

Manual | EN

# Beckhoff Device Manager





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# 1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the security requirements, including all the relevant laws, regulations, guidelines, and standards.

## Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams, and descriptions in this documentation.

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## 2 Security

The Security chapter provides information on how to reduce the risk of unauthorized access.

Signal panels like the one shown below highlight additional information throughout the documentation:



### Tip or pointer

This symbol indicates information that contributes to better understanding.

#### Intended use

The Beckhoff Device Manager is used for Beckhoff IPC diagnostics. It enables monitoring of system values, which helps to prevent device downtimes. Since a customized BIOS is required for using the Beckhoff Device Manager, the Device Manager is only available for Beckhoff Industrial PCs and Embedded PCs.

The intuitive Device Manager website facilitates system configuration. The website is protected by a password, and access is encrypted (https). A standard administrator password specified by Beckhoff is applied on delivery. You should change this password to prevent unauthorized remote access to the system. Information on setting secure passwords is provided below.

#### Fundamental safety instructions

As a rule, it is important to prevent unauthorized persons from accessing the system. Various security measures are available for this purpose.

- Secure access to the system by means of certificates (e.g. ssh or OPC UA). Note that this only secures this type of access. If you want to prevent unauthorized access to the website, close TCP port 443 (https) in the system firewall. Please refer to the documentation for your operating system.
- Protect the system physically by keeping control cabinets locked and allowing access only to administrators and technicians. This reduces attacks on the system via data carriers.
- Train employees in the general handling of passwords and data carriers.

For more information, refer to the IPC security documentation.

#### Secure passwords

Strong passwords are an important prerequisite for a secure system.

Please note the following points when assigning new passwords:

- Passwords should be unique for each user and service.
- Only change passwords after an incident in which passwords have become known without authorization.
- Train the device users in the use of passwords.

A secure password has the following characteristics:

- Password complexity: The password should contain capital and lower-case letters, numbers, punctuation marks and special characters.
- Password length: The password should be at least 10 characters long.

You can generate the password in different ways. An example is shown in the following table:

Table 1: Password generation

| Procedure                                                     | Example                           |
|---------------------------------------------------------------|-----------------------------------|
| Start with one or two sentences.                              | Complex passwords are more secure |
| Remove the spaces.                                            | Complexpasswordsaremoresecure     |
| Abbreviate words or add spelling mistakes.                    | Complxpasswordsarmorescure        |
| Insert numbers and special characters to extend the password. | KomlxPasswörtersinsicerer#529954# |

The following passwords are not secure:

- Words from a dictionary
- Words written backwards, common spelling mistakes, and abbreviations
- Repetitive sequences, e.g. 123456789 or abcdefgh
- Personal information, e.g. birthdays, ID numbers, telephone numbers

## 3 Overview

The Beckhoff Device Manager can be used for device diagnostics. It can provide a variety of system values. They can be accessed via standard functions of the Windows operating system and via special functions of the Beckhoff BIOS. The functions available for individual IPCs depend on the hardware, the BIOS, the operating system, and the Device Manager version. They may therefore differ between different Beckhoff IPCs.

In view of the fact that the control computer is the central element of the machine control system, any failure can cause high downtime costs. It is therefore essential to be able to check the device. To prevent failure and minimize downtime, it is important to detect critical conditions early on. These include impending heat collapse due to failure of a fan or insufficient passive cooling. For the acquisition, analysis, and evaluation of system data during operation, all newer Beckhoff IPCs therefore offer the option of sophisticated system diagnostics with standardized, safe access to existing hardware and software components.

The Beckhoff Device Manager is only available for Beckhoff Industrial PCs and Embedded PCs, since it requires a customized BIOS. The current version of the Device Manager is available from Beckhoff support. On Beckhoff IPCs that are delivered with an embedded operating system, the Device Manager is pre-installed as standard (IPCs with standard Windows OS are available on request).

### Communication and programming interfaces

The Beckhoff Device Manager supports local system access (in the control program on the device) and remote access from another IPC (or PLC).

The Device Manager functions can be integrated in user applications (particularly TwinCAT) via different communication and programming interfaces.

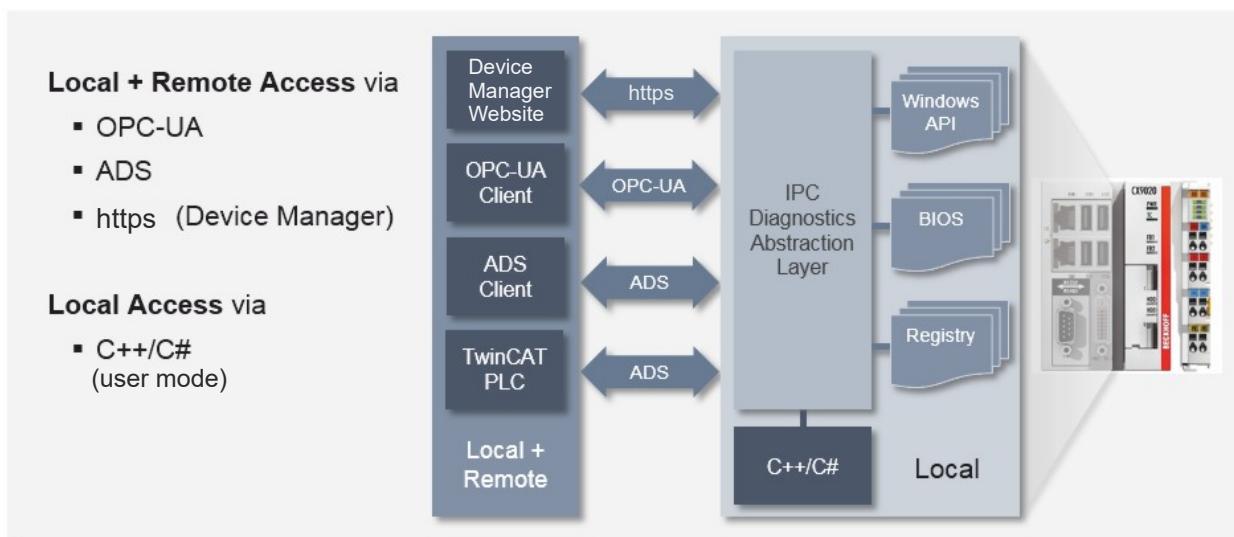


Fig. 1: Communication and programming interfaces

## 4 System requirements



### Current components

The Beckhoff Device Manager is constantly being updated and further developed. Always use the latest components in your application:

- BIOS
- Image for your Beckhoff IPC
- Beckhoff Automation Device Driver
- Tc3\_IPCDiag or Tc2\_MDP library for your TwinCAT PLC program

### Hardware requirements

- The Beckhoff Device Manager only runs on Beckhoff IPCs or Beckhoff Embedded PCs. It does not run on other IPCs/PCs.
- A prerequisite is the use of a Beckhoff image, as this contains special settings for using the Beckhoff Device Manager.
- The Device Manager is included in all current Beckhoff standard images under Windows Embedded (Standard and Compact).

### Software requirements

- In the current version of the Device Manager, optimizations and improvements have been made compared to previous versions. The current version of the Device Manager can be obtained from Beckhoff Service.
- The Device Manager is usually not pre-installed on Beckhoff images with Windows desktop versions (Windows 7 Professional etc.). In this case you can install the Beckhoff Device Manager via a setup program. The Setup facility is only available for "big" Windows systems, not for Windows CE or Windows Embedded Compact. Windows CE systems cannot be updated. In this case always use the latest image.
- Non-Beckhoff images are not supported.

### BIOS version

There may be further conditions for the Beckhoff Device Manager version and the BIOS version, depending on which features you want to use and which Industrial PCs or Embedded PCs you use.

Whether special features, such as reading of the CPU or mainboard temperature, are available in the Device Manager depends on the BIOS version in the device used, since the device must make the corresponding values available via a dedicated interface (BIOS API).

The following table shows the systems for which Device Manager values can **not** be read via the BIOS API.

| IPC mainboard                                                                              | Server                                                  | Embedded PC                                                                                |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• CBxx50</li><li>• CBxx51</li><li>• CB3x10</li></ul> | <ul style="list-style-type: none"><li>• C6670</li></ul> | <ul style="list-style-type: none"><li>• CX10x0</li><li>• CX80x0</li><li>• CX90xx</li></ul> |

Beckhoff Industrial PCs of the same series may be equipped with different Beckhoff IPC mainboards, depending on the performance class. An exception are Embedded PCs of the CX series. The functions available for the Beckhoff Device Manager therefore depend on the integrated mainboard, not the IPC type.

Check whether additional information on the availability of individual features is provided in the description of the modules you require.

When using the Device Manager via a PLC library, note the [system requirements](#) of the PLC library.

## 5 Web interface

For a quick overview of the functions supported by your Beckhoff IPC, please refer to Device Manager web page. This is particularly helpful for functions that require a special Beckhoff BIOS (e.g. mainboard data).

All IPC diagnostic parameters of the Beckhoff IPC can be read out via the web interface using a standard web browser. The web interface is available for download via a URL with the following structure: `http://<Device IP>/config`

Important notes:

- Local access (without network connection) to the device web page is also available via the URL `http://localhost/config`.
- Your network firewall must permit access via port 443 (https) for the web interface of the IPC.
- Instead of the IP address of the device, in principle you can use the device name of the IPC. However, depending on the structure/configuration of your network (proxy server, etc.), the system may not be able to resolve the device name. We therefore recommend using the IP address of the IPC.

### Self-signed certificates for https connection

 Since the devices use self-signed certificates for the https connection, current browsers will issue a warning message that the identity cannot be verified. In this case, you can import the self-signed certificate of the device (server) into the client Windows computer.

Before you can import the self-signed certificate to the client Windows computer, you must copy it from the Industrial PC to the client Windows computer. For 64-bit systems the certificates can be found in the directory `C:\Program Files (x86)\Beckhoff\IPC-Diagnostics\Certs`, for 32-bit systems in the directory `C:\Program Files\Beckhoff\IPC-Diagnostics\Certs`.

Now import the self-signed certificate to the client Windows computer as follows:

1. Start `certmgr.msc` on the Windows computer.
2. Add the certificate snap-in for the computer account and manage the certificates for the local computer.
3. Import the self-signed certificate into Trusted Root Certification Authorities > Certificates.

### Update certificate

 If you want to install a new image on a device, the certificate on the client Windows computer must also be updated.

By default, the access data are predefined when the IPCs are delivered:

- User name: Administrator
- Password: 1

The Security Wizard of the Device Manager prompts you to change these access data after the first start. Please follow this instruction to prevent unauthorized access. For more information on selecting strong passwords, see chapter 2 [Security](#) [▶ 6].

After you have changed and confirmed the access data, the home page of the current web interface of the Beckhoff Device Manager appears:



Fig. 2: Beckhoff Device Manager home page

The home page provides a basic overview of the device. From here you can directly access the hardware, software, and security sections. This allows you to check the hardware and software in a targeted manner.

From the home page, navigate further in the menu to configure the Industrial PC or Embedded PC. Note that modifications only become active once they have been confirmed. Restart the PC if necessary.

On Beckhoff IPCs with desktop Windows, which are usually delivered without pre-installed Beckhoff Device Manager, the Device Manager can be retrofitted via an installation program. The installation program is available from Beckhoff Support.

#### Previous version of the web interface

The web interface of the Beckhoff Device Manager shown above was introduced at the end of 2015, so that all new images will contain this interface from the time of its introduction. All images from the time before the end of 2015 contain the old interface. The following image shows the home page and the Software menu item, with reference to the MDP interface version (as an indicator of up-to-dateness) of the old web interface.

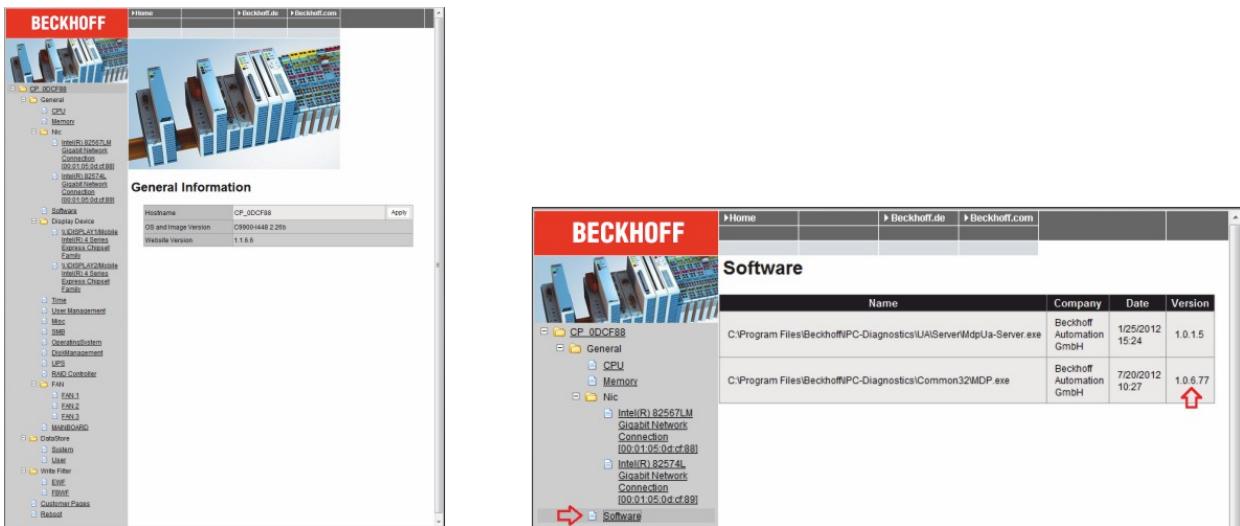


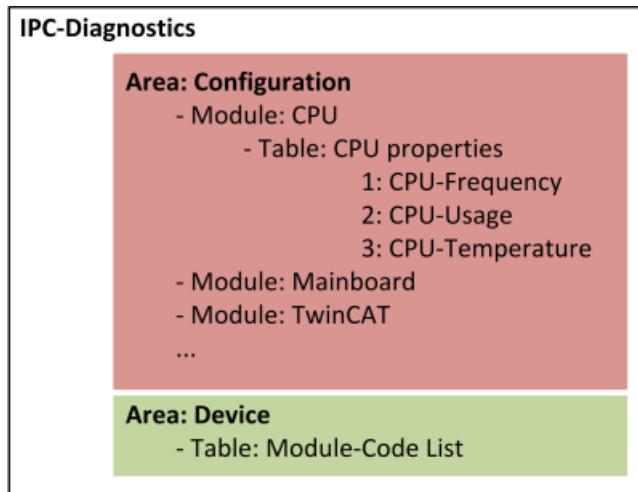
Fig. 3: IPC diagnostics, old web interface

## 6 Information model

### Modules – categorization of hardware and software information

The Beckhoff Device Manager categorizes various hardware and software data in an information model via modules.

- A module categorizes several pieces of hardware and software information in logical groups, e.g. CPU, mainboard, TwinCAT.
- The Device Manager automatically generates modules on system startup based on the actual IPC hardware and software. Modules therefore do not have a static address but a dynamic address, which is generated when the Device Manager is started, based on the identified hardware and software of the IPC.
- A module contains several tables that subdivide the hardware and software information for respective modules into logical subgroups. Each module contains at least one "Header" table containing general information on the module, plus at least one data table.
- A particular entry in the table is addressed via its subindex.



The following information is required to read specific data via the Device Manager:

- The (dynamic) address of the table containing the required information. A table can be addressed via a unique address.
- The SubIndex within the table representing the desired information (e.g. CPU temperature).

For PLC programming convenient function blocks are available, which facilitate access to the required data (see [samples for PLC programming \[▶ 64\]](#)). The following information on addressing can therefore be skipped for PLC programming.

### Finding the address of a table

To read a particular piece of hardware or software information via the Device Manager it is necessary to determine its precise position in the information model, based on the index of the surrounding table and its subindex.

#### Index:

The index of the table consists of 16 bits and is configured as follows:

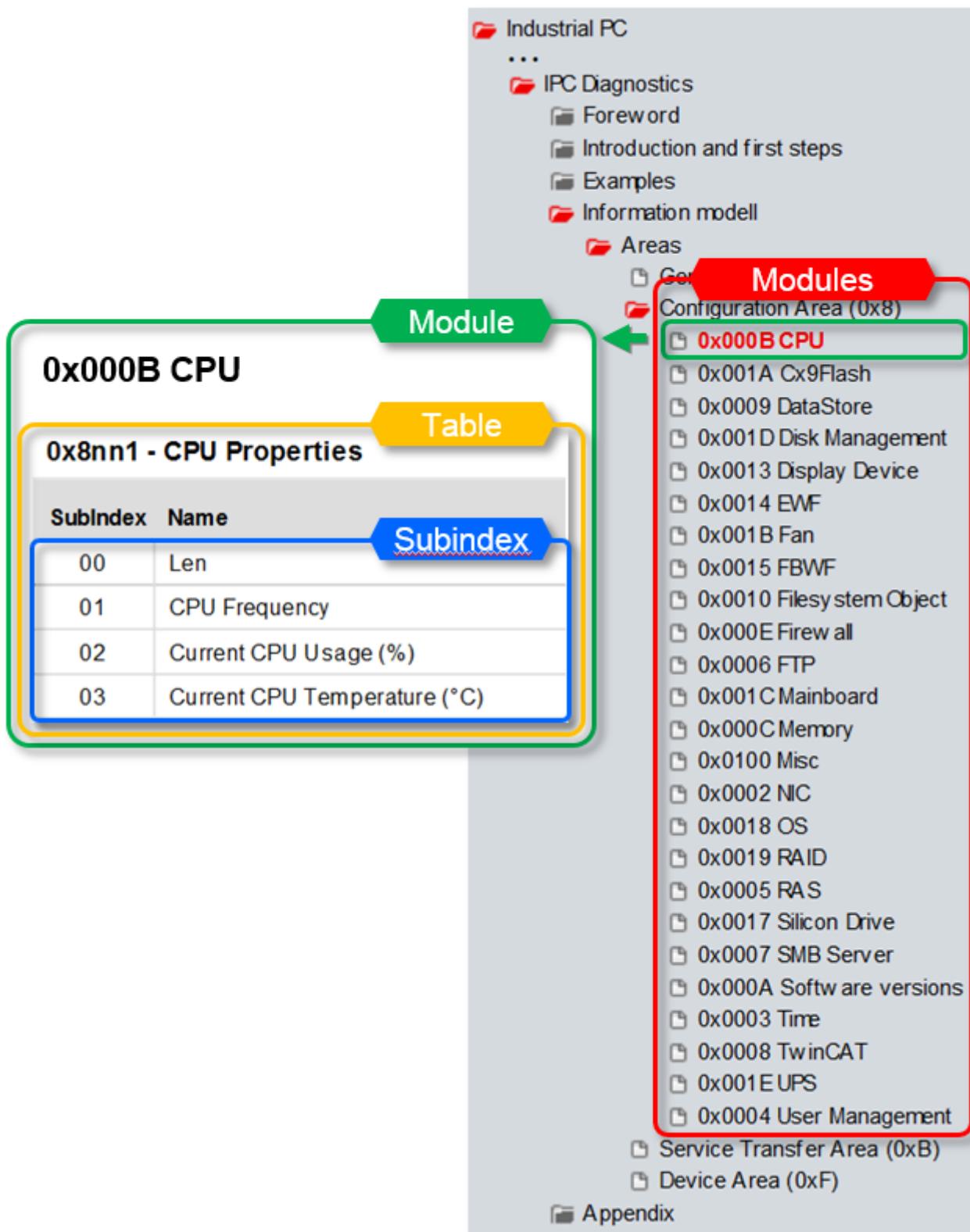
| 0x           | a                  | nn                 | x                 |
|--------------|--------------------|--------------------|-------------------|
| Hex preamble | Area code (4 bits) | Module ID (8 bits) | Table ID (4 bits) |

**Area code** (4 bits): describes which [area \[▶ 15\]](#) this address should address.

**Module ID** (8 bits): clearly identifies the dynamic position of the respective module and is automatically generated by the Device Manager at system startup. It can be determined by querying the table 0xF020 (Device Area).

**Table ID** (4 bits): identifies the table within a module.

Depending on the area used, the module ID and the table ID may be consolidated, e.g. for the Device Area, which does not have any modules.



#### SubIndex:

The subindex for a required piece of information can be found in the list of available modules (Configuration Area).

## Example

In this example the NIC module is to be addressed for reading the IP address of the network card (NIC). Remember: Device Manager modules are generated automatically based on the actually available hardware and software. In table [0xF020 \[▶ 62\]](#) of the Device Area a list of all automatically generated modules can be queried. Each row in this table represents a module, consisting of the respective module type in the high word and the dynamically created module ID in the low word. The content of table 0xF020 may look as follows, for example:

| SubIndex | Value<br>High/Low Word prefix | Description                     |
|----------|-------------------------------|---------------------------------|
| 0        | 5                             | Number of entries in this table |
| 1        | 0x 000C 0000                  | Module "Memory"                 |
| 2        | 0x 000B 0001                  | Module "CPU" (core 1)           |
| 3        | 0x 000B 0002                  | Module "CPU" (core 2)           |
| 4        | 0x 0002 0003                  | Module "NIC"                    |

The value returned to SubIndex 4 consists of the searched module type "NIC" (0x0002) in the high word and the dynamic module ID (0x0003) in the low word. Since the list is sorted based on the dynamic module IDs, the dynamic module ID always corresponds to the subindex minus one.

The complete index is now configured as follows, based on the scheme mentioned above:

|           |                                                 |                                              |                                  |
|-----------|-------------------------------------------------|----------------------------------------------|----------------------------------|
| <b>0x</b> | <b>a</b>                                        | <b>nn</b>                                    | <b>x</b>                         |
| <b>0x</b> | <b>8</b>                                        | <b>03</b>                                    | <b>1</b>                         |
|           | Area code (in this case:<br>Configuration Area) | Module ID (results from<br>the table 0xF020) | Table ID (1 = NIC<br>properties) |

The properties of the network card are therefore stored at address 0x8031. According to the [specification of the NIC module \[▶ 18\]](#), the IP address of the network card can now be read under address 0x8031 at its subindex 2. The return value corresponds to one of the defined [data types \[▶ 77\]](#).

## 6.1 Areas

For addressing a table it is important to specify which area is to be addressed, since the Beckhoff Device Manager is subdivided into different areas:

| Area code | Name                  | Meaning                                                                                                                                                                                                                                                                                               |
|-----------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x1       | General Area          | The General Area contains various general data of the IPC.                                                                                                                                                                                                                                            |
| 0x8       | Configuration Area    | This is where the individual modules and associated information are created.                                                                                                                                                                                                                          |
| 0xB       | Service Transfer Area | The Service Transfer Area offers functional access.                                                                                                                                                                                                                                                   |
| 0xF       | Device Area           | This is where the IPC diagnostics enters information to indicate which modules are automatically detected on startup, depending on the hardware and software, for example. In contrast to the Configuration Area, the Device Area does not consist of subordinate modules, only of individual tables. |

When addressing a table, the first 4 bits represent the area (see also [Description of the information model \[▶ 12\]](#)).

### 6.1.1 0x1000-0x1FFF – General Area

The General Area contains various general data of the IPC.

#### 0x1000

| SubIndex | Typ | Name                                                      | Typ     | Zugriff   |
|----------|-----|-----------------------------------------------------------|---------|-----------|
| 00       | VAR | Device Typ (MDP ProfileID(0x1389) & SubProfileID(0x2710)) | DWORD32 | read-only |

#### 0x1008

| SubIndex | Type | Name        | Type           | Access     |
|----------|------|-------------|----------------|------------|
| 00       | VAR  | Device Name | VISIBLE STRING | read-write |

If the device name is invalid, the write command terminates with the value [0xECA60106 \(invalid data \[▶ 77\]\)](#).

Valid file names must meet the following requirements:

- Compliant with the RFC952/1123 standard
- The following prefixes are reserved by Beckhoff and must not be included:
  - CX- or CX\_
  - CP- or CP\_
  - EK-
  - AX-

#### 0x1009

| SubIndex | Typ | Name             | Typ            | Zugriff  |
|----------|-----|------------------|----------------|----------|
| 00       | VAR | Hardware Version | VISIBLE STRING | constant |

**0x100A**

| SubIndex | Typ | Name                 | Typ            | Zugriff  |
|----------|-----|----------------------|----------------|----------|
| 00       | VAR | OS and Image Version | VISIBLE STRING | constant |

**0x1018 - Identity Object**

| SubIndex | Typ | Name                                | Typ        | Zugriff   |
|----------|-----|-------------------------------------|------------|-----------|
| 00       | VAR | Len                                 | UNSIGNED16 | read-only |
| 01       | VAR | Vendor                              | UNSIGNED32 | constant  |
| 02       | VAR | Product Code (not yet supported)    | UNSIGNED32 | constant  |
| 03       | VAR | Revision Number (not yet supported) | UNSIGNED32 | constant  |
| 04       | VAR | Serial Number                       | UNSIGNED32 | constant  |

**6.1.2 0x8000-0x8FF – Configuration Area**

The Configuration Area enables read and write accesses to configuration data in the existing MDP modules.

The following module list shows the available modules. It also indicates on which operating system the respective modules are not available. The corresponding data are shown as elements of tables. Each table has a unique MDP index (see [information model \[► 12\]](#)).

Note: If a component – e.g. an EtherCAT port or a hard disk – is present several times on the system, a separate module instance is created for each one.

## Overview of the module types according to type numbers

| Module                                             | Type number | Operating system (module not available)            |
|----------------------------------------------------|-------------|----------------------------------------------------|
| <a href="#">NIC [▶ 18]</a>                         | 0x0002      |                                                    |
| <a href="#">Time [▶ 19]</a>                        | 0x0003      |                                                    |
| <a href="#">User Management [▶ 21]</a>             | 0x0004      |                                                    |
| <a href="#">RAS [▶ 23]</a>                         | 0x0005      | TwinCAT/BSD                                        |
| FTP                                                | 0x0006      | TwinCAT/BSD                                        |
| <a href="#">SMB [▶ 24]</a>                         | 0x0007      |                                                    |
| <a href="#">TwinCAT [▶ 26]</a>                     | 0x0008      |                                                    |
| <a href="#">Software [▶ 28]</a>                    | 0x000A      |                                                    |
| <a href="#">CPU [▶ 29]</a>                         | 0x000B      |                                                    |
| <a href="#">Memory [▶ 30]</a>                      | 0x000C      |                                                    |
| <a href="#">Firewall WinCE [▶ 30]</a>              | 0x000E      |                                                    |
| <a href="#">File System Object [▶ 34]</a>          | 0x0010      |                                                    |
| <a href="#">Display Device [▶ 37]</a>              | 0x0013      |                                                    |
| <a href="#">EWF [▶ 38]</a>                         | 0x0014      | TwinCAT/BSD                                        |
| <a href="#">FBWF [▶ 40]</a>                        | 0x0015      | TwinCAT/BSD                                        |
| <a href="#">OS [▶ 43]</a>                          | 0x0018      |                                                    |
| <a href="#">RAID [▶ 43]</a>                        | 0x0019      |                                                    |
| <a href="#">Fan [▶ 45]</a>                         | 0x001B      |                                                    |
| <a href="#">Mainboard [▶ 46]</a>                   | 0x001C      |                                                    |
| <a href="#">Disk Management [▶ 48]</a>             | 0x001D      |                                                    |
| <a href="#">UPS [▶ 49]</a>                         | 0x001E      |                                                    |
| <a href="#">Physical Drive (S.M.A.R.T.) [▶ 52]</a> | 0x001F      | Windows CE/Windows Embedded Compact<br>TwinCAT/BSD |
| <a href="#">Mass Storage Monitoring [▶ 54]</a>     | 0x0020      | Windows CE/Windows Embedded Compact                |
| <a href="#">Unified Write Filter (UWF) [▶ 57]</a>  | 0x0021      | Windows CE/Windows Embedded Compact<br>TwinCAT/BSD |
| <a href="#">Misc [▶ 59]</a>                        | 0x0100      |                                                    |

The individual modules are explained in the following sections. Each module may contain access options for different MDP areas.

## 6.1.2.1 0x0002 - NIC

### 0x8nn0 - Module Header

| SubIndex | Type | Name     | Value        | Type           | Access    |
|----------|------|----------|--------------|----------------|-----------|
| 00       | VAR  | Len      |              | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0002 00nn  | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | NIC          | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Adapter Name | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0002 2710  | UNSIGNED32     | read-only |

### 0x8nn1 – NIC properties



If this component exists more than once on the system, a separate module instance is created for each one.



Changing these settings requires an active network connection for the selected Ethernet/EtherCAT adapter. Without an active network connection no parameters can be (pre-)set.

| SubIndex | Type | Name                                 | Type           | Access     |
|----------|------|--------------------------------------|----------------|------------|
| 00       | VAR  | Len                                  | UNSIGNED16     | read-only  |
| 01       | VAR  | MAC Address                          | VISIBLE STRING | constant   |
| 02       | VAR  | IPv4 Address <sup>1</sup>            | VISIBLE STRING | read-write |
| 03       | VAR  | IPv4 Subnet Mask <sup>1</sup>        | VISIBLE STRING | read-write |
| 04       | VAR  | DHCP                                 | BOOLEAN        | read-write |
| 05       | VAR  | IPv4 Default Gateway <sup>1,2</sup>  | VISIBLE STRING | read-write |
| 06       | VAR  | IPv4 DNS Servers <sup>3</sup>        | VISIBLE STRING | read-write |
| 07       | VAR  | Virtual Device Name <sup>4</sup>     | VISIBLE STRING | read-write |
| 08       | VAR  | IPv4 DNS Servers Active <sup>5</sup> | VISIBLE STRING | read       |

<sup>1</sup> This is the current active value.

With WinCE a reboot may be required in order to obtain a correct value. Without a reboot WinCE may still supply the previous value!

<sup>2</sup> WinCE: Depending on the DHCP status, a "Read" operation has the return value "DefaultGateway" or "DhcpDefaultGateway".

<sup>3</sup> Not available for WinCE.

<sup>4</sup> Only available for Windows.

<sup>5</sup> Only available for TC/BSD and TC/RTOS.

### 0xBnn0 – IP Release/Renew Address (Service Transfer Object)

| InputData |           |
|-----------|-----------|
| Type      | Name      |
| UNSIGNED8 | DummyByte |

**0xBnn1 – Set IP, Subnet and Default Gateway**

| <b>InputData</b> |              |
|------------------|--------------|
| Type             | Name         |
| UNSIGNED32       | cblInputData |
| UNSIGNED32       | IpLen        |
| UNSIGNED32       | SubnetLen    |
| UNSIGNED32       | GatewayLen   |
| char[IpLen]      | szIP         |
| char[SubnetLen]  | szSubnet     |
| char[GatewayLen] | szGateway    |

**6.1.2.2 0x0003 - Time****0x8nn0 – Module Header**

| <b>SubIndex</b> | <b>Type</b> | <b>Name</b> | <b>Value</b> | <b>Type</b>    | <b>Access</b> |
|-----------------|-------------|-------------|--------------|----------------|---------------|
| 00              | VAR         | Len         |              | UNSIGNED16     | read-only     |
| 01              | VAR         | Address     | 0x0003 00nn  | UNSIGNED32     | read-only     |
| 02              | VAR         | Type        | Time         | VISIBLE STRING | read-only     |
| 03              | VAR         | Name        | Time         | VISIBLE STRING | read-only     |
| 04              | VAR         | Dev type    | 0x0003 2710  | UNSIGNED32     | read-only     |

**0x8nn1**

| SubIndex | Type | Name                                                                                                                                                                                                     | Type           | Access     |
|----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| 00       | VAR  | Len                                                                                                                                                                                                      | UNSIGNED16     | read-only  |
| 01       | VAR  | SNTP Server:<br>• Name or IP Address of the timeserver<br>• Empty string = No synchronization<br>• "NT5DS" = Use domain hierarchy settings (Win32 only)                                                  | VISIBLE STRING | read-write |
| 02       | VAR  | SNTP Refresh in Seconds<br>On Windows CE the smallest allowed value is 5 seconds.                                                                                                                        | UNSIGNED32     | read-write |
| 03       | VAR  | Seconds since midnight January 1, 1970 (UTC)                                                                                                                                                             | UNSIGNED32     | read-write |
| 04       | VAR  | Textual DateTime presentation (ISO 8601) YYYY-MM-DDThh:mm:ss.sTZD                                                                                                                                        | VISIBLE STRING | read-write |
| 05       | VAR  | Timezone.Zero based index of currently active timezone as listed in object 0x8nn2. Sub indizes in Object 0x8nn2 are one based. To lookup timezone information you need to query sub idx @ "this value"+1 | UNSIGNED16     | read-write |
| 06       | VAR  | Shift Value <sup>2</sup> – Offset in seconds of the current local time relative to the coordinated universal time (UTC)                                                                                  | SIGNED32       | read-write |

<sup>1</sup>SNTP Server and SNTP Refresh: the system must be rebooted in order for the changes to take effect.

<sup>2</sup>Only supported for TC/RTOS

**0x8nn2 - Timezones**

| SubIndex  | Type | Name             | Type           | Access    |
|-----------|------|------------------|----------------|-----------|
| 00        | VAR  | Len              | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Timezone1 .. Len | VISIBLE STRING | read-only |

### 6.1.2.3 0x0004 - User Management

#### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value           | Type           | Access    |
|----------|------|----------|-----------------|----------------|-----------|
| 00       | VAR  | Len      |                 | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0004 00nn     | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | User Management | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | User Management | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0004 2710     | UNSIGNED32     | read-only |

#### 0x8nn1 – User Name

List of the local users (excluding domain users)

| SubIndex  | Type | Name         | Type           | Access    |
|-----------|------|--------------|----------------|-----------|
| 00        | VAR  | Len          | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | name1 .. Len | VISIBLE STRING | read-only |

#### 0x8nn2 – Domain

List of domain names for the users from table 0x8nn1

| SubIndex  | Type | Name         | Type           | Access    |
|-----------|------|--------------|----------------|-----------|
| 00        | VAR  | Len          | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | name1 .. Len | VISIBLE STRING | read-only |

#### 0x8nn3 – Group Membership \*

Comma-separated list of groups to whom the user from list 0x8nn1 belongs.

| SubIndex  | Type | Name               | Type           | Access    |
|-----------|------|--------------------|----------------|-----------|
| 00        | VAR  | Len                | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | GroupList 1 .. Len | VISIBLE STRING | read-only |

#### 0x8nn4 – Local Groups \*

List of all local groups

| SubIndex  | Type | Name               | Type           | Access    |
|-----------|------|--------------------|----------------|-----------|
| 00        | VAR  | Len                | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | GroupList 1 .. Len | VISIBLE STRING | read-only |

#### Service transfer objects

##### 0xBnn0 – Add User (Service Transfer Object)

| InputData          |              |
|--------------------|--------------|
| Type               | Name         |
| UNSIGNED32         | cblInputData |
| UNSIGNED32         | NameLen      |
| UNSIGNED32         | Domain Len   |
| UNSIGNED32         | Password Len |
| char[Name Len]     | szName       |
| char[DomainLen]    | szDomain     |
| char[Password Len] | szPassword   |

No output data

**0xBnn1 – Delete User (Service Transfer Object)**

| <b>InputData</b> |             |
|------------------|-------------|
| Type             | Name        |
| UNSIGNED32       | cbInputData |
| UNSIGNED32       | NameLen     |
| UNSIGNED32       | Domain Len  |
| char[Name Len]   | szName      |
| char[DomainLen]  | szDomain    |

No output data

**0xBnn3 – Set Group Membership (Service Transfer Object) \***

| <b>InputData</b> |                 |
|------------------|-----------------|
| Type             | Name            |
| UNSIGNED32       | cbInputData     |
| UNSIGNED32       | UserNameLen     |
| UNSIGNED32       | GroupNameLen    |
| UNSIGNED32       | DomainNameLen   |
| BOOLEAN          | IsMemberOfGroup |
| char[Name Len]   | szUserName      |
| char[Group Len]  | szGroupName     |
| char[DomainLen]  | szDomainName    |

No output data

**0xBnn4 – Create Group (Service Transfer Object) \***

| <b>InputData</b> |               |
|------------------|---------------|
| Type             | Name          |
| UNSIGNED32       | cbInputData   |
| UNSIGNED32       | GroupNameLen  |
| UNSIGNED32       | DomainNameLen |
| char[Name Len]   | szGroupName   |
| char[DomainLen]  | szDomainName  |

No output data

**0xBnn5 – Delete Group (Service Transfer Object) \***

| <b>InputData</b> |               |
|------------------|---------------|
| Type             | Name          |
| UNSIGNED32       | cbInputData   |
| UNSIGNED32       | GroupNameLen  |
| UNSIGNED32       | DomainNameLen |
| char[Name Len]   | szGroupName   |
| char[DomainLen]  | szDomainName  |

No output data

\* Available in MDP 1.0.5.x

**0xBnn6 – SetPassword Secure (Service Transfer Object)**

| InputData            |                |
|----------------------|----------------|
| Type                 | Name           |
| DWORD                | cb             |
| DWORD                | cchName        |
| DWORD                | cchDomain      |
| DWORD                | cchPassword    |
| DWORD]               | cchPasswordNew |
| char[cchName]        | szName         |
| char[cchDomain]      | szDomain       |
| char[cchPassword]    | szPassword     |
| char[cchPasswordNew] | szPasswordNew  |

No output data

#### 6.1.2.4 0x0005 - RAS (WinCE)



This module is available for Windows CE.

#### TwinCAT/BSD

This function is not available for TwinCAT/BSD.

#### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0005 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | RAS         | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | RAS         | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0005 2710 | UNSIGNED32     | read-only |

#### 0x8nn1 - Misc

| SubIndex | Type | Name               | Type           | Access     |
|----------|------|--------------------|----------------|------------|
| 00       | VAR  | Len                | UNSIGNED16     | read-only  |
| 01       | VAR  | Enable             | BOOLEAN        | read-write |
| 02       | VAR  | Slow Connection    | BOOLEAN        | read-write |
| 03       | VAR  | Use DHCP           | BOOLEAN        | read-write |
| 04       | VAR  | Use Auto Addresses | BOOLEAN        | read-write |
| 05       | VAR  | Static Ip Count    | UNSIGNED32     | read-write |
| 06       | VAR  | Static Ip Start    | VISIBLE STRING | read-write |

#### 0x8nn2 - Line Names

| SubIndex  | Type | Name          | Type           | Access    |
|-----------|------|---------------|----------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Line 1 .. Len | VISIBLE STRING | read-only |

#### 0x8nn3 - Line Enabled

| SubIndex  | Type | Name             | Type       | Access     |
|-----------|------|------------------|------------|------------|
| 00        | VAR  | Len              | UNSIGNED16 | read-only  |
| 01 .. Len | VAR  | Enabled 1 .. Len | BOOLEAN    | read-write |

**0x8nn4 - Userlist**

| SubIndex  | Type | Name              | Type           | Access    |
|-----------|------|-------------------|----------------|-----------|
| 00        | VAR  | Len               | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Username 1 .. Len | VISIBLE STRING | read-only |

**Service transfer objects****0xBnn0 – Add User**

| InputData      |            |
|----------------|------------|
| Typ            | Name       |
| UNSIGNED32     | cbUserName |
| VISIBLE STRING | UserName   |

**0xBnn1 – Delete User**

| InputData      |            |
|----------------|------------|
| Typ            | Name       |
| UNSIGNED32     | cbUserName |
| VISIBLE STRING | UserName   |

**6.1.2.5 0x0007 - SMB Server****0x8nn0 – Module Header**

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0007 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | SMB Server  | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | SMB Server  | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0007 2710 | UNSIGNED32     | read-only |

**0x8nn1 - SMB Share Names**

| SubIndex  | Type | Name          | Type           | Access    |
|-----------|------|---------------|----------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | name 1 .. Len | VISIBLE STRING | read-only |

**0x8nn2- SMB Path Names**

| SubIndex  | Type | Name          | Type           | Access    |
|-----------|------|---------------|----------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Path 1 .. Len | VISIBLE STRING | read-only |

**0x8nn3- Userlist**

| SubIndex  | Type | Name              | Type           | Access    |
|-----------|------|-------------------|----------------|-----------|
| 00        | VAR  | Len               | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Username 1 .. Len | VISIBLE STRING | read-only |

**0x8nn4- Access rights**

| SubIndex  | Type | Name                  | Type           | Access    |
|-----------|------|-----------------------|----------------|-----------|
| 00        | VAR  | Len                   | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Access right 1 .. Len | VISIBLE STRING | read-only |

**Access rights:**

The user access rights have the format UNSIGNED32 and are output as VISIBLE STRING.

```
USER_DELETE 0 // deletes the specified user from the
ACL
```

```
SHARE_READ 10 // grant read Access
```

```
SHARE_CHANGE 20 // grant change Access
```

```
SHARE_FULL -1 // grant full Access
```

Under WinCE only USER\_DELETE and SHARE\_FULL access can be set.

**Service transfer objects****0xBnn0 – Add Share (Service Transfer Object)**

| InputData     |             |
|---------------|-------------|
| Type          | Name        |
| UNSIGNED32    | cbInputData |
| UNSIGNED32    | NameLen     |
| UNSIGNED32    | PathLen     |
| char[NameLen] | szName      |
| char[PathLen] | szPath      |

**0xBnn1 – Del Share (Service Transfer Object)**

| InputData     |           |
|---------------|-----------|
| Type          | Name      |
| UNSIGNED32    | NameLen   |
| Char[NameLen] | ShareName |

**0xBnn2 – Set user Access rights (Service Transfer Object)**

| InputData     |              |
|---------------|--------------|
| Type          | Name         |
| UNSIGNED32    | ShareNameLen |
| UNSIGNED32    | UserNameLen  |
| UNSIGNED32    | AccessRights |
| Char[NameLen] | ShareName    |
| Char[NameLen] | UserName     |

## 6.1.2.6 0x0008 - TwinCAT

### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0008 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | TwinCAT     | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | TwinCAT     | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0008 2710 | UNSIGNED32     | read-only |

### 0x8nn1 – Tc Misc

| SubIndex | Type | Name                                                      | Type           | Access     |
|----------|------|-----------------------------------------------------------|----------------|------------|
| 00       | VAR  | Len                                                       | UNSIGNED16     | read-only  |
| 01       | VAR  | Major Version                                             | UNSIGNED16     | read-only  |
| 02       | VAR  | Minor Version                                             | UNSIGNED16     | read-only  |
| 03       | VAR  | Build                                                     | UNSIGNED16     | read-only  |
| 04       | VAR  | Ams Net ID <sup>1</sup>                                   | VISIBLE STRING | read-write |
| 05       | VAR  | Reg Level <sup>2</sup><br>(Only available with TwinCAT 2) | UNSIGNED32     | read-only  |
| 06       | VAR  | TwinCAT Status                                            | UNSIGNED16     | read-only  |
| 07       | VAR  | RunAsDevice<br>(available for WindowsCE)                  | UNSIGNED16     | read-write |
| 08       | VAR  | ShowTargetVisu<br>(available for WindowsCE)               | UNSIGNED16     | read-write |
| 09       | VAR  | Log File size<br>(available for WindowsCE)                | UNSIGNED32     | read-write |
| 10       | VAR  | Log File Path<br>(available for WindowsCE)                | VISIBLE STRING | read-write |
| 11       | VAR  | TwinCAT System ID <sup>3</sup>                            | VISIBLE STRING | read-only  |
| 12       | VAR  | TwinCAT Revision                                          | UNSIGNED16     | read-only  |

#### <sup>1</sup> Ams Net ID Info

A restart of the computer is required in order to make the changes to the NetID

#### <sup>2</sup> Reg Level Info (only available with TwinCAT 2)

Reg Level 0 =CP

Reg Level 1 =I/O

Reg Level 2 =PLC

Reg Level 3 =NC-PTP

Reg Level 4 =NCI

#### <sup>3</sup> TwinCAT System ID Info

**System requirements:** MDP Version 1.6 or higher

### 0x8nn2 - TwinCAT Route Name

| SubIndex  | Type | Name         | Type           | Access    |
|-----------|------|--------------|----------------|-----------|
| 00        | VAR  | Len          | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | name1 .. Len | VISIBLE STRING | read-only |

**0x8nn3 - TwinCAT Route Address**

| SubIndex  | Type | Name            | Type           | Access    |
|-----------|------|-----------------|----------------|-----------|
| 00        | VAR  | Len             | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Address1 .. Len | VISIBLE STRING | read-only |

**0x8nn4 - TwinCAT Route AMS Address**

| SubIndex  | Type | Name        | Type           | Access    |
|-----------|------|-------------|----------------|-----------|
| 00        | VAR  | Len         | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | AMS1 .. Len | VISIBLE STRING | read-only |

**0x8nn5 - TwinCAT Route Flags**

| SubIndex  | Type | Name          | Type       | Access    |
|-----------|------|---------------|------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Flags1 .. Len | UNSIGNED32 | read-only |

**0x8nn6 - TwinCAT Route Timeout**

| SubIndex  | Type | Name            | Type       | Access    |
|-----------|------|-----------------|------------|-----------|
| 00        | VAR  | Len             | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Timeout1 .. Len | UNSIGNED32 | read-only |

**0x8nn7 - TwinCAT Route Transport**

| SubIndex                                                                       | Type | Name              | Type       | Access    |
|--------------------------------------------------------------------------------|------|-------------------|------------|-----------|
| 00                                                                             | VAR  | Len               | UNSIGNED16 | read-only |
| 01 .. Len                                                                      | VAR  | Transport1 .. Len | UNSIGNED16 | read-only |
| Transport Info                                                                 |      |                   |            |           |
| The type E_RouteTransportType is documented in the Beckhoff Information System |      |                   |            |           |

**0x8nn8 - TwinCAT Logfile**

| SubIndex | Type | Name    | Type           | Access    |
|----------|------|---------|----------------|-----------|
| 00       | VAR  | LogFile | VISIBLE STRING | read-only |

**0x8nn9 – TwinCAT Router Information<sup>1</sup>**

| SubIndex | Type | Name                                        | Type       | Access    |
|----------|------|---------------------------------------------|------------|-----------|
| 00       | VAR  | Len                                         | UNSIGNED16 | read-only |
| 01       | VAR  | Router Memory Maximum                       | UNSIGNED64 | read-only |
| 02       | VAR  | Router Memory Available                     | UNSIGNED64 | read-only |
| 03       | VAR  | Registered Ports                            | UNSIGNED32 | read-only |
| 04       | VAR  | Registered Drivers                          | UNSIGNED32 | read-only |
| 05       | VAR  | Registered Transports                       | UNSIGNED32 | read-only |
| 06       | VAR  | Debug Window – True if Ads Logger is active | BOOLEAN    | read-only |
| 07       | VAR  | Mailbox Size                                | UNSIGNED32 | read-only |
| 08       | VAR  | Mailbox Used Entries                        | UNSIGNED32 | read-only |

<sup>1</sup>Available in MDP 1.0.10.3**0x8nnA – TwinCAT and OS extended Information TcOs<sup>1</sup>**

| SubIndex | Type | Name                                                               | Type       | Access    |
|----------|------|--------------------------------------------------------------------|------------|-----------|
| 00       | VAR  | Len                                                                | UNSIGNED16 | read-only |
| 01       | VAR  | TwinCAT Heap Maximum – Maximum available Memory for TcOs Instance  | UNSIGNED64 | read-only |
| 02       | VAR  | TwinCAT Heap Available – free Memory in TcOs Instance <sup>2</sup> | UNSIGNED64 | read-only |

<sup>1</sup>only supported for TC/RTOS.

<sup>2</sup>may be fragmented and can therefore likely not be allocated as a single block.

### Service transfer objects

#### 0xBnn0 - TwinCAT Add Route (Service Transfer Object)

| InputData                                                                      |             |
|--------------------------------------------------------------------------------|-------------|
| Type                                                                           | Name        |
| UNSIGNED32                                                                     | cbInputData |
| UNSIGNED32                                                                     | Flags       |
| UNSIGNED32                                                                     | Timeout     |
| UNSIGNED16                                                                     | Transport   |
| BYTE[6]                                                                        | NetId       |
| UNSIGNED32                                                                     | Name Len    |
| UNSIGNED32                                                                     | Address Len |
| char[name Len]                                                                 | szName      |
| char[Adresse Len]                                                              | szAddress   |
| Transport Info                                                                 |             |
| The type E_RouteTransportType is documented in the Beckhoff Information System |             |

#### 0xBnn1 - TwinCAT Del Route (Service Transfer Object)

| InputData     |         |
|---------------|---------|
| Type          | Name    |
| UNSIGNED32    | NameLen |
| char[nameLen] | szName  |

### 6.1.2.7 0x000A - Software versions

#### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x000A 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | Software    | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Software    | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x000A 2710 | UNSIGNED32     | read-only |

**0x8nn1 - Name**

| SubIndex  | Type | Name          | Type           | Access    |
|-----------|------|---------------|----------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Name 1 .. Len | VISIBLE STRING | read-only |

**0x8nn2 - Company**

| SubIndex  | Type | Name             | Type           | Access    |
|-----------|------|------------------|----------------|-----------|
| 00        | VAR  | Len              | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Company 1 .. Len | VISIBLE STRING | read-only |

**0x8nn3 - Date**

| SubIndex  | Type | Name          | Type           | Access    |
|-----------|------|---------------|----------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Date 1 .. Len | VISIBLE STRING | read-only |

**0x8nn4 - Version**

| SubIndex  | Type | Name             | Type           | Access    |
|-----------|------|------------------|----------------|-----------|
| 00        | VAR  | Len              | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Version 1 .. Len | VISIBLE STRING | read-only |

**6.1.2.8 0x000B - CPU**

This module provides CPU information.



The current version does not support multi-core systems.

**0x8nn0 - Module Header**

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x000B 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | CPU         | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | CPU         | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x000B 2710 | UNSIGNED32     | read-only |

**0x8nn1 - CPU Properties**

| SubIndex | Type | Name                                      | Type       | Access    |
|----------|------|-------------------------------------------|------------|-----------|
| 00       | VAR  | Len                                       | UNSIGNED16 | read-only |
| 01       | VAR  | CPU frequency                             | UNSIGNED32 | constant  |
| 02       | VAR  | Current CPU Usage (%)                     | UNSIGNED16 | read-only |
| 03       | VAR  | Current CPU Temperature (°C) <sup>1</sup> | SIGNED16   | read-only |

<sup>1</sup> Requires BIOS API, see [system requirements \[► 9\]](#)

## 6.1.2.9 0x000C - Memory

### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x000C 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | Memory      | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Memory      | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x000C 2710 | UNSIGNED32     | read-only |

### 0x8nn1

| SubIndex | Type | Name                                               | Type       | Access     |
|----------|------|----------------------------------------------------|------------|------------|
| 00       | VAR  | Len                                                | UNSIGNED16 | read-only  |
| 01       | VAR  | Program Memory Allocated                           | UNSIGNED32 | read-only  |
| 02       | VAR  | Program Memory Available                           | UNSIGNED32 | read-only  |
| 03       | VAR  | Storage Memory Allocated (available for WindowsCE) | UNSIGNED32 | read-only  |
| 04       | VAR  | Storage Memory Available (available for WindowsCE) | UNSIGNED32 | read-only  |
| 05       | VAR  | Memory Division (available for Windows CE)         | UNSIGNED32 | read-write |
| 06       | VAR  | Program Memory Allocated <sup>1</sup>              | UNSIGNED64 | read-only  |
| 07       | VAR  | Program Memory Available <sup>2</sup>              | UNSIGNED64 | read-only  |

#### <sup>1</sup> Program Memory Allocated

On computers with more than 4 GB of RAM the subindex 01 "Program Memory Allocated" will return Not Supported. Use subindex 06 instead.

**System requirements:** MDP Version 1.7 or higher

#### <sup>2</sup> Program Memory Available

On computers with more than 4 GB of RAM the subindex 02 "Program Memory Available" will return Not Supported. Use subindex 07 instead.

**System requirements:** MDP Version 1.7 or higher

## 6.1.2.10 0x000E - Firewall (WinCE)



This module is based on operating system-specific functions and is not automatically supported by all devices. The module is only available for Windows CE and Windows Embedded Compact.

Module for configuring the Windows CE firewall.

Table 0x8nn1 contains general firewall settings. The tables from 0x8nn2 onwards describe the firewall rules.

### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x000E 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | Firewall CE | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Firewall CE | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x000E 2710 | UNSIGNED32     | read-only |

#### 0x8nn1 – Firewall Settings

| SubIndex | Type | Name          | Type       | Access     |
|----------|------|---------------|------------|------------|
| 00       | VAR  | Len           | UNSIGNED16 | read-only  |
| 01       | VAR  | Activate IPv4 | BOOLEAN    | read-write |
| 02       | VAR  | Activate IPv6 | BOOLEAN    | read-write |
| 03       | VAR  | Persist       | BOOLEAN    | read-write |

#### 0x8nn2 – Flags

| SubIndex  | Type | Name          | Type       | Access    |
|-----------|------|---------------|------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Flags1 .. Len | ENUM       | read-only |

```

FWF_BLOCK = 01
FWF_ALLOW = 02
FWF_LOG = 04
FWF_INBOUND = 08
FWF_OUTBOUND = 16
FWF_DISABLED = 20

```

#### 0x8nn3 – Mask

| SubIndex  | type | name         | type       | Access    |
|-----------|------|--------------|------------|-----------|
| 00        | VAR  | Len          | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Mask1 .. Len | ENUM       | read-only |

```

FWM_PRIVATE_HOST = 0x0001
FWM_PUBLIC_HOST = 0x0002
FWM_PORT = 0x0004
FWM_TYPE = 0x0008
FWM_CODE = 0x0010
FWM_PROTOCOL = 0x0020
FWM_ACTION = 0x0040
FWM_TIME_OF_DAY = 0x0080 (not supported)
FWM_DAY_OF_WEEK = 0x0100 (not supported)
FWM_DAY = 0x0200 (not supported)
FWM_MONTH = 0x0400 (not supported)
FWM_PUBLIC_HOST_MASK = 0x0800
FWM_PUBLIC_HOST_PREFIX = 0x1000

```

#### 0x8nn4 – Private Host

| SubIndex  | type | name               | type           | Access    |
|-----------|------|--------------------|----------------|-----------|
| 00        | VAR  | Len                | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | IP String 1 .. Len | VISIBLE STRING | read-only |

Only valid if the flags (0x8nn2) contain FWM\_PRIVATE\_HOST.

#### 0x8nn5 – Public Host

| SubIndex  | type | name               | type           | Access    |
|-----------|------|--------------------|----------------|-----------|
| 00        | VAR  | Len                | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | IP String 1 .. Len | VISIBLE STRING | read-only |

Only valid if the flags (0x8nn2) contain FWM\_PUBLIC\_HOST. The content is then a textual representation of an IPv4 or IPv6 address (depending on the protocol type that is specified in 0x8nn6).

#### 0x8nn6 – Public Host Mask

| SubIndex  | type | name         | type           | Access    |
|-----------|------|--------------|----------------|-----------|
| 00        | VAR  | Len          | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Mask1 .. Len | VISIBLE STRING | read-only |

Only valid if the flags (0x8nn2) contain FWM\_PUBLIC\_HOST\_MASK. If it is an IPv4 rule, this is the subnet mask. For an IPv6 rule this is the "prefix length".

#### 0x8nn7 – protocol

| SubIndex  | type | name              | type       | Access    |
|-----------|------|-------------------|------------|-----------|
| 00        | VAR  | Len               | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Protocol 1 .. Len | UNSIGNED32 | read-only |

Only valid if the flags (0x8nn2) contain FWM\_PROTOCOL.

#### 0x8nn8 – action

| SubIndex  | type | name            | type       | Access    |
|-----------|------|-----------------|------------|-----------|
| 00        | VAR  | Len             | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Action 1 .. Len | ENUM       | read-only |

BLOCK = 0x01 ALLOW = 0x02 ALLOW\_RESPONSE = 0x03

#### 0x8nn9 – port area

| SubIndex  | type | name              | type       | Access    |
|-----------|------|-------------------|------------|-----------|
| 00        | VAR  | Len               | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Protocol 1 .. Len | UNSIGNED32 | read-only |

Only valid if the flags (0x8nn2) contain FWM\_PORT. Hiword is Max Port; Loword is Min Port. Max Port must be equal or greater Min Port.

#### 0x8nnA – type & code

| SubIndex  | type | name             | type       | Access    |
|-----------|------|------------------|------------|-----------|
| 00        | VAR  | Len              | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Protocol 1.. Len | WORD       | read-only |

Hibyte is code; Lobyte is type. The validity depends on the flags FWM\_TYPE and FWM\_CODE (0x8nn2).

#### 0x8nnB – description

| SubIndex  | type | name                 | type           | Access    |
|-----------|------|----------------------|----------------|-----------|
| 00        | VAR  | Len                  | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Description 1 .. Len | VISIBLE STRING | read-only |

## 0x8nnC – UID

| SubIndex  | type | name         | type       | Access    |
|-----------|------|--------------|------------|-----------|
| 00        | VAR  | Len          | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | UID 1 .. Len | UNSIGNED32 | read-only |

## Service transfer objects

## 0xBnn0 – Add Rule (Service Transfer Object)

| InputData                                          |                                                                                                                                                                             |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>type</b>                                        | <b>name</b>                                                                                                                                                                 |
| UNSIGNED32                                         | cbData                                                                                                                                                                      |
| UNSIGNED32                                         | Flags                                                                                                                                                                       |
| UNSIGNED32                                         | Mask                                                                                                                                                                        |
| union { char szPrivateHost[8*5]; WORD family; };   | If FWF_PRIVATE_HOST is set this is the Private host Ip Address. Otherwise this is the Address Family to which the rule applies (AF_INET or AF_INET6)                        |
| Char[8*5]                                          | Public Host IP                                                                                                                                                              |
| union { BYTE b[4]; UINT publicHostPrefixLength; }; | If FWM_PUBLIC_HOST_MASK is set this is the public host mask for an IPv4 Address. If FWM_PUBLIC_HOST_PREFIX is set this is the public host prfix length for an IPv6 Address. |
| UNSIGNED32                                         | Protocol                                                                                                                                                                    |
| UNSIGNED32                                         | Actions                                                                                                                                                                     |
| UNSIGNED32                                         | PortRange (HIWORD = max   LOWORD = min)                                                                                                                                     |
| UNSIGNED16                                         | type & Code (HBYTE = code   LOBYTE = type)                                                                                                                                  |
| UNSIGNED32                                         | DescriptionLen                                                                                                                                                              |
| char[DescriptionLen]                               | szDescription                                                                                                                                                               |

## 0xBnn1 – Delete Rule (Service Transfer Object)

| InputData   |                         |
|-------------|-------------------------|
| <b>type</b> | <b>name</b>             |
| UNSIGNED32  | UId (From Table 8x8nnC) |

### 6.1.2.11 0x0010 - File System Object

The module offers access to the local file system via Service Transfer Objects, which enable the browsing of directories and access to files.

#### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0010 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | FSO         | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | FSO         | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0010 2710 | UNSIGNED32     | read-only |

#### 0xBnn0 - Dir Service Transfer

This object returns all files and subdirectories of a given directory path (e.g. for browsing directories).

The path specification can contain placeholders, e.g. '\*' or '?'. If the string ends with a placeholder, a Dot (.) or the directory name, the user must have access rights to the main directory and all subdirectories of the path.

| InputData      |            |
|----------------|------------|
| Type           | Name       |
| DWORD          | cbsRootDir |
| VISIBLE STRING | sRootDir   |

| OutputData |                                                             |
|------------|-------------------------------------------------------------|
| Type       | Name                                                        |
| DWORD      | Version = 0                                                 |
| DWORD      | cbData                                                      |
| DWORD      | cDirs                                                       |
| DWORD      | cFiles                                                      |
| DWORD      | nOffsFirstDir //Offset of the first DirectoryInfo structure |
| DWORD      | nOffsFirstFile //Offset of the first FileInfo structure     |

#### 0xBnn1 – GetFile Service Transfer

##### Service Transfer Objects for reading from and writing to a file

Reading from and writing to large files can take place via multiple calls. The file is initially opened by specifying a file name, then specifying the Continuation Handle that is returned with tFileResponse. The maximum size of a data segment is defined by the parameter cbMaxRead.

Either a file name or a Continuation Handle must always be specified. If both are specified simultaneously or if none is specified, this leads to the return value E\_INVALIDDATA.

| InputData        |                     |                                                                                                                                                                                                          |
|------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type             | Name                | Meaning                                                                                                                                                                                                  |
| DWORD            | cbFilename          | Length of the file name in characters                                                                                                                                                                    |
| DWORD            | Continuation handle | The Continuation Handle returned by ReadFile OutputData must be specified for subsequent read accesses.                                                                                                  |
| DWORD            | cbMaxRead           | Maximum size of the return value. This is the number of bytes that are to be read, plus the size of the OutputData structure. The value must always be larger than the size of the OutputData structure. |
| Char[cbFilename] | Filename            | Path and file name to be opened for reading                                                                                                                                                              |

| OutputData   |                     |                                                                                                                                          |
|--------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Type         | Name                | Meaning                                                                                                                                  |
| DWORD        | cbData              | Number of bytes that were read                                                                                                           |
| DWORD        | Continuation handle | If data still remain to be read, this Continuation Handle is used for subsequent read accesses                                           |
| BOOL         | bMoreData           | Indicates whether more data can still be read from the file. "True" = reading of the data is complete and no further data are available. |
| BYTE[cbData] | data                | Memory range for the data to be read                                                                                                     |

### 0xBnn2 - WriteFile Service Transfer

| InputData        |                     |                                                                                                           |
|------------------|---------------------|-----------------------------------------------------------------------------------------------------------|
| Type             | Name                | Meaning                                                                                                   |
| DWORD            | cbFilename          | Length of the file name in characters                                                                     |
| DWORD            | Continuation handle | The Continuation Handle returned by WriteFile OutputData must be specified for subsequent write accesses. |
| DWORD            | cbData              | Number of bytes which are to be written                                                                   |
| DWORD            | bWriteCompleted     | Indicates the completion of the file access. If !=0, the file is closed after the final access.           |
| Char[cbFilename] | Filename            | File name                                                                                                 |
| BYTE[cbData]     | data                | Data that is to be written                                                                                |

| OutputData |                     |                                                          |
|------------|---------------------|----------------------------------------------------------|
| Type       | Name                | Meaning                                                  |
| DWORD      | Continuation handle | Continuation Handle for writing further data to the file |

### 0xBnn3 - CopyFile Service Transfer

Copy or move the source file to the target

| <b>InputData</b> |                       |                                                                                                                                                    |
|------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>      | <b>Name</b>           | <b>Meaning</b>                                                                                                                                     |
| DWORD            | cbSrc                 | Length of the source file name                                                                                                                     |
| DWORD            | cbDst                 | Length of the target file name                                                                                                                     |
| DWORD            | Flags                 | One or more of the following flags:<br>0x00000001 = copy file.<br>(If the flag is not set, the file is moved.)0x00000002 = overwrite existing file |
| Char[cbSource]   | Source Filename       | Complete path to the source file                                                                                                                   |
| Char[cbDst]      | Destination file name | Complete path to the destination file                                                                                                              |

**0xBnn4 - DeleteFile ServiceTransfer**

Delete a file or folder.

| <b>InputData</b> |             |                                        |
|------------------|-------------|----------------------------------------|
| <b>Type</b>      | <b>Name</b> | <b>Meaning</b>                         |
| DWORD            | cbFilename  | length of filename                     |
| BOOL             | bRecurse    | delete an entire directory recursively |
| Char[cbFilename] | Filename    | Path to destination file or folder     |

**0xBnn5 - mkdir ServiceTransfer**

Create a new directory

| <b>InputData</b> |             |                                    |
|------------------|-------------|------------------------------------|
| <b>Type</b>      | <b>Name</b> | <b>Meaning</b>                     |
| DWORD            | cbFilename  | Length of the folder to be created |
| BOOL             | bRecurse    | Create directories recursively     |
| char[cbFilename] | Filename    | Name of the new folder.            |

### 6.1.2.12 0x0013 - Display Device

Properties of the display adapter. If several adapters are installed, there is an instance for each one.

Table 0x8nn2 is a list of all available display modes, while the current display mode is shown in table 0x8nn1.

#### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value          | Type           | Access    |
|----------|------|----------|----------------|----------------|-----------|
| 00       | VAR  | Len      |                | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0013 00nn    | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | Display Device | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Device Name    | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0013 2710    | UNSIGNED32     | read-only |

#### 0x8nn1 – Device settings

| SubIndex | Type | Name                       | Type       | Access     |
|----------|------|----------------------------|------------|------------|
| 00       | VAR  | Len                        | UNSIGNED16 | read-only  |
| 01       | VAR  | IDx of active display mode | UNSIGNED8  | read-write |

#### 0x8nn2 – Display modes

| SubIndex  | Type | Name | Type           | Access    |
|-----------|------|------|----------------|-----------|
| 00        | VAR  | Len  | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Mode | VISIBLE STRING | read-only |

#### 0x8nn3 – Dim function <sup>1</sup>

| SubIndex | Type | Name                    | Type           | Access     |
|----------|------|-------------------------|----------------|------------|
| 00       | VAR  | Len                     | UNSIGNED16     | read-only  |
| 01       | VAR  | IsPrimaryDisplay        | BOOLEAN        | read-only  |
| 02       | VAR  | Com Port <sup>2</sup>   | VISIBLE STRING | read-write |
| 03       | VAR  | Version                 | UNSIGNED32     | read-only  |
| 04       | VAR  | Brightness <sup>3</sup> | UNSIGNED32     | read-write |
| 05       | VAR  | Light <sup>4</sup>      | BOOLEAN        | read-write |

##### <sup>1</sup> Dim function info

The dimming function is not supported by all devices.

In Windows CE, the dimming function is only available for the primary monitor. "Com Port" must be set to the configured virtual com port, (e.g "COM4").

##### System requirements:

Windows Embedded Standard (WES): MDP Version 1.7 or higher

##### <sup>2</sup> Com Port Info

Windows Embedded Standard (WES): e.g. "Com4"

Windows CE: Under Windows CE, the Com Port must end with a colon, e.g. "COM4:"

##### <sup>3</sup> Brightness Info

Valid values: 20-100 (20 lowest brightness, 100 maximum brightness)

**<sup>4</sup>Light Info**

Valid values: TRUE = background light ON, FALSE = background light OFF

**0xBnn0 – Identify Com Port (Service Transfer Object)<sup>5</sup>****InputData**

|           |           |
|-----------|-----------|
| Type      | Name      |
| UNSIGNED8 | DummyByte |

**<sup>5</sup>Identify Com Port Info**

Identification of the com port(s) is started by setting any value. If the call is successful, the field 0x8nn3 subindex 2 is set. If the call fails, an error code is issued.

**System requirements:**

Windows Embedded Standard (WES): MDP Version 1.7 or higher

Windows CE: not supported

**0xBnn1 – Save T1, T2, T3, T4 and Brightness****InputData**

|           |           |
|-----------|-----------|
| Type      | Name      |
| UNSIGNED8 | DummyByte |

**6.1.2.13 0x0014 - Enhanced Write Filter (EWF)****System requirements**

This module is based on operating system-specific functions and is not automatically supported by all devices.

The module requires the Windows Embedded Standard version as operating system (including Windows XP Embedded)

**TwinCAT/BSD**

This function is not available for TwinCAT/BSD.

Configuration of the "Enhanced Write Filters" of Windows Embedded Standard.

**0x8nn0 – Module Header**

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0014 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | EWF         | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | EWF         | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0014 2710 | UNSIGNED32     | read-only |

**0x8nn1 – Volume name**

| SubIndex | Type | Name        | Type           | Access    |
|----------|------|-------------|----------------|-----------|
| 00       | VAR  | Len         | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Volume name | VISIBLE STRING | read-only |

**0x8nn2 – Volume ID**

| SubIndex | Type | Name      | Type           | Access    |
|----------|------|-----------|----------------|-----------|
| 00       | VAR  | Len       | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Volume ID | VISIBLE STRING | read-only |

**0x8nn3 – State**

| SubIndex | type | name  | type       | Access    |
|----------|------|-------|------------|-----------|
| 00       | VAR  | Len   | UNSIGNED16 | read-only |
| 01..Len  | VAR  | State | UNSIGNED32 | read-only |

Values:

0 = EWF\_ENABLED  
 1 = EWF\_DISABLED

**0x8nn4 – type**

| SubIndex | type | name | type       | Access    |
|----------|------|------|------------|-----------|
| 00       | VAR  | Len  | UNSIGNED16 | read-only |
| 01..Len  | VAR  | type | UNSIGNED32 | read-only |

Values:

0 = EWF\_DISK  
 1 = EWF\_RAM  
 2 = EWF\_RAM\_REG

**0x8nn5 – Boot command**

| SubIndex | type | name         | type       | Access     |
|----------|------|--------------|------------|------------|
| 00       | VAR  | Len          | UNSIGNED16 | read-only  |
| 01..Len  | VAR  | Boot command | UNSIGNED32 | read-write |

## OUT Values

0 = No Command  
 1 = Enable  
 2 = Disable  
 3 = SetLevel  
 4 = Commit

## IN Values

0 = ClearCommand  
 1 = EwfMgrEnable  
 2 = EwfMgrDisable without Commit  
 3 = EwfMgrDisable with Commit  
 4 = EwfMgrCommit

Die IN und OUT Werte korrespondieren nicht!

**Service transfer objects****0xBnn0 - EWF Commit and Disable Live\***

| InputData |             |
|-----------|-------------|
| Type      | Name        |
| CHAR      | Volume name |

### 6.1.2.14 0x0015 - File Based Write Filter (FBWF)



#### System requirements

This module is based on operating system-specific functions and is not automatically supported by all devices.

The module requires the Windows Embedded Standard version as operating system (including Windows XP Embedded)



#### TwinCAT/BSD

This function is not available for TwinCAT/BSD.

Configuration of the "File Based Write Filter" of Windows Embedded Standard.

#### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0015 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | FBWF        | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | FBWF        | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0015 2710 | UNSIGNED32     | read-only |

#### 0x8nn1 - CurrentState

| SubIndex | Type | Name          | Type       | Access    |
|----------|------|---------------|------------|-----------|
| 00       | VAR  | Len           | UNSIGNED16 | read-only |
| 01       | VAR  | State         | UNSIGNED32 | read-only |
| 02       | VAR  | Compression   | UNSIGNED32 | read-only |
| 03       | VAR  | PreAllocation | UNSIGNED32 | read-only |

#### 0x8nn2 - NextState

| SubIndex | Type | Name          | Type       | Access     |
|----------|------|---------------|------------|------------|
| 00       | VAR  | Len           | UNSIGNED16 | read-only  |
| 01       | VAR  | State         | UNSIGNED32 | read-write |
| 02       | VAR  | Compression   | UNSIGNED32 | read-write |
| 03       | VAR  | PreAllocation | UNSIGNED32 | read-write |

#### 0x8nn3 - Volumes

| SubIndex | Type | Name   | Type           | Access    |
|----------|------|--------|----------------|-----------|
| 00       | VAR  | Len    | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Volume | VISIBLE STRING | read-only |

#### 0x8nn4 - Exclusions

| SubIndex | Type | Name                                                                                                                                                                                                            | Type           | Access    |
|----------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|
| 00       | VAR  | Len                                                                                                                                                                                                             | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Exclusions for one volume at a time (corresponding volumes see 0x8nn3). The return value is a multi-string. Each individual string is singly null-terminated, the whole multi-string is doubly null-terminated. | VISIBLE STRING | read-only |

### Service transfer objects

#### 0xBnn0 - FBFW Add Volume Command object

| InputData      |          |
|----------------|----------|
| Type           | Name     |
| DWORD          | cbData   |
| DWORD          | cbVolume |
| CHAR[cbVolume] | cVolume  |

#### 0xBnn1 - FBFW Remove Volume Command object

| InputData      |                 |
|----------------|-----------------|
| Type           | Name            |
| DWORD          | cbData          |
| DWORD          | cbVolume        |
| BOOL           | bClearExclusion |
| CHAR[cbVolume] | cVolume         |

bClearExclusion: If "TRUE", the exclusion list for this volume is deleted.

#### 0xBnn2- FBFW Add Exclusion Command object

| InputData        |            |
|------------------|------------|
| Type             | Name       |
| DWORD            | cbData     |
| DWORD            | cbVolume   |
| DWORD            | cbFilePath |
| CHAR[cbVolume]   | cVolume    |
| CHAR[cbFilePath] | cFilePath  |

#### 0xBnn3- FBFW Enum Exclusions Command object

| InputData      |          |
|----------------|----------|
| Type           | Name     |
| DWORD          | cbData   |
| DWORD          | cbVolume |
| DWORD          | Index    |
| CHAR[cbVolume] | cVolume  |

| OutputData       |            |
|------------------|------------|
| Type             | Name       |
| DWORD            | cbFilePath |
| CHAR[cbFilePath] | cFilePath  |

#### 0xBnn4 - FBWF Remove Exclusion Command object

| InputData        |            |
|------------------|------------|
| Type             | Name       |
| DWORD            | cbData     |
| DWORD            | cbVolume   |
| DWORD            | cbFilePath |
| CHAR[cbVolume]   | cVolume    |
| CHAR[cbFilePath] | cFilePath  |

#### 0xBnn5 - FBWF Commit File Command object

| InputData        |            |
|------------------|------------|
| Type             | Name       |
| DWORD            | cbData     |
| DWORD            | cbVolume   |
| DWORD            | cbFilePath |
| CHAR[cbVolume]   | cVolume    |
| CHAR[cbFilePath] | cFilePath  |

#### 0xBnn6 - FBWF Commit All Command object\*

| InputData      |          |
|----------------|----------|
| Type           | Name     |
| DWORD          | cbData   |
| DWORD          | cbVolume |
| CHAR[cbVolume] | cVolume  |

\* Not supported for security reasons

#### 0xBnn7 - FBWF RestoreFile Command object

| InputData        |            |
|------------------|------------|
| Type             | Name       |
| DWORD            | cbData     |
| DWORD            | cbVolume   |
| DWORD            | cbFilePath |
| CHAR[cbVolume]   | cVolume    |
| CHAR[cbFilePath] | cFilePath  |

#### System requirements

|                  |                                   |
|------------------|-----------------------------------|
| Driver           | Installed FBWF driver             |
| Operating system | Windows Embedded (XPE, WES, WES7) |

## 6.1.2.15 0x0018 - Operating System

### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value           | Type           | Access    |
|----------|------|----------|-----------------|----------------|-----------|
| 00       | VAR  | Len      |                 | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0018 00nn     | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | OperatingSystem | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | <OS Name>       | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0018 2710     | UNSIGNED32     | read-only |

### 0x8nn1

| SubIndex | Type | Name             | Type           | Access    |
|----------|------|------------------|----------------|-----------|
| 00       | VAR  | Len              | UNSIGNED16     | read-only |
| 01       | VAR  | OS Major Version | UNSIGNED32     | read-only |
| 02       | VAR  | OS Minor Version | UNSIGNED32     | read-only |
| 03       | VAR  | OS Build         | UNSIGNED32     | read-only |
| 04       | VAR  | CSD Version      | VISIBLE STRING | read-only |

### System requirements

|     |                          |
|-----|--------------------------|
| MDP | Version 1.3.42 or higher |
|-----|--------------------------|

## 6.1.2.16 0x0019 - RAID

This module can be used to manage and check physical components in a RAID hard disk array.

### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value           | Type           | Access    |
|----------|------|----------|-----------------|----------------|-----------|
| 00       | VAR  | Len      |                 | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0019 00nn     | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | RAID Controller | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | SCSI Number     | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0019 2710     | UNSIGNED32     | read-only |

### 0x8nn1 – Controller Info

| SubIndex | Type | Name           | Type       | Access    |
|----------|------|----------------|------------|-----------|
| 00       | VAR  | Len            | UNSIGNED16 | read-only |
| 01       | VAR  | State          | UNSIGNED32 | read-only |
| 02       | VAR  | Offline Reason | UNSIGNED32 | read-only |

**State Info**

1 = GOOD => Normal operation.  
 2 = FAILED => Controller signals error. In this status read or write access to the controller should be avoided.  
 3 = OFFLINE => The controller is in a transition mode and currently unreachable.  
 In this status, read or write access to the controller must be avoided.  
 4 = POWEROFF => The controller is currently switched off. (This status may have been preceded by an error.)

**Offline Reason Info**

0 = NO\_REASON => reason unknown.  
 1 = INITIALIZING => The driver is still being initialized by the controller.  
 2 = BUS\_DEGRADED => The physical interface to the SAS or SATA domain is not working properly (sporadic errors).  
 3 = BUS\_FAILURE => The physical interface to the SAS or SATA domain is not working.

**0x8nn2 – RAID Set Typ**

The tables 0x8nn2, 0x8nn3 and 0x8nn4 are connected to each other. Each table contains information on existing Raid Sets. The same index references the same Raid Set.

Example: In all three tables index 1 contains detailed information on the same Raid Set.

| SubIndex | Type | Name | Type       | Access    |
|----------|------|------|------------|-----------|
| 00       | VAR  | Len  | UNSIGNED16 | read-only |
| 01..Len  | VAR  | Type | UNSIGNED8  | read-only |

**Type info**

0 = no RAID  
 1 = RAID type 0  
 2 = Raid Typ 1  
 3 = RAID type 10  
 4 = Raid Typ 5  
 5 = Raid Typ 15  
 255 = RAID type is not a standard type

**0x8nn3 – RAID Sets Status & Info**

| SubIndex | Type | Name         | Type       | Access    |
|----------|------|--------------|------------|-----------|
| 00       | VAR  | Len          | UNSIGNED16 | read-only |
| 01..Len  | VAR  | State & Info | UNSIGNED16 | read-only |

**State = first 8 bits**

0 = OK => indicator: RAID set is ready for operation.  
 1 = DEGRADED => indicator: RAID set no longer operates in fault-tolerant mode.  
 2 = REBUILDING => indicator: RAID set is being restored. This follows a "degraded operation". As soon as the rebuild is completed successfully, the status is set to "OK". If the rebuild fails, the status is updated accordingly.  
 3 = FAILED => indicator: RAID set shows faulty behavior. The function of the RAID Set is no longer ensured. Data loss is imminent or has already occurred.

**Information = last 8 bits**

bStatus == OK: Info is 0.  
 bStatus == DEGRADED: Info contains the index of the faulty hard disk.<sup>1</sup>  
 bStatus == REBUILDING: Info contains the percentage value of the recovery. The value is in the range 0 to 100 (0x0 to 0x64). bStatus == FAILED: Information is 0 or vendor-specific. A manufacturer-specific code may contain hard disk or controller error messages.

<sup>1</sup> Not supported

**0x8nn4 – RAID Sets Festplatten**

This is a list of all RAID Sets in the current system configuration. Each line contains a specific number of devices. One byte of the value represents an index in the 0x8nn9 / 0x8nnA list. Detailed information can be found in the 0x8nn9 and 0x8nnA tables. The maximum value is 255.

| SubIndex | Type | Name    | Type           | Access    |
|----------|------|---------|----------------|-----------|
| 00       | VAR  | Len     | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Devices | VISIBLE STRING | read-only |

**0x8nn5 – 0x8nn8 : Reserved****0x8nn9 - serial number of the hard disk**

| SubIndex | Type | Name          | Type           | Access    |
|----------|------|---------------|----------------|-----------|
| 00       | VAR  | Len           | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Serial Number | VISIBLE STRING | read-only |

**Serial Number**

Maximum 40 bytes

**0x8nnA – hard disk status**

| SubIndex | Type | Name  | Type       | Access    |
|----------|------|-------|------------|-----------|
| 00       | VAR  | Len   | UNSIGNED16 | read-only |
| 01..Len  | VAR  | State | UNSIGNED8  | read-only |

**State**

0 = OK => indicator: The physical hard disk is in operation.

1 = REBUILDING => indicator: The physical hard disk is part of the configuration of a RAID set.

As soon as the build is completed successfully, the status changes to OK.

If the (re-)configuration is unsuccessful, the status is updated accordingly.<sup>1</sup>

2 = FAILED => indicator: The physical hard disk has reported unrecoverable errors to the controller, or it has started a manufacturer-specific action, in order to remove the physical hard disk from the RAID set.

The behavior of the hard disk cannot be guaranteed, data loss is imminent or has already occurred.

3 = DEGRADED => indicator: The physical hard disk has sent a SMART message to the controller.

<sup>1</sup> Not Supported

**System requirements**

|             |                                  |
|-------------|----------------------------------|
| OS          | XPE, WES, WES 7<br>XP, Windows 7 |
| RAID driver | IMSM 7.0 PV or higher            |

**6.1.2.17 0x001B - Fan**

Each fan for which information is available is represented by a dedicated MDP module instance (not all devices support this).

**0x8nn0 - Module Header**

| SubIndex | Type | Name     | Value        | Type           | Access    |
|----------|------|----------|--------------|----------------|-----------|
| 00       | VAR  | Len      |              | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x001b 00nn  | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | Fan          | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Adapter Name | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x001b 2710  | UNSIGNED32     | read-only |

**0x8nn1 - Fan Properties**

| SubIndex | Type | Name            | Type       | Access    |
|----------|------|-----------------|------------|-----------|
| 00       | VAR  | Len             | UNSIGNED16 | read-only |
| 01       | VAR  | Fan speed (rpm) | SIGNED 16  | read-only |

**6.1.2.18 0x001C - Mainboard****System requirements**

This module is not supported by all devices, since it requires a special BIOS.

If your device does not support this module, the program will issue [error message ▶ 78](#) 0xECA60105 ("No data available").

See also: [System requirements ▶ 9](#)

This module provides mainboard information.

**0x8nn0 - Module Header**

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x001C 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | Mainboard   | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Mainboard   | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x001C 2710 | UNSIGNED32     | read-only |

**0x8nn1 - Mainboard Information**

| SubIndex | Type | Name                                    | Type           | Access    |
|----------|------|-----------------------------------------|----------------|-----------|
| 00       | VAR  | Len                                     | UNSIGNED16     | read-only |
| 01       | VAR  | Mainboard Type                          | VISIBLE STRING | read-only |
| 02       | VAR  | Serial Number                           | VISIBLE STRING | read-only |
| 03       | VAR  | Production Date                         | VISIBLE STRING | read-only |
| 04       | VAR  | Boot Count                              | UNSIGNED32     | read-only |
| 05       | VAR  | Operating Time in Minutes               | UNSIGNED32     | read-only |
| 06       | VAR  | Min Board Temperature (°C) <sup>1</sup> | SIGNED32       | read-only |
| 07       | VAR  | Max Board Temperature (°C) <sup>1</sup> | SIGNED32       | read-only |
| 08       | VAR  | Min Input Voltage (mV) <sup>1</sup>     | SIGNED32       | read-only |
| 09       | VAR  | Max Input Voltage (mV) <sup>1</sup>     | SIGNED32       | read-only |
| 10       | VAR  | Mainboard Temperature (°C) <sup>1</sup> | SIGNED16       | read-only |

<sup>1</sup> Requires BIOS API, see [system requirements](#) [► 9]

| Production Date Info                                                               |
|------------------------------------------------------------------------------------|
| YYYY-MM-DD-ww (Year-Month-Day-CalendarWeek) Each value can be 0 if it is not used. |
| Min Board Temperature Info                                                         |
| Lowest measured temperature                                                        |
| Max Board Temperature Info                                                         |
| Highest measured temperature                                                       |
| Min Input Voltage Info                                                             |
| Lowest measured voltage                                                            |
| Max Input Voltage Info                                                             |
| Highest measured voltage                                                           |

**0x8nn2 - Version Information**

| SubIndex | Type | Name               | Type       | Access    |
|----------|------|--------------------|------------|-----------|
| 00       | VAR  | Len                | UNSIGNED16 | read-only |
| 01       | VAR  | Mainboard revision | UNSIGNED8  | read-only |
| 02       | VAR  | Bios Major Version | UNSIGNED8  | read-only |
| 03       | VAR  | Bios Minor Version | UNSIGNED8  | read-only |

**0x8nn3 - Voltage Information**

| SubIndex | Type | Name | Type           | Access    |
|----------|------|------|----------------|-----------|
| 00       | VAR  | Len  | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Name | VISIBLE STRING | read-only |

**0x8nn4 - Voltage Information**

| SubIndex | Type | Name     | Type       | Access    |
|----------|------|----------|------------|-----------|
| 00       | VAR  | Len      | UNSIGNED16 | read-only |
| 01..Len  | VAR  | Location | SIGNED16   | read-only |

**Location Info**

00 = LOCATION\_UNKNOWN  
 01 = LOCATION\_OTHER  
 02 = LOCATION\_PROCESSOR  
 03 = LOCATION\_DISK  
 04 = LOCATION\_SYSTEM\_MANAGEMENT\_MODULE  
 05 = LOCATION\_MOTHERBOARD  
 06 = LOCATION\_MEMORY\_MODULE  
 07 = LOCATION\_POWER\_SUPPLY  
 08 = LOCATION\_ADDIN\_CARD  
 09 = LOCATION\_FRONT\_PANEL\_BOARD  
 10 = LOCATION\_BACK\_PANEL\_BOARD  
 11 = LOCATION\_PERIPHERIE  
 12 = LOCATION\_CHASSIS  
 13 = LOCATION\_BATTERY  
 14 = LOCATION\_UPS  
 15 = LOCATION\_GRAFFIC\_BOARD  
 16 = LOCATION\_SUPERIO  
 17 = LOCATION\_CHIPSET

**0x8nn5 - Voltage Information**

| SubIndex | Type | Name         | Type       | Access    |
|----------|------|--------------|------------|-----------|
| 00       | VAR  | Len          | UNSIGNED16 | read-only |
| 01..Len  | VAR  | Voltage (mV) | SIGNED16   | read-only |

**0x8nn6 - Voltage Information**

| SubIndex | Type | Name                 | Type       | Access    |
|----------|------|----------------------|------------|-----------|
| 00       | VAR  | Len                  | UNSIGNED16 | read-only |
| 01..Len  | VAR  | Nominal Voltage (mV) | SIGNED16   | read-only |

**6.1.2.19 0x001D - Disk Management**

List of the mounted logical volumes.



If this component exists more than once on the system, a separate module instance is created for each one.

**0x8nn0 - Module Header**

| SubIndex | Type | Name     | Value          | Type           | Access    |
|----------|------|----------|----------------|----------------|-----------|
| 00       | VAR  | Len      |                | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x001d 00nn    | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | DiskManagement | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | DiskManagement | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x001d 2710    | UNSIGNED32     | read-only |

**0x8nn1 - DriveLetter**

| SubIndex | Type | Name              | Type           | Access    |
|----------|------|-------------------|----------------|-----------|
| 00       | VAR  | Len               | UNSIGNED16     | read-only |
| 01       | VAR  | Drive letter 1..n | VISIBLE STRING | read-only |

**0x8nn2 - Volume Label**

| SubIndex | Type | Name                | Type           | Access       |
|----------|------|---------------------|----------------|--------------|
| 00       | VAR  | Len                 | UNSIGNED16     | read-only    |
| 01       | VAR  | Volume Label 1... n | VISIBLE STRING | read/ write* |

\* Write is not supported under WinCE.

**0x8nn3 - FileSystem**

| SubIndex | Type | Name                  | Type           | Access    |
|----------|------|-----------------------|----------------|-----------|
| 00       | VAR  | Len                   | UNSIGNED16     | read-only |
| 01       | VAR  | File system name 1..n | VISIBLE STRING | read-only |

**0x8nn4 - drive type**

| SubIndex | Type | Name            | Type       | Access    |
|----------|------|-----------------|------------|-----------|
| 00       | VAR  | Len             | UNSIGNED16 | read-only |
| 01       | VAR  | Drive type 1..n | UNSIGNED32 | read-only |

```
DRV_UNKNOWN = 0,
DRV_FIXED = 1,
DRV_REMOVABLE= 2,
DRV_CDROM = 4
```

**0x8nn5 - total size (bytes)**

| SubIndex | Type | Name               | Type       | Access    |
|----------|------|--------------------|------------|-----------|
| 00       | VAR  | Len                | UNSIGNED16 | read-only |
| 01       | VAR  | Volume size 1... n | UNSIGNED64 | read-only |

**0x8nn6 – free space (bytes)**

| SubIndex | Type | Name            | Type       | Access    |
|----------|------|-----------------|------------|-----------|
| 00       | VAR  | Len             | UNSIGNED16 | read-only |
| 01       | VAR  | Free space 1..n | UNSIGNED64 | read-only |

**6.1.2.20 0x001E - UPS**

The module is not supported by all devices.

UPS (uninterruptible power supply) / German: USV (unterbrechungsfreie Stromversorgung)

This module provides UPS information.

**0x8nn0 - Module Header**

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x001E 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | UPS         | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | UPS         | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x001E 2710 | UNSIGNED32     | read-only |

**0x8nn1 - UPS Information**

| SubIndex | Type | Name                         | Type           | Access     |
|----------|------|------------------------------|----------------|------------|
| 00       | VAR  | Len                          | UNSIGNED16     | read-only  |
| 01       | VAR  | UPS Model                    | VISIBLE STRING | read-only  |
| 02       | VAR  | Vendor Name                  | VISIBLE STRING | read-only  |
| 03       | VAR  | Version                      | UNSIGNED8      | read-only  |
| 04       | VAR  | Revision                     | UNSIGNED8      | read-only  |
| 05       | VAR  | Build                        | UNSIGNED16     | read-only  |
| 06       | VAR  | Serial Number                | VISIBLE STRING | read-only  |
| 07       | VAR  | Power-Status                 | UNSIGNED8      | read-only  |
| 08       | VAR  | Communication Status         | UNSIGNED8      | read-only  |
| 09       | VAR  | Battery Status               | UNSIGNED8      | read-only  |
| 10       | VAR  | Battery Capacity (in %)      | UNSIGNED8      | read-only  |
| 11       | VAR  | Battery Runtime (in seconds) | UNSIGNED32     | read-only  |
| 12       | VAR  | Persistent Power Fail Count  | BOOLEAN        | read-only  |
| 13       | VAR  | Power Fail Counter           | UNSIGNED32     | read-only  |
| 14       | VAR  | Fan Error                    | BOOLEAN        | read-only  |
| 15       | VAR  | No Battery                   | BOOLEAN        | read-only  |
| 16       | VAR  | Test Capacity                | BOOLEAN        | write-only |
| 17       | VAR  | Battery Replace Date         | VISIBLE STRING | read-only  |
| 18       | VAR  | Interval Service Status      | BOOLEAN        | read-only  |

| Compatibility List            | S-UPS | 24V Beckhoff UPS/ 230V Beckhoff UPS |
|-------------------------------|-------|-------------------------------------|
| UPS Model                     | X     | X                                   |
| Vendor Name                   | X     | X                                   |
| Version                       | X     | X                                   |
| Revision                      | X     | X                                   |
| Build                         | X     | X                                   |
| Serial Number                 |       | X                                   |
| Power-Status                  | X     | X                                   |
| Communication Status          |       | X                                   |
| Battery Status                |       | X                                   |
| Battery Capacity (in %)       | X     | X                                   |
| Battery Runtime (in seconds)  | X     | X                                   |
| Persistent Power Fail Counter | X     | X                                   |
| Power Fail Counter            | X     | X                                   |
| Fan Error                     |       | X                                   |
| No Battery                    |       | X                                   |
| Test Capacity                 | X     |                                     |
| Battery Replace Date          |       | X                                   |
| Interval Service Status       |       | X                                   |

**UPS Model Info**

1 = SUPS

2 = 24V Beckhoff UPS and APC 230V UPS

**Power Status Info**

0 = UNKNOWN

1 = ONLINE

2 = ONBATTERIES

**Communication Status Info**

0 = UNKNOWN

1 = OK

2 = ERROR

**Battery Status Info**

0 = UNKNOWN

1 = OK

2 = Change Battery

**Persistent Power Fail Counter Info**

TRUE = Power Fail Counter is stored persistently

FALSE = Power Fail Counter is reset at each restart

**Test Capacity Info**

"TestCapacity" updates "Battery Runtime (in seconds)". Write a value to start the test. Disconnect the computer from the mains supply and wait until the computer switches off. Start the computer and read "Battery Runtime (in seconds)".

**Battery Replace Date Info**

Date of the last battery change.

**Interval Service Status Info**

Interval Service Status indicates whether the configured service interval has elapsed.

**0x8nn2 - UPS GPIO Pin Information**

| SubIndex | Type | Name    | Type       | Access    |
|----------|------|---------|------------|-----------|
| 00       | VAR  | Len     | UNSIGNED16 | read-only |
| 01       | VAR  | Address | UNSIGNED16 | read-only |
| 02       | VAR  | Offset  | UNSIGNED8  | read-only |
| 03       | VAR  | Params  | UNSIGNED8  | read-only |

| Compatibility List | S-UPS | 24V Beckhoff UPS/ 230V Beckhoff UPS |
|--------------------|-------|-------------------------------------|
| Address            | x     |                                     |
| Offset             | x     |                                     |
| Params             | x     |                                     |

**System requirements**

|     |                       |
|-----|-----------------------|
| MDP | Version 1.6 or higher |
|-----|-----------------------|

**6.1.2.21 0x001F - Physical Drive (S.M.A.R.T.)****● Windows CE / Windows Embedded Compact**

**i** This function is not available for Windows CE / Windows Embedded Compact.

**i** If this component exists more than once on the system, a separate module instance is created for each one.

**● TwinCAT/BSD**

**i** This function is not available for TwinCAT/BSD.

**Self-Monitoring, Analysis and Reporting Technology (SMART or S.M.A.R.T.)**, is an industry standard that is built into computer hard disks. It enables the permanent monitoring of important parameters and thus the early identification of impending defects. The Beckhoff IPC diagnostics enables access to these parameters.

**0x8nn0 - Module Header**

| SubIndex | Type | Name     | Value                  | Type           | Access    |
|----------|------|----------|------------------------|----------------|-----------|
| 00       | VAR  | Len      |                        | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x001f 00nn            | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | PhysicalDrive          | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Serial number of drive | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x001f 2710            | UNSIGNED32     | read-only |

**0x8nn1 - Drive Properties**

| SubIndex | Type | Name                                      | Type           | Access    |
|----------|------|-------------------------------------------|----------------|-----------|
| 00       | VAR  | Len                                       | UNSIGNED16     | read-only |
| 01       | VAR  | Index                                     | UNSIGNED32     | read-only |
| 02       | VAR  | Caption                                   | VISIBLE STRING | read-only |
| 03       | VAR  | Logical Partitions (Comma separated list) | VISIBLE STRING | read-only |
| 04       | VAR  | Partition Count                           | UNSIGNED32     | read-only |
| 05       | VAR  | Total Cylinders                           | UNSIGNED64     | read-only |
| 06       | VAR  | Total Heads                               | UNSIGNED32     | read-only |
| 07       | VAR  | Total Sectors                             | UNSIGNED64     | read-only |
| 08       | VAR  | Total Tracks                              | UNSIGNED64     | read-only |

**0x8nn2 - S.M.A.R.T. Attribute IDs**

| SubIndex  | Type | Name         | Type       | Access    |
|-----------|------|--------------|------------|-----------|
| 00        | VAR  | Len          | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Attribute ID | UNSIGNED8  | read-only |

**0x8nn3 - S.M.A.R.T. Status Flags**

| SubIndex  | Type | Name        | Type       | Access    |
|-----------|------|-------------|------------|-----------|
| 00        | VAR  | Len         | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Status Flag | UNSIGNED16 | read-only |

**0x8nn4 - S.M.A.R.T. Current Values**

| SubIndex  | Type | Name          | Type       | Access    |
|-----------|------|---------------|------------|-----------|
| 00        | VAR  | Len           | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Current Value | UNSIGNED8  | read-only |

**0x8nn5 - S.M.A.R.T. Worst Values**

| SubIndex  | Type | Name        | Type       | Access    |
|-----------|------|-------------|------------|-----------|
| 00        | VAR  | Len         | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Worst Value | UNSIGNED8  | read-only |

**0x8nn6 - S.M.A.R.T. Raw Data**

| SubIndex  | Type | Name              | Type           | Access    |
|-----------|------|-------------------|----------------|-----------|
| 00        | VAR  | Len               | UNSIGNED16     | read-only |
| 01 .. Len | VAR  | Raw Data (6 Byte) | VISIBLE STRING | read-only |

**0x8nn7 - S.M.A.R.T. Thresholds**

| SubIndex  | Type | Name      | Type       | Access    |
|-----------|------|-----------|------------|-----------|
| 00        | VAR  | Len       | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Threshold | UNSIGNED8  | read-only |

## 6.1.2.22 0x0020 - Mass Storage Monitoring



### Windows CE / Windows Embedded Compact

This function is not available for Windows CE / Windows Embedded Compact.

The information about a drive is mapped line by line in the tables 0x8nn1 to 0x8nnF. For example, the serial number from line 2 (in Table 0x8nn1) and the DriveName from line 2 (in Table 0x8nn4) belong to the same drive.



### Position offset

The position of the drives within the table can shift if a drive is connected to the computer or disconnected from it during operation. Therefore a check should always be done on the basis of the serial number from Table 0x8nn1 in order to identify the drive in line (n).

- If drive (n) is a data storage device that is not supported, then Tables 0x8nn4 to 0x8nnF contain the error message 0xECA61000 "Not Supported" in line (n).
- The tables 0x8nn6 to 0x8nnB contain exclusively SMART information for flash drive media. If the drive (n) is a hard disk (DriveType=1), then these tables contain the error message 0xECAF0701 "Flashdrive data not available" in line (n).
- Tables 0x8nnC to 0x8nnF contain exclusively data for hard disks (rotary data storage media). If the drive (n) is a flash drive (DriveType > 1), then these tables contain the error message 0xECAF0702 "Hard disk data not available" in line (n).

### 0x8nn0 - Module Header

| SubIndex | Type | Name     | Value                 | Type           | Access    |
|----------|------|----------|-----------------------|----------------|-----------|
| 00       | VAR  | Len      |                       | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0020 00nn           | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | MassStorageMonitoring | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | MassStorageMonitoring | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0020 2710           | UNSIGNED32     | read-only |

### 0x8nn1 - Serialnumber

| SubIndex | Type | Name                        | Type           | Access    |
|----------|------|-----------------------------|----------------|-----------|
| 00       | VAR  | Len                         | UNSIGNED16     | read-only |
| 01...n   | VAR  | Serial number of drive 1..n | VISIBLE STRING | read-only |

### 0x8nn2 - SATA-Port

| SubIndex | Type | Name                    | Type       | Access    |
|----------|------|-------------------------|------------|-----------|
| 00       | VAR  | Len                     | UNSIGNED16 | read-only |
| 01...n   | VAR  | SATA Port of drive 1..n | UNSIGNED8  | read-only |

### 0x8nn3 - Partiton-letter(s)

| SubIndex | Type | Name                             | Type           | Access    |
|----------|------|----------------------------------|----------------|-----------|
| 00       | VAR  | Len                              | UNSIGNED16     | read-only |
| 01...n   | VAR  | Partiton letter(s) of drive 1..n | VISIBLE STRING | read-only |

### 0x8nn4 - DriveName

| SubIndex | Type | Name                    | Type           | Access    |
|----------|------|-------------------------|----------------|-----------|
| 00       | VAR  | Len                     | UNSIGNED16     | read-only |
| 01...n   | VAR  | DriveName of drive 1..n | VISIBLE STRING | read-only |

**0x8nn5 - DriveType**

| SubIndex | Type | Name                    | Type       | Access    |
|----------|------|-------------------------|------------|-----------|
| 00       | VAR  | Len                     | UNSIGNED16 | read-only |
| 01...n   | VAR  | DriveType of drive 1..n | UNSIGNED8  | read-only |

(0 = Unknown, 1 = Harddisk, 2 = SSD, 3 = CFast, 4 = CF)

**Flashdrive SMART information****0x8nn6 - EraseCountAverage**

| SubIndex | Type | Name                            | Type       | Access    |
|----------|------|---------------------------------|------------|-----------|
| 00       | VAR  | Len                             | UNSIGNED16 | read-only |
| 01...n   | VAR  | EraseCountAverage of drive 1..n | UNSIGNED64 | read-only |

**0x8nn7 - EraseCountSpecified**

| SubIndex | Type | Name                              | Type       | Access    |
|----------|------|-----------------------------------|------------|-----------|
| 00       | VAR  | Len                               | UNSIGNED16 | read-only |
| 01...n   | VAR  | EraseCountSpecified of drive 1..n | UNSIGNED64 | read-only |

**0x8nn8 - EraseCyclesLeftPercent**

| SubIndex | Type | Name                                 | Type       | Access    |
|----------|------|--------------------------------------|------------|-----------|
| 00       | VAR  | Len                                  | UNSIGNED16 | read-only |
| 01...n   | VAR  | EraseCyclesLeftPercent of drive 1..n | SIGNED16   | read-only |

**0x8nn9 - SpareBlocksRemaining**

| SubIndex | Type | Name                               | Type       | Access    |
|----------|------|------------------------------------|------------|-----------|
| 00       | VAR  | Len                                | UNSIGNED16 | read-only |
| 01...n   | VAR  | SpareBlocksRemaining of drive 1..n | UNSIGNED64 | read-only |

**0x8nnA - SpareBlocksInitial**

| SubIndex | Type | Name                             | Type       | Access    |
|----------|------|----------------------------------|------------|-----------|
| 00       | VAR  | Len                              | UNSIGNED16 | read-only |
| 01...n   | VAR  | SpareBlocksInitial of drive 1..n | UNSIGNED64 | read-only |

**0x8nnB - SpareBlocksLeftPercent**

| SubIndex | Type | Name                                 | Type       | Access    |
|----------|------|--------------------------------------|------------|-----------|
| 00       | VAR  | Len                                  | UNSIGNED16 | read-only |
| 01...n   | VAR  | SpareBlocksLeftPercent of drive 1..n | SIGNED16   | read-only |

**Harddisk SMART information****0x8nnC - ReallocatedSectors**

| SubIndex | Type | Name                             | Type       | Access    |
|----------|------|----------------------------------|------------|-----------|
| 00       | VAR  | Len                              | UNSIGNED16 | read-only |
| 01...n   | VAR  | ReallocatedSectors of drive 1..n | UNSIGNED64 | read-only |

**0x8nnD - SpinRetries**

| SubIndex | Type | Name                      | Type       | Access    |
|----------|------|---------------------------|------------|-----------|
| 00       | VAR  | Len                       | UNSIGNED16 | read-only |
| 01...n   | VAR  | SpinRetries of drive 1..n | UNSIGNED64 | read-only |

**0x8nnE - PendingSectors**

| SubIndex | Type | Name                         | Type       | Access    |
|----------|------|------------------------------|------------|-----------|
| 00       | VAR  | Len                          | UNSIGNED16 | read-only |
| 01...n   | VAR  | PendingSectors of drive 1..n | UNSIGNED64 | read-only |

**0x8nnF - UltraDmaCrcErrors**

| SubIndex | Type | Name                            | Type       | Access    |
|----------|------|---------------------------------|------------|-----------|
| 00       | VAR  | Len                             | UNSIGNED16 | read-only |
| 01...n   | VAR  | UltraDmaCrcErrors of drive 1..n | UNSIGNED64 | read-only |

### 6.1.2.23 0x0021 - Unified Write Filter (UWF)



#### Windows CE/Windows Embedded Compact

This function is not available for Windows CE/Windows Embedded Compact.



This component is available from the MDP version 1.0.9.25.

The BkWritefilterDII.dll is required in the image to use the component.



#### TwinCAT/BSD

This function is not available for TwinCAT/BSD.

#### 0x8nn0 – Module Header

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0021 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | UWF         | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | UWF         | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0021 2710 | UNSIGNED32     | read-only |

#### 0x8nn1 - CurrentState

| SubIndex | Type | Name              | Type       | Access    |
|----------|------|-------------------|------------|-----------|
| 00       | VAR  | Len               | UNSIGNED16 | read-only |
| 01       | VAR  | State             | BOOLEAN    | read-only |
| 02       | VAR  | Overlay Mode      | UNSIGNED32 | read-only |
| 03       | VAR  | Overlay Size [MB] | UNSIGNED32 | read-only |

Overlay Mode: 0 = RAM, 1 = Disk

#### 0x8nn2 – NextState

| SubIndex | Type | Name              | Type       | Access      |
|----------|------|-------------------|------------|-------------|
| 00       | VAR  | Len               | UNSIGNED16 | read-only   |
| 01       | VAR  | State             | BOOLEAN    | read-write  |
| 02       | VAR  | Overlay Mode      | UNSIGNED32 | read- write |
| 03       | VAR  | Overlay Size [MB] | UNSIGNED32 | read- write |

Overlay Mode: 0 = RAM, 1 = Disk

Overlay Size: A warning eventlog is written at 50 % and a critical eventlog at 75 % of the Overlay.

#### 0x8nn3 – Volumes

| SubIndex | Type | Name   | Type           | Access    |
|----------|------|--------|----------------|-----------|
| 00       | VAR  | Len    | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Volume | VISIBLE STRING | read-only |

#### 0x8nn4 – Volume Protection Current States

| SubIndex | Type | Name                    | Type       | Access    |
|----------|------|-------------------------|------------|-----------|
| 00       | VAR  | Len                     | UNSIGNED16 | read-only |
| 01..Len  | VAR  | Volume protection state | BOOLEAN    | read-only |

**0x8nn5 – Volume Protection Next States**

| SubIndex | Type | Name                    | Type       | Access    |
|----------|------|-------------------------|------------|-----------|
| 00       | VAR  | Len                     | UNSIGNED16 | read-only |
| 01..Len  | VAR  | Volume protection state | BOOLEAN    | read-only |

**0x8nn6 – Exclusions**

| SubIndex | Type | Name                                                                                                                                                                                                            | Type           | Access    |
|----------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|
| 00       | VAR  | Len                                                                                                                                                                                                             | UNSIGNED16     | read-only |
| 01..Len  | VAR  | Exclusions for one volume at a time (corresponding volumes see 0x8nn3). The return value is a multi-string. Each individual string is singly null-terminated, the whole multi-string is doubly null-terminated. | VISIBLE STRING | read-only |

**Service transfer objects****0xBnn0 – UWF Protect Volume**

| InputData      |          |
|----------------|----------|
| Type           | Name     |
| DWORD          | cbData   |
| DWORD          | cbVolume |
| CHAR[cbVolume] | cVolume  |

**0xBnn1 – UWF Unprotect Volume**

| InputData      |          |
|----------------|----------|
| Type           | Name     |
| DWORD          | cbData   |
| DWORD          | cbVolume |
| CHAR[cbVolume] | cVolume  |

**0xBnn2 – UWF Add Exclusions**

| InputData        |            |
|------------------|------------|
| Type             | Name       |
| DWORD            | cbData     |
| DWORD            | cbVolume   |
| DWORD            | cbFilePath |
| CHAR[cbVolume]   | cVolume    |
| CHAR[cbFilePath] | cFilePath  |

**0xBnn3 – UWF Enum Exclusions Command object\***

| <b>InputData</b> |             |
|------------------|-------------|
| <b>Type</b>      | <b>Name</b> |
| DWORD            | cbData      |
| DWORD            | cbVolume    |
| DWORD            | Index       |
| CHAR[cbVolume]   | cVolume     |

| <b>OutputData</b> |             |
|-------------------|-------------|
| <b>Type</b>       | <b>Name</b> |
| DWORD             | cbFilePath  |
| CHAR[cbFilePath]  | cFilePath   |

#### 0xBnn4 – UWF Remove Exclusion

| <b>InputData</b> |             |
|------------------|-------------|
| <b>Type</b>      | <b>Name</b> |
| DWORD            | cbData      |
| DWORD            | cbVolume    |
| DWORD            | cbFilePath  |
| CHAR[cbVolume]   | cVolume     |
| CHAR[cbFilePath] | cFilePath   |

#### 0xBnn5 – UWF Commit File Command object

| <b>InputData</b> |             |
|------------------|-------------|
| <b>Type</b>      | <b>Name</b> |
| DWORD            | cbData      |
| DWORD            | cbVolume    |
| DWORD            | cbFilePath  |
| CHAR[cbVolume]   | cVolume     |
| CHAR[cbFilePath] | cFilePath   |

#### 0xBnn6 – UWF Commit File Delete Command object

| <b>InputData</b> |             |
|------------------|-------------|
| <b>Type</b>      | <b>Name</b> |
| DWORD            | cbData      |
| DWORD            | cbVolume    |
| DWORD            | cbFilePath  |
| CHAR[cbVolume]   | cVolume     |
| CHAR[cbFilePath] | cFilePath   |

#### 6.1.2.24 0x0100 - Miscellaneous

This module pools the remaining information.

**0x8nn0 – Module Header**

| SubIndex | Type | Name     | Value       | Type           | Access    |
|----------|------|----------|-------------|----------------|-----------|
| 00       | VAR  | Len      |             | UNSIGNED16     | read-only |
| 01       | VAR  | Address  | 0x0100 00nn | UNSIGNED32     | read-only |
| 02       | VAR  | Type     | Misc        | VISIBLE STRING | read-only |
| 03       | VAR  | Name     | Misc        | VISIBLE STRING | read-only |
| 04       | VAR  | Dev type | 0x0100 2710 | UNSIGNED32     | read-only |

**0x8nn1**

| SubIndex | Type | Name                                                                                                 | Type           | Access     |
|----------|------|------------------------------------------------------------------------------------------------------|----------------|------------|
| 00       | VAR  | Len                                                                                                  | UNSIGNED16     | read-only  |
| 01       | VAR  | Startup Numlock State. State of the Numlock key at system start                                      | BOOLEAN        | read-write |
| 02       | VAR  | CE remote display state shows whether a client is connected via CERHost. From MDP 1.6.x (WinCE only) | BOOLEAN        | read only  |
| 03       | VAR  | CE Remote Display Enabled (WinCE only)                                                               | BOOLEAN        | read-write |
| 04       | VAR  | SecurityWizardEnabled                                                                                | BOOLEAN        | read-write |
| 05       | VAR  | AutoLogonUser                                                                                        | VISIBLE STRING | read-only  |
| 06       | VAR  | AutoGenerateCertificates                                                                             | BOOLEAN        | read-write |

**Service transfer objects****0xBnn0 - Restore Factory Settings (Service Transfer Object) (available for Windows CE)**

| InputData  |           |
|------------|-----------|
| Type       | Name      |
| UNSIGNED16 | DummyByte |

**0xBnn1 - Reboot (Service Transfer Object)**

| InputData |           |
|-----------|-----------|
| Type      | Name      |
| UNSIGNED8 | DummyByte |

**0xBnn2 – SetAutoLogon (Service Transfer Object) (BigWindows only)**

| InputData         |             |
|-------------------|-------------|
| Type              | Name        |
| DWORD             | cb          |
| DWORD             | cchUsername |
| DWORD             | cchDomain   |
| DWORD             | cchPassword |
| BOOLEAN           | bAutoLogon  |
| char[cchUsername] | szUsername  |
| char[cchDomain]   | szDomain    |
| char[cchPassword] | szPassword  |

### 6.1.3 0xB000-0xBFFF – ServiceTransfer Area

The Service Transfer Area offers functional access. The handling is therefore different than for data from the Configuration Area. An operation is started and processed asynchronously.

The module descriptions contain tables for the Service Transfer Area. An operation may contain input parameters, which are shown in an InputData table, and output parameters, which are shown in an OutputData table.

The following applies for all indices of the Service Transfer Area:

| SubIndex | Name                           | Access     |
|----------|--------------------------------|------------|
| 00       | Len (always = 4)               | Read only  |
| 01       | Trigger / Write Data           | Write only |
| 02       | Operation status               | Read only  |
| 03       | Operation status and read data | Read only  |

#### SubIndex 01

Writing the input data starts the action. For this trigger the SubIndex 01 is used. All variables are transmitted in one data block.

#### SubIndex 02

Once an operation has been started, its status can be queried with subindex 02.

| Status value [BYTE] | Description                                                           |
|---------------------|-----------------------------------------------------------------------|
| 0                   | No error; No data available                                           |
| 1                   | No error; Data available                                              |
| 2                   | error; No data available                                              |
| 3                   | error; data available (4 byte <a href="#">MDP error code [▶ 77]</a> ) |
| 100 ... 200         | Busy; 0% ... 100%                                                     |
| 255                 | Busy; No percentage                                                   |

#### SubIndex 03

As soon as the action is complete, the return data are available and can be queried. Subindex 03 is used for this purpose. All information is received in a data block, according to the structure in the OutputData table.

In addition to the read data the status of the operation is also output, according to the diagram above.

Layout:

```
BYTE status
BYTE padding
VOID Nutzdaten (Optional)
```

## 6.1.4 0xF000-0xFFFF – Device Area

### Index 0xF000

| SubIndex | type | name            | value | type       | Access    |
|----------|------|-----------------|-------|------------|-----------|
| 00       | VAR  | Len             | 4     | UNSIGNED16 | read-only |
| 01       | VAR  | Object interval | 16    | UNSIGNED32 | read-only |
| 02       | VAR  | Max Modules     | 0xFF  | UNSIGNED32 | read-only |
| 03       | VAR  |                 | 0     | UNSIGNED32 | read-only |
| 04       | VAR  |                 | 0xF   | UNSIGNED32 | read-only |

### Index 0xF010 – module types list

| SubIndex  | type | name                             | type       | Access    |
|-----------|------|----------------------------------|------------|-----------|
| 00        | VAR  | Len                              | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | MDPSubProfile Id and Module Type | UNSIGNED32 | read-only |

Flat list of the module types of the instantiated modules. The module type is stored in the LowWord. The HighWord contains the "MDPSubProfile Id".

The SubIndex can be used to determine the dynamically created "Module ID" of a module.

#### Example:

```
SubIndex: 0x04      MDPSubProfile Id
and Module type: 0x2710 0002
```

The module type 0x02 is stored in SubIndex 0x04: It is an instance of the [NIC module \[▶ 18\]](#); the dynamically created module ID is 0x03 (SubIndex - 1).

The configuration data can therefore be found at address 0x8030.

### Index 0xF020 – module ID list

| SubIndex  | type | name               | type       | Access    |
|-----------|------|--------------------|------------|-----------|
| 00        | VAR  | Len                | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Module type and ID | UNSIGNED32 | read-only |

The module type is stored in the HighWord. The LowWord contains the dynamically assigned module ID.

The module type is determined via the module type in the HighWord. The "Module ID" is a sequential number that is allocated for each object. It corresponds to the variables 'nn' in the index.

#### Example:

```
Module type and ID: 0x0002 0003
```

The module type is 0x02: [NIC module \[▶ 18\]](#)

The Module ID is 3, the object is described at index 0x8030.

### Index 0xF060 – module names list

| SubIndex  | type | name        | type       | Access    |
|-----------|------|-------------|------------|-----------|
| 00        | VAR  | Len         | UNSIGNED16 | read-only |
| 01 .. Len | VAR  | Module name | VIS STRING | read-only |

List of the names of all instanced modules. The module name is unique. It enables the module to be identified unambiguously, even if the index was modified dynamically.

**Index 0xF9F0 – serial number of Beckhoff IPCs**

| SubIndex | type | name          | type       | Access    |
|----------|------|---------------|------------|-----------|
| 00       | VAR  | Serial number | VIS STRING | read-only |

Serial number of a Beckhoff IPC (according to the name plate of the IPC).

Note: Not to be confused with the serial number of the motherboard. (This is read out via the MDP module "Mainboard")

Comments:

- For Beckhoff DIN rail IPCs (CXnnnn series) the serial number of the device matches the serial number of the mainboard (since in this case there is only one mainboard type for the respective IPC).
- All other Beckhoff IPCs have a serial number for the mainboard and a separate serial number for the device (different mainboards are used, depending on the power level).
- In older BIOS version (before Q4/2013) the serial number was not stored in the IPC BIOS. In these cases the return value is the serial number of the IPC mainboard.
- For older Beckhoff Automation Device Driver versions (for details see note) the return value is the serial number of the IPC mainboard.
- The serial number of the IPC mainboard is read via the [mainboard module \[▶ 46\]](#).

**Prerequisites for index 0xF9F0**

MDP version 1.0.7.6 or higher

**Return of IPC serial number**

Additional prerequisites for returning the IPC serial number (not the mainboard serial number): Beckhoff Automation Device Driver v1.22.1.0 or higher. BIOS that supports this functionality (Beckhoff IPCs manufactured from Q4/2013)

## 7 API / samples

This section provides programming samples for the Device Manager that demonstrate the principle of access to Device Manager data. The examples are structured such that they can easily be modified for querying other data values.

The underlying data structure is described in section [Information model \[▶ 12\]](#).

### 7.1 PLC

#### TwinCAT 3:

In order to be able to use the functions of the Beckhoff Device Manager in a TwinCAT PLC program, the [TwinCAT 3 PLC library Tc3\\_IPCDiag](#) must be integrated into the TwinCAT project as reference.

The Device Manager offers a wide range of readable and partly writeable parameters. The available Device Manager parameters are organized in modules in the Configuration area. A module contains all the data for a specific topic, for example the CPU or the fans.

Since the available modules and their contents depend on the components available in the IPC, the list is generated dynamically – depending on which components the current IPC contains or which information types it supports. A module or a parameter therefore cannot be addressed via a fixed address. You first have to determine where exactly the module is located. In the Tc3\_IPCDiag library this is done by the function block `FB_IPCDiag_Register`. It identifies a register of all available information so that it can be easily accessed from then on. Normally, the function block only needs to be executed once at the beginning.

The function block `FB_IPCDiag_ReadParameter` offers an extensive list of parameters, which are grouped according to their MDP area and modules, with the help of the `E_IPCDiag_ParameterKey` enumeration.

Below is an excerpt from the enumeration containing more than 100 parameters:

| Enumeration value                                   | Comment                                                |
|-----------------------------------------------------|--------------------------------------------------------|
| <code>E_IPCDiag_ParameterKey.IPCDeviceName</code>   | IPC device name, STRING, read/write (MDP general area) |
| <code>E_IPCDiag_ParameterKey.CPU_Usage</code>       | CPU usage (%), UINT, read-only                         |
| <code>E_IPCDiag_ParameterKey.CPU_Temp</code>        | CPU temperature (°C), INT, read-only                   |
| <code>E_IPCDiag_ParameterKey.Fan_Speed</code>       | Fan speed (rpm), INT, read-only                        |
| <code>E_IPCDiag_ParameterKey.NIC_IPv4Address</code> | IPv4 address, STRING, read/write                       |
| <code>E_IPCDiag_ParameterKey.TC_VersionBuild</code> | TwinCAT build version, UINT, read-only                 |

A detailed description of the Tc3\_IPCDiag library and easy access to the parameters and Device Manager modules can be found in the [documentation of the TwinCAT 3 PLC library Tc3\\_IPCDiag](#). There you will also find the [Samples chapter](#) with programming examples for a quick introduction to using the PLC library.



#### Restricted access at the time of system start

MDP forms an interface to the hardware. This is independent of TwinCAT. MDP can be accessed from TwinCAT with the PLC library. This is done internally by means of ADS communication. The versatility of the hardware configuration justifies a different initialization phase of the MDP service. It is possible that first PLC cycles are executed while the MDP initialization is not yet completed. Either the possible error outputs as well as timeouts of the function blocks from the library can be reacted and a new query can be triggered or the queries are executed deliberately delayed after the system start.

It is recommended in the PLC program not to query values from the MDP immediately after the system start, but to consider a small waiting time. How large this should be depends on various parameters (such as the performance of your control computer), and can therefore not be given as a general rule. Typically it is in the range of 10-60 seconds.

#### TwinCAT 3: Previous library:



### Update: Tc3\_IPCDiag library

The TwinCAT 3 PLC library Tc2\_MDP is the predecessor to Tc3\_IPCDiag. With the new Tc3\_IPCDiag library the number of readable parameters has been increased and the user interface has been optimized. It is recommended to use the [Tc3\\_IPCDiag library](#).

Future extensions will no longer be performed in the Tc2\_MDP library. It is not recommended to use the Tc2\_MDP library for new projects. All functionalities of the Tc2\_MDP library can also be found in the new Tc3\_IPCDiag library.

A detailed description of the Tc2\_MDP PLC library and all available function blocks through which TwinCAT 3 accesses the Device Manager modules can be found in the documentation:

- [Function blocks of the TwinCAT 3 PLC library "Tc2\\_MDP" for IPC diagnostics](#)
- [Error codes of the TwinCAT 3 PLC library "Tc2\\_MDP" for IPC diagnostics](#)
- The [Tc2\\_MDP library examples](#) cover the following use cases:
  - Querying CPU data (generic)
  - Querying the fan state (generic)
  - Querying CPU data (specific)
  - Reading IPC serial numbers
  - Setting the IP address

#### TwinCAT 2:

A description of the corresponding TwinCAT 2 PLC TcMDP library can be found in the documentation entitled:

- [Function blocks of the TwinCAT 2 PLC library "TcMDP" for IPC diagnostics](#)
- [Error codes of the TwinCAT 2 PLC library "TcMDP" for IPC diagnostics](#)
- [Examples for TwinCAT 2](#)

#### Requirements

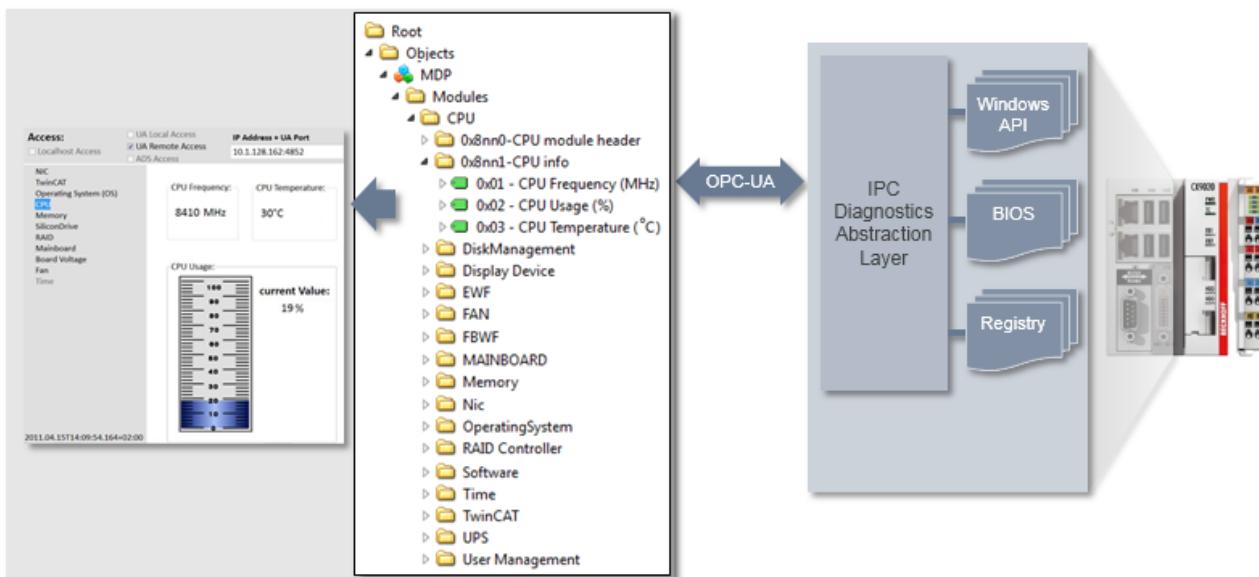
| MDP version          | Beckhoff Automation Device Driver | Beckhoff BIOS |
|----------------------|-----------------------------------|---------------|
| From version 1.0.7.6 | From v1.22.1.0                    | From Q4/2013  |

MDP (Modular Device Profile) is the information model that TwinCAT uses to access the Device Manager data.

## 7.2 OPC UA

OPC UA is a standardized communication interface with built in transmission and access security that is supported by numerous software manufacturers (e.g. visualization software).

The Device Manager values can also be accessed via OPC UA. The Device Manager comes with its own OPC UA server for data access.



The address for accessing the OPC UA server of an IPC is:

opc.tcp://<Device IP>:4852

Samples:

opc.tcp://CP-004711:4852

opc.tcp://172.17.36.11:4852

The OPC UA Server is disabled on IPCs with Windows CE (Windows Embedded Compact) at delivery and must be started manually (or by configuring Autostart accordingly), if required: \Hard Disk\BklpcDiag\UA\DevMgrSrv-UA-CE.



### OPC UA port blocked by firewall

By default, the OPC UA port is blocked by the firewall in all current images. In this case the port in the firewall must be opened if necessary.

### OPC UA .NET sample

Via OPC UA the following .NET application reads the current values for CPU frequency, CPU load, CF card memory capacity, TwinCAT version, TwinCAT build, and CPU temperature.

Download: mdpoverua.zip (Resources/zip/263048715.zip)

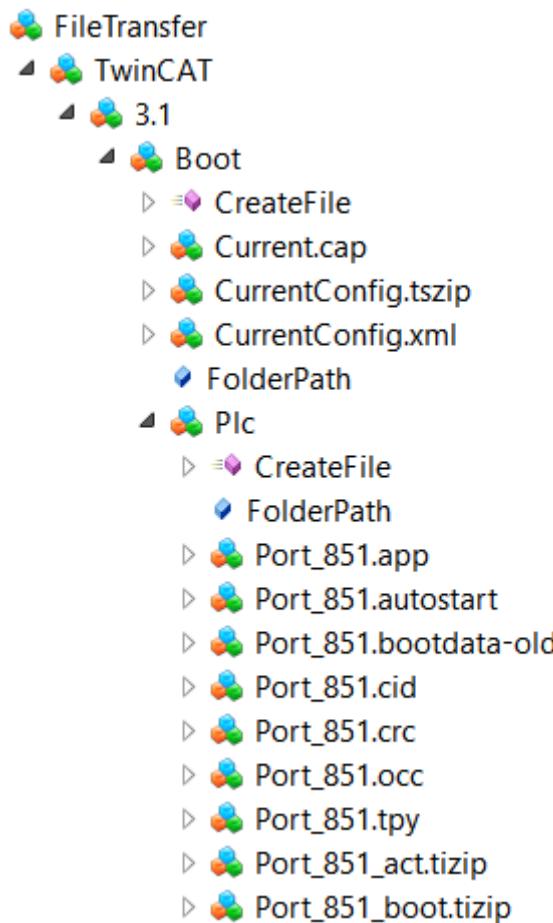
Execute the following steps:

1. Unpack the sample.
2. Open the file *settings.xml* in directory *MDPOverUA\MDPOverUA* folder.
3. In the file find the line `<Session Url="opc.tcp://<DeviceName>:4852" Security="None" RefreshInterval="1000" KeepAlive="10000" />`.
4. Modify the value for `<DeviceName>` according to your device.
5. Compile the project and execute it.

### Access to files and folders via OPC UA

From OPC UA specification version 1.02, OPC UA contains a specialized ObjectType for file transfer, which is described in Appendix C of the specification. This special ObjectType called "FileType" describes the information model for the data transfer. Files can be modeled as simple variables in OPC UA with *ByteStrings*. *FileType* is a file with methods for accessing the file. The OPC UA specification provides further information about *FileType* and the structure and handling of the underlying methods and properties for accessing a file in the OPC UA namespace.

Beckhoff has implemented a generic way to load files and folders from a local hard disk into the OPC UA namespace. Each file is represented by a FileType and allows read and write operations for this file. In addition, each folder contains a CreateFile() method to create new files on the hard disk and a separate FolderPath to specify the actual path to the folder on the OPC UA Server.



### FileTransfer in the OPC UA Server Device Manager

Only the OPC UA server of the Beckhoff Device Manager has this function. The TwinCAT OPC UA Server also provides some parts of this file transfer. However, the general function that enables disclosure of all files and folders is only available in the OPC UA Server, which is part of the device manager that is automatically available on every Beckhoff Industrial PC or Embedded PC. See the [Device manager documentation](#) for more information.

## Configuration

FileType objects are created in a separate namespace called "FileTransfer". An XML file (*files.xml*) is used to configure this namespace and to select the files and folders available via OPC UA. The file must be located in the same directory as the executable file of the OPC UA Server. The system must be restarted in order to activate the configuration. The XML file contains information about the folder path and a search mask that defines which files are published in the OPC UA namespace:

```

<Files>
  <FolderObject DisplayName="TwinCAT">
    <FolderObject DisplayName="3.1">
      <FolderObject DisplayName="Boot" Path="c:/TwinCAT/3.1/Boot" Search="*.*" >
        <FolderObject DisplayName="Plc" Path="c:/TwinCAT/3.1/Boot/Plc" Search="*.*" ></FolderObject>
        <FolderObject DisplayName="Tmi" Path="c:/TwinCAT/3.1/Boot/Tmi" Search="*.*" ></FolderObject>
      </FolderObject>
    </FolderObject>
  </FolderObject>
</Files>
  
```

### Example: Reading a file with UA Expert

General file handling is described in Appendix C of the OPC UA specification. Reading a file via UA can be divided into the following steps:

1. Calling the Open method of a file. This method returns a file handle that must be saved for later access. The mode defines whether the file is read or written to (see File modes).
2. Determining the file size with the property "Size". In this way, the entire file can be read when the Read method is called.
3. Calling the Read method. Inserting the file handle and file size as inputs. Selecting the destination folder in which the file contents are to be saved AFTER the method call.
4. Calling the Close method to enable the file handle.

#### File modes

The following table shows all available file modes.

| Field         | Bit | Description                                                                                                                          |
|---------------|-----|--------------------------------------------------------------------------------------------------------------------------------------|
| Read          | 1   | The file is opened for reading. If this bit is not set, Read cannot be executed.                                                     |
| Write         | 4   | The file is opened for writing. If this bit is not set, Write cannot be executed.                                                    |
| EraseExisting | 6   | The existing file contents are deleted, and an empty file is made available.                                                         |
| Append        | 10  | The file is opened and positioned at the end, otherwise it is moved to the beginning. This position can be changed with SetPosition. |

## 7.3 C#

### VisualStudio.NET C# (Visual Studio 2010/2012/2013)

Programming of the sample programs is explained based on Visual Studio 2012. The procedure for Visual Studio 2010/2013 is similar.

The programs require the library *MdpNetApi.dll.*, which can be found in the respective installation directory of the IPC diagnostics.



#### 64-bit Windows

Prerequisites for creating 64-bit application programs with the library *MdpNetApi.dll*:

MDP from v1.0.7.06 and Beckhoff Automation Device Driver from v1.22.1.0

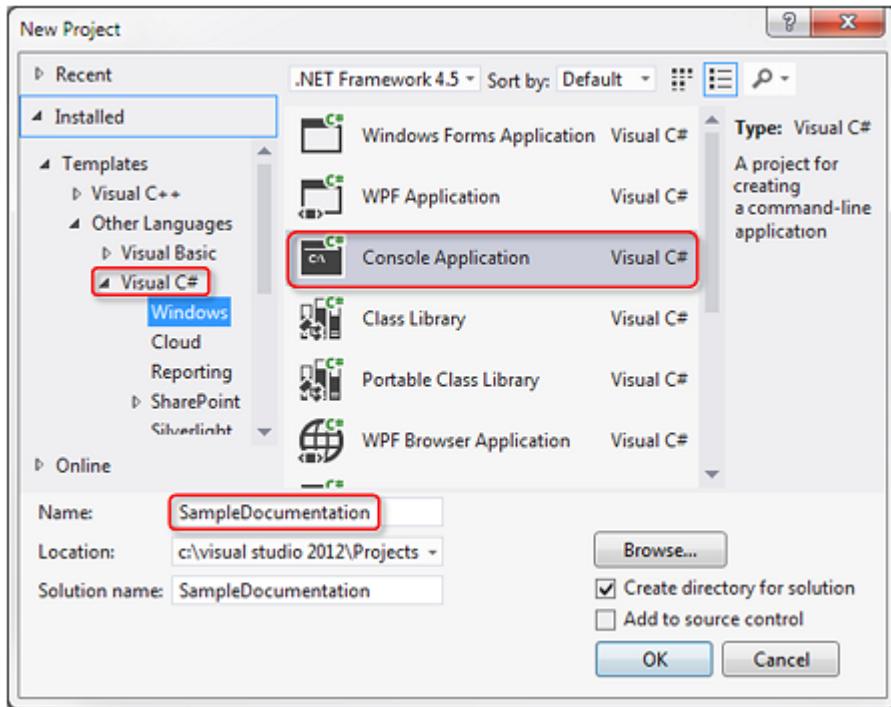
If older versions of MDP or the Beckhoff Automation Device Driver are used, the application program must be compiled for 32 bits, since these library and driver versions are only designed for 32-bit programs. (An application program compiled for 32 bits can be used on a 64-bit system.)

The implementation of the sample code in user programs is explained below. The description is based on the simplest option in Visual Studio, i.e. configuration of a console application.

#### Creating a new console application in Visual Studio

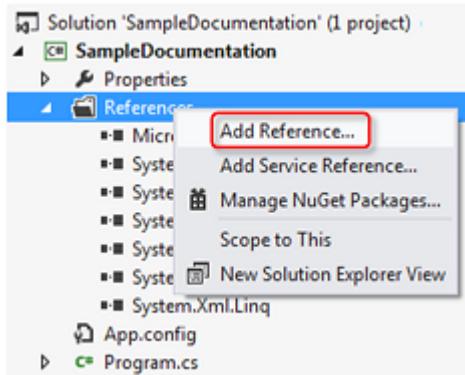
1. Under **File > New**, select the command **Project** to create a new console application.  
⇒ The **New Project** dialog opens.

2. In the overview on the left, select **Templates > Other Languages > Visual C#**, then select **Console Application** in the overview on the right. Enter a name for the project.



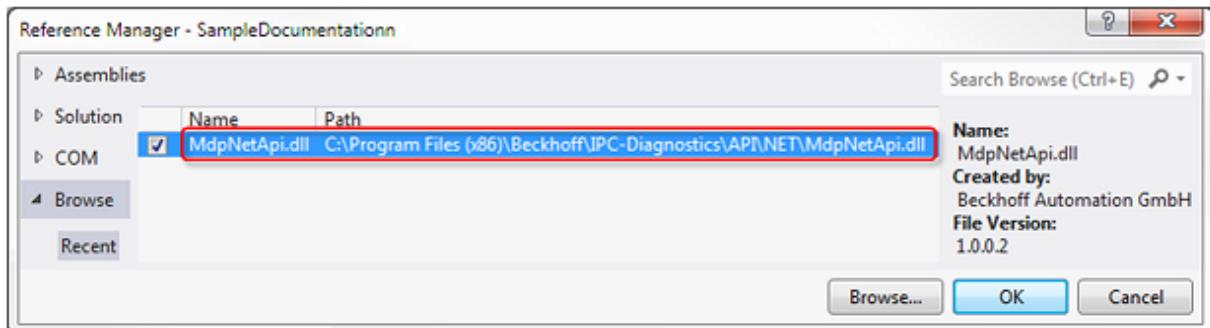
⇒ TwinCAT creates a new console application.

3. Right-click **References** and select the command **Add References** from the context menu that opens.



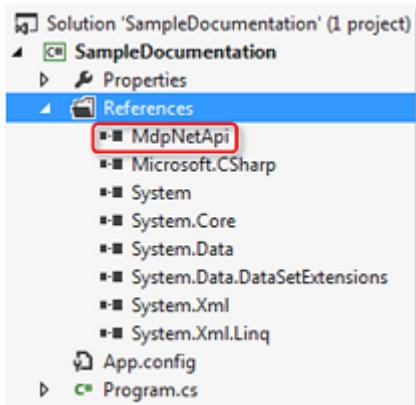
⇒ The **Reference Manager** dialog opens.

4. Enter the file name *MdpNetApi.dll* and confirm with **OK**.

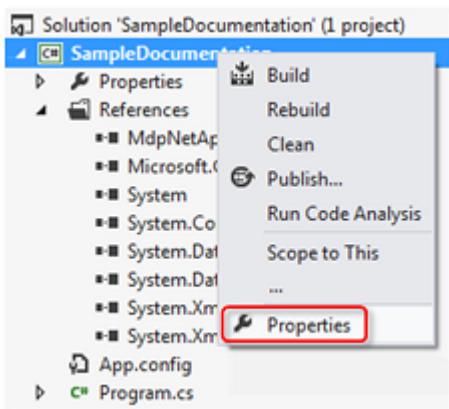


The library *MdpNetApi.dll* can be found in the IPC diagnostics installation directory (default: C:\Program Files (x86)\Beckhoff\IPC-Diagnostics\APINET\MdpNetApi.dll).

⇒ The file is entered as a new reference.

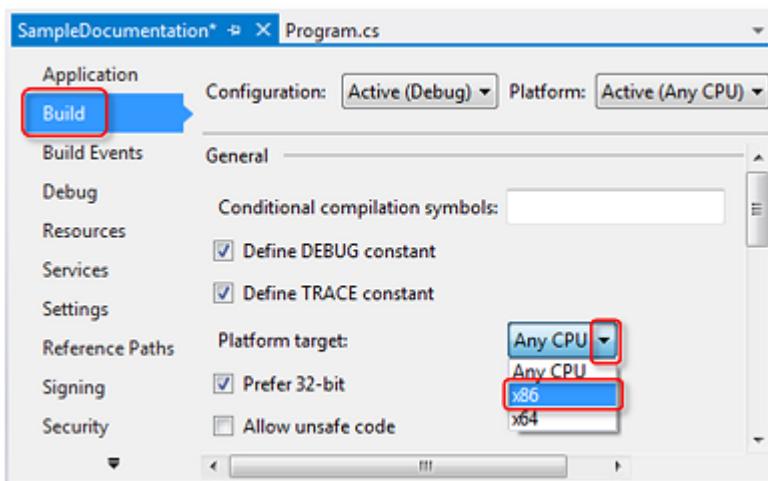


5. Right-click on the project (here: SampleDocumentation) and select **Properties** from the context menu that opens to select the target platform.

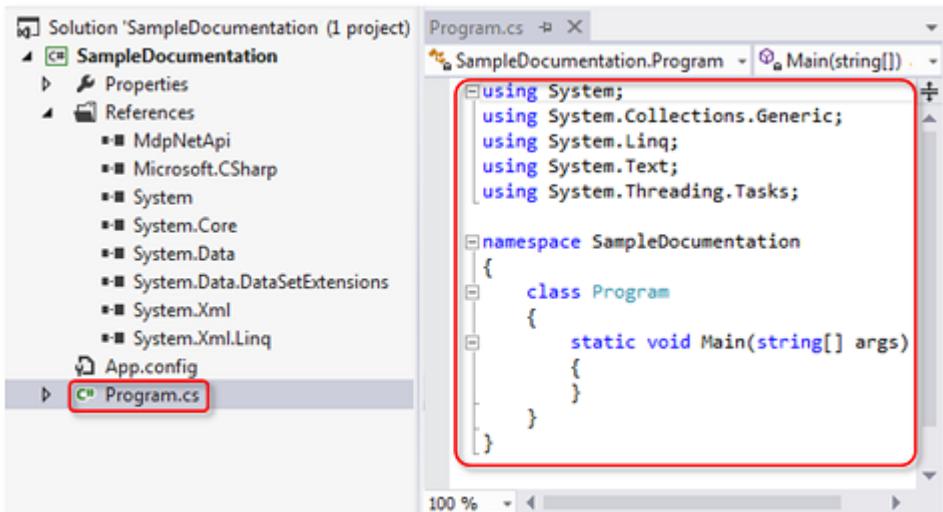


⇒ A configuration window opens.

6. Select the **Build** category and select "x86" or "x64" from the **Platform target** drop-down list, depending on the target platform. Select "x86" (= 32-bit) as target platform, if the requirements for 64-bit (see above) are not met.



7. Incorporate the program code of the example. To do this, copy the code from the sample program to the default file *Program.cs*. Replace the whole default program code highlighted below with the sample code.



⇒ The program can now be compiled and tested.

### 7.3.1 Querying CPU data

This example demonstrates access to IPC diagnostic data via a C# program. CPU data (clock frequency and load) are read as examples.

The library *MdpNetApi.dll* required for this purpose can be found in the installation directory of the IPC diagnostics (default directory: *C:\Program Files (x86)\Beckhoff\IPC-Diagnostics*).

#### Program code:

```
using System.Text;
using System.IO; // namespace for the Memory Stream, Stream- und Binary-Reader
using MdpNetApi; // namespace of the MDP .Net API

namespace MdpCsharpHwRead
{
    class Program
    {
        static void Main(string[] args)
        {
            // initialization

            // opens a connection to the MDP
            MdpNetMethods.MDPOpen();

            // create Memory Stream, Stream- and Binary-Reader for handing data
            MemoryStream memoryStream = new MemoryStream();
            memoryStream.SetLength(1);
            BinaryReader binReader = new BinaryReader(memoryStream);
            StreamReader strReader = new StreamReader(memoryStream);

            // title/header of console output
            Console.WriteLine("Hardware Information (via MDP Csharp Sample)\n=====");
            Console.WriteLine("=====");

            // Read module information
            // Get CPU information (CPU frequency & load)

            memoryStream.Position = 0;

            // create a variable containing the base address of a specific module type
            ushort nBaseAddress = GetAdressOfModuleType(MdpModuleType.CPU)[0];
        }
    }
}
```

## 7.4 C++



---

## User Mode

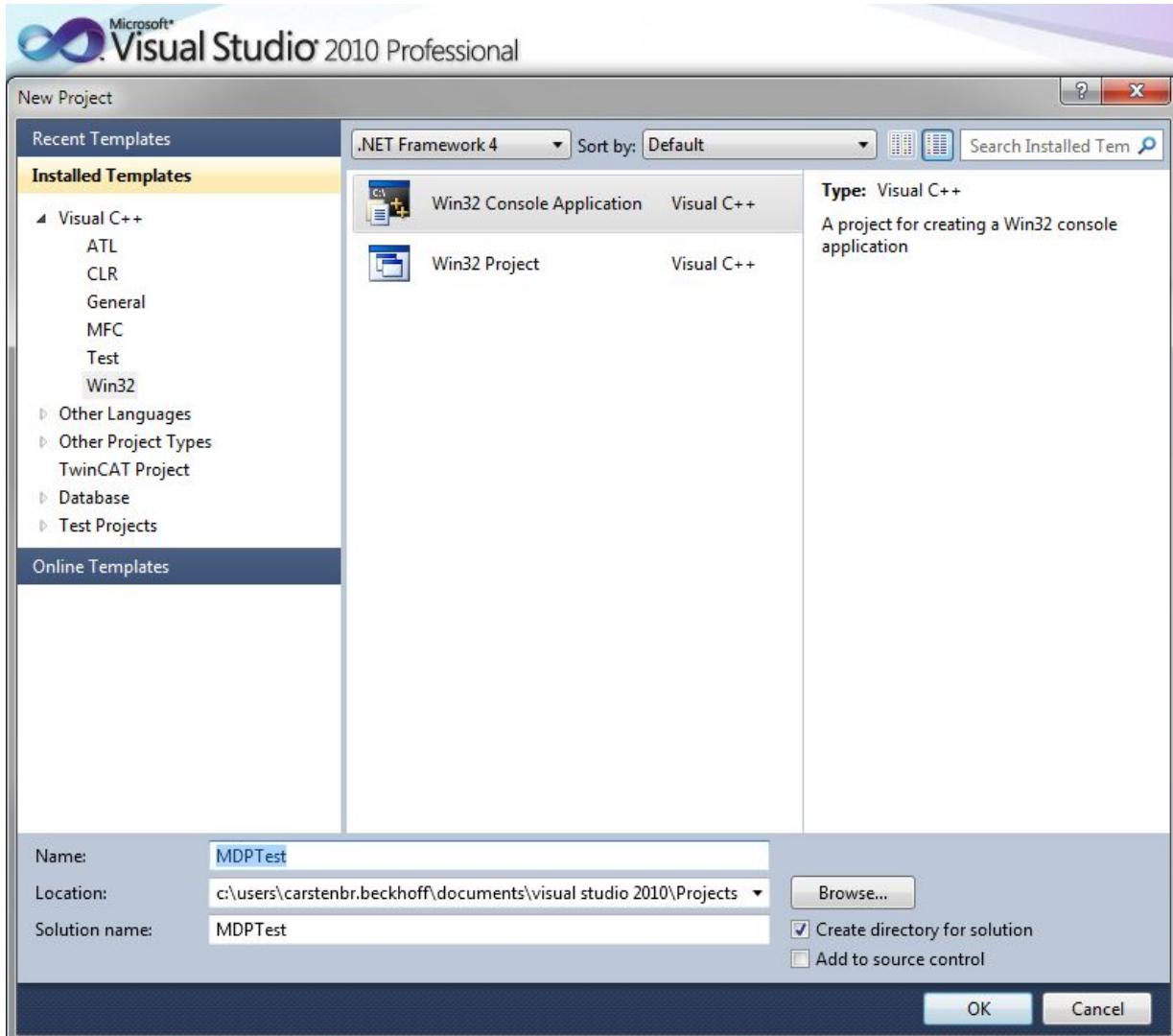
Only for User Mode, not for Real-Time.

## Preparation of Visual Studio

This section explains how to include the files required for IPC diagnostics for programming in C++ in Visual Studio 2010.

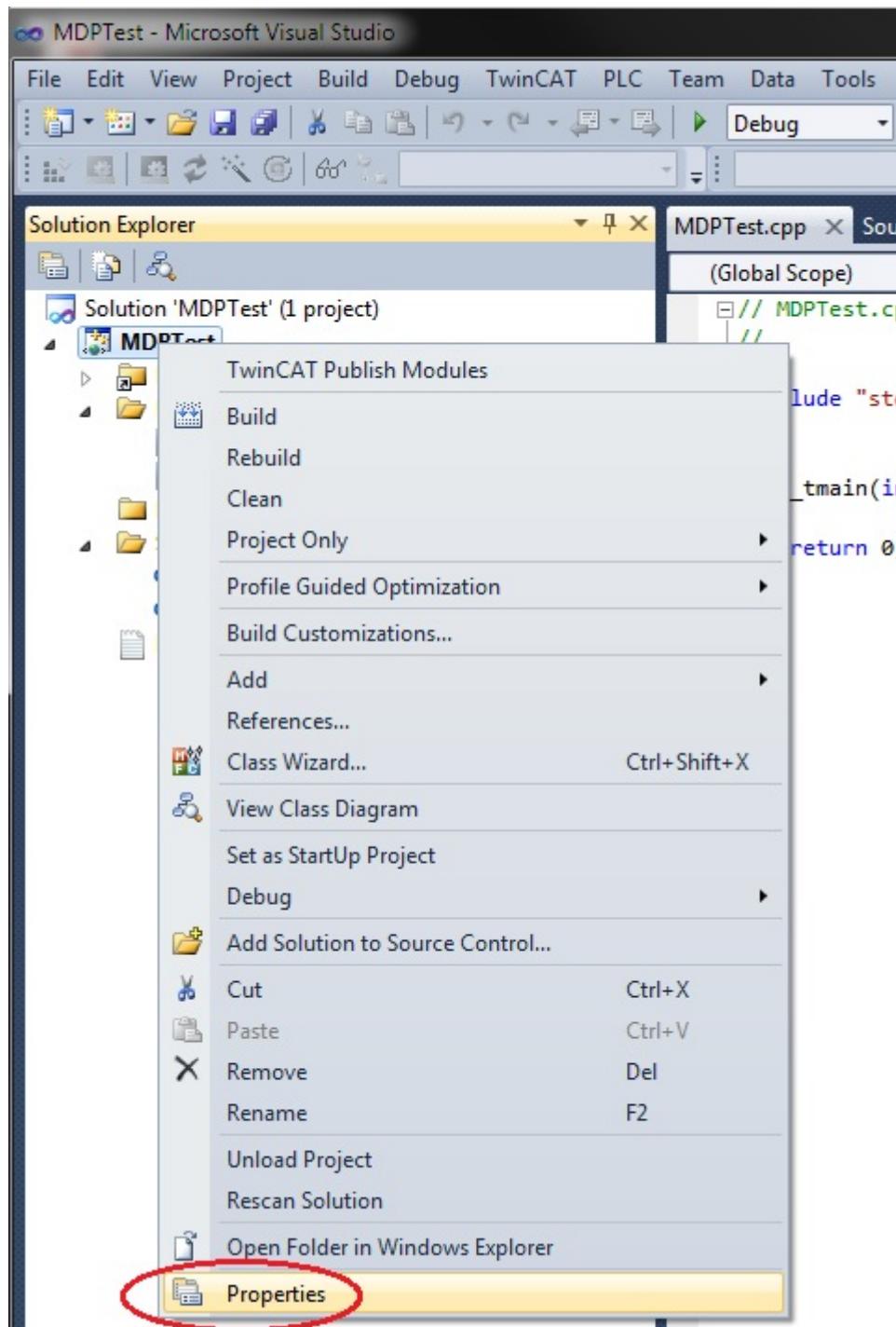
The files can be found in the IPC diagnostics installation directory (Windows: *C:\Program Files (x86)\Beckhoff\IPC-Diagnostics\API\C*).

1. Start Visual Studio and create a new Visual C++ Win32 console application.

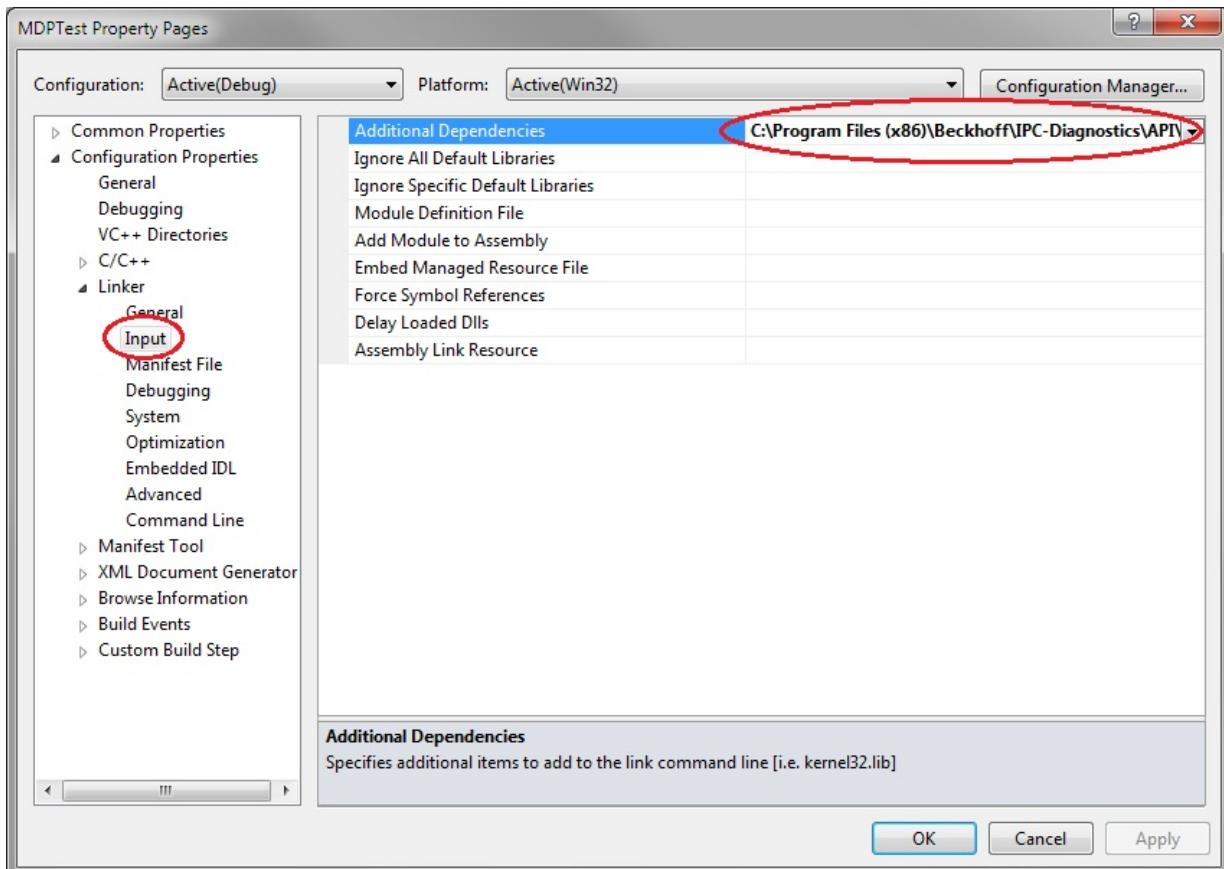


2. Confirm the default settings of the project wizard.

3. Open the project properties.



4. Enter MDPApi.lib (from C:\Program Files (x86)\Beckhoff\IPC-Diagnostics\API\C\Lib\Win32) as additional dependency.



5. Add the MDPApi header:

```
#include "C:\Program Files
(x86)\Beckhoff\IPC-Diagnostics\API\C\Include\MdpApi.h"
```

6. The program now has the following structure:

```
/// MDPTest.cpp : Defines the entry point for the console application.
//

#include "stdafx.h"
#include "C:\Program Files (x86)\Beckhoff\IPC-Diagnostics\API\C\Include\MdpApi.h"

int _tmain(int argc, _TCHAR* argv[])
{
    return 0;
}
```

## Prerequisites

| Required TwinCAT libraries | MDP version         | Beckhoff Automation Device Driver | Beckhoff BIOS         |
|----------------------------|---------------------|-----------------------------------|-----------------------|
| MDPApi.lib<br>MdpApi.h     | Current MDP version | Current BA Device Driver          | Current Beckhoff BIOS |

## 7.5 ADS

### IPC diagnostics via ADS - Example in C#

In addition to communication with "Modular Device Profile for IPC" via MDP API it is possible to communicate with MDP via ADS.

The following example reads the CPU frequency, CPU load, free space, CF card drive usage, TwinCAT version & build and the CPU temperature, if supported.

Download: mdpoverads.zip (Resources/zip/263045771.zip)

Execute the following steps:

1. Extract the example.
2. Open the solution.
3. In *Window1.xaml.cs* find the line `private AmsNetId netId = AmsNetId.Local;`
4. In this case the default NetId is local. To connect a remote device change the NetId, e.g. to the new AmsNetId ("172.16.5.2.1.1").
5. Compile and execute the solution.

## 8 Appendix

### 8.1 Initial help in case of problems



#### Current components

The Beckhoff Device Manager is constantly being updated and further developed. Always use the latest components in your application:

- BIOS
- Image for your Beckhoff IPC
- Beckhoff Automation Device Driver
- IPC diagnostics program version  
(Update for Windows x86/64 available from Beckhoff Support)
- PLC library for your TwinCAT PLC program

The following questions and hints are intended to provide initial assistance in the event of any problems:

- Why does the Device Manager not work or issue error messages?
- Why can some values not be accessed?
- Check the Device Manager version via the version of the file MDP.exe (MDP.dll on Windows CE).
- The current version of the Device Manager for x86/x64 Windows is available from Beckhoff support.
- Windows CE (Windows Embedded Compact): are you using the latest image for your device?  
**The Device Manager for Windows CE is not available as a separate download.**
- Which services are supported by your IPC?
- Does the device web page work?  
Check with the device web page whether the desired values are displayed.
- Does access via OPC UA work?  
Use an OPC UA client (e.g. UA Expert) to check whether you can access the desired values.

### 8.2 Data Types Overview

The MDP information is subdivided into modules, which contain different elements. The elements may have different data types.

| Data type      | Description                                        |
|----------------|----------------------------------------------------|
| BOOLEAN        | 8-bit Boolean value. 1=true, 0=false               |
| SIGNED8        | 8 bit signed integer                               |
| SIGNED16       | 16 bit signed integer                              |
| SIGNED32       | 32 bit signed integer                              |
| UNSIGNED8      | 8 bit unsigned integer                             |
| UNSIGNED16     | 16 bit unsigned integer                            |
| UNSIGNED32     | 32 bit unsigned integer                            |
| UNSIGNED64     | 64 bit unsigned integer                            |
| REAL32         | 32-bit floating point value                        |
| VISIBLE STRING | ASCII string, variable length, not null-terminated |

### 8.3 Overview of error codes.

An error code is made up of two parts. The error code group, which is represented by the upper two bytes, describes the type of error that has occurred.

| Error code group | Type of error                              |
|------------------|--------------------------------------------|
| 0x EC81 xxxx     | Error codes of the Tc3_IPCDiag PLC library |
| 0x ECA6 xxxx     | General IPC diagnostic error codes         |
| 0x ECA7 xxxx     | API error codes (Win32 error codes)        |
| 0x ECA8 xxxx     | ADS error codes (TwinCAT ADS error codes)  |
| 0x ECAF xxxx     | Module-dependent error numbers             |

### Error codes of the Tc3\_IPCDiag PLC library

| Code       | Meaning                                                                                                                                                     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0xEC810001 | invalid module list (initialization of IPDIAG required)<br>Probably the instance of FB_IPCDiag_Register was not called successfully or it is still pending. |
| 0xEC810002 | module of parameter is unavailable (not existing)                                                                                                           |
| 0xEC810003 | parameter is unavailable (not existing)                                                                                                                     |
| 0xEC810004 | no valid value available (reading is probably pending)                                                                                                      |
| 0xEC810005 | allocated buffer is invalid (pointer is zero or buffer size is too small)                                                                                   |
| 0xEC810006 | allocated index is invalid                                                                                                                                  |

### General IPC diagnosis error codes

| Code       | Meaning                  |
|------------|--------------------------|
| 0x00000000 | Success - No Error       |
| 0xECA60001 | Fail - Unspecified error |
| 0xECA60100 | Invalid index            |
| 0xECA60101 | Invalid access           |
| 0xECA60102 | Buffer too small         |
| 0xECA60103 | Type not supported       |
| 0xECA60104 | Out of memory            |
| 0xECA60105 | No data available        |
| 0xECA60106 | Invalid data             |
| 0xECA60107 | Invalid arg              |
| 0xECA60108 | Value out of range       |
| 0xECA60200 | Server is busy           |
| 0xECA60201 | MDP API not initialized  |
| 0xECA60F00 | Not implemented          |
| 0xECA61000 | Not supported            |
| 0xECA60FFF | Unexpected error         |

### API error codes

| Code       | Meaning                                                 |
|------------|---------------------------------------------------------|
| 0xECA7xxxx | The low word contains an error code from a system call. |

See also: [Win32 Error Codes](#) [▶ 84]

### ADS error codes

| Code       | Meaning                                 |
|------------|-----------------------------------------|
| 0xECA8xxxx | The low word contains a ADS result code |

See also: [ADS Return Codes](#) [▶ 80]

## Module specific error codes

| Code       | Module    | Meaning                                                           |
|------------|-----------|-------------------------------------------------------------------|
| 0xECAF0401 | User Mgmt | User already exists                                               |
| 0xECAF0402 | User Mgmt | User does not exist                                               |
| 0xECAF0403 | User Mgmt | Group already exists                                              |
| 0xECAF0404 | User Mgmt | Group does not exist                                              |
| 0xECAF0410 | SMB       | Server is not installed                                           |
| 0xECAF0411 | SMB       | Share already exists                                              |
| 0xECAF0412 | SMB       | Share does not exist                                              |
| 0xECAF0420 | TwinCAT   | Ads route already exists                                          |
| 0xECAF0421 | TwinCAT   | Ads port could not be opened                                      |
| 0xECAF0430 | Datastore | A variable with this name already exists                          |
| 0xECAF0431 | Datastore | Variable with requested name does not exist                       |
| 0xECAF0432 | Datastore | Section with specified name does not exist                        |
| 0xECAF0433 | Datastore | The name of the variable was invalid                              |
| 0xECAF0440 | Registry  | The name of the key (e.g. "HKLM") was invalid                     |
| 0xECAF0601 | Display   | RESTART/ computer must be restarted for the graphics mode to work |
| 0xECAF0602 | Display   | FAILED/ display driver failed specified graphics mode             |
| 0xECAF0603 | Display   | BADMODE/ graphics mode is not supported                           |
| 0xECAF0604 | Display   | NOTUPDATED/ unable to write settings to the registry              |
| 0xECAF0605 | Display   | BADFLAGS/ invalid set of flags                                    |
| 0xECAF0606 | Display   | BADPARAM/ Invalid parameter or invalid combination of flags       |
| 0xECAF0607 | Display   | BADDUALVIEW/ System is DualView capable                           |
| 0xECAF0608 | Display   | Com Port not set                                                  |
| 0xECAF0609 | Display   | Invalid Value                                                     |
| 0xECAF0610 | Display   | Invalid Command                                                   |
| 0xECAF0611 | Display   | Invalid Com Port                                                  |

## 8.4 ADS Return Codes

Grouping of error codes: [0x000](#)... [80](#)..., [0x500](#)... [80](#)..., [0x700](#)... [81](#)..., [0x1000](#)... [83](#)...

### Global error codes

| Hex  | Dec | HRESULT     | Name                      | Description                                                                                                |
|------|-----|-------------|---------------------------|------------------------------------------------------------------------------------------------------------|
| 0x0  | 0   | 0x9811 0000 | ERR_NOERROR               | No error.                                                                                                  |
| 0x1  | 1   | 0x9811 0001 | ERR_INTERNAL              | Internal error.                                                                                            |
| 0x2  | 2   | 0x9811 0002 | ERR_NORTIME               | No real-time.                                                                                              |
| 0x3  | 3   | 0x9811 0003 | ERR_ALLOCLOCKEDMEM        | Allocation locked – memory error.                                                                          |
| 0x4  | 4   | 0x9811 0004 | ERR_INSERTMAILBOX         | Mailbox full – the ADS message could not be sent. Reducing the number of ADS messages per cycle will help. |
| 0x5  | 5   | 0x9811 0005 | ERR_WRONGRECEIVEHMSG      | Wrong HMSG.                                                                                                |
| 0x6  | 6   | 0x9811 0006 | ERR_TARGETPORTNOTFOUND    | Target port not found – ADS server is not started or is not reachable.                                     |
| 0x7  | 7   | 0x9811 0007 | ERR_TARGETMACHINENOTFOUND | Target computer not found – AMS route was not found.                                                       |
| 0x8  | 8   | 0x9811 0008 | ERR_UNKNOWNCMDID          | Unknown command ID.                                                                                        |
| 0x9  | 9   | 0x9811 0009 | ERR_BADTASKID             | Invalid task ID.                                                                                           |
| 0xA  | 10  | 0x9811 000A | ERR_NOIO                  | No IO.                                                                                                     |
| 0xB  | 11  | 0x9811 000B | ERR_UNKNOWNAMECMD         | Unknown AMS command.                                                                                       |
| 0xC  | 12  | 0x9811 000C | ERR_WIN32ERROR            | Win32 error.                                                                                               |
| 0xD  | 13  | 0x9811 000D | ERR_PORTNOTCONNECTED      | Port not connected.                                                                                        |
| 0xE  | 14  | 0x9811 000E | ERR_INVALIDAMSLLENGTH     | Invalid AMS length.                                                                                        |
| 0xF  | 15  | 0x9811 000F | ERR_INVALIDAMSNETID       | Invalid AMS Net ID.                                                                                        |
| 0x10 | 16  | 0x9811 0010 | ERR_LWINSTLEVEL           | Installation level is too low – TwinCAT 2 license error.                                                   |
| 0x11 | 17  | 0x9811 0011 | ERR_NODEBUGINTAVAILABLE   | No debugging available.                                                                                    |
| 0x12 | 18  | 0x9811 0012 | ERR_PORTDISABLED          | Port disabled – TwinCAT system service not started.                                                        |
| 0x13 | 19  | 0x9811 0013 | ERR_PORTALREADYCONNECTED  | Port already connected.                                                                                    |
| 0x14 | 20  | 0x9811 0014 | ERR_AMSSYNC_W32ERROR      | AMS Sync Win32 error.                                                                                      |
| 0x15 | 21  | 0x9811 0015 | ERR_AMSSYNC_TIMEOUT       | AMS Sync Timeout.                                                                                          |
| 0x16 | 22  | 0x9811 0016 | ERR_AMSSYNC_AMSError      | AMS Sync error.                                                                                            |
| 0x17 | 23  | 0x9811 0017 | ERR_AMSSYNC_NOINDEXINMAP  | No index map for AMS Sync available.                                                                       |
| 0x18 | 24  | 0x9811 0018 | ERR_INVALIDAMSPORT        | Invalid AMS port.                                                                                          |
| 0x19 | 25  | 0x9811 0019 | ERR_NOMEMORY              | No memory.                                                                                                 |
| 0x1A | 26  | 0x9811 001A | ERR_TCPSEND               | TCP send error.                                                                                            |
| 0x1B | 27  | 0x9811 001B | ERR_HOSTUNREACHABLE       | Host unreachable.                                                                                          |
| 0x1C | 28  | 0x9811 001C | ERR_INVALIDAMSFragments   | Invalid AMS fragment.                                                                                      |
| 0x1D | 29  | 0x9811 001D | ERR_TLSSEND               | TLS send error – secure ADS connection failed.                                                             |
| 0x1E | 30  | 0x9811 001E | ERR_ACCESSDENIED          | Access denied – secure ADS access denied.                                                                  |

### Router error codes

| Hex   | Dec  | HRESULT     | Name                       | Description                                                            |
|-------|------|-------------|----------------------------|------------------------------------------------------------------------|
| 0x500 | 1280 | 0x9811 0500 | ROUTERERR_NOLOCKEDMEMORY   | Locked memory cannot be allocated.                                     |
| 0x501 | 1281 | 0x9811 0501 | ROUTERERR_RESIZEMEMORY     | The router memory size could not be changed.                           |
| 0x502 | 1282 | 0x9811 0502 | ROUTERERR_MAILBOXFULL      | The mailbox has reached the maximum number of possible messages.       |
| 0x503 | 1283 | 0x9811 0503 | ROUTERERR_DEBUGBOXFULL     | The Debug mailbox has reached the maximum number of possible messages. |
| 0x504 | 1284 | 0x9811 0504 | ROUTERERR_UNKNOWNPORTTYPE  | The port type is unknown.                                              |
| 0x505 | 1285 | 0x9811 0505 | ROUTERERR_NOTINITIALIZED   | The router is not initialized.                                         |
| 0x506 | 1286 | 0x9811 0506 | ROUTERERR_PORTALREADYINUSE | The port number is already assigned.                                   |
| 0x507 | 1287 | 0x9811 0507 | ROUTERERR_NOTREGISTERED    | The port is not registered.                                            |
| 0x508 | 1288 | 0x9811 0508 | ROUTERERR_NOMOREQUEUES     | The maximum number of ports has been reached.                          |
| 0x509 | 1289 | 0x9811 0509 | ROUTERERR_INVALIDPORT      | The port is invalid.                                                   |
| 0x50A | 1290 | 0x9811 050A | ROUTERERR_NOTACTIVATED     | The router is not active.                                              |
| 0x50B | 1291 | 0x9811 050B | ROUTERERR_FRAGMENTBOXFULL  | The mailbox has reached the maximum number for fragmented messages.    |
| 0x50C | 1292 | 0x9811 050C | ROUTERERR_FRAGMENTTIMEOUT  | A fragment timeout has occurred.                                       |
| 0x50D | 1293 | 0x9811 050D | ROUTERERR_TOBEREMOVED      | The port is removed.                                                   |

### General ADS error codes

| Hex   | Dec  | HRESULT     | Name                               | Description                                                                                                                                                                               |
|-------|------|-------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x700 | 1792 | 0x9811 0700 | ADSERR_DEVICE_ERROR                | General device error.                                                                                                                                                                     |
| 0x701 | 1793 | 0x9811 0701 | ADSERR_DEVICE_SRVNOTSUPP           | Service is not supported by the server.                                                                                                                                                   |
| 0x702 | 1794 | 0x9811 0702 | ADSERR_DEVICE_INVALIDGRP           | Invalid index group.                                                                                                                                                                      |
| 0x703 | 1795 | 0x9811 0703 | ADSERR_DEVICE_INVALIDOFFSET        | Invalid index offset.                                                                                                                                                                     |
| 0x704 | 1796 | 0x9811 0704 | ADSERR_DEVICE_INVALIDACCESS        | Reading or writing not permitted.                                                                                                                                                         |
| 0x705 | 1797 | 0x9811 0705 | ADSERR_DEVICE_INVALIDSIZE          | Parameter size not correct.                                                                                                                                                               |
| 0x706 | 1798 | 0x9811 0706 | ADSERR_DEVICE_INVALIDDATA          | Invalid data values.                                                                                                                                                                      |
| 0x707 | 1799 | 0x9811 0707 | ADSERR_DEVICE_NOTREADY             | Device is not ready to operate.                                                                                                                                                           |
| 0x708 | 1800 | 0x9811 0708 | ADSERR_DEVICE_BUSY                 | Device is busy.                                                                                                                                                                           |
| 0x709 | 1801 | 0x9811 0709 | ADSERR_DEVICE_INVALIDCONTEXT       | Invalid operating system context. This can result from use of ADS function blocks in different tasks. It may be possible to resolve this through multitasking synchronization in the PLC. |
| 0x70A | 1802 | 0x9811 070A | ADSERR_DEVICE_NOMEMORY             | Insufficient memory.                                                                                                                                                                      |
| 0x70B | 1803 | 0x9811 070B | ADSERR_DEVICE_INVALIDPARM          | Invalid parameter values.                                                                                                                                                                 |
| 0x70C | 1804 | 0x9811 070C | ADSERR_DEVICE_NOTFOUND             | Not found (files, ...).                                                                                                                                                                   |
| 0x70D | 1805 | 0x9811 070D | ADSERR_DEVICE_SYNTAX               | Syntax error in file or command.                                                                                                                                                          |
| 0x70E | 1806 | 0x9811 070E | ADSERR_DEVICE_INCOMPATIBLE         | Objects do not match.                                                                                                                                                                     |
| 0x70F | 1807 | 0x9811 070F | ADSERR_DEVICE_EXISTS               | Object already exists.                                                                                                                                                                    |
| 0x710 | 1808 | 0x9811 0710 | ADSERR_DEVICE_SYMBOLNOTFOUND       | Symbol not found.                                                                                                                                                                         |
| 0x711 | 1809 | 0x9811 0711 | ADSERR_DEVICE_SYMBOLVERSIONINVALID | Invalid symbol version. This can occur due to an online change. Create a new handle.                                                                                                      |
| 0x712 | 1810 | 0x9811 0712 | ADSERR_DEVICE_INVALIDSTATE         | Device (server) is in invalid state.                                                                                                                                                      |
| 0x713 | 1811 | 0x9811 0713 | ADSERR_DEVICE_TRANSMODENOTSUPP     | AdsTransMode not supported.                                                                                                                                                               |
| 0x714 | 1812 | 0x9811 0714 | ADSERR_DEVICE_NOTIFYHNDINVALID     | Notification handle is invalid.                                                                                                                                                           |
| 0x715 | 1813 | 0x9811 0715 | ADSERR_DEVICE_CLIENTUNKNOWN        | Notification client not registered.                                                                                                                                                       |
| 0x716 | 1814 | 0x9811 0716 | ADSERR_DEVICE_NOMOREHDLS           | No further notification handle available.                                                                                                                                                 |
| 0x717 | 1815 | 0x9811 0717 | ADSERR_DEVICE_INVALIDWATCHSIZE     | Notification size too large.                                                                                                                                                              |
| 0x718 | 1816 | 0x9811 0718 | ADSERR_DEVICE_NOTINIT              | Device not initialized.                                                                                                                                                                   |
| 0x719 | 1817 | 0x9811 0719 | ADSERR_DEVICE_TIMEOUT              | Device has a timeout.                                                                                                                                                                     |
| 0x71A | 1818 | 0x9811 071A | ADSERR_DEVICE_NOINTERFACE          | Interface query failed.                                                                                                                                                                   |
| 0x71B | 1819 | 0x9811 071B | ADSERR_DEVICE_INVALIDINTERFACE     | Wrong interface requested.                                                                                                                                                                |
| 0x71C | 1820 | 0x9811 071C | ADSERR_DEVICE_INVALIDCLSID         | Class ID is invalid.                                                                                                                                                                      |
| 0x71D | 1821 | 0x9811 071D | ADSERR_DEVICE_INVALIDOBJID         | Object ID is invalid.                                                                                                                                                                     |
| 0x71E | 1822 | 0x9811 071E | ADSERR_DEVICE_PENDING              | Request pending.                                                                                                                                                                          |
| 0x71F | 1823 | 0x9811 071F | ADSERR_DEVICE_ABORTED              | Request is aborted.                                                                                                                                                                       |
| 0x720 | 1824 | 0x9811 0720 | ADSERR_DEVICE_WARNING              | Signal warning.                                                                                                                                                                           |
| 0x721 | 1825 | 0x9811 0721 | ADSERR_DEVICE_INVALIDARRAYIDX      | Invalid array index.                                                                                                                                                                      |
| 0x722 | 1826 | 0x9811 0722 | ADSERR_DEVICE_SYMBOLNOTACTIVE      | Symbol not active.                                                                                                                                                                        |
| 0x723 | 1827 | 0x9811 0723 | ADSERR_DEVICE_ACCESSDENIED         | Access denied.                                                                                                                                                                            |
| 0x724 | 1828 | 0x9811 0724 | ADSERR_DEVICE_LICENSENOTFOUND      | Missing license.                                                                                                                                                                          |
| 0x725 | 1829 | 0x9811 0725 | ADSERR_DEVICE_LICENSEEXPIRED       | License expired.                                                                                                                                                                          |
| 0x726 | 1830 | 0x9811 0726 | ADSERR_DEVICE_LICENSEEXCEEDED      | License exceeded.                                                                                                                                                                         |
| 0x727 | 1831 | 0x9811 0727 | ADSERR_DEVICE_LICENSEINVALID       | Invalid license.                                                                                                                                                                          |
| 0x728 | 1832 | 0x9811 0728 | ADSERR_DEVICE_LICENSESYSTEMID      | License problem: System ID is invalid.                                                                                                                                                    |
| 0x729 | 1833 | 0x9811 0729 | ADSERR_DEVICE_LICENSENOTIMELIMIT   | License not limited in time.                                                                                                                                                              |
| 0x72A | 1834 | 0x9811 072A | ADSERR_DEVICE_LICENSEFUTUREISSUE   | License problem: Time in the future.                                                                                                                                                      |
| 0x72B | 1835 | 0x9811 072B | ADSERR_DEVICE_LICENSESETIMETOOLONG | License period too long.                                                                                                                                                                  |
| 0x72C | 1836 | 0x9811 072C | ADSERR_DEVICE_EXCEPTION            | Exception at system startup.                                                                                                                                                              |
| 0x72D | 1837 | 0x9811 072D | ADSERR_DEVICE_LICENSEDUPPLICATED   | License file read twice.                                                                                                                                                                  |
| 0x72E | 1838 | 0x9811 072E | ADSERR_DEVICE_SIGNATUREINVALID     | Invalid signature.                                                                                                                                                                        |
| 0x72F | 1839 | 0x9811 072F | ADSERR_DEVICE_CERTIFICATEINVALID   | Invalid certificate.                                                                                                                                                                      |
| 0x730 | 1840 | 0x9811 0730 | ADSERR_DEVICE_LICENSEOEMNOTFOUND   | Public key not known from OEM.                                                                                                                                                            |
| 0x731 | 1841 | 0x9811 0731 | ADSERR_DEVICE_LICENSERESTRICTED    | License not valid for this system ID.                                                                                                                                                     |
| 0x732 | 1842 | 0x9811 0732 | ADSERR_DEVICE_LICENSEDEMODENIED    | Demo license prohibited.                                                                                                                                                                  |
| 0x733 | 1843 | 0x9811 0733 | ADSERR_DEVICE_INVALIDFUNCID        | Invalid function ID.                                                                                                                                                                      |
| 0x734 | 1844 | 0x9811 0734 | ADSERR_DEVICE_OUTOFRANGE           | Outside the valid range.                                                                                                                                                                  |
| 0x735 | 1845 | 0x9811 0735 | ADSERR_DEVICE_INVALIDALIGNMENT     | Invalid alignment.                                                                                                                                                                        |

| Hex   | Dec  | HRESULT     | Name                          | Description                                                                                                                                                        |
|-------|------|-------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x736 | 1846 | 0x9811 0736 | ADSERR_DEVICE_LICENSEPLATFORM | Invalid platform level.                                                                                                                                            |
| 0x737 | 1847 | 0x9811 0737 | ADSERR_DEVICE_FORWARD_PL      | Context – forward to passive level.                                                                                                                                |
| 0x738 | 1848 | 0x9811 0738 | ADSERR_DEVICE_FORWARD_DL      | Context – forward to dispatch level.                                                                                                                               |
| 0x739 | 1849 | 0x9811 0739 | ADSERR_DEVICE_FORWARD_RT      | Context – forward to real-time.                                                                                                                                    |
| 0x740 | 1856 | 0x9811 0740 | ADSERR_CLIENT_ERROR           | Client error.                                                                                                                                                      |
| 0x741 | 1857 | 0x9811 0741 | ADSERR_CLIENT_INVALIDPARM     | Service contains an invalid parameter.                                                                                                                             |
| 0x742 | 1858 | 0x9811 0742 | ADSERR_CLIENT_LISTEMPTY       | Polling list is empty.                                                                                                                                             |
| 0x743 | 1859 | 0x9811 0743 | ADSERR_CLIENT_VARUSED         | Var connection already in use.                                                                                                                                     |
| 0x744 | 1860 | 0x9811 0744 | ADSERR_CLIENT_DUPLINVOKEID    | The called ID is already in use.                                                                                                                                   |
| 0x745 | 1861 | 0x9811 0745 | ADSERR_CLIENT_SYNCTIMEOUT     | Timeout has occurred – the remote terminal is not responding in the specified ADS timeout. The route setting of the remote terminal may be configured incorrectly. |
| 0x746 | 1862 | 0x9811 0746 | ADSERR_CLIENT_W32ERROR        | Error in Win32 subsystem.                                                                                                                                          |
| 0x747 | 1863 | 0x9811 0747 | ADSERR_CLIENT_TIMEOUTINVALID  | Invalid client timeout value.                                                                                                                                      |
| 0x748 | 1864 | 0x9811 0748 | ADSERR_CLIENT_PORTNOTOPEN     | Port not open.                                                                                                                                                     |
| 0x749 | 1865 | 0x9811 0749 | ADSERR_CLIENT_NOAMSADDR       | No AMS address.                                                                                                                                                    |
| 0x750 | 1872 | 0x9811 0750 | ADSERR_CLIENT_SYNCINTERNAL    | Internal error in Ads sync.                                                                                                                                        |
| 0x751 | 1873 | 0x9811 0751 | ADSERR_CLIENT_ADDHASH         | Hash table overflow.                                                                                                                                               |
| 0x752 | 1874 | 0x9811 0752 | ADSERR_CLIENT_REMOVEHASH      | Key not found in the table.                                                                                                                                        |
| 0x753 | 1875 | 0x9811 0753 | ADSERR_CLIENT_NOMORESYM       | No symbols in the cache.                                                                                                                                           |
| 0x754 | 1876 | 0x9811 0754 | ADSERR_CLIENT_SYNCRESINVALID  | Invalid response received.                                                                                                                                         |
| 0x755 | 1877 | 0x9811 0755 | ADSERR_CLIENT_SYNCPORTLOCKED  | Sync Port is locked.                                                                                                                                               |

### RTIME error codes

| Hex    | Dec  | HRESULT     | Name                      | Description                                                                               |
|--------|------|-------------|---------------------------|-------------------------------------------------------------------------------------------|
| 0x1000 | 4096 | 0x9811 1000 | RTERR_INTERNAL            | Internal error in the real-time system.                                                   |
| 0x1001 | 4097 | 0x9811 1001 | RTERR_BADTIMERPERIODS     | Timer value is not valid.                                                                 |
| 0x1002 | 4098 | 0x9811 1002 | RTERR_INVALIDTASKPTR      | Task pointer has the invalid value 0 (zero).                                              |
| 0x1003 | 4099 | 0x9811 1003 | RTERR_INVALIDSTACKPTR     | Stack pointer has the invalid value 0 (zero).                                             |
| 0x1004 | 4100 | 0x9811 1004 | RTERR_PRIOEXISTS          | The request task priority is already assigned.                                            |
| 0x1005 | 4101 | 0x9811 1005 | RTERR_NOMORETCB           | No free TCB (Task Control Block) available. The maximum number of TCBs is 64.             |
| 0x1006 | 4102 | 0x9811 1006 | RTERR_NOMORESEMAS         | No free semaphores available. The maximum number of semaphores is 64.                     |
| 0x1007 | 4103 | 0x9811 1007 | RTERR_NOMOREQUEUES        | No free space available in the queue. The maximum number of positions in the queue is 64. |
| 0x100D | 4109 | 0x9811 100D | RTERR_EXTIRQALREADYDEF    | An external synchronization interrupt is already applied.                                 |
| 0x100E | 4110 | 0x9811 100E | RTERR_EXTIRQNOTDEF        | No external sync interrupt applied.                                                       |
| 0x100F | 4111 | 0x9811 100F | RTERR_EXTIRQINSTALLFAILED | Application of the external synchronization interrupt has failed.                         |
| 0x1010 | 4112 | 0x9811 1010 | RTERR_IRQLNOTLESSOREQUAL  | Call of a service function in the wrong context                                           |
| 0x1017 | 4119 | 0x9811 1017 | RTERR_VMXNOTSUPPORTED     | Intel VT-x extension is not supported.                                                    |
| 0x1018 | 4120 | 0x9811 1018 | RTERR_VMXDISABLED         | Intel VT-x extension is not enabled in the BIOS.                                          |
| 0x1019 | 4121 | 0x9811 1019 | RTERR_VMXCONTROLSMISSING  | Missing function in Intel VT-x extension.                                                 |
| 0x101A | 4122 | 0x9811 101A | RTERR_VMXENABLEFAILS      | Activation of Intel VT-x fails.                                                           |

### TCP Winsock error codes

| Hex    | Dec   | Name            | Description                                                                                                                                                                                                                                                                              |
|--------|-------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x274C | 10060 | WSAETIMEDOUT    | A connection timeout has occurred - error while establishing the connection, because the remote terminal did not respond properly after a certain period of time, or the established connection could not be maintained because the connected host did not respond.                      |
| 0x274D | 10061 | WSAECONNREFUSED | Connection refused - no connection could be established because the target computer has explicitly rejected it. This error usually results from an attempt to connect to a service that is inactive on the external host, that is, a service for which no server application is running. |
| 0x2751 | 10065 | WSAEHOSTUNREACH | No route to host - a socket operation referred to an unavailable host.                                                                                                                                                                                                                   |

More Winsock error codes: [Win32 error codes \[► 84\]](#)

## 8.5 Win32 Error Codes

The following table provides a list of Win32 error codes.

0 [▶ [85](#)], 100 [▶ [87](#)], 200 [▶ [89](#)], 1001 [▶ [91](#)], 1100 [▶ [93](#)], 1200 [▶ [95](#)], 1400 [▶ [100](#)], 1600 [▶ [102](#)], 1800 [▶ [106](#)], 2000 [▶ [108](#)], 3000 [▶ [109](#)], 5000 [▶ [112](#)], 6000 [▶ [115](#)], 8000 [▶ [117](#)], 8500 [▶ [126](#)], 9001 [▶ [130](#)], 10004 [▶ [132](#)], 12000 [▶ [135](#)],

| Error   |             |                               | Description                                                                                  |
|---------|-------------|-------------------------------|----------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                          |                                                                                              |
| 0       | 0x00000000  | ERROR_SUCCESS                 | The operation completed successfully.                                                        |
| 1       | 0x00000001  | ERROR_INVALID_FUNCTION        | Incorrect function.                                                                          |
| 2       | 0x00000002  | ERROR_FILE_NOT_FOUND          | The system cannot find the file specified.                                                   |
| 3       | 0x00000003  | ERROR_PATH_NOT_FOUND          | The system cannot find the path specified.                                                   |
| 4       | 0x00000004  | ERROR_TOO_MANY_OPEN_FILES     | The system cannot open the file.                                                             |
| 5       | 0x00000005  | ERROR_ACCESS_DENIED           | Access is denied.                                                                            |
| 6       | 0x00000006  | ERROR_INVALID_HANDLE          | The handle is invalid.                                                                       |
| 7       | 0x00000007  | ERROR_ARENA_TRASHED           | The storage control blocks were destroyed.                                                   |
| 8       | 0x00000008  | ERROR_NOT_ENOUGH_MEMORY       | Not enough storage is available to process this command.                                     |
| 9       | 0x00000009  | ERROR_INVALID_BLOCK           | The storage control block address is invalid.                                                |
| 10      | 0x0000000A  | ERROR_BAD_ENVIRONMENT         | The environment is incorrect.                                                                |
| 11      | 0x0000000B  | ERROR_BAD_FORMAT              | An attempt was made to load a program with an incorrect format.                              |
| 12      | 0x0000000C  | ERROR_INVALID_ACCESS          | The access code is invalid.                                                                  |
| 13      | 0x0000000D  | ERROR_INVALID_DATA            | The data is invalid.                                                                         |
| 14      | 0x0000000E  | ERROR_OUTOFMEMORY             | Not enough storage is available to complete this operation.                                  |
| 15      | 0x0000000F  | ERROR_INVALID_DRIVE           | The system cannot find the drive specified.                                                  |
| 16      | 0x00000010  | ERROR_CURRENT_DIRECTORY       | The directory cannot be removed.                                                             |
| 17      | 0x00000011  | ERROR_NOT_SAME_DEVICE         | The system cannot move the file to a different disk drive.                                   |
| 18      | 0x00000012  | ERROR_NO_MORE_FILES           | There are no more files.                                                                     |
| 19      | 0x00000013  | ERROR_WRITE_PROTECT           | The media is write protected.                                                                |
| 20      | 0x00000014  | ERROR_BAD_UNIT                | The system cannot find the device specified.                                                 |
| 21      | 0x00000015  | ERROR_NOT_READY               | The device is not ready.                                                                     |
| 22      | 0x00000016  | ERROR_BAD_COMMAND             | The device does not recognize the command.                                                   |
| 23      | 0x00000017  | ERROR_CRC                     | Data error (cyclic redundancy check).                                                        |
| 24      | 0x00000018  | ERROR_BAD_LENGTH              | The program issued a command but the command length is incorrect.                            |
| 25      | 0x00000019  | ERROR_SEEK                    | The drive cannot locate a specific area or track on the disk.                                |
| 26      | 0x0000001A  | ERROR_NOT_DOS_DISK            | The specified disk or diskette cannot be accessed.                                           |
| 27      | 0x0000001B  | ERROR_SECTOR_NOT_FOUND        | The drive cannot find the sector requested.                                                  |
| 28      | 0x0000001C  | ERROR_OUT_OF_PAPER            | The printer is out of paper.                                                                 |
| 29      | 0x0000001D  | ERROR_WRITEFAULT              | The system cannot write to the specified device.                                             |
| 30      | 0x0000001E  | ERROR_READFAULT               | The system cannot read from the specified device.                                            |
| 31      | 0x0000001F  | ERROR_GEN_FAILURE             | A device attached to the system is not functioning.                                          |
| 32      | 0x00000020  | ERROR_SHARING_VIOLATION       | The process cannot access the file because it is being used by another process.              |
| 33      | 0x00000021  | ERROR_LOCK_VIOLATION          | The process cannot access the file because another process has locked a portion of the file. |
| 34      | 0x00000022  | ERROR_WRONG_DISK              | The wrong diskette is in the drive. Insert %2 (Volume Serial Number: %3) into drive %1.      |
| 36      | 0x00000024  | ERROR_SHARING_BUFFER_EXCEEDED | Too many files opened for sharing.                                                           |
| 38      | 0x00000026  | ERROR_HANDLE_EOF              | Reached the end of the file.                                                                 |
| 39      | 0x00000027  | ERROR_HANDLE_DISK_FULL        | The disk is full.                                                                            |
| 50      | 0x00000032  | ERROR_NOT_SUPPORTED           | The request is not supported.                                                                |
| 51      | 0x00000033  | ERRORREM_NOT_LIST             | The remote computer is not available.                                                        |
| 52      | 0x00000034  | ERROR_DUP_NAME                | A duplicate name exists on the network.                                                      |
| 53      | 0x00000035  | ERROR_BAD_NETPATH             | The network path was not found.                                                              |
| 54      | 0x00000036  | ERROR_NETWORK_BUSY            | The network is busy.                                                                         |
| 55      | 0x00000037  | ERROR_DEV_NOT_EXIST           | The specified network resource or device is no longer available.                             |
| 56      | 0x00000038  | ERROR_TOO_MANY_CMDS           | The network BIOS command limit has been reached.                                             |
| 57      | 0x00000039  | ERROR_ADAP_HDW_ERR            | A network adapter hardware error occurred.                                                   |

| Error   |             |                             | Description                                                                                                                                    |
|---------|-------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                        |                                                                                                                                                |
| 58      | 0x0000003A  | ERROR_BAD_NET_RESP          | The specified server cannot perform the requested operation.                                                                                   |
| 59      | 0x0000003B  | ERROR_UNEXP_NET_ERR         | An unexpected network error occurred.                                                                                                          |
| 60      | 0x0000003C  | ERROR_BADREMADAP            | The remote adapter is not compatible.                                                                                                          |
| 61      | 0x0000003D  | ERROR_PRINTQ_FULL           | The printer queue is full.                                                                                                                     |
| 62      | 0x0000003E  | ERROR_NO_SPOOL_SPACE        | Space to store the file waiting to be printed is not available on the server.                                                                  |
| 63      | 0x0000003F  | ERROR_PRINT_CANCELLED       | Your file waiting to be printed was deleted.                                                                                                   |
| 64      | 0x00000040  | ERROR_NETNAME_DELETED       | The specified network name is no longer available.                                                                                             |
| 65      | 0x00000041  | ERROR_NETWORK_ACCESS_DENIED | Network access is denied.                                                                                                                      |
| 66      | 0x00000042  | ERROR_BAD_DEV_TYPE          | The network resource type is not correct.                                                                                                      |
| 67      | 0x00000043  | ERROR_BAD_NET_NAME          | The network name cannot be found.                                                                                                              |
| 68      | 0x00000044  | ERROR_TOO_MANY_NAMES        | The name limit for the local computer network adapter card was exceeded.                                                                       |
| 69      | 0x00000045  | ERROR_TOO_MANY_SESS         | The network BIOS session limit was exceeded.                                                                                                   |
| 70      | 0x00000046  | ERROR_SHARING_PAUSED        | The remote server has been paused or is in the process of being started.                                                                       |
| 71      | 0x00000047  | ERROR_REQ_NOT_ACCEP         | No more connections can be made to this remote computer at this time because there are already as many connections as the computer can accept. |
| 72      | 0x00000048  | ERROR_REDIR_PAUSED          | The specified printer or disk device has been paused.                                                                                          |
| 80      | 0x00000050  | ERROR_FILE_EXISTS           | The file exists.                                                                                                                               |
| 82      | 0x00000052  | ERROR_CANNOT_MAKE           | The directory or file cannot be created.                                                                                                       |
| 83      | 0x00000053  | ERROR_FAIL_I24              | Fail on INT 24.                                                                                                                                |
| 84      | 0x00000054  | ERROR_OUT_OF_STRUCTURES     | Storage to process this request is not available.                                                                                              |
| 85      | 0x00000055  | ERROR_ALREADY_ASSIGNED      | The local device name is already in use.                                                                                                       |
| 86      | 0x00000056  | ERROR_INVALID_PASSWORD      | The specified network password is not correct.                                                                                                 |
| 87      | 0x00000057  | ERROR_INVALID_PARAMETER     | The parameter is incorrect.                                                                                                                    |
| 88      | 0x00000058  | ERROR_NET_WRITEFAULT        | A write fault occurred on the network.                                                                                                         |
| 89      | 0x00000059  | ERROR_NO_PROC_SLOTS         | The system cannot start another process at this time.                                                                                          |

| Error   |             |                                 | Description                                                                                      |
|---------|-------------|---------------------------------|--------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                            |                                                                                                  |
| 100     | 0x00000064  | ERROR_TOO_MANY_SEMAPHORES       | Cannot create another system semaphore.                                                          |
| 101     | 0x00000065  | ERROR_EXCL_SEM_ALREADY_OWNED    | The exclusive semaphore is owned by another process.                                             |
| 102     | 0x00000066  | ERROR_SEM_IS_SET                | The semaphore is set and cannot be closed.                                                       |
| 103     | 0x00000067  | ERROR_TOO_MANY_SEM_REQUESTS     | The semaphore cannot be set again.                                                               |
| 104     | 0x00000068  | ERROR_INVALID_AT_INTERRUPT_TIME | Cannot request exclusive semaphores at interrupt time.                                           |
| 105     | 0x00000069  | ERROR_SEM_OWNER_DIED            | The previous ownership of this semaphore has ended.                                              |
| 106     | 0x0000006A  | ERROR_SEM_USER_LIMIT            | Insert the diskette for drive %1.                                                                |
| 107     | 0x0000006B  | ERROR_DISK_CHANGE               | The program stopped because an alternate diskette was not inserted.                              |
| 108     | 0x0000006C  | ERROR_DRIVE_LOCKED              | The disk is in use or locked by another process.                                                 |
| 109     | 0x0000006D  | ERROR_BROKEN_PIPE               | The pipe has been ended.                                                                         |
| 110     | 0x0000006E  | ERROR_OPEN_FAILED               | The system cannot open the device or file specified.                                             |
| 111     | 0x0000006F  | ERROR_BUFFER_OVERFLOW           | The file name is too long.                                                                       |
| 112     | 0x00000070  | ERROR_DISK_FULL                 | There is not enough space on the disk.                                                           |
| 113     | 0x00000071  | ERROR_NO_MORE_SEARCH_HANDLES    | No more internal file identifiers available.                                                     |
| 114     | 0x00000072  | ERROR_INVALID_TARGET_HANDLE     | The target internal file identifier is incorrect.                                                |
| 117     | 0x00000075  | ERROR_INVALID_CATEGORY          | The IOCTL call made by the application program is not correct.                                   |
| 118     | 0x00000076  | ERROR_INVALID_VERIFY_SWITCH     | The verify-on-write switch parameter value is not correct.                                       |
| 119     | 0x00000077  | ERROR_BAD_DRIVER_LEVEL          | The system does not support the command requested.                                               |
| 120     | 0x00000078  | ERROR_CALL_NOT_IMPLEMENTED      | This function is not supported on this system.                                                   |
| 121     | 0x00000079  | ERROR_SEM_TIMEOUT               | The semaphore timeout period has expired.                                                        |
| 122     | 0x0000007A  | ERROR_INSUFFICIENT_BUFFER       | The data area passed to a system call is too small.                                              |
| 123     | 0x0000007B  | ERROR_INVALID_NAME              | The filename, directory name, or volume label syntax is incorrect.                               |
| 124     | 0x0000007C  | ERROR_INVALID_LEVEL             | The system call level is not correct.                                                            |
| 125     | 0x0000007D  | ERROR_NO_VOLUME_LABEL           | The disk has no volume label.                                                                    |
| 126     | 0x0000007E  | ERROR_MOD_NOT_FOUND             | The specified module could not be found.                                                         |
| 127     | 0x0000007F  | ERROR_PROC_NOT_FOUND            | The specified procedure could not be found.                                                      |
| 128     | 0x00000080  | ERROR_WAIT_NO_CHILDREN          | There are no child processes to wait for.                                                        |
| 129     | 0x00000081  | ERROR_CHILD_NOT_COMPLETE        | The %1 application cannot be run in Win32 mode.                                                  |
| 130     | 0x00000082  | ERROR_DIRECT_ACCESS_HANDLE      | Attempt to use a file handle to an open disk partition for an operation other than raw disk I/O. |
| 131     | 0x00000083  | ERROR_NEGATIVE_SEEK             | An attempt was made to move the file pointer before the beginning of the file.                   |
| 132     | 0x00000084  | ERROR_SEEK_ON_DEVICE            | The file pointer cannot be set on the specified device or file.                                  |
| 133     | 0x00000085  | ERROR_IS_JOIN_TARGET            | A JOIN or SUBST command cannot be used for a drive that contains previously joined drives.       |
| 134     | 0x00000086  | ERROR_IS_JOINED                 | An attempt was made to use a JOIN or SUBST command on a drive that has already been joined.      |
| 135     | 0x00000087  | ERROR_IS_SUBSTED                | An attempt was made to use a JOIN or SUBST command on a drive that has already been substituted. |
| 136     | 0x00000088  | ERROR_NOT_JOINED                | The system tried to delete the JOIN of a drive that is not joined.                               |
| 137     | 0x00000089  | ERROR_NOT_SUBSTED               | The system tried to delete the substitution of a drive that is not substituted.                  |
| 138     | 0x0000008A  | ERROR_JOIN_TO_JOIN              | The system tried to join a drive to a directory on a joined drive.                               |
| 139     | 0x0000008B  | ERROR_SUBST_TO_SUBST            | The system tried to substitute a drive to a directory on a substituted drive.                    |
| 140     | 0x0000008C  | ERROR_JOIN_TO_SUBST             | The system tried to join a drive to a directory on a substituted drive.                          |
| 141     | 0x0000008D  | ERROR_SUBST_TO_JOIN             | The system tried to SUBST a drive to a directory on a joined drive.                              |

| Error   |             |                                  | Description                                                                                                                  |
|---------|-------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                             |                                                                                                                              |
| 142     | 0x0000008E  | ERROR_BUSY_DRIVE                 | The system cannot perform a JOIN or SUBST at this time.                                                                      |
| 143     | 0x0000008F  | ERROR_SAME_DRIVE                 | The system cannot join or substitute a drive to or for a directory on the same drive.                                        |
| 144     | 0x00000090  | ERROR_DIR_NOT_ROOT               | The directory is not a subdirectory of the root directory.                                                                   |
| 145     | 0x00000091  | ERROR_DIR_NOT_EMPTY              | The directory is not empty.                                                                                                  |
| 146     | 0x00000092  | ERROR_IS_SUBST_PATH              | The path specified is being used in a substitute.                                                                            |
| 147     | 0x00000093  | ERROR_IS_JOIN_PATH               | Not enough resources are available to process this command.                                                                  |
| 148     | 0x00000094  | ERROR_PATH_BUSY                  | The path specified cannot be used at this time.                                                                              |
| 149     | 0x00000095  | ERROR_IS_SUBST_TARGET            | An attempt was made to join or substitute a drive for which a directory on the drive is the target of a previous substitute. |
| 150     | 0x00000096  | ERROR_SYSTEM_TRACE               | System trace information was not specified in your CONFIG.SYS file, or tracing is disallowed.                                |
| 151     | 0x00000097  | ERROR_INVALID_EVENT_COUNT        | The number of specified semaphore events for DosMuxSemWait is not correct.                                                   |
| 152     | 0x00000098  | ERROR_TOO_MANY_MUXWAITERS        | DosMuxSemWait did not execute; too many semaphores are already set.                                                          |
| 153     | 0x00000099  | ERROR_INVALID_LIST_FORMAT        | The DosMuxSemWait list is not correct.                                                                                       |
| 154     | 0x0000009A  | ERROR_LABEL_TOO_LONG             | The volume label you entered exceeds the label character limit of the target file system.                                    |
| 155     | 0x0000009B  | ERROR_TOO_MANY_TCBS              | Cannot create another thread.                                                                                                |
| 156     | 0x0000009C  | ERROR_SIGNAL_REFUSED             | The recipient process has refused the signal.                                                                                |
| 157     | 0x0000009D  | ERROR_DISCARDED                  | The segment is already discarded and cannot be locked.                                                                       |
| 158     | 0x0000009E  | ERROR_NOT_LOCKED                 | The segment is already unlocked.                                                                                             |
| 159     | 0x0000009F  | ERROR_BAD_THREADID_ADDR          | The address for the thread ID is not correct.                                                                                |
| 160     | 0x000000A0  | ERROR_BAD_ARGUMENTS              | The argument string passed to DosExecPgm is not correct.                                                                     |
| 161     | 0x000000A1  | ERROR_BAD_PATHNAME               | The specified path is invalid.                                                                                               |
| 162     | 0x000000A2  | ERROR_SIGNAL_PENDING             | A signal is already pending.                                                                                                 |
| 164     | 0x000000A4  | ERROR_MAX_THREADS_REACHED        | No more threads can be created in the system.                                                                                |
| 167     | 0x000000A7  | ERROR_LOCK_FAILED                | Unable to lock a region of a file.                                                                                           |
| 170     | 0x000000AA  | ERROR_BUSY                       | The requested resource is in use.                                                                                            |
| 173     | 0x000000AD  | ERROR_CANCEL_VIOLATION           | A lock request was not outstanding for the supplied cancel region.                                                           |
| 174     | 0x000000AE  | ERROR_ATOMIC_LOCKS_NOT_SUPPORTED | The file system does not support atomic changes to the lock type.                                                            |
| 180     | 0x000000B4  | ERROR_INVALID_SEGMENT_NUMBER     | The system detected a segment number that was not correct.                                                                   |
| 182     | 0x000000B6  | ERROR_INVALID_ORDINAL            | The operating system cannot run %1.                                                                                          |
| 183     | 0x000000B7  | ERROR_ALREADY_EXISTS             | Cannot create a file when that file already exists.                                                                          |
| 186     | 0x000000BA  | ERROR_INVALID_FLAG_NUMBER        | The flag passed is not correct.                                                                                              |
| 187     | 0x000000BB  | ERROR_SEM_NOT_FOUND              | The specified system semaphore name was not found.                                                                           |
| 188     | 0x000000BC  | ERROR_INVALID_STARTING_CODESEG   | The operating system cannot run %1.                                                                                          |
| 189     | 0x000000BD  | ERROR_INVALID_STACKSEG           | The operating system cannot run %1.                                                                                          |
| 190     | 0x000000BE  | ERROR_INVALID_MODULETYPE         | The operating system cannot run %1.                                                                                          |
| 191     | 0x000000BF  | ERROR_INVALID_EXE_SIGNATURE      | Cannot run %1 in Win32 mode.                                                                                                 |
| 192     | 0x000000C0  | ERROR_EXE_MARKED_INVALID         | The operating system cannot run %1.                                                                                          |
| 193     | 0x000000C1  | ERROR_BAD_EXE_FORMAT             | %1 is not a valid Win32 application.                                                                                         |
| 194     | 0x000000C2  | ERROR_ITERATED_DATA_EXCEEDS_64k  | The operating system cannot run %1.                                                                                          |
| 195     | 0x000000C3  | ERROR_INVALID_MIMALLOCSIZE       | The operating system cannot run %1.                                                                                          |
| 196     | 0x000000C4  | ERROR_DYNLINK_FROM_INVALID_RING  | The operating system cannot run this application program.                                                                    |
| 197     | 0x000000C5  | ERROR_IOPL_NOT_ENABLED           | The operating system is not presently configured to run this application.                                                    |
| 198     | 0x000000C6  | ERROR_INVALID_SEGDPL             | The operating system cannot run %1.                                                                                          |
| 199     | 0x000000C7  | ERROR_AUTODATASEG_EXCEEDS_64k    | The operating system cannot run this application program.                                                                    |

| Error   |             |                                 | Description                                                                                                           |
|---------|-------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                            |                                                                                                                       |
| 200     | 0x000000C8  | ERROR_RING2SEG_MUST_BE_MOVABLE  | The code segment cannot be greater than or equal to 64K.                                                              |
| 201     | 0x000000C9  | ERROR_RELOC_CHAIN_XEEDS_SEGLIM  | The operating system cannot run %1.                                                                                   |
| 202     | 0x000000CA  | ERROR_INFLOOP_IN_RELOC_CHAIN    | The operating system cannot run %1.                                                                                   |
| 203     | 0x000000CB  | ERROR_ENVVAR_NOT_FOUND          | The system could not find the environment option that was entered.                                                    |
| 205     | 0x000000CD  | ERROR_NO_SIGNAL_SENT            | No process in the command subtree has a signal handler.                                                               |
| 206     | 0x000000CE  | ERROR_FILENAME_EXCED_RANGE      | The filename or extension is too long.                                                                                |
| 207     | 0x000000CF  | ERROR_RING2_STACK_IN_USE        | The ring 2 stack is in use.                                                                                           |
| 208     | 0x000000D0  | ERROR_META_EXPANSION_TOO_LONG   | The global filename characters, * or ?, are entered incorrectly or too many global filename characters are specified. |
| 209     | 0x000000D1  | ERROR_INVALID_SIGNAL_NUMBER     | The signal being posted is not correct.                                                                               |
| 210     | 0x000000D2  | ERROR_THREAD_1_INACTIVE         | The signal handler cannot be set.                                                                                     |
| 212     | 0x000000D4  | ERROR_LOCKED                    | The segment is locked and cannot be reallocated.                                                                      |
| 214     | 0x000000D6  | ERROR_TOO_MANY_MODULES          | Too many dynamic-link modules are attached to this program or dynamic-link module.                                    |
| 215     | 0x000000D7  | ERROR_NESTING_NOT_ALLOWED       | Cannot nest calls to LoadModule.                                                                                      |
| 216     | 0x000000D8  | ERROR_EXE_MACHINE_TYPE_MISMATCH | The image file %1 is valid, but is for a machine type other than the current machine.                                 |
| 230     | 0x000000E6  | ERROR_BAD_PIPE                  | The pipe state is invalid.                                                                                            |
| 231     | 0x000000E7  | ERROR_PIPE_BUSY                 | All pipe instances are busy.                                                                                          |
| 232     | 0x000000E8  | ERROR_NO_DATA                   | The pipe is being closed.                                                                                             |
| 233     | 0x000000E9  | ERROR_PIPE_NOT_CONNECTED        | No process is on the other end of the pipe.                                                                           |
| 234     | 0x000000EA  | ERROR_MORE_DATA                 | More data is available.                                                                                               |
| 240     | 0x000000F0  | ERROR_VC_DISCONNECTED           | The session was canceled.                                                                                             |
| 254     | 0x000000FE  | ERROR_INVALID_EA_NAME           | The specified extended attribute name was invalid.                                                                    |
| 255     | 0x000000FF  | ERROR_EA_LIST_INCONSISTENT      | The extended attributes are inconsistent.                                                                             |
| 258     | 0x00000102  | WAIT_TIMEOUT                    | The wait operation timed out.                                                                                         |
| 259     | 0x00000103  | ERROR_NO_MORE_ITEMS             | No more data is available.                                                                                            |
| 266     | 0x0000010A  | ERROR_CANNOT_COPY               | The copy functions cannot be used.                                                                                    |
| 267     | 0x0000010B  | ERROR_DIRECTORY                 | The directory name is invalid.                                                                                        |
| 275     | 0x00000113  | ERROR_EAS_DIDNT_FIT             | The extended attributes did not fit in the buffer.                                                                    |
| 276     | 0x00000114  | ERROR_EA_FILE_CORRUPT           | The extended attribute file on the mounted file system is corrupt.                                                    |
| 277     | 0x00000115  | ERROR_EA_TABLE_FULL             | The extended attribute table file is full.                                                                            |
| 278     | 0x00000116  | ERROR_INVALID_EA_HANDLE         | The specified extended attribute handle is invalid.                                                                   |
| 282     | 0x0000011A  | ERROR_EAS_NOT_SUPPORTED         | The mounted file system does not support extended attributes.                                                         |
| 288     | 0x00000120  | ERROR_NOT_OWNER                 | Attempt to release mutex not owned by caller.                                                                         |
| 298     | 0x0000012A  | ERROR_TOO_MANY_POSTS            | Too many posts were made to a semaphore.                                                                              |
| 299     | 0x0000012B  | ERROR_PARTIAL_COPY              | Only part of a ReadProcessMemory or WriteProcessMemory request was completed.                                         |
| 300     | 0x0000012C  | ERROR_OPLOCK_NOT_GRANTED        | The oplock request is denied.                                                                                         |
| 301     | 0x0000012D  | ERROR_INVALID_OPLOCK_PROTOCOL   | An invalid oplock acknowledgment was received by the system.                                                          |
| 302     | 0x0000012E  | ERROR_DISK_TOO_FRAGMENTED       | The volume is too fragmented to complete this operation.                                                              |
| 303     | 0x0000012F  | ERROR_DELETE_PENDING            | The file cannot be opened because it is in the process of being deleted.                                              |
| 317     | 0x0000013D  | ERROR_MR_MID_NOT_FOUND          | The system cannot find message text for message number 0x%1 in the message file for %2.                               |
| 487     | 0x000001E7  | ERROR_INVALID_ADDRESS           | Attempt to access invalid address.                                                                                    |
| 534     | 0x00000216  | ERROR_ARITHMETIC_OVERFLOW       | Arithmetic result exceeded 32 bits.                                                                                   |
| 535     | 0x00000217  | ERROR_PIPE_CONNECTED            | There is a process on other end of the pipe.                                                                          |
| 536     | 0x00000218  | ERROR_PIPE_LISTENING            | Waiting for a process to open the other end of the pipe.                                                              |
| 994     | 0x000003E2  | ERROR_EA_ACCESS_DENIED          | Access to the extended attribute was denied.                                                                          |

| Error   |             |                         | Description                                                                                   |
|---------|-------------|-------------------------|-----------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                    |                                                                                               |
| 995     | 0x000003E3  | ERROR_OPERATION_ABORTED | The I/O operation has been aborted because of either a thread exit or an application request. |
| 996     | 0x000003E4  | ERROR_IO_INCOMPLETE     | Overlapped I/O event is not in a signaled state.                                              |
| 997     | 0x000003E5  | ERROR_IO_PENDING        | Overlapped I/O operation is in progress.                                                      |
| 998     | 0x000003E6  | ERROR_NOACCESS          | Invalid access to memory location.                                                            |
| 999     | 0x000003E7  | ERROR_SWAPERROR         | Error performing inpage operation.                                                            |

| Error   |             |                                  | Description                                                                                                                                                                                                                                              |
|---------|-------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                             |                                                                                                                                                                                                                                                          |
| 1001    | 0x000003E9  | ERROR_STACK_OVERFLOW             | Recursion too deep; the stack overflowed.                                                                                                                                                                                                                |
| 1002    | 0x000003EA  | ERROR_INVALID_MESSAGE            | The window cannot act on the sent message.                                                                                                                                                                                                               |
| 1003    | 0x000003EB  | ERROR_CAN_NOT_COMPLETE           | Cannot complete this function.                                                                                                                                                                                                                           |
| 1004    | 0x000003EC  | ERROR_INVALID_FLAGS              | Invalid flags.                                                                                                                                                                                                                                           |
| 1005    | 0x000003ED  | ERROR_UNRECOGNIZED_VOLUME        | The volume does not contain a recognized file system. Please make sure that all required file system drivers are loaded and that the volume is not corrupted.                                                                                            |
| 1006    | 0x000003EE  | ERROR_FILE_INVALID               | The volume for a file has been externally altered so that the opened file is no longer valid.                                                                                                                                                            |
| 1007    | 0x000003EF  | ERROR_FULLSCREEN_MODE            | The requested operation cannot be performed in full-screen mode.                                                                                                                                                                                         |
| 1008    | 0x000003F0  | ERROR_NO_TOKEN                   | An attempt was made to reference a token that does not exist.                                                                                                                                                                                            |
| 1009    | 0x000003F1  | ERROR_BADDATABASE                | The configuration registry database is corrupt.                                                                                                                                                                                                          |
| 1010    | 0x000003F2  | ERROR_BADKEY                     | The configuration registry key is invalid.                                                                                                                                                                                                               |
| 1011    | 0x000003F3  | ERROR_CANTOPEN                   | The configuration registry key could not be opened.                                                                                                                                                                                                      |
| 1012    | 0x000003F4  | ERROR_CANTREAD                   | The configuration registry key could not be read.                                                                                                                                                                                                        |
| 1013    | 0x000003F5  | ERROR_CANTWRITE                  | The configuration registry key could not be written.                                                                                                                                                                                                     |
| 1014    | 0x000003F6  | ERROR_REGISTRY_RECOVERED         | One of the files in the registry database had to be recovered by use of a log or alternate copy. The recovery was successful.                                                                                                                            |
| 1015    | 0x000003F7  | ERROR_REGISTRY_CORRUPT           | The registry is corrupted. The structure of one of the files containing registry data is corrupted, or the system's memory image of the file is corrupted, or the file could not be recovered because the alternate copy or log was absent or corrupted. |
| 1016    | 0x000003F8  | ERROR_REGISTRY_IO_FAILED         | An I/O operation initiated by the registry failed unrecoverably. The registry could not read in, or write out, or flush, one of the files that contain the system's image of the registry.                                                               |
| 1017    | 0x000003F9  | ERROR_NOT_REGISTRY_FILE          | The system has attempted to load or restore a file into the registry, but the specified file is not in a registry file format.                                                                                                                           |
| 1018    | 0x000003FA  | ERROR_KEY_DELETED                | Illegal operation attempted on a registry key that has been marked for deletion.                                                                                                                                                                         |
| 1019    | 0x000003FB  | ERROR_NO_LOG_SPACE               | System could not allocate the required space in a registry log.                                                                                                                                                                                          |
| 1020    | 0x000003FC  | ERROR_KEY_HAS_CHILDREN           | Cannot create a symbolic link in a registry key that already has subkeys or values.                                                                                                                                                                      |
| 1021    | 0x000003FD  | ERROR_CHILD_MUST_BE_VOLATILE     | Cannot create a stable subkey under a volatile parent key.                                                                                                                                                                                               |
| 1022    | 0x000003FE  | ERROR_NOTIFY_ENUM_DIR            | A notify change request is being completed and the information is not being returned in the caller's buffer. The caller now needs to enumerate the files to find the changes.                                                                            |
| 1051    | 0x0000041B  | ERROR_DEPENDENT_SERVICES_RUNNING | A stop control has been sent to a service that other running services are dependent on.                                                                                                                                                                  |
| 1052    | 0x0000041C  | ERROR_INVALID_SERVICE_CONTROL    | The requested control is not valid for this service.                                                                                                                                                                                                     |
| 1053    | 0x0000041D  | ERROR_SERVICE_REQUEST_TIMEOUT    | The service did not respond to the start or control request in a timely fashion.                                                                                                                                                                         |
| 1054    | 0x0000041E  | ERROR_SERVICE_NO_THREAD          | A thread could not be created for the service.                                                                                                                                                                                                           |
| 1055    | 0x0000041F  | ERROR_SERVICE_DATABASE_LOCKED    | The service database is locked.                                                                                                                                                                                                                          |
| 1056    | 0x00000420  | ERROR_SERVICE_ALREADY_RUNNING    | An instance of the service is already running.                                                                                                                                                                                                           |
| 1057    | 0x00000421  | ERROR_INVALID_SERVICE_ACCOUNT    | The account name is invalid or does not exist, or the password is invalid for the account name specified.                                                                                                                                                |
| 1058    | 0x00000422  | ERROR_SERVICE_DISABLED           | The service cannot be started, either because it is disabled or because it has no enabled devices associated with it.                                                                                                                                    |
| 1059    | 0x00000423  | ERROR_CIRCULAR_DEPENDENCY        | Circular service dependency was specified.                                                                                                                                                                                                               |
| 1060    | 0x00000424  | ERROR_SERVICE_DOES_NOT_EXIST     | The specified service does not exist as an installed service.                                                                                                                                                                                            |

| Error   |             |                                         | Description                                                                                                                                                                        |
|---------|-------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                    |                                                                                                                                                                                    |
| 1061    | 0x00000425  | ERROR_SERVICE_CANNOT_ACCEPT_CTRL        | The service cannot accept control messages at this time.                                                                                                                           |
| 1062    | 0x00000426  | ERROR_SERVICE_NOT_ACTIVE                | The service has not been started.                                                                                                                                                  |
| 1063    | 0x00000427  | ERROR_FAILED_SERVICE_CONTROLLER_CONNECT | The service process could not connect to the service controller.                                                                                                                   |
| 1064    | 0x00000428  | ERROR_EXCEPTION_IN_SERVICE              | An exception occurred in the service when handling the control request.                                                                                                            |
| 1065    | 0x00000429  | ERROR_DATABASE_DOES_NOT_EXIST           | The database specified does not exist.                                                                                                                                             |
| 1066    | 0x0000042A  | ERROR_SERVICE_SPECIFIC_ERROR            | The service has returned a service-specific error code.                                                                                                                            |
| 1067    | 0x0000042B  | ERROR_PROCESS_ABORTED                   | The process terminated unexpectedly.                                                                                                                                               |
| 1068    | 0x0000042C  | ERROR_SERVICE_DEPENDENCY_FAIL           | The dependency service or group failed to start.                                                                                                                                   |
| 1069    | 0x0000042D  | ERROR_SERVICE_LOGON_FAILED              | The service did not start due to a logon failure.                                                                                                                                  |
| 1070    | 0x0000042E  | ERROR_SERVICE_START_HANG                | After starting, the service hung in a start-pending state.                                                                                                                         |
| 1071    | 0x0000042F  | ERROR_INVALID_SERVICE_LOCK              | The specified service database lock is invalid.                                                                                                                                    |
| 1072    | 0x00000430  | ERROR_SERVICE_MARKED_FOR_DELETE         | The specified service has been marked for deletion.                                                                                                                                |
| 1073    | 0x00000431  | ERROR_SERVICE_EXISTS                    | The specified service already exists.                                                                                                                                              |
| 1074    | 0x00000432  | ERROR_ALREADY_RUNNING_LKG               | The system is currently running with the last-known-good configuration.                                                                                                            |
| 1075    | 0x00000433  | ERROR_SERVICE_DEPENDENCY_DELETED        | The dependency service does not exist or has been marked for deletion.                                                                                                             |
| 1076    | 0x00000434  | ERROR_BOOT_ALREADY_ACCEPTED             | The current boot has already been accepted for use as the last-known-good control set.                                                                                             |
| 1077    | 0x00000435  | ERROR_SERVICE_NEVER_STARTED             | No attempts to start the service have been made since the last boot.                                                                                                               |
| 1078    | 0x00000436  | ERROR_DUPLICATE_SERVICE_NAME            | The name is already in use as either a service name or a service display name.                                                                                                     |
| 1079    | 0x00000437  | ERROR_DIFFERENT_SERVICE_ACCOUNT         | The account specified for this service is different from the account specified for other services running in the same process.                                                     |
| 1080    | 0x00000438  | ERROR_CANNOT_DETECT_DRIVER_FAILURE      | Failure actions can only be set for Win32 services, not for drivers.                                                                                                               |
| 1081    | 0x00000439  | ERROR_CANNOT_DETECT_PROCESS_ABORT       | This service runs in the same process as the service control manager. Therefore, the service control manager cannot take action if this service's process terminates unexpectedly. |
| 1082    | 0x0000043A  | ERROR_NO_RECOVERY_PROGRAM               | No recovery program has been configured for this service.                                                                                                                          |
| 1083    | 0x0000043B  | ERROR_SERVICE_NOT_IN_EXE                | The executable program that this service is configured to run in does not implement the service.                                                                                   |
| 1084    | 0x0000043C  | ERROR_NOT_SAFEBOOT_SERVICE              | This service cannot be started in Safe Mode.                                                                                                                                       |

| Error   |             |                                | Description                                                                                                                                              |
|---------|-------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                           |                                                                                                                                                          |
| 1100    | 0x0000044C  | ERROR_END_OF_MEDIA             | The physical end of the tape has been reached.                                                                                                           |
| 1101    | 0x0000044D  | ERROR_FILEMARK_DETECTED        | A tape access reached a filemark.                                                                                                                        |
| 1102    | 0x0000044E  | ERROR_BEGINNING_OF_MEDIA       | The beginning of the tape or a partition was encountered.                                                                                                |
| 1103    | 0x0000044F  | ERROR_SETMARK_DETECTED         | A tape access reached the end of a set of files.                                                                                                         |
| 1104    | 0x00000450  | ERROR_NO_DATA_DETECTED         | No more data is on the tape.                                                                                                                             |
| 1105    | 0x00000451  | ERROR_PARTITION_FAILURE        | Tape could not be partitioned.                                                                                                                           |
| 1106    | 0x00000452  | ERROR_INVALID_BLOCK_LENGTH     | When accessing a new tape of a multivolume partition, the current block size is incorrect.                                                               |
| 1107    | 0x00000453  | ERROR_DEVICE_NOT_PARTITIONED   | Tape partition information could not be found when loading a tape.                                                                                       |
| 1108    | 0x00000454  | ERROR_UNABLE_TO_LOCK_MEDIA     | Unable to lock the media eject mechanism.                                                                                                                |
| 1109    | 0x00000455  | ERROR_UNABLE_TO_UNLOAD_MEDIA   | Unable to unload the media.                                                                                                                              |
| 1110    | 0x00000456  | ERROR_MEDIA_CHANGED            | The media in the drive may have changed.                                                                                                                 |
| 1111    | 0x00000457  | ERROR_BUS_RESET                | The I/O bus was reset.                                                                                                                                   |
| 1112    | 0x00000458  | ERROR_NO_MEDIA_IN_DRIVE        | No media in drive.                                                                                                                                       |
| 1113    | 0x00000459  | ERROR_NO_UNICODE_TRANSLATION   | No mapping for the Unicode character exists in the target multi-byte code page.                                                                          |
| 1114    | 0x0000045A  | ERROR_DLL_INIT_FAILED          | A dynamic link library (DLL) initialization routine failed.                                                                                              |
| 1115    | 0x0000045B  | ERROR_SHUTDOWN_IN_PROGRESS     | A system shutdown is in progress.                                                                                                                        |
| 1116    | 0x0000045C  | ERROR_NO_SHUTDOWN_IN_PROGRESS  | Unable to abort the system shutdown because no shutdown was in progress.                                                                                 |
| 1117    | 0x0000045D  | ERROR_IO_DEVICE                | The request could not be performed because of an I/O device error.                                                                                       |
| 1118    | 0x0000045E  | ERROR_SERIAL_NO_DEVICE         | No serial device was successfully initialized. The serial driver will unload.                                                                            |
| 1119    | 0x0000045F  | ERROR_IRQ_BUSY                 | Unable to open a device that was sharing an interrupt request (IRQ) with other devices. At least one other device that uses that IRQ was already opened. |
| 1120    | 0x00000460  | ERROR_MORE_WRITES              | A serial I/O operation was completed by another write to the serial port. (The IOCTL_SERIAL_XOFF_COUNTER reached zero.)                                  |
| 1121    | 0x00000461  | ERROR_COUNTER_TIMEOUT          | A serial I/O operation completed because the timeout period expired. (The IOCTL_SERIAL_XOFF_COUNTER did not reach zero.)                                 |
| 1122    | 0x00000462  | ERROR_FLOPPY_ID_MARK_NOT_FOUND | No ID address mark was found on the floppy disk.                                                                                                         |
| 1123    | 0x00000463  | ERROR_FLOPPY_WRONG_CYLINDER    | Mismatch between the floppy disk sector ID field and the floppy disk controller track address.                                                           |
| 1124    | 0x00000464  | ERROR_FLOPPY_UNKNOWN_ERROR     | The floppy disk controller reported an error that is not recognized by the floppy disk driver.                                                           |
| 1125    | 0x00000465  | ERROR_FLOPPY_BAD_REGISTERS     | The floppy disk controller returned inconsistent results in its registers.                                                                               |
| 1126    | 0x00000466  | ERROR_DISK recalibrate FAILED  | While accessing the hard disk, a recalibrate operation failed, even after retries.                                                                       |
| 1127    | 0x00000467  | ERROR_DISK_OPERATION FAILED    | While accessing the hard disk, a disk operation failed even after retries.                                                                               |
| 1128    | 0x00000468  | ERROR_DISK_RESET FAILED        | While accessing the hard disk, a disk controller reset was needed, but even that failed.                                                                 |
| 1129    | 0x00000469  | ERROR_EOM_OVERFLOW             | Physical end of tape encountered.                                                                                                                        |
| 1130    | 0x0000046A  | ERROR_NOT_ENOUGH_SERVER_MEMORY | Not enough server storage is available to process this command.                                                                                          |
| 1131    | 0x0000046B  | ERROR_POSSIBLE_DEADLOCK        | A potential deadlock condition has been detected.                                                                                                        |
| 1132    | 0x0000046C  | ERROR_MAPPED_ALIGNMENT         | The base address or the file offset specified does not have the proper alignment.                                                                        |
| 1140    | 0x00000474  | ERROR_SET_POWER_STATE_VETOED   | An attempt to change the system power state was vetoed by another application or driver.                                                                 |
| 1141    | 0x00000475  | ERROR_SET_POWER_STATE FAILED   | The system BIOS failed an attempt to change the system power state.                                                                                      |
| 1142    | 0x00000476  | ERROR_TOO_MANY_LINKS           | An attempt was made to create more links on a file than the file system supports.                                                                        |
| 1150    | 0x0000047E  | ERROR_OLD_WIN_VERSION          | The specified program requires a newer version of Windows.                                                                                               |

| Error   |             |                                      | Description                                                                                                                     |
|---------|-------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                 |                                                                                                                                 |
| 1151    | 0x0000047F  | ERROR_APP_WRONG_OS                   | The specified program is not a Windows or MS-DOS program.                                                                       |
| 1152    | 0x00000480  | ERROR_SINGLE_INSTANCE_APP            | Cannot start more than one instance of the specified program.                                                                   |
| 1153    | 0x00000481  | ERROR_RMODE_APP                      | The specified program was written for an earlier version of Windows.                                                            |
| 1154    | 0x00000482  | ERROR_INVALID_DLL                    | One of the library files needed to run this application is damaged.                                                             |
| 1155    | 0x00000483  | ERROR_NO_ASSOCIATION                 | No application is associated with the specified file for this operation.                                                        |
| 1156    | 0x00000484  | ERROR_DDE_FAIL                       | An error occurred in sending the command to the application.                                                                    |
| 1157    | 0x00000485  | ERROR_DLL_NOT_FOUND                  | One of the library files needed to run this application cannot be found.                                                        |
| 1158    | 0x00000486  | ERROR_NO_MORE_USER_HANDLES           | The current process has used all of its system allowance of handles for Window Manager objects.                                 |
| 1159    | 0x00000487  | ERROR_MESSAGE_SYNC_ONLY              | The message can be used only with synchronous operations.                                                                       |
| 1160    | 0x00000488  | ERROR_SOURCE_ELEMENT_EMPTY           | The indicated source element has no media.                                                                                      |
| 1161    | 0x00000489  | ERROR_DESTINATION_ELEMENT_FULL       | The indicated destination element already contains media.                                                                       |
| 1162    | 0x0000048A  | ERROR_ILLEGAL_ELEMENT_ADDRESS        | The indicated element does not exist.                                                                                           |
| 1163    | 0x0000048B  | ERROR_MAGAZINE_NOT_PRESENT           | The indicated element is part of a magazine that is not present.                                                                |
| 1164    | 0x0000048C  | ERROR_DEVICE_REINITIALIZATION_NEEDED | The indicated device requires reinitialization due to hardware errors.                                                          |
| 1165    | 0x0000048D  | ERROR_DEVICE_REQUIRES_CLEANING       | The device has indicated that cleaning is required before further operations are attempted.                                     |
| 1166    | 0x0000048E  | ERROR_DEVICE_DOOR_OPEN               | The device has indicated that its door is open.                                                                                 |
| 1167    | 0x0000048F  | ERROR_DEVICE_NOT_CONNECTED           | The device is not connected.                                                                                                    |
| 1168    | 0x00000490  | ERROR_NOT_FOUND                      | Element not found.                                                                                                              |
| 1169    | 0x00000491  | ERROR_NO_MATCH                       | There was no match for the specified key in the index.                                                                          |
| 1170    | 0x00000492  | ERROR_SET_NOT_FOUND                  | The property set specified does not exist on the object.                                                                        |
| 1171    | 0x00000493  | ERROR_POINT_NOT_FOUND                | The point passed to GetMouseMovePointsEx is not in the buffer.                                                                  |
| 1172    | 0x00000494  | ERROR_NO_TRACKING_SERVICE            | The tracking (workstation) service is not running.                                                                              |
| 1173    | 0x00000495  | ERROR_NO_VOLUME_ID                   | The Volume ID could not be found.                                                                                               |
| 1175    | 0x00000497  | ERROR_UNABLE_TO_REMOVE_REPLACED      | Unable to remove the file to be replaced.                                                                                       |
| 1176    | 0x00000498  | ERROR_UNABLE_TO_MOVE REPLACEMENT     | Unable to move the replacement file to the file to be replaced. The file to be replaced has retained its original name.         |
| 1177    | 0x00000499  | ERROR_UNABLE_TO_MOVE REPLACEMENT_2   | Unable to move the replacement file to the file to be replaced. The file to be replaced has been renamed using the backup name. |
| 1178    | 0x0000049A  | ERROR_JOURNAL_DELETE_IN_PROGRESS     | The volume change journal is being deleted.                                                                                     |
| 1179    | 0x0000049B  | ERROR_JOURNAL_NOT_ACTIVE             | The volume change journal is not active.                                                                                        |
| 1180    | 0x0000049C  | ERROR_POTENTIAL_FILE_FOUND           | A file was found, but it may not be the correct file.                                                                           |
| 1181    | 0x0000049D  | ERROR_JOURNAL_ENTRY_DELETED          | The journal entry has been deleted from the journal.                                                                            |

| Error   |             |                                     | Description                                                                                                                         |
|---------|-------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                |                                                                                                                                     |
| 1200    | 0x000004B0  | ERROR_BAD_DEVICE                    | The specified device name is invalid.                                                                                               |
| 1201    | 0x000004B1  | ERROR_CONNECTION_UNAVAIL            | The device is not currently connected but it is a remembered connection.                                                            |
| 1202    | 0x000004B2  | ERROR_DEVICE_ALREADY_REMEMBERED     | The local device name has a remembered connection to another network resource.                                                      |
| 1203    | 0x000004B3  | ERROR_NO_NET_OR_BAD_PATH            | No network provider accepted the given network path.                                                                                |
| 1204    | 0x000004B4  | ERROR_BAD_PROVIDER                  | The specified network provider name is invalid.                                                                                     |
| 1205    | 0x000004B5  | ERROR_CANNOT_OPEN_PROFILE           | Unable to open the network connection profile.                                                                                      |
| 1206    | 0x000004B6  | ERROR_BAD_PROFILE                   | The network connection profile is corrupted.                                                                                        |
| 1207    | 0x000004B7  | ERROR_NOT_CONTAINER                 | Cannot enumerate a noncontainer.                                                                                                    |
| 1208    | 0x000004B8  | ERROR_EXTENDED_ERROR                | An extended error has occurred.                                                                                                     |
| 1209    | 0x000004B9  | ERROR_INVALID_GROUPNAME             | The format of the specified group name is invalid.                                                                                  |
| 1210    | 0x000004BA  | ERROR_INVALID_COMPUTERNAME          | The format of the specified computer name is invalid.                                                                               |
| 1211    | 0x000004BB  | ERROR_INVALID_EVENTNAME             | The format of the specified event name is invalid.                                                                                  |
| 1212    | 0x000004BC  | ERROR_INVALID_DOMAINNAME            | The format of the specified domain name is invalid.                                                                                 |
| 1213    | 0x000004BD  | ERROR_INVALID_SERVICENAME           | The format of the specified service name is invalid.                                                                                |
| 1214    | 0x000004BE  | ERROR_INVALID_NETNAME               | The format of the specified network name is invalid.                                                                                |
| 1215    | 0x000004BF  | ERROR_INVALID_SHARENAME             | The format of the specified share name is invalid.                                                                                  |
| 1216    | 0x000004C0  | ERROR_INVALID_PASSWORDNAME          | The format of the specified password is invalid.                                                                                    |
| 1217    | 0x000004C1  | ERROR_INVALID_MESSAGENAME           | The format of the specified message name is invalid.                                                                                |
| 1218    | 0x000004C2  | ERROR_INVALID_MESSAGEDEST           | The format of the specified message destination is invalid.                                                                         |
| 1219    | 0x000004C3  | ERROR_SESSION_CREDENTIAL_CONFLICT   | The credentials supplied conflict with an existing set of credentials.                                                              |
| 1220    | 0x000004C4  | ERROR_REMOTE_SESSION_LIMIT_EXCEEDED | An attempt was made to establish a session to a network server, but there are already too many sessions established to that server. |
| 1221    | 0x000004C5  | ERROR_DUP_DOMAINNAME                | The workgroup or domain name is already in use by another computer on the network.                                                  |
| 1222    | 0x000004C6  | ERROR_NO_NETWORK                    | The network is not present or not started.                                                                                          |
| 1223    | 0x000004C7  | ERROR_CANCELLED                     | The operation was canceled by the user.                                                                                             |
| 1224    | 0x000004C8  | ERROR_USER_MAPPED_FILE              | The requested operation cannot be performed on a file with a user-mapped section open.                                              |
| 1225    | 0x000004C9  | ERROR_CONNECTION_REFUSED            | The remote system refused the network connection.                                                                                   |
| 1226    | 0x000004CA  | ERROR_GRACEFUL_DISCONNECT           | The network connection was gracefully closed.                                                                                       |
| 1227    | 0x000004CB  | ERROR_ADDRESS_ALREADY_ASSOCIATED    | The network transport endpoint already has an address associated with it.                                                           |
| 1228    | 0x000004CC  | ERROR_ADDRESS_NOT_ASSOCIATED        | An address has not yet been associated with the network endpoint.                                                                   |
| 1229    | 0x000004CD  | ERROR_CONNECTION_INVALID            | An operation was attempted on a nonexistent network connection.                                                                     |
| 1230    | 0x000004CE  | ERROR_CONNECTION_ACTIVE             | An invalid operation was attempted on an active network connection.                                                                 |
| 1231    | 0x000004CF  | ERROR_NETWORK_UNREACHABLE           | The network location cannot be reached. For information about network troubleshooting, see Windows Help.                            |
| 1232    | 0x000004D0  | ERROR_HOST_UNREACHABLE              | The network location cannot be reached. For information about network troubleshooting, see Windows Help.                            |
| 1233    | 0x000004D1  | ERROR_PROTOCOL_UNREACHABLE          | The network location cannot be reached. For information about network troubleshooting, see Windows Help.                            |
| 1234    | 0x000004D2  | ERROR_PORT_UNREACHABLE              | No service is operating at the destination network endpoint on the remote system.                                                   |
| 1235    | 0x000004D3  | ERROR_REQUEST_ABORTED               | The request was aborted.                                                                                                            |
| 1236    | 0x000004D4  | ERROR_CONNECTION_ABORTED            | The network connection was aborted by the local system.                                                                             |

| Error   |             |                                   | Description                                                                                                                               |
|---------|-------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                              |                                                                                                                                           |
| 1237    | 0x000004D5  | ERROR_RETRY                       | The operation could not be completed. A retry should be performed.                                                                        |
| 1238    | 0x000004D6  | ERROR_CONNECTION_COUNT_LIMIT      | A connection to the server could not be made because the limit on the number of concurrent connections for this account has been reached. |
| 1239    | 0x000004D7  | ERROR_LOGIN_TIME_RESTRICTION      | Attempting to log in during an unauthorized time of day for this account.                                                                 |
| 1240    | 0x000004D8  | ERROR_LOGIN_WKSTA_RESTRICTION     | The account is not authorized to log in from this station.                                                                                |
| 1241    | 0x000004D9  | ERROR_INCORRECT_ADDRESS           | The network address could not be used for the operation requested.                                                                        |
| 1242    | 0x000004DA  | ERROR_ALREADY_REGISTERED          | The service is already registered.                                                                                                        |
| 1243    | 0x000004DB  | ERROR_SERVICE_NOT_FOUND           | The specified service does not exist.                                                                                                     |
| 1244    | 0x000004DC  | ERROR_NOT_AUTHENTICATED           | The operation being requested was not performed because the user has not been authenticated.                                              |
| 1245    | 0x000004DD  | ERROR_NOT_LOGGED_ON               | The operation being requested was not performed because the user has not logged on to the network. The specified service does not exist.  |
| 1246    | 0x000004DE  | ERROR_CONTINUE                    | Continue with work in progress.                                                                                                           |
| 1247    | 0x000004DF  | ERROR_ALREADY_INITIALIZED         | An attempt was made to perform an initialization operation when initialization has already been completed.                                |
| 1248    | 0x000004E0  | ERROR_NO_MORE_DEVICES             | No more local devices.                                                                                                                    |
| 1249    | 0x000004E1  | ERROR_NO_SUCH_SITE                | The specified site does not exist.                                                                                                        |
| 1250    | 0x000004E2  | ERROR_DOMAIN_CONTROLLER_EXISTS    | A domain controller with the specified name already exists.                                                                               |
| 1251    | 0x000004E3  | ERROR_ONLY_IF_CONNECTED           | This operation is supported only when you are connected to the server.                                                                    |
| 1252    | 0x000004E4  | ERROR_OVERRIDE_NOCHANGES          | The group policy framework should call the extension even if there are no changes.                                                        |
| 1253    | 0x000004E5  | ERROR_BAD_USER_PROFILE            | The specified user does not have a valid profile.                                                                                         |
| 1254    | 0x000004E6  | ERROR_NOT_SUPPORTED_ON_SBS        | This operation is not supported on a Microsoft Small Business Server.                                                                     |
| 1255    | 0x000004E7  | ERROR_SERVER_SHUTDOWN_IN_PROGRESS | The server machine is shutting down.                                                                                                      |
| 1256    | 0x000004E8  | ERROR_HOST_DOWN                   | The remote system is not available. For information about network troubleshooting, see Windows Help.                                      |
| 1257    | 0x000004E9  | ERROR_NON_ACCOUNT_SID             | The security identifier provided is not from an account domain.                                                                           |
| 1258    | 0x000004EA  | ERROR_NON_DOMAIN_SID              | The security identifier provided does not have a domain component.                                                                        |
| 1259    | 0x000004EB  | ERROR_APPHELP_BLOCK               | AppHelp dialog canceled thus preventing the application from starting.                                                                    |
| 1260    | 0x000004EC  | ERROR_ACCESS_DISABLED_BY_POLICY   | Access to the requested resource has been disabled by your administrator.                                                                 |
| 1261    | 0x000004ED  | ERROR_REG_NAT_CONSUMPTION         | A program attempt to use an invalid register value. Normally caused by an uninitialized register. This error is Itanium specific.         |
| 1262    | 0x000004EE  | ERROR_CSCSHARE_OFFLINE            | The share is currently offline or does not exist.                                                                                         |
| 1300    | 0x00000514  | ERROR_NOT_ALL_ASSIGNED            | Not all privileges referenced are assigned to the caller.                                                                                 |
| 1301    | 0x00000515  | ERROR_SOME_NOT_MAPPED             | Some mapping between account names and security IDs was not done.                                                                         |
| 1302    | 0x00000516  | ERROR_NO_QUOTAS_FOR_ACCOUNT       | No system quota limits are specifically set for this account.                                                                             |
| 1303    | 0x00000517  | ERROR_LOCAL_USER_SESSION_KEY      | No encryption key is available. A well-known encryption key was returned.                                                                 |
| 1304    | 0x00000518  | ERROR_NULL_LM_PASSWORD            | The password is too complex to be converted to a LAN Manager password. The LAN Manager password returned is a NULL string.                |
| 1305    | 0x00000519  | ERROR_UNKNOWN_REVISION            | The revision level is unknown.                                                                                                            |
| 1306    | 0x0000051A  | ERROR_REVISION_MISMATCH           | Indicates two revision levels are incompatible.                                                                                           |
| 1307    | 0x0000051B  | ERROR_INVALID_OWNER               | This security ID may not be assigned as the owner of this object.                                                                         |

| Error   |             |                                | Description                                                                                                                                          |
|---------|-------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                           |                                                                                                                                                      |
| 1308    | 0x0000051C  | ERROR_INVALID_PRIMARY_GROUP    | This security ID may not be assigned as the primary group of an object.                                                                              |
| 1309    | 0x0000051D  | ERROR_NO_IMPERSONATION_TOKEN   | An attempt has been made to operate on an impersonation token by a thread that is not currently impersonating a client.                              |
| 1310    | 0x0000051E  | ERROR_CANT_DISABLE_MANDATORY   | The group may not be disabled.                                                                                                                       |
| 1311    | 0x0000051F  | ERROR_NO_LOGON_SERVERS         | There are currently no logon servers available to service the logon request.                                                                         |
| 1312    | 0x00000520  | ERROR_NO_SUCH_LOGON_SESSION    | A specified logon session does not exist. It may already have been terminated.                                                                       |
| 1313    | 0x00000521  | ERROR_NO_SUCH_PRIVILEGE        | A specified privilege does not exist.                                                                                                                |
| 1314    | 0x00000522  | ERROR_PRIVILEGE_NOT_HELD       | A required privilege is not held by the client.                                                                                                      |
| 1315    | 0x00000523  | ERROR_INVALID_ACCOUNT_NAME     | The name provided is not a properly formed account name.                                                                                             |
| 1316    | 0x00000524  | ERROR_USER_EXISTS              | The specified user already exists.                                                                                                                   |
| 1317    | 0x00000525  | ERROR_NO_SUCH_USER             | The specified user does not exist.                                                                                                                   |
| 1318    | 0x00000526  | ERROR_GROUP_EXISTS             | The specified group already exists.                                                                                                                  |
| 1319    | 0x00000527  | ERROR_NO_SUCH_GROUP            | The specified group does not exist.                                                                                                                  |
| 1320    | 0x00000528  | ERROR_MEMBER_IN_GROUP          | Either the specified user account is already a member of the specified group, or the specified group cannot be deleted because it contains a member. |
| 1321    | 0x00000529  | ERROR_MEMBER_NOT_IN_GROUP      | The specified user account is not a member of the specified group account.                                                                           |
| 1322    | 0x0000052A  | ERROR_LAST_ADMIN               | The last remaining administration account cannot be disabled or deleted.                                                                             |
| 1323    | 0x0000052B  | ERROR_WRONG_PASSWORD           | Unable to update the password. The value provided as the current password is incorrect.                                                              |
| 1324    | 0x0000052C  | ERROR_ILL_FORMED_PASSWORD      | Unable to update the password. The value provided for the new password contains values that are not allowed in passwords.                            |
| 1325    | 0x0000052D  | ERROR_PASSWORD_RESTRICTION     | Unable to update the password. The value provided for the new password does not meet the length, complexity, or history requirement of the domain.   |
| 1326    | 0x0000052E  | ERROR_LOGON_FAILURE            | Logon failure: unknown user name or bad password.                                                                                                    |
| 1327    | 0x0000052F  | ERROR_ACCOUNT_RESTRICTION      | Logon failure: user account restriction.                                                                                                             |
| 1328    | 0x00000530  | ERROR_INVALID_LOGON_HOURS      | Logon failure: account logon time restriction violation.                                                                                             |
| 1329    | 0x00000531  | ERROR_INVALID_WORKSTATION      | Logon failure: user not allowed to log on to this computer.                                                                                          |
| 1330    | 0x00000532  | ERROR_PASSWORD_EXPIRED         | Logon failure: the specified account password has expired.                                                                                           |
| 1331    | 0x00000533  | ERROR_ACCOUNT_DISABLED         | Logon failure: account currently disabled.                                                                                                           |
| 1332    | 0x00000534  | ERROR_NONE_MAPPED              | No mapping between account names and security IDs was done.                                                                                          |
| 1333    | 0x00000535  | ERROR_TOO_MANY_LUIDS_REQUESTED | Too many local user identifiers (LUIDs) were requested at one time.                                                                                  |
| 1334    | 0x00000536  | ERROR_LUIDS_EXHAUSTED          | No more local user identifiers (LUIDs) are available.                                                                                                |
| 1335    | 0x00000537  | ERROR_INVALID_SUB_AUTHORITY    | The subauthority part of a security ID is invalid for this particular use.                                                                           |
| 1336    | 0x00000538  | ERROR_INVALID_ACL              | The access control list (ACL) structure is invalid.                                                                                                  |
| 1337    | 0x00000539  | ERROR_INVALID_SID              | The security ID structure is invalid.                                                                                                                |
| 1338    | 0x0000053A  | ERROR_INVALID_SECURITY_DESCR   | The security descriptor structure is invalid.                                                                                                        |
| 1340    | 0x0000053C  | ERROR_BAD_INHERITANCE_ACL      | The inherited access control list (ACL) or access control entry (ACE) could not be built.                                                            |
| 1341    | 0x0000053D  | ERROR_SERVER_DISABLED          | The server is currently disabled.                                                                                                                    |
| 1342    | 0x0000053E  | ERROR_SERVER_NOT_DISABLED      | The server is currently enabled.                                                                                                                     |
| 1343    | 0x0000053F  | ERROR_INVALID_ID_AUTHORITY     | The value provided was an invalid value for an identifier authority.                                                                                 |
| 1344    | 0x00000540  | ERROR_ALLOTTED_SPACE_EXCEEDED  | No more memory is available for security information updates.                                                                                        |

| Error   |             |                                | Description                                                                                                                                   |
|---------|-------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                           |                                                                                                                                               |
| 1345    | 0x00000541  | ERROR_INVALID_GROUP_ATTRIBUTES | The specified attributes are invalid, or incompatible with the attributes for the group as a whole.                                           |
| 1346    | 0x00000542  | ERROR_BAD_IMPERSONATION_LEVEL  | Either a required impersonation level was not provided, or the provided impersonation level is invalid.                                       |
| 1347    | 0x00000543  | ERROR_CANT_OPEN_ANONYMOUS      | Cannot open an anonymous level security token.                                                                                                |
| 1348    | 0x00000544  | ERROR_BAD_VALIDATION_CLASS     | The validation information class requested was invalid.                                                                                       |
| 1349    | 0x00000545  | ERROR_BAD_TOKEN_TYPE           | The type of the token is inappropriate for its attempted use.                                                                                 |
| 1350    | 0x00000546  | ERROR_NO_SECURITY_ON_OBJECT    | Unable to perform a security operation on an object that has no associated security.                                                          |
| 1351    | 0x00000547  | ERROR_CANT_ACCESS_DOMAIN_INFO  | Configuration information could not be read from the domain controller, either because the machine is unavailable, or access has been denied. |
| 1352    | 0x00000548  | ERROR_INVALID_SERVER_STATE     | The security account manager (SAM) or local security authority (LSA) server was in the wrong state to perform the security operation.         |
| 1353    | 0x00000549  | ERROR_INVALID_DOMAIN_STATE     | The domain was in the wrong state to perform the security operation.                                                                          |
| 1354    | 0x0000054A  | ERROR_INVALID_DOMAIN_ROLE      | This operation is only allowed for the Primary Domain Controller of the domain.                                                               |
| 1355    | 0x0000054B  | ERROR_NO_SUCH_DOMAIN           | The specified domain either does not exist or could not be contacted.                                                                         |
| 1356    | 0x0000054C  | ERROR_DOMAIN_EXISTS            | The specified domain already exists.                                                                                                          |
| 1357    | 0x0000054D  | ERROR_DOMAIN_LIMIT_EXCEEDED    | An attempt was made to exceed the limit on the number of domains per server.                                                                  |
| 1358    | 0x0000054E  | ERROR_INTERNAL_DB_CORRUPTION   | Unable to complete the requested operation because of either a catastrophic media failure or a data structure corruption on the disk.         |
| 1359    | 0x0000054F  | ERROR_INTERNAL_ERROR           | An internal error occurred.                                                                                                                   |
| 1360    | 0x00000550  | ERROR_GENERIC_NOT_MAPPED       | Generic access types were contained in an access mask which should already be mapped to nongeneric types.                                     |
| 1361    | 0x00000551  | ERROR_BAD_DESCRIPTOR_FORMAT    | A security descriptor is not in the right format (absolute or self-relative).                                                                 |
| 1362    | 0x00000552  | ERROR_NOT_LOGON_PROCESS        | The requested action is restricted for use by logon processes only. The calling process has not registered as a logon process.                |
| 1363    | 0x00000553  | ERROR_LOGON_SESSION_EXISTS     | Cannot start a new logon session with an ID that is already in use.                                                                           |
| 1364    | 0x00000554  | ERROR_NO_SUCH_PACKAGE          | A specified authentication package is unknown.                                                                                                |
| 1365    | 0x00000555  | ERROR_BAD_LOGON_SESSION_STATE  | The logon session is not in a state that is consistent with the requested operation.                                                          |
| 1366    | 0x00000556  | ERROR_LOGON_SESSION_COLLISION  | The logon session ID is already in use.                                                                                                       |
| 1367    | 0x00000557  | ERROR_INVALID_LOGON_TYPE       | A logon request contained an invalid logon type value.                                                                                        |
| 1368    | 0x00000558  | ERROR_CANNOT_IMPERSONATE       | Unable to impersonate using a named pipe until data has been read from that pipe.                                                             |
| 1369    | 0x00000559  | ERROR_RXACT_INVALID_STATE      | The transaction state of a registry subtree is incompatible with the requested operation.                                                     |
| 1370    | 0x0000055A  | ERROR_RXACT_COMMIT_FAILURE     | An internal security database corruption has been encountered.                                                                                |
| 1371    | 0x0000055B  | ERROR_SPECIAL_ACCOUNT          | Cannot perform this operation on built-in accounts.                                                                                           |
| 1372    | 0x0000055C  | ERROR_SPECIAL_GROUP            | Cannot perform this operation on this built-in special group.                                                                                 |
| 1373    | 0x0000055D  | ERROR_SPECIAL_USER             | Cannot perform this operation on this built-in special user.                                                                                  |
| 1374    | 0x0000055E  | ERROR_MEMBERS_PRIMARY_GROUP    | The user cannot be removed from a group because the group is currently the user's primary group.                                              |
| 1375    | 0x0000055F  | ERROR_TOKEN_ALREADY_IN_USE     | The token is already in use as a primary token.                                                                                               |
| 1376    | 0x00000560  | ERROR_NO_SUCH_ALIAS            | The specified local group does not exist.                                                                                                     |

| Error   |             |                                    | Description                                                                                                                                                                                                         |
|---------|-------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                               |                                                                                                                                                                                                                     |
| 1377    | 0x00000561  | ERROR_MEMBER_NOT_IN_ALIAS          | The specified account name is not a member of the local group.                                                                                                                                                      |
| 1378    | 0x00000562  | ERROR_MEMBER_IN_ALIAS              | The specified account name is already a member of the local group.                                                                                                                                                  |
| 1379    | 0x00000563  | ERROR_ALIAS_EXISTS                 | The specified local group already exists.                                                                                                                                                                           |
| 1380    | 0x00000564  | ERROR_LOGON_NOT_GRANTED            | Logon failure: the user has not been granted the requested logon type at this computer.                                                                                                                             |
| 1381    | 0x00000565  | ERROR_TOO_MANY_SECRETS             | The maximum number of secrets that may be stored in a single system has been exceeded.                                                                                                                              |
| 1382    | 0x00000566  | ERROR_SECRET_TOO_LONG              | The length of a secret exceeds the maximum length allowed.                                                                                                                                                          |
| 1383    | 0x00000567  | ERROR_INTERNAL_DB_ERROR            | The local security authority database contains an internal inconsistency.                                                                                                                                           |
| 1384    | 0x00000568  | ERROR_TOO_MANY_CONTEXT_IDS         | During a logon attempt, the user's security context accumulated too many security IDs.                                                                                                                              |
| 1385    | 0x00000569  | ERROR_LOGON_TYPE_NOT_GRANTED       | Logon failure: the user has not been granted the requested logon type at this computer.                                                                                                                             |
| 1386    | 0x0000056A  | ERROR_NT_CROSS_ENCRYPTION_REQUIRED | A cross-encrypted password is necessary to change a user password.                                                                                                                                                  |
| 1387    | 0x0000056B  | ERROR_NO_SUCH_MEMBER               | A new member could not be added to or removed from the local group because the member does not exist.                                                                                                               |
| 1388    | 0x0000056C  | ERROR_INVALID_MEMBER               | A new member could not be added to a local group because the member has the wrong account type.                                                                                                                     |
| 1389    | 0x0000056D  | ERROR_TOO_MANY_SIDS                | Too many security IDs have been specified.                                                                                                                                                                          |
| 1390    | 0x0000056E  | ERROR_LM_CROSS_ENCRYPTION_REQUIRED | A cross-encrypted password is necessary to change this user password.                                                                                                                                               |
| 1391    | 0x0000056F  | ERROR_NO_INHERITANCE               | Indicates an ACL contains no inheritable components.                                                                                                                                                                |
| 1392    | 0x00000570  | ERROR_FILE_CORRUPT                 | The file or directory is corrupted and unreadable.                                                                                                                                                                  |
| 1393    | 0x00000571  | ERROR_DISK_CORRUPT                 | The disk structure is corrupted and unreadable.                                                                                                                                                                     |
| 1394    | 0x00000572  | ERROR_NO_USER_SESSION_KEY          | There is no user session key for the specified logon session.                                                                                                                                                       |
| 1395    | 0x00000573  | ERROR_LICENSE_QUOTA_EXCEEDED       | The service being accessed is licensed for a particular number of connections. No more connections can be made to the service at this time because there are already as many connections as the service can accept. |
| 1396    | 0x00000574  | ERROR_WRONG_TARGET_NAME            | Logon Failure: The target account name is incorrect.                                                                                                                                                                |
| 1397    | 0x00000575  | ERROR_MUTUAL_AUTH_FAILED           | Mutual Authentication failed. The server's password is out of date at the domain controller.                                                                                                                        |
| 1398    | 0x00000576  | ERROR_TIME_SKEW                    | There is a time difference between the client and server.                                                                                                                                                           |
| 1399    | 0x00000577  | ERROR_CURRENT_DOMAIN_NOT_ALLOWED   | This operation can not be performed on the current domain.                                                                                                                                                          |

| Error   |             |                                      | Description                                                                                    |
|---------|-------------|--------------------------------------|------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                 |                                                                                                |
| 1400    | 0x000000578 | ERROR_INVALID_WINDOW_HANDLE          | Invalid window handle.                                                                         |
| 1401    | 0x000000579 | ERROR_INVALID_MENU_HANDLE            | Invalid menu handle.                                                                           |
| 1402    | 0x00000057A | ERROR_INVALID_CURSOR_HANDLE          | Invalid cursor handle.                                                                         |
| 1403    | 0x00000057B | ERROR_INVALID_ACCEL_HANDLE           | Invalid accelerator table handle.                                                              |
| 1404    | 0x00000057C | ERROR_INVALID_HOOK_HANDLE            | Invalid hook handle.                                                                           |
| 1405    | 0x00000057D | ERROR_INVALID_DWP_HANDLE             | Invalid handle to a multiple-window position structure.                                        |
| 1406    | 0x00000057E | ERROR_TLW_WITH_WSCCHILD              | Cannot create a top-level child window.                                                        |
| 1407    | 0x00000057F | ERROR_CANNOT_FIND_WND_CLASS          | Cannot find window class.                                                                      |
| 1408    | 0x000000580 | ERROR_WINDOW_OF_OTHER_THREAD         | Invalid window; it belongs to other thread.                                                    |
| 1409    | 0x000000581 | ERROR_HOTKEY_ALREADY_REGISTERED      | Hot key is already registered.                                                                 |
| 1410    | 0x000000582 | ERROR_CLASS_ALREADY_EXISTS           | Class already exists.                                                                          |
| 1411    | 0x000000583 | ERROR_CLASS_DOES_NOT_EXIST           | Class does not exist.                                                                          |
| 1412    | 0x000000584 | ERROR_CLASS_HAS_WINDOWS              | Class still has open windows.                                                                  |
| 1413    | 0x000000585 | ERROR_INVALID_INDEX                  | Invalid index.                                                                                 |
| 1414    | 0x000000586 | ERROR_INVALID_ICON_HANDLE            | Invalid icon handle.                                                                           |
| 1415    | 0x000000587 | ERROR_PRIVATE_DIALOG_INDEX           | Using private DIALOG window words.                                                             |
| 1416    | 0x000000588 | ERROR_LISTBOX_ID_NOT_FOUND           | The list box identifier was not found.                                                         |
| 1417    | 0x000000589 | ERROR_NO_WILDCARD_CHARACTERS         | No wildcards were found.                                                                       |
| 1418    | 0x00000058A | ERROR_CLIPBOARD_NOT_OPEN             | Thread does not have a clipboard open.                                                         |
| 1419    | 0x00000058B | ERROR_HOTKEY_NOT_REGISTERED          | Hot key is not registered.                                                                     |
| 1420    | 0x00000058C | ERROR_WINDOW_NOT_DIALOG              | The window is not a valid dialog window.                                                       |
| 1421    | 0x00000058D | ERROR_CONTROL_ID_NOT_FOUND           | Control ID not found.                                                                          |
| 1422    | 0x00000058E | ERROR_INVALID_COMBOBOX_MESSAGE       | Invalid message for a combo box because it does not have an edit control.                      |
| 1423    | 0x00000058F | ERROR_WINDOW_NOT_COMBOBOX            | The window is not a combo box.                                                                 |
| 1424    | 0x000000590 | ERROR_INVALID_EDIT_HEIGHT            | Height must be less than 256.                                                                  |
| 1425    | 0x000000591 | ERROR_DC_NOT_FOUND                   | Invalid device context (DC) handle.                                                            |
| 1426    | 0x000000592 | ERROR_INVALID_HOOK_FILTER            | Invalid hook procedure type.                                                                   |
| 1427    | 0x000000593 | ERROR_INVALID_FILTER_PROC            | Invalid hook procedure.                                                                        |
| 1428    | 0x000000594 | ERROR_HOOK_NEEDS_HMOD                | Cannot set nonlocal hook without a module handle.                                              |
| 1429    | 0x000000595 | ERROR_GLOBAL_ONLY_HOOK               | This hook procedure can only be set globally.                                                  |
| 1430    | 0x000000596 | ERROR_JOURNAL_HOOK_SET               | The journal hook procedure is already installed.                                               |
| 1431    | 0x000000597 | ERROR_HOOK_NOT_INSTALLED             | The hook procedure is not installed.                                                           |
| 1432    | 0x000000598 | ERROR_INVALID_LB_MESSAGE             | Invalid message for single-selection list box.                                                 |
| 1433    | 0x000000599 | ERROR_SETCOUNT_ON_BAD_LB             | LB_SETCOUNT sent to non-lazy list box.                                                         |
| 1434    | 0x00000059A | ERROR_LB_WITHOUT_TABSTOPS            | This list box does not support tab stops.                                                      |
| 1435    | 0x00000059B | ERROR_DESTROY_OBJECT_OF_OTHER_THREAD | Cannot destroy object created by another thread.                                               |
| 1436    | 0x00000059C | ERROR_CHILD_WINDOW_MENU              | Child windows cannot have menus.                                                               |
| 1437    | 0x00000059D | ERROR_NO_SYSTEM_MENU                 | The window does not have a system menu.                                                        |
| 1438    | 0x00000059E | ERROR_INVALID_MSGBOX_STYLE           | Invalid message box style.                                                                     |
| 1439    | 0x00000059F | ERROR_INVALID_SPI_VALUE              | Invalid system-wide (SPI_*) parameter.                                                         |
| 1440    | 0x0000005A0 | ERROR_SCREEN_ALREADY_LOCKED          | Screen already locked.                                                                         |
| 1441    | 0x0000005A1 | ERROR_HWNDS_HAVE_DIFF_PARENT         | All handles to windows in a multiple-window position structure must have the same parent.      |
| 1442    | 0x0000005A2 | ERROR_NOT_CHILD_WINDOW               | The window is not a child window.                                                              |
| 1443    | 0x0000005A3 | ERROR_INVALID_GW_COMMAND             | Invalid GW_* command.                                                                          |
| 1444    | 0x0000005A4 | ERROR_INVALID_THREAD_ID              | Invalid thread identifier.                                                                     |
| 1445    | 0x0000005A5 | ERROR_NON_MDICHILD_WINDOW            | Cannot process a message from a window that is not a multiple document interface (MDI) window. |
| 1446    | 0x0000005A6 | ERROR_POPUP_ALREADY_ACTIVE           | Popup menu already active.                                                                     |
| 1447    | 0x0000005A7 | ERROR_NO_SCROLLBARS                  | The window does not have scroll bars.                                                          |
| 1448    | 0x0000005A8 | ERROR_INVALID_SCROLLBAR_RANGE        | Scroll bar range cannot be greater than MAX-LONG.                                              |
| 1449    | 0x0000005A9 | ERROR_INVALID_SHOWWIN_COMMAND        | Cannot show or remove the window in the way specified.                                         |

| Error   |             |                                           | Description                                                                    |
|---------|-------------|-------------------------------------------|--------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                      |                                                                                |
| 1450    | 0x000005AA  | ERROR_NO_SYSTEM_RESOURCES                 | Insufficient system resources exist to complete the requested service.         |
| 1451    | 0x000005AB  | ERROR_NONPAGED_SYSTEM_RESOURCES           | Insufficient system resources exist to complete the requested service.         |
| 1452    | 0x000005AC  | ERROR_PAGED_SYSTEM_RESOURCES              | Insufficient system resources exist to complete the requested service.         |
| 1453    | 0x000005AD  | ERROR_WORKING_SET_QUOTA                   | Insufficient quota to complete the requested service.                          |
| 1454    | 0x000005AE  | ERROR_PAGEFILE_QUOTA                      | Insufficient quota to complete the requested service.                          |
| 1455    | 0x000005AF  | ERROR_COMMITMENT_LIMIT                    | The paging file is too small for this operation to complete.                   |
| 1456    | 0x000005B0  | ERROR_MENU_ITEM_NOT_FOUND                 | A menu item was not found.                                                     |
| 1457    | 0x000005B1  | ERROR_INVALID_KEYBOARD_HANDLE             | Invalid keyboard layout handle.                                                |
| 1458    | 0x000005B2  | ERROR_HOOK_TYPE_NOT_ALLOWED               | Hook type not allowed.                                                         |
| 1459    | 0x000005B3  | ERROR_REQUIRES_INTERACTIVE_WINDOW-STATION | This operation requires an interactive window station.                         |
| 1460    | 0x000005B4  | ERROR_TIMEOUT                             | This operation returned because the timeout period expired.                    |
| 1461    | 0x000005B5  | ERROR_INVALID_MONITOR_HANDLE              | Invalid monitor handle.                                                        |
| 1500    | 0x000005DC  | ERROR_EVENTLOG_FILE_CORRUPT               | The event log file is corrupted.                                               |
| 1501    | 0x000005DD  | ERROR_EVENTLOG_CANT_START                 | No event log file could be opened, so the event logging service did not start. |
| 1502    | 0x000005DE  | ERROR_LOG_FILE_FULL                       | The event log file is full.                                                    |
| 1503    | 0x000005DF  | ERROR_EVENTLOG_FILE_CHANGED               | The event log file has changed between read operations.                        |

| Error   |             |                                    | Description                                                                                                                                                                                           |
|---------|-------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                               |                                                                                                                                                                                                       |
| 1601    | 0x00000641  | ERROR_INSTALL_SERVICE_FAILURE      | The Windows Installer service could not be accessed. Contact your support personnel to verify that the Windows Installer service is properly registered.                                              |
| 1602    | 0x00000642  | ERROR_INSTALL_USEREXIT             | User cancelled installation.                                                                                                                                                                          |
| 1603    | 0x00000643  | ERROR_INSTALL_FAILURE              | Fatal error during installation.                                                                                                                                                                      |
| 1604    | 0x00000644  | ERROR_INSTALL_SUSPEND              | Installation suspended, incomplete.                                                                                                                                                                   |
| 1605    | 0x00000645  | ERROR_UNKNOWN_PRODUCT              | This action is only valid for products that are currently installed.                                                                                                                                  |
| 1606    | 0x00000646  | ERROR_UNKNOWN_FEATURE              | Feature ID not registered.                                                                                                                                                                            |
| 1607    | 0x00000647  | ERROR_UNKNOWN_COMPONENT            | Component ID not registered.                                                                                                                                                                          |
| 1608    | 0x00000648  | ERROR_UNKNOWN_PROPERTY             | Unknown property.                                                                                                                                                                                     |
| 1609    | 0x00000649  | ERROR_INVALID_HANDLE_STATE         | Handle is in an invalid state.                                                                                                                                                                        |
| 1610    | 0x0000064A  | ERROR_BAD_CONFIGURATION            | The configuration data for this product is corrupt. Contact your support personnel.                                                                                                                   |
| 1611    | 0x0000064B  | ERROR_INDEX_ABSENT                 | Component qualifier not present.                                                                                                                                                                      |
| 1612    | 0x0000064C  | ERROR_INSTALL_SOURCE_ABSENT        | The installation source for this product is not available. Verify that the source exists and that you can access it.                                                                                  |
| 1613    | 0x0000064D  | ERROR_INSTALL_PACKAGE_VERSION      | This installation package cannot be installed by the Windows Installer service. You must install a Windows service pack that contains a newer version of the Windows Installer service.               |
| 1614    | 0x0000064E  | ERROR_PRODUCT_UNINSTALLED          | Product is uninstalled.                                                                                                                                                                               |
| 1615    | 0x0000064F  | ERROR_BAD_QUERY_SYNTAX             | SQL query syntax invalid or unsupported.                                                                                                                                                              |
| 1616    | 0x00000650  | ERROR_INVALID_FIELD                | Record field does not exist.                                                                                                                                                                          |
| 1617    | 0x00000651  | ERROR_DEVICE_REMOVED               | The device has been removed.                                                                                                                                                                          |
| 1618    | 0x00000652  | ERROR_INSTALL_ALREADY_RUNNING      | Another installation is already in progress. Complete that installation before proceeding with this install.                                                                                          |
| 1619    | 0x00000653  | ERROR_INSTALL_PACKAGE_OPEN_FAILED  | This installation package could not be opened. Verify that the package exists and that you can access it, or contact the application vendor to verify that this is a valid Windows Installer package. |
| 1620    | 0x00000654  | ERROR_INSTALL_PACKAGE_INVALID      | This installation package could not be opened. Contact the application vendor to verify that this is a valid Windows Installer package.                                                               |
| 1621    | 0x00000655  | ERROR_INSTALL_UI_FAILURE           | There was an error starting the Windows Installer service user interface. Contact your support personnel.                                                                                             |
| 1622    | 0x00000656  | ERROR_INSTALL_LOG_FAILURE          | Error opening installation log file. Verify that the specified log file location exists and that you can write to it.                                                                                 |
| 1623    | 0x00000657  | ERROR_INSTALL_LANGUAGE_UNSUPPORTED | The language of this installation package is not supported by your system.                                                                                                                            |
| 1624    | 0x00000658  | ERROR_INSTALL_TRANSFORM_FAILURE    | Error applying transforms. Verify that the specified transform paths are valid.                                                                                                                       |
| 1625    | 0x00000659  | ERROR_INSTALL_PACKAGE_REJECTED     | This installation is forbidden by system policy. Contact your system administrator.                                                                                                                   |
| 1626    | 0x0000065A  | ERROR_FUNCTION_NOT_CALLED          | Function could not be executed.                                                                                                                                                                       |
| 1627    | 0x0000065B  | ERROR_FUNCTION_FAILED              | Function failed during execution.                                                                                                                                                                     |
| 1628    | 0x0000065C  | ERROR_INVALID_TABLE                | Invalid or unknown table specified.                                                                                                                                                                   |
| 1629    | 0x0000065D  | ERROR_DATATYPE_MISMATCH            | Data supplied is of wrong type.                                                                                                                                                                       |
| 1630    | 0x0000065E  | ERROR_UNSUPPORTED_TYPE             | Data of this type is not supported.                                                                                                                                                                   |
| 1631    | 0x0000065F  | ERROR_CREATE_FAILED                | The Windows Installer service failed to start. Contact your support personnel.                                                                                                                        |
| 1632    | 0x00000660  | ERROR_INSTALL_TEMP_UNWRITABLE      | The temp folder is either full or inaccessible. Verify that the temp folder exists and that you can write to it.                                                                                      |
| 1633    | 0x00000661  | ERROR_INSTALL_PLATFORM_UNSUPPORTED | This installation package is not supported by this processor type. Contact your product vendor.                                                                                                       |
| 1634    | 0x00000662  | ERROR_INSTALL_NOTUSED              | Component not used on this computer.                                                                                                                                                                  |

| Error   |             |                                  | Description                                                                                                                                                                                                                                                                                               |
|---------|-------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                             |                                                                                                                                                                                                                                                                                                           |
| 1635    | 0x00000663  | ERROR_PATCH_PACKAGE_OPEN_FAILED  | This patch package could not be opened. Verify that the patch package exists and that you can access it, or contact the application vendor to verify that this is a valid Windows Installer patch package.                                                                                                |
| 1636    | 0x00000664  | ERROR_PATCH_PACKAGE_INVALID      | This patch package could not be opened. Contact the application vendor to verify that this is a valid Windows Installer patch package.                                                                                                                                                                    |
| 1637    | 0x00000665  | ERROR_PATCH_PACKAGE_UNSUPPORTED  | This patch package cannot be processed by the Windows Installer service. You must install a Windows service pack that contains a newer version of the Windows Installer service.                                                                                                                          |
| 1638    | 0x00000666  | ERROR_PRODUCT_VERSION            | Another version of this product is already installed. Installation of this version cannot continue. To configure or remove the existing version of this product, use Add/Remove Programs on the Control Panel.                                                                                            |
| 1639    | 0x00000667  | ERROR_INVALID_COMMAND_LINE       | Invalid command line argument. Consult the Windows Installer SDK for detailed command line help.                                                                                                                                                                                                          |
| 1640    | 0x00000668  | ERROR_INSTALL_REMOTE_DISALLOWED  | Only administrators have permission to add, remove, or configure server software during a Terminal Services remote session. If you want to install or configure software on the server, contact your network administrator.                                                                               |
| 1641    | 0x00000669  | ERROR_SUCCESS_REBOOT_INITIATED   | The requested operation completed successfully. The system will be restarted so the changes can take effect.                                                                                                                                                                                              |
| 1642    | 0x0000066A  | ERROR_PATCH_TARGET_NOT_FOUND     | The upgrade patch cannot be installed by the Windows Installer service because the program to be upgraded may be missing, or the upgrade patch may update a different version of the program. Verify that the program to be upgraded exists on your computer and that you have the correct upgrade patch. |
| 1643    | 0x0000066B  | ERROR_PATCH_PACKAGE_REJECTED     | The patch package is not permitted by system policy. It is not signed with an appropriate certificate.                                                                                                                                                                                                    |
| 1644    | 0x0000066C  | ERROR_INSTALL_TRANSFORM_REJECTED | One or more customizations are not permitted by system policy. They are not signed with an appropriate certificate.                                                                                                                                                                                       |
| 1700    | 0x000006A4  | RPC_S_INVALID_STRING_BINDING     | The string binding is invalid.                                                                                                                                                                                                                                                                            |
| 1701    | 0x000006A5  | RPC_S_WRONG_KIND_OF_BINDING      | The binding handle is not the correct type.                                                                                                                                                                                                                                                               |
| 1702    | 0x000006A6  | RPC_S_INVALID_BINDING            | The binding handle is invalid.                                                                                                                                                                                                                                                                            |
| 1703    | 0x000006A7  | RPC_S_PROTSEQ_NOT_SUPPORTED      | The RPC protocol sequence is not supported.                                                                                                                                                                                                                                                               |
| 1704    | 0x000006A8  | RPC_S_INVALID_RPC_PROTSEQ        | The RPC protocol sequence is invalid.                                                                                                                                                                                                                                                                     |
| 1705    | 0x000006A9  | RPC_S_INVALID_STRING_UUID        | The string universal unique identifier (UUID) is invalid.                                                                                                                                                                                                                                                 |
| 1706    | 0x000006AA  | RPC_S_INVALID_ENDPOINT_FORMAT    | The endpoint format is invalid.                                                                                                                                                                                                                                                                           |
| 1707    | 0x000006AB  | RPC_S_INVALID_NET_ADDR           | The network address is invalid.                                                                                                                                                                                                                                                                           |
| 1708    | 0x000006AC  | RPC_S_NO_ENDPOINT_FOUND          | No endpoint was found.                                                                                                                                                                                                                                                                                    |
| 1709    | 0x000006AD  | RPC_S_INVALID_TIMEOUT            | The timeout value is invalid.                                                                                                                                                                                                                                                                             |
| 1710    | 0x000006AE  | RPC_S_OBJECT_NOT_FOUND           | The object universal unique identifier (UUID) was not found.                                                                                                                                                                                                                                              |
| 1711    | 0x000006AF  | RPC_S_ALREADY_REGISTERED         | The object universal unique identifier (UUID) has already been registered.                                                                                                                                                                                                                                |
| 1712    | 0x000006B0  | RPC_S_TYPE_ALREADY_REGISTERED    | The type universal unique identifier (UUID) has already been registered.                                                                                                                                                                                                                                  |
| 1713    | 0x000006B1  | RPC_S_ALREADY_LISTENING          | The RPC server is already listening.                                                                                                                                                                                                                                                                      |
| 1714    | 0x000006B2  | RPC_S_NO_PROTSEQS_REGISTERED     | No protocol sequences have been registered.                                                                                                                                                                                                                                                               |
| 1715    | 0x000006B3  | RPC_S_NOT_LISTENING              | The RPC server is not listening.                                                                                                                                                                                                                                                                          |
| 1716    | 0x000006B4  | RPC_S_UNKNOWN_MGR_TYPE           | The manager type is unknown.                                                                                                                                                                                                                                                                              |
| 1717    | 0x000006B5  | RPC_S_UNKNOWN_IF                 | The interface is unknown.                                                                                                                                                                                                                                                                                 |
| 1718    | 0x000006B6  | RPC_S_NO_BINDINGS                | There are no bindings.                                                                                                                                                                                                                                                                                    |
| 1719    | 0x000006B7  | RPC_S_NO_PROTSEQS                | There are no protocol sequences.                                                                                                                                                                                                                                                                          |
| 1720    | 0x000006B8  | RPC_S_CANT_CREATE_ENDPOINT       | The endpoint cannot be created.                                                                                                                                                                                                                                                                           |

| Error   |             |                                | Description                                                                               |
|---------|-------------|--------------------------------|-------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                           |                                                                                           |
| 1721    | 0x000006B9  | RPC_S_OUT_OF_RESOURCES         | Not enough resources are available to complete this operation.                            |
| 1722    | 0x000006BA  | RPC_S_SERVER_UNAVAILABLE       | The RPC server is unavailable.                                                            |
| 1723    | 0x000006BB  | RPC_S_SERVER_TOO_BUSY          | The RPC server is too busy to complete this operation.                                    |
| 1724    | 0x000006BC  | RPC_S_INVALID_NETWORK_OPTIONS  | The network options are invalid.                                                          |
| 1725    | 0x000006BD  | RPC_S_NO_CALL_ACTIVE           | There are no remote procedure calls active on this thread.                                |
| 1726    | 0x000006BE  | RPC_S_CALL_FAILED              | The remote procedure call failed.                                                         |
| 1727    | 0x000006BF  | RPC_S_CALL_FAILED_DNE          | The remote procedure call failed and did not execute.                                     |
| 1728    | 0x000006C0  | RPC_S_PROTOCOL_ERROR           | A remote procedure call (RPC) protocol error occurred.                                    |
| 1730    | 0x000006C2  | RPC_S_UNSUPPORTED_TRANS_SYN    | The transfer syntax is not supported by the RPC server.                                   |
| 1732    | 0x000006C4  | RPC_S_UNSUPPORTED_TYPE         | The universal unique identifier (UUID) type is not supported.                             |
| 1733    | 0x000006C5  | RPC_S_INVALID_TAG              | The tag is invalid.                                                                       |
| 1734    | 0x000006C6  | RPC_S_INVALID_BOUND            | The array bounds are invalid.                                                             |
| 1735    | 0x000006C7  | RPC_S_NO_ENTRY_NAME            | The binding does not contain an entry name.                                               |
| 1736    | 0x000006C8  | RPC_S_INVALID_NAME_SYNTAX      | The name syntax is invalid.                                                               |
| 1737    | 0x000006C9  | RPC_S_UNSUPPORTED_NAME_SYNTAX  | The name syntax is not supported.                                                         |
| 1739    | 0x000006CB  | RPC_S_UUID_NO_ADDRESS          | No network address is available to use to construct a universal unique identifier (UUID). |
| 1740    | 0x000006CC  | RPC_S_DUPLICATE_ENDPOINT       | The endpoint is a duplicate.                                                              |
| 1741    | 0x000006CD  | RPC_S_UNKNOWN_AUTHN_TYPE       | The authentication type is unknown.                                                       |
| 1742    | 0x000006CE  | RPC_S_MAX_CALLS_TOO_SMALL      | The maximum number of calls is too small.                                                 |
| 1743    | 0x000006CF  | RPC_S_STRING_TOO_LONG          | The string is too long.                                                                   |
| 1744    | 0x000006D0  | RPC_S_PROTSEQ_NOT_FOUND        | The RPC protocol sequence was not found.                                                  |
| 1745    | 0x000006D1  | RPC_S_PROCNUM_OUT_OF_RANGE     | The procedure number is out of range.                                                     |
| 1746    | 0x000006D2  | RPC_S_BINDING_HAS_NO_AUTH      | The binding does not contain any authentication information.                              |
| 1747    | 0x000006D3  | RPC_S_UNKNOWN_AUTHN_SERVICE    | The authentication service is unknown.                                                    |
| 1748    | 0x000006D4  | RPC_S_UNKNOWN_AUTHN_LEVEL      | The authentication level is unknown.                                                      |
| 1749    | 0x000006D5  | RPC_S_INVALID_AUTH_IDENTITY    | The security context is invalid.                                                          |
| 1750    | 0x000006D6  | RPC_S_UNKNOWN_AUTHZ_SERVICE    | The authorization service is unknown.                                                     |
| 1751    | 0x000006D7  | EPT_S_INVALID_ENTRY            | The entry is invalid.                                                                     |
| 1752    | 0x000006D8  | EPT_S_CANT_PERFORM_OP          | The server endpoint cannot perform the operation.                                         |
| 1753    | 0x000006D9  | EPT_S_NOT_REGISTERED           | There are no more endpoints available from the endpoint mapper.                           |
| 1754    | 0x000006DA  | RPC_S_NOTHING_TO_EXPORT        | No interfaces have been exported.                                                         |
| 1755    | 0x000006DB  | RPC_S_INCOMPLETE_NAME          | The entry name is incomplete.                                                             |
| 1756    | 0x000006DC  | RPC_S_INVALID_VERS_OPTION      | The version option is invalid.                                                            |
| 1757    | 0x000006DD  | RPC_S_NO_MORE_MEMBERS          | There are no more members.                                                                |
| 1758    | 0x000006DE  | RPC_S_NOT_ALL_OBJS_UNEXPORTED  | There is nothing to unexport.                                                             |
| 1759    | 0x000006DF  | RPC_S_INTERFACE_NOT_FOUND      | The interface was not found.                                                              |
| 1760    | 0x000006E0  | RPC_S_ENTRY_ALREADY_EXISTS     | The entry already exists.                                                                 |
| 1761    | 0x000006E1  | RPC_S_ENTRY_NOT_FOUND          | The entry is not found.                                                                   |
| 1762    | 0x000006E2  | RPC_S_NAME_SERVICE_UNAVAILABLE | The name service is unavailable.                                                          |
| 1763    | 0x000006E3  | RPC_S_INVALID_NAF_ID           | The network address family is invalid.                                                    |
| 1764    | 0x000006E4  | RPC_S_CANNOT_SUPPORT           | The requested operation is not supported.                                                 |
| 1765    | 0x000006E5  | RPC_S_NO_CONTEXT_AVAILABLE     | No security context is available to allow impersonation.                                  |
| 1766    | 0x000006E6  | RPC_S_INTERNAL_ERROR           | An internal error occurred in a remote procedure call (RPC).                              |
| 1767    | 0x000006E7  | RPC_S_ZERO_DIVIDE              | The RPC server attempted an integer division by zero.                                     |
| 1768    | 0x000006E8  | RPC_S_ADDRESS_ERROR            | An addressing error occurred in the RPC server.                                           |
| 1769    | 0x000006E9  | RPC_S_FP_DIV_ZERO              | A floating-point operation at the RPC server caused a division by zero.                   |

| Error   |             |                                        | Description                                                                                                   |
|---------|-------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                   |                                                                                                               |
| 1770    | 0x000006EA  | RPC_S_FP_UNDERFLOW                     | A floating-point underflow occurred at the RPC server.                                                        |
| 1771    | 0x000006EB  | RPC_S_FP_OVERFLOW                      | A floating-point overflow occurred at the RPC server.                                                         |
| 1772    | 0x000006EC  | RPC_X_NO_MORE_ENTRIES                  | The list of RPC servers available for the binding of auto handles has been exhausted.                         |
| 1773    | 0x000006ED  | RPC_X_SS_CHAR_TRANS_OPEN_FAIL          | Unable to open the character translation table file.                                                          |
| 1774    | 0x000006EE  | RPC_X_SS_CHAR_TRANS_SHORT_FILE         | The file containing the character translation table has fewer than 512 bytes.                                 |
| 1775    | 0x000006EF  | RPC_X_SS_IN_NULL_CONTEXT               | A null context handle was passed from the client to the host during a remote procedure call.                  |
| 1777    | 0x000006F1  | RPC_X_SS_CONTEXT_DAMAGED               | The context handle changed during a remote procedure call.                                                    |
| 1778    | 0x000006F2  | RPC_X_SS_HANDLES_MISMATCH              | The binding handles passed to a remote procedure call do not match.                                           |
| 1779    | 0x000006F3  | RPC_X_SS_CANNOT_GET_CALL_HANDLE        | The stub is unable to get the remote procedure call handle.                                                   |
| 1780    | 0x000006F4  | RPC_X_NULL_REF_POINTER                 | A null reference pointer was passed to the stub.                                                              |
| 1781    | 0x000006F5  | RPC_X_ENUM_VALUE_OUT_OF_RANGE          | The enumeration value is out of range.                                                                        |
| 1782    | 0x000006F6  | RPC_X_BYTE_COUNT_TOO_SMALL             | The byte count is too small.                                                                                  |
| 1783    | 0x000006F7  | RPC_X_BAD_STUB_DATA                    | The stub received bad data.                                                                                   |
| 1784    | 0x000006F8  | ERROR_INVALID_USER_BUFFER              | The supplied user buffer is not valid for the requested operation.                                            |
| 1785    | 0x000006F9  | ERROR_UNRECOGNIZED_MEDIA               | The disk media is not recognized. It may not be formatted.                                                    |
| 1786    | 0x000006FA  | ERROR_NO_TRUST_LSA_SECRET              | The workstation does not have a trust secret.                                                                 |
| 1787    | 0x000006FB  | ERROR_NO_TRUST_SAM_ACCOUNT             | The security database on the server does not have a computer account for this workstation trust relationship. |
| 1788    | 0x000006FC  | ERROR_TRUSTED_DOMAIN_FAILURE           | The trust relationship between the primary domain and the trusted domain failed.                              |
| 1789    | 0x000006FD  | ERROR_TRUSTED_RELATIONSHIP_FAILURE     | The trust relationship between this workstation and the primary domain failed.                                |
| 1790    | 0x000006FE  | ERROR_TRUST_FAILURE                    | The network logon failed.                                                                                     |
| 1791    | 0x000006FF  | RPC_S_CALL_IN_PROGRESS                 | A remote procedure call is already in progress for this thread.                                               |
| 1792    | 0x00000700  | ERROR_NETLOGON_NOT_STARTED             | An attempt was made to logon, but the network logon service was not started.                                  |
| 1793    | 0x00000701  | ERROR_ACCOUNT_EXPIRED                  | The user's account has expired.                                                                               |
| 1794    | 0x00000702  | ERROR_REDIRECTOR_HAS_OPEN_HANDLES      | The redirector is in use and cannot be unloaded.                                                              |
| 1795    | 0x00000703  | ERROR_PRINTER_DRIVER_ALREADY_INSTALLED | The specified printer driver is already installed.                                                            |
| 1796    | 0x00000704  | ERROR_UNKNOWN_PORT                     | The specified port is unknown.                                                                                |
| 1797    | 0x00000705  | ERROR_UNKNOWN_PRINTER_DRIVER           | The printer driver is unknown.                                                                                |
| 1798    | 0x00000706  | ERROR_UNKNOWN_PRINTPROCESSOR           | The print processor is unknown.                                                                               |
| 1799    | 0x00000707  | ERROR_INVALID_SEPARATOR_FILE           | The specified separator file is invalid.                                                                      |

| Error   |             |                                         | Description                                                                                                                 |
|---------|-------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                    |                                                                                                                             |
| 1800    | 0x00000708  | ERROR_INVALID_PRIORITY                  | The specified priority is invalid.                                                                                          |
| 1801    | 0x00000709  | ERROR_INVALID_PRINTER_NAME              | The printer name is invalid.                                                                                                |
| 1802    | 0x0000070A  | ERROR_PRINTER_ALREADY_EXISTS            | The printer already exists.                                                                                                 |
| 1803    | 0x0000070B  | ERROR_INVALID_PRINTER_COMMAND           | The printer command is invalid.                                                                                             |
| 1804    | 0x0000070C  | ERROR_INVALID_DATATYPE                  | The specified datatype is invalid.                                                                                          |
| 1805    | 0x0000070D  | ERROR_INVALID_ENVIRONMENT               | The environment specified is invalid.                                                                                       |
| 1806    | 0x0000070E  | RPC_S_NO_MORE_BINDINGS                  | There are no more bindings.                                                                                                 |
| 1807    | 0x0000070F  | ERROR_NOLOGON_INTERDOMAIN_TRUST_ACCOUNT | The account used is an interdomain trust account. Use your global user account or local user account to access this server. |
| 1808    | 0x00000710  | ERROR_NOLOGON_WORKSTATION_TRUST_ACCOUNT | The account used is a computer account. Use your global user account or local user account to access this server.           |
| 1809    | 0x00000711  | ERROR_NOLOGON_SERVER_TRUST_ACCOUNT      | The account used is a server trust account. Use your global user account or local user account to access this server.       |
| 1810    | 0x00000712  | ERROR_DOMAIN_TRUST_INCONSISTENT         | The name or security ID (SID) of the domain specified is inconsistent with the trust information for that domain.           |
| 1811    | 0x00000713  | ERROR_SERVER_HAS_OPEN_HANDLES           | The server is in use and cannot be unloaded.                                                                                |
| 1812    | 0x00000714  | ERROR_RESOURCE_DATA_NOT_FOUND           | The specified image file did not contain a resource section.                                                                |
| 1813    | 0x00000715  | ERROR_RESOURCE_TYPE_NOT_FOUND           | The specified resource type cannot be found in the image file.                                                              |
| 1814    | 0x00000716  | ERROR_RESOURCE_NAME_NOT_FOUND           | The specified resource name cannot be found in the image file.                                                              |
| 1815    | 0x00000717  | ERROR_RESOURCE_LANG_NOT_FOUND           | The specified resource language ID cannot be found in the image file.                                                       |
| 1816    | 0x00000718  | ERROR_NOT_ENOUGH_QUOTA                  | Not enough quota is available to process this command.                                                                      |
| 1817    | 0x00000719  | RPC_S_NO_INTERFACES                     | No interfaces have been registered.                                                                                         |
| 1818    | 0x0000071A  | RPC_S_CALL_CANCELLED                    | The remote procedure call was cancelled.                                                                                    |
| 1819    | 0x0000071B  | RPC_S_BINDING_INCOMPLETE                | The binding handle does not contain all required information.                                                               |
| 1820    | 0x0000071C  | RPC_S_COMM_FAILURE                      | A communications failure occurred during a remote procedure call.                                                           |
| 1821    | 0x0000071D  | RPC_S_UNSUPPORTED_AUTHN_LEVEL           | The requested authentication level is not supported.                                                                        |
| 1822    | 0x0000071E  | RPC_S_NO_PRINC_NAME                     | No principal name registered.                                                                                               |
| 1823    | 0x0000071F  | RPC_S_NOT_RPC_ERROR                     | The error specified is not a valid Windows RPC error code.                                                                  |
| 1824    | 0x00000720  | RPC_S_UUID_LOCAL_ONLY                   | A UUID that is valid only on this computer has been allocated.                                                              |
| 1825    | 0x00000721  | RPC_S_SEC_PKG_ERROR                     | A security package specific error occurred.                                                                                 |
| 1826    | 0x00000722  | RPC_S_NOT_CANCELLED                     | Thread is not canceled.                                                                                                     |
| 1827    | 0x00000723  | RPC_X_INVALID_ES_ACTION                 | Invalid operation on the encoding/decoding handle.                                                                          |
| 1828    | 0x00000724  | RPC_X_WRONG_ES_VERSION                  | Incompatible version of the serializing package.                                                                            |
| 1829    | 0x00000725  | RPC_X_WRONG_STUB_VERSION                | Incompatible version of the RPC stub.                                                                                       |
| 1830    | 0x00000726  | RPC_X_INVALID_PIPE_OBJECT               | The RPC pipe object is invalid or corrupted.                                                                                |
| 1831    | 0x00000727  | RPC_X_WRONG_PIPE_ORDER                  | An invalid operation was attempted on an RPC pipe object.                                                                   |
| 1832    | 0x00000728  | RPC_X_WRONG_PIPE_VERSION                | Unsupported RPC pipe version.                                                                                               |
| 1898    | 0x0000076A  | RPC_S_GROUP_MEMBER_NOT_FOUND            | The group member was not found.                                                                                             |
| 1899    | 0x0000076B  | EPT_S_CANT_CREATE                       | The endpoint mapper database entry could not be created.                                                                    |
| 1900    | 0x0000076C  | RPC_S_INVALID_OBJECT                    | The object universal unique identifier (UUID) is the nil UUID.                                                              |
| 1901    | 0x0000076D  | ERROR_INVALID_TIME                      | The specified time is invalid.                                                                                              |
| 1902    | 0x0000076E  | ERROR_INVALID_FORM_NAME                 | The specified form name is invalid.                                                                                         |
| 1903    | 0x0000076F  | ERROR_INVALID_FORM_SIZE                 | The specified form size is invalid.                                                                                         |
| 1904    | 0x00000770  | ERROR_ALREADY_WAITING                   | The specified printer handle is already being waited on                                                                     |

| Error   |             |                                   | Description                                                                                             |
|---------|-------------|-----------------------------------|---------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                              |                                                                                                         |
| 1905    | 0x00000771  | ERROR_PRINTER_DELETED             | The specified printer has been deleted.                                                                 |
| 1906    | 0x00000772  | ERROR_INVALID_PRINTER_STATE       | The state of the printer is invalid.                                                                    |
| 1907    | 0x00000773  | ERROR_PASSWORD_MUST_CHANGE        | The user's password must be changed before logging on the first time.                                   |
| 1908    | 0x00000774  | ERROR_DOMAIN_CONTROLLER_NOT_FOUND | Could not find the domain controller for this domain.                                                   |
| 1909    | 0x00000775  | ERROR_ACCOUNT_LOCKED_OUT          | The referenced account is currently locked out and may not be logged on to.                             |
| 1910    | 0x00000776  | OR_INVALID_OXID                   | The object exporter specified was not found.                                                            |
| 1911    | 0x00000777  | OR_INVALID_OID                    | The object specified was not found.                                                                     |
| 1912    | 0x00000778  | OR_INVALID_SET                    | The object resolver set specified was not found.                                                        |
| 1913    | 0x00000779  | RPC_S_SEND_INCOMPLETE             | Some data remains to be sent in the request buffer.                                                     |
| 1914    | 0x0000077A  | RPC_S_INVALID_ASYNC_HANDLE        | Invalid asynchronous remote procedure call handle.                                                      |
| 1915    | 0x0000077B  | RPC_S_INVALID_ASYNC_CALL          | Invalid asynchronous RPC call handle for this operation.                                                |
| 1916    | 0x0000077C  | RPC_X_PIPE_CLOSED                 | The RPC pipe object has already been closed.                                                            |
| 1917    | 0x0000077D  | RPC_X_PIPE_DISCIPLINE_ERROR       | The RPC call completed before all pipes were processed.                                                 |
| 1918    | 0x0000077E  | RPC_X_PIPE_EMPTY                  | No more data is available from the RPC pipe.                                                            |
| 1919    | 0x0000077F  | ERROR_NO_SITENAME                 | No site name is available for this machine.                                                             |
| 1920    | 0x00000780  | ERROR_CANT_ACCESS_FILE            | The file can not be accessed by the system.                                                             |
| 1921    | 0x00000781  | ERROR_CANT_RESOLVE_FILENAME       | The name of the file cannot be resolved by the system.                                                  |
| 1922    | 0x00000782  | RPC_S_ENTRY_TYPE_MISMATCH         | The entry is not of the expected type.                                                                  |
| 1923    | 0x00000783  | RPC_S_NOT_ALL_OBJS_EXPORTED       | Not all object UUIDs could be exported to the specified entry.                                          |
| 1924    | 0x00000784  | RPC_S_INTERFACE_NOT_EXPORTED      | Interface could not be exported to the specified entry.                                                 |
| 1925    | 0x00000785  | RPC_S_PROFILE_NOT_ADDED           | The specified profile entry could not be added.                                                         |
| 1926    | 0x00000786  | RPC_S_PRF_elt_NOT_ADDED           | The specified profile element could not be added.                                                       |
| 1927    | 0x00000787  | RPC_S_PRF_elt_NOT_REMOVED         | The specified profile element could not be removed.                                                     |
| 1928    | 0x00000788  | RPC_S_GRP_elt_NOT_ADDED           | The group element could not be added.                                                                   |
| 1929    | 0x00000789  | RPC_S_GRP_elt_NOT_REMOVED         | The group element could not be removed.                                                                 |
| 1930    | 0x0000078A  | ERROR_KM_DRIVER_BLOCKED           | The printer driver is not compatible with a policy enabled on your computer that blocks NT 4.0 drivers. |

| Error   |             |                                          | Description                                                                                                                           |
|---------|-------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                     |                                                                                                                                       |
| 2000    | 0x000007D0  | ERROR_INVALID_PIXEL_FORMAT               | The pixel format is invalid.                                                                                                          |
| 2001    | 0x000007D1  | ERROR_BAD_DRIVER                         | The specified driver is invalid.                                                                                                      |
| 2002    | 0x000007D2  | ERROR_INVALID_WINDOW_STYLE               | The window style or class attribute is invalid for this operation.                                                                    |
| 2003    | 0x000007D3  | ERROR_METAFILE_NOT_SUPPORTED             | The requested metafile operation is not supported.                                                                                    |
| 2004    | 0x000007D4  | ERROR_TRANSFORM_NOT_SUPPORTED            | The requested transformation operation is not supported.                                                                              |
| 2005    | 0x000007D5  | ERROR_CLIPPING_NOT_SUPPORTED             | The requested clipping operation is not supported.                                                                                    |
| 2010    | 0x000007DA  | ERROR_INVALID_CMM                        | The specified color management module is invalid.                                                                                     |
| 2011    | 0x000007DB  | ERROR_INVALID_PROFILE                    | The specified color profile is invalid.                                                                                               |
| 2012    | 0x000007DC  | ERROR_TAG_NOT_FOUND                      | The specified tag was not found.                                                                                                      |
| 2013    | 0x000007DD  | ERROR_TAG_NOT_PRESENT                    | A required tag is not present.                                                                                                        |
| 2014    | 0x000007DE  | ERROR_DUPLICATE_TAG                      | The specified tag is already present.                                                                                                 |
| 2015    | 0x000007DF  | ERROR_PROFILE_NOT_ASSOCIATED_WITH_DEVICE | The specified color profile is not associated with any device.                                                                        |
| 2016    | 0x000007E0  | ERROR_PROFILE_NOT_FOUND                  | The specified color profile was not found.                                                                                            |
| 2017    | 0x000007E1  | ERROR_INVALID_COLORSPACE                 | The specified color space is invalid.                                                                                                 |
| 2018    | 0x000007E2  | ERROR_ICM_NOT_ENABLED                    | Image Color Management is not enabled.                                                                                                |
| 2019    | 0x000007E3  | ERROR_DELETING_ICM_XFORM                 | There was an error while deleting the color transform.                                                                                |
| 2020    | 0x000007E4  | ERROR_INVALID_TRANSFORM                  | The specified color transform is invalid.                                                                                             |
| 2021    | 0x000007E5  | ERROR_COLORSPACE_MISMATCH                | The specified transform does not match the bitmap's color space.                                                                      |
| 2022    | 0x000007E6  | ERROR_INVALID_COLORINDEX                 | The specified named color index is not present in the profile.                                                                        |
| 2108    | 0x0000083C  | ERROR_CONNECTED_OTHER_PASSWORD           | The network connection was made successfully, but the user had to be prompted for a password other than the one originally specified. |
| 2202    | 0x0000089A  | ERROR_BAD_USERNAME                       | The specified username is invalid.                                                                                                    |
| 2250    | 0x000008CA  | ERROR_NOT_CONNECTED                      | This network connection does not exist.                                                                                               |
| 2401    | 0x00000961  | ERROR_OPEN_FILES                         | This network connection has files open or requests pending.                                                                           |
| 2402    | 0x00000962  | ERROR_ACTIVE_CONNECTIONS                 | Active connections still exist.                                                                                                       |
| 2404    | 0x00000964  | ERROR_DEVICE_IN_USE                      | The device is in use by an active process and cannot be disconnected.                                                                 |
| 2500    | 0x000009C4  | ERROR_PKINIT_FAILURE                     | The kerberos protocol encountered an error while validating the KDC certificate during smartcard logon.                               |
| 2501    | 0x000009C5  | ERROR_SMARTCARD_SUBSYSTEM_FAILURE        | The kerberos protocol encountered an error while attempting to utilize the smartcard subsystem.                                       |

| Error   |             |                                         | Description                                                                                                                                                            |
|---------|-------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                    |                                                                                                                                                                        |
| 3000    | 0x00000BB8  | ERROR_UNKNOWN_PRINT_MONITOR             | The specified print monitor is unknown.                                                                                                                                |
| 3001    | 0x00000BB9  | ERROR_PRINTER_DRIVER_IN_USE             | The specified printer driver is currently in use.                                                                                                                      |
| 3002    | 0x00000BBA  | ERROR_SPOOL_FILE_NOT_FOUND              | The spool file was not found.                                                                                                                                          |
| 3003    | 0x00000BBB  | ERROR_SPL_NO_STARTDOC                   | A StartDocPrinter call was not issued.                                                                                                                                 |
| 3004    | 0x00000BBC  | ERROR_SPL_NO_ADDJOB                     | An AddJob call was not issued.                                                                                                                                         |
| 3005    | 0x00000BBD  | ERROR_PRINT_PROCESSOR_ALREADY_INSTALLED | The specified print processor has already been installed.                                                                                                              |
| 3006    | 0x00000BBE  | ERROR_PRINT_MONITOR_ALREADY_INSTALLED   | The specified print monitor has already been installed.                                                                                                                |
| 3007    | 0x00000BBF  | ERROR_INVALID_PRINT_MONITOR             | The specified print monitor does not have the required functions.                                                                                                      |
| 3008    | 0x00000BC0  | ERROR_PRINT_MONITOR_IN_USE              | The specified print monitor is currently in use.                                                                                                                       |
| 3009    | 0x00000BC1  | ERROR_PRINTER_HAS_JOBS_QUEUED           | The requested operation is not allowed when there are jobs queued to the printer.                                                                                      |
| 3010    | 0x00000BC2  | ERROR_SUCCESS_REBOOT_REQUIRED           | The requested operation is successful. Changes will not be effective until the system is rebooted.                                                                     |
| 3011    | 0x00000BC3  | ERROR_SUCCESS_RESTART_REQUIRED          | The requested operation is successful. Changes will not be effective until the service is restarted.                                                                   |
| 3012    | 0x00000BC4  | ERROR_PRINTER_NOT_FOUND                 | No printers were found.                                                                                                                                                |
| 4000    | 0x00000FA0  | ERROR_WINS_INTERNAL                     | WINS encountered an error while processing the command.                                                                                                                |
| 4001    | 0x00000FA1  | ERROR_CAN_NOT_DEL_LOCAL_WINS            | The local WINS can not be deleted.                                                                                                                                     |
| 4002    | 0x00000FA2  | ERROR_STATIC_INIT                       | The importation from the file failed.                                                                                                                                  |
| 4003    | 0x00000FA3  | ERROR_INC_BACKUP                        | The backup failed. Was a full backup done before?                                                                                                                      |
| 4004    | 0x00000FA4  | ERROR_FULL_BACKUP                       | The backup failed. Check the directory to which you are backing the database.                                                                                          |
| 4005    | 0x00000FA5  | ERROR_REC_NON_EXISTENT                  | The name does not exist in the WINS database.                                                                                                                          |
| 4006    | 0x00000FA6  | ERROR_RPL_NOT_ALLOWED                   | Replication with a nonconfigured partner is not allowed.                                                                                                               |
| 4100    | 0x00001004  | ERROR_DHCP_ADDRESS_CONFLICT             | The DHCP client has obtained an IP address that is already in use on the network. The local interface will be disabled until the DHCP client can obtain a new address. |
| 4200    | 0x00001068  | ERROR_WMI_GUID_NOT_FOUND                | The GUID passed was not recognized as valid by a WMI data provider.                                                                                                    |
| 4201    | 0x00001069  | ERROR_WMI_INSTANCE_NOT_FOUND            | The instance name passed was not recognized as valid by a WMI data provider.                                                                                           |
| 4202    | 0x0000106A  | ERROR_WMI_ITEMID_NOT_FOUND              | The data item ID passed was not recognized as valid by a WMI data provider.                                                                                            |
| 4203    | 0x0000106B  | ERROR_WMI_TRY AGAIN                     | The WMI request could not be completed and should be retried.                                                                                                          |
| 4204    | 0x0000106C  | ERROR_WMI_DP_NOT_FOUND                  | The WMI data provider could not be located.                                                                                                                            |
| 4205    | 0x0000106D  | ERROR_WMI_UNRESOLVED_INSTANCE_REF       | The WMI data provider references an instance set that has not been registered.                                                                                         |
| 4206    | 0x0000106E  | ERROR_WMI_ALREADY_ENABLED               | The WMI data block or event notification has already been enabled.                                                                                                     |
| 4207    | 0x0000106F  | ERROR_WMI_GUID_DISCONNECTED             | The WMI data block is no longer available.                                                                                                                             |
| 4208    | 0x00001070  | ERROR_WMI_SERVER_UNAVAILABLE            | The WMI data service is not available.                                                                                                                                 |
| 4209    | 0x00001071  | ERROR_WMI_DP_FAILED                     | The WMI data provider failed to carry out the request.                                                                                                                 |
| 4210    | 0x00001072  | ERROR_WMI_INVALID_MOF                   | The WMI MOF information is not valid.                                                                                                                                  |
| 4211    | 0x00001073  | ERROR_WMI_INVALID_REGINFO               | The WMI registration information is not valid.                                                                                                                         |
| 4212    | 0x00001074  | ERROR_WMI_ALREADY_DISABLED              | The WMI data block or event notification has already been disabled.                                                                                                    |
| 4213    | 0x00001075  | ERROR_WMI_READ_ONLY                     | The WMI data item or data block is read only.                                                                                                                          |
| 4214    | 0x00001076  | ERROR_WMI_SET_FAILURE                   | The WMI data item or data block could not be changed.                                                                                                                  |
| 4300    | 0x000010CC  | ERROR_INVALID_MEDIA                     | The media identifier does not represent a valid medium.                                                                                                                |
| 4301    | 0x000010CD  | ERROR_INVALID_LIBRARY                   | The library identifier does not represent a valid library.                                                                                                             |

| Error   |             |                                     | Description                                                                                                                        |
|---------|-------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                |                                                                                                                                    |
| 4302    | 0x000010CE  | ERROR_INVALID_MEDIA_POOL            | The media pool identifier does not represent a valid media pool.                                                                   |
| 4303    | 0x000010CF  | ERROR_DRIVE_MEDIA_MISMATCH          | The drive and medium are not compatible or exist in different libraries.                                                           |
| 4304    | 0x000010D0  | ERROR_MEDIA_OFFLINE                 | The medium currently exists in an offline library and must be online to perform this operation.                                    |
| 4305    | 0x000010D1  | ERROR_LIBRARY_OFFLINE               | The operation cannot be performed on an offline library.                                                                           |
| 4306    | 0x000010D2  | ERROR_EMPTY                         | The library, drive, or media pool is empty.                                                                                        |
| 4307    | 0x000010D3  | ERROR_NOT_EMPTY                     | The library, drive, or media pool must be empty to perform this operation.                                                         |
| 4308    | 0x000010D4  | ERROR_MEDIA_UNAVAILABLE             | No media is currently available in this media pool or library.                                                                     |
| 4309    | 0x000010D5  | ERROR_RESOURCE_DISABLED             | A resource required for this operation is disabled.                                                                                |
| 4310    | 0x000010D6  | ERROR_INVALID_CLEANER               | The media identifier does not represent a valid cleaner.                                                                           |
| 4311    | 0x000010D7  | ERROR_UNABLE_TO_CLEAN               | The drive cannot be cleaned or does not support cleaning.                                                                          |
| 4312    | 0x000010D8  | ERROR_OBJECT_NOT_FOUND              | The object identifier does not represent a valid object.                                                                           |
| 4313    | 0x000010D9  | ERROR_DATABASE_FAILURE              | Unable to read from or write to the database.                                                                                      |
| 4314    | 0x000010DA  | ERROR_DATABASE_FULL                 | The database is full.                                                                                                              |
| 4315    | 0x000010DB  | ERROR_MEDIA_INCOMPATIBLE            | The medium is not compatible with the device or media pool.                                                                        |
| 4316    | 0x000010DC  | ERROR_RESOURCE_NOT_PRESENT          | The resource required for this operation does not exist.                                                                           |
| 4317    | 0x000010DD  | ERROR_INVALID_OPERATION             | The operation identifier is not valid.                                                                                             |
| 4318    | 0x000010DE  | ERROR_MEDIA_NOT_AVAILABLE           | The media is not mounted or ready for use.                                                                                         |
| 4319    | 0x000010DF  | ERROR_DEVICE_NOT_AVAILABLE          | The device is not ready for use.                                                                                                   |
| 4320    | 0x000010E0  | ERROR_REQUEST_REFUSED               | The operator or administrator has refused the request.                                                                             |
| 4321    | 0x000010E1  | ERROR_INVALID_DRIVE_OBJECT          | The drive identifier does not represent a valid drive.                                                                             |
| 4322    | 0x000010E2  | ERROR_LIBRARY_FULL                  | Library is full. No slot is available for use.                                                                                     |
| 4323    | 0x000010E3  | ERROR_MEDIUM_NOT_ACCESSIBLE         | The transport cannot access the medium.                                                                                            |
| 4324    | 0x000010E4  | ERROR_UNABLE_TO_LOAD_MEDIUM         | Unable to load the medium into the drive.                                                                                          |
| 4325    | 0x000010E5  | ERROR_UNABLE_TO_INVENTORY_DRIVE     | Unable to retrieve status about the drive.                                                                                         |
| 4326    | 0x000010E6  | ERROR_UNABLE_TO_INVENTORY_SLOT      | Unable to retrieve status about the slot.                                                                                          |
| 4327    | 0x000010E7  | ERROR_UNABLE_TO_INVENTORY_TRANSPORT | Unable to retrieve status about the transport.                                                                                     |
| 4328    | 0x000010E8  | ERROR_TRANSPORT_FULL                | Cannot use the transport because it is already in use.                                                                             |
| 4329    | 0x000010E9  | ERROR_CONTROLLING_IPORT             | Unable to open or close the inject/eject port.                                                                                     |
| 4330    | 0x000010EA  | ERROR_UNABLE_TO_EJECT_MOUNTED_MEDIA | Unable to eject the media because it is in a drive.                                                                                |
| 4331    | 0x000010EB  | ERROR_CLEANER_SLOT_SET              | A cleaner slot is already reserved.                                                                                                |
| 4332    | 0x000010EC  | ERROR_CLEANER_SLOT_NOT_SET          | A cleaner slot is not reserved.                                                                                                    |
| 4333    | 0x000010ED  | ERROR_CLEANER_CARTRIDGE_SPENT       | The cleaner cartridge has performed the maximum number of drive cleanings.                                                         |
| 4334    | 0x000010EE  | ERROR_UNEXPECTED_OMID               | Unexpected on-medium identifier.                                                                                                   |
| 4335    | 0x000010EF  | ERROR_CANT_DELETE_LAST_ITEM         | The last remaining item in this group or resource cannot be deleted.                                                               |
| 4336    | 0x000010F0  | ERROR_MESSAGE_EXCEEDS_MAX_SIZE      | The message provided exceeds the maximum size allowed for this parameter.                                                          |
| 4337    | 0x000010F1  | ERROR_VOLUME_CONTAINS_SYS_FILES     | The volume contains system or paging files.                                                                                        |
| 4338    | 0x000010F2  | ERROR_INDIGENOUS_TYPE               | The media type cannot be removed from this library since at least one drive in the library reports it can support this media type. |
| 4339    | 0x000010F3  | ERROR_NO_SUPPORTING_DRIVES          | This offline media cannot be mounted on this system since no enabled drives are present which can be used.                         |
| 4340    | 0x000010F4  | ERROR_CLEANER_CARTRIDGE_INSTALLED   | A cleaner cartridge is present in the tape library.                                                                                |
| 4350    | 0x000010FE  | ERROR_FILE_OFFLINE                  | The remote storage service was not able to recall the file.                                                                        |

| decimal | Hexadecimal | Error                            | Description                                                                                            |
|---------|-------------|----------------------------------|--------------------------------------------------------------------------------------------------------|
|         |             | Name                             |                                                                                                        |
| 4351    | 0x000010FF  | ERROR_REMOTE_STORAGE_NOT_ACTIVE  | The remote storage service is not operational at this time.                                            |
| 4352    | 0x00001100  | ERROR_REMOTE_STORAGE_MEDIA_ERROR | The remote storage service encountered a media error.                                                  |
| 4390    | 0x00001126  | ERROR_NOT_A_REPARSE_POINT        | The file or directory is not a reparse point.                                                          |
| 4391    | 0x00001127  | ERROR_REPARSE_ATTRIBUTE_CONFLICT | The reparse point attribute cannot be set because it conflicts with an existing attribute.             |
| 4392    | 0x00001128  | ERROR_INVALID_REPARSE_DATA       | The data present in the reparse point buffer is invalid.                                               |
| 4393    | 0x00001129  | ERROR_REPARSE_TAG_INVALID        | The tag present in the reparse point buffer is invalid.                                                |
| 4394    | 0x0000112A  | ERROR_REPARSE_TAG_MISMATCH       | There is a mismatch between the tag specified in the request and the tag present in the reparse point. |
| 4500    | 0x00001194  | ERROR_VOLUME_NOT_SIS_ENABLED     | Single Instance Storage is not available on this volume.                                               |

| Error   |             |                                         | Description                                                                                                               |
|---------|-------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                    |                                                                                                                           |
| 5001    | 0x00001389  | ERROR_DEPENDENT_RESOURCE_EXISTS         | The cluster resource cannot be moved to another group because other resources are dependent on it.                        |
| 5002    | 0x0000138A  | ERROR_DEPENDENCY_NOT_FOUND              | The cluster resource dependency cannot be found.                                                                          |
| 5003    | 0x0000138B  | ERROR_DEPENDENCY_ALREADY_EXISTS         | The cluster resource cannot be made dependent on the specified resource because it is already dependent.                  |
| 5004    | 0x0000138C  | ERROR_RESOURCE_NOT_ONLINE               | The cluster resource is not online.                                                                                       |
| 5005    | 0x0000138D  | ERROR_HOST_NODE_NOT_AVAILABLE           | A cluster node is not available for this operation.                                                                       |
| 5006    | 0x0000138E  | ERROR_RESOURCE_NOT_AVAILABLE            | The cluster resource is not available.                                                                                    |
| 5007    | 0x0000138F  | ERROR_RESOURCE_NOT_FOUND                | The cluster resource could not be found.                                                                                  |
| 5008    | 0x00001390  | ERROR_SHUTDOWN_CLUSTER                  | The cluster is being shut down.                                                                                           |
| 5009    | 0x00001391  | ERROR_CANT_EVICT_ACTIVE_NODE            | A cluster node cannot be evicted from the cluster unless the node is down.                                                |
| 5010    | 0x00001392  | ERROR_OBJECT_ALREADY_EXISTS             | The object already exists.                                                                                                |
| 5011    | 0x00001393  | ERROR_OBJECT_IN_LIST                    | The object is already in the list.                                                                                        |
| 5012    | 0x00001394  | ERROR_GROUP_NOT_AVAILABLE               | The cluster group is not available for any new requests.                                                                  |
| 5013    | 0x00001395  | ERROR_GROUP_NOT_FOUND                   | The cluster group could not be found.                                                                                     |
| 5014    | 0x00001396  | ERROR_GROUP_NOT_ONLINE                  | The operation could not be completed because the cluster group is not online.                                             |
| 5015    | 0x00001397  | ERROR_HOST_NODE_NOT_RESOURCE_OWNER      | The cluster node is not the owner of the resource.                                                                        |
| 5016    | 0x00001398  | ERROR_HOST_NODE_NOT_GROUP_OWNER         | The cluster node is not the owner of the group.                                                                           |
| 5017    | 0x00001399  | ERROR_RESMON_CREATE_FAILED              | The cluster resource could not be created in the specified resource monitor.                                              |
| 5018    | 0x0000139A  | ERROR_RESMON_ONLINE_FAILED              | The cluster resource could not be brought online by the resource monitor.                                                 |
| 5019    | 0x0000139B  | ERROR_RESOURCE_ONLINE                   | The operation could not be completed because the cluster resource is online.                                              |
| 5020    | 0x0000139C  | ERROR_QUORUM_RESOURCE                   | The cluster resource could not be deleted or brought offline because it is the quorum resource.                           |
| 5021    | 0x0000139D  | ERROR_NOT_QUORUM_CAPABLE                | The cluster could not make the specified resource a quorum resource because it is not capable of being a quorum resource. |
| 5022    | 0x0000139E  | ERROR_CLUSTER_SHUTTING_DOWN             | The cluster software is shutting down.                                                                                    |
| 5023    | 0x0000139F  | ERROR_INVALID_STATE                     | The group or resource is not in the correct state to perform the requested operation.                                     |
| 5024    | 0x000013A0  | ERROR_RESOURCE_PROPERTIES_STORED        | The properties were stored but not all changes will take effect until the next time the resource is brought online.       |
| 5025    | 0x000013A1  | ERROR_NOT_QUORUM_CLASS                  | The cluster could not make the specified resource a quorum resource because it does not belong to a shared storage class. |
| 5026    | 0x000013A2  | ERROR_CORE_RESOURCE                     | The cluster resource could not be deleted since it is a core resource.                                                    |
| 5027    | 0x000013A3  | ERROR_QUORUM_RESOURCE_ONLINE_FAILED     | The quorum resource failed to come online.                                                                                |
| 5028    | 0x000013A4  | ERROR_QUORUMLOG_OPEN_FAILED             | The quorum log could not be created or mounted successfully.                                                              |
| 5029    | 0x000013A5  | ERROR_CLUSTERLOG_CORRUPT                | The cluster log is corrupt.                                                                                               |
| 5030    | 0x000013A6  | ERROR_CLUSTERLOG_RECORD_EXCEEDS_MAXSIZE | The record could not be written to the cluster log since it exceeds the maximum size.                                     |
| 5031    | 0x000013A7  | ERROR_CLUSTERLOG_EXCEEDS_MAXSIZE        | The cluster log exceeds its maximum size.                                                                                 |
| 5032    | 0x000013A8  | ERROR_CLUSTERLOG_CHKPOINT_NOT_FOUND     | No checkpoint record was found in the cluster log.                                                                        |
| 5033    | 0x000013A9  | ERROR_CLUSTERLOG_NOT_ENOUGH_SPACE       | The minimum required disk space needed for logging is not available.                                                      |
| 5034    | 0x000013AA  | ERROR_QUORUM_OWNER_ALIVE                | The cluster node failed to take control of the quorum resource because the resource is owned by another active node.      |
| 5035    | 0x000013AB  | ERROR_NETWORK_NOT_AVAILABLE             | A cluster network is not available for this operation.                                                                    |
| 5036    | 0x000013AC  | ERROR_NODE_NOT_AVAILABLE                | A cluster node is not available for this operation.                                                                       |

| Error   |             |                                            | Description                                                                                                                                                                                           |
|---------|-------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                       |                                                                                                                                                                                                       |
| 5037    | 0x000013AD  | ERROR_ALL_NODES_NOT_AVAILABLE              | All cluster nodes must be running to perform this operation.                                                                                                                                          |
| 5038    | 0x000013AE  | ERROR_RESOURCE_FAILED                      | A cluster resource failed.                                                                                                                                                                            |
| 5039    | 0x000013AF  | ERROR_CLUSTER_INVALID_NODE                 | The cluster node is not valid.                                                                                                                                                                        |
| 5040    | 0x000013B0  | ERROR_CLUSTER_NODE_EXISTS                  | The cluster node already exists.                                                                                                                                                                      |
| 5041    | 0x000013B1  | ERROR_CLUSTER_JOIN_IN_PROGRESS             | A node is in the process of joining the cluster.                                                                                                                                                      |
| 5042    | 0x000013B2  | ERROR_CLUSTER_NODE_NOT_FOUND               | The cluster node was not found.                                                                                                                                                                       |
| 5043    | 0x000013B3  | ERROR_CLUSTER_LOCAL_NODE_NOT_FOUND         | The cluster local node information was not found.                                                                                                                                                     |
| 5044    | 0x000013B4  | ERROR_CLUSTER_NETWORK_EXISTS               | The cluster network already exists.                                                                                                                                                                   |
| 5045    | 0x000013B5  | ERROR_CLUSTER_NETWORK_NOT_FOUND            | The cluster network was not found.                                                                                                                                                                    |
| 5046    | 0x000013B6  | ERROR_CLUSTER_NETINTERFACE_EXISTS          | The cluster network interface already exists.                                                                                                                                                         |
| 5047    | 0x000013B7  | ERROR_CLUSTER_NETINTERFACE_NOT_FOUND       | The cluster network interface was not found.                                                                                                                                                          |
| 5048    | 0x000013B8  | ERROR_CLUSTER_INVALID_REQUEST              | The cluster request is not valid for this object.                                                                                                                                                     |
| 5049    | 0x000013B9  | ERROR_CLUSTER_INVALID_NETWORK_PROVIDER     | The cluster network provider is not valid.                                                                                                                                                            |
| 5050    | 0x000013BA  | ERROR_CLUSTER_NODE_DOWN                    | The cluster node is down.                                                                                                                                                                             |
| 5051    | 0x000013BB  | ERROR_CLUSTER_NODE_UNREACHABLE             | The cluster node is not reachable.                                                                                                                                                                    |
| 5052    | 0x000013BC  | ERROR_CLUSTER_NODE_NOT_MEMBER              | The cluster node is not a member of the cluster.                                                                                                                                                      |
| 5053    | 0x000013BD  | ERROR_CLUSTER_JOIN_NOT_IN_PROGRESS         | A cluster join operation is not in progress.                                                                                                                                                          |
| 5054    | 0x000013BE  | ERROR_CLUSTER_INVALID_NETWORK              | The cluster network is not valid.                                                                                                                                                                     |
| 5056    | 0x000013C0  | ERROR_CLUSTER_NODE_UP                      | The cluster node is up.                                                                                                                                                                               |
| 5057    | 0x000013C1  | ERROR_CLUSTER_IPADDR_IN_USE                | The cluster IP address is already in use.                                                                                                                                                             |
| 5058    | 0x000013C2  | ERROR_CLUSTER_NODE_NOT_PAUSED              | The cluster node is not paused.                                                                                                                                                                       |
| 5059    | 0x000013C3  | ERROR_CLUSTER_NO_SECURITY_CONTEXT          | No cluster security context is available.                                                                                                                                                             |
| 5060    | 0x000013C4  | ERROR_CLUSTER_NETWORK_NOT_INTERNAL         | The cluster network is not configured for internal cluster communication.                                                                                                                             |
| 5061    | 0x000013C5  | ERROR_CLUSTER_NODE_ALREADY_UP              | The cluster node is already up.                                                                                                                                                                       |
| 5062    | 0x000013C6  | ERROR_CLUSTER_NODE_ALREADY_DOWN            | The cluster node is already down.                                                                                                                                                                     |
| 5063    | 0x000013C7  | ERROR_CLUSTER_NETWORK_ALREADY_ONLINE       | The cluster network is already online.                                                                                                                                                                |
| 5064    | 0x000013C8  | ERROR_CLUSTER_NETWORK_ALREADY_OFFLINE      | The cluster network is already offline.                                                                                                                                                               |
| 5065    | 0x000013C9  | ERROR_CLUSTER_NODE_ALREADY_MEMBER          | The cluster node is already a member of the cluster.                                                                                                                                                  |
| 5066    | 0x000013CA  | ERROR_CLUSTER_LAST_INTERNAL_NETWORK        | The cluster network is the only one configured for internal cluster communication between two or more active cluster nodes. The internal communication capability cannot be removed from the network. |
| 5067    | 0x000013CB  | ERROR_CLUSTER_NETWORK_HAS_DEPENDENTS       | One or more cluster resources depend on the network to provide service to clients. The client access capability cannot be removed from the network.                                                   |
| 5068    | 0x000013CC  | ERROR_INVALID_OPERATION_ON_QUORUM          | This operation cannot be performed on the cluster resource as it is the quorum resource. You may not bring the quorum resource offline or modify its possible owners list.                            |
| 5069    | 0x000013CD  | ERROR_DEPENDENCY_NOT_ALLOWED               | The cluster quorum resource is not allowed to have any dependencies.                                                                                                                                  |
| 5070    | 0x000013CE  | ERROR_CLUSTER_NODE_PAUSED                  | The cluster node is paused.                                                                                                                                                                           |
| 5071    | 0x000013CF  | ERROR_NODE_CANT_HOST_RESOURCE              | The cluster resource cannot be brought online. The owner node cannot run this resource.                                                                                                               |
| 5072    | 0x000013D0  | ERROR_CLUSTER_NODE_NOT_READY               | The cluster node is not ready to perform the requested operation.                                                                                                                                     |
| 5073    | 0x000013D1  | ERROR_CLUSTER_NODE_SHUTTING_DOWN           | The cluster node is shutting down.                                                                                                                                                                    |
| 5074    | 0x000013D2  | ERROR_CLUSTER_JOIN_ABORTED                 | The cluster join operation was aborted.                                                                                                                                                               |
| 5075    | 0x000013D3  | ERROR_CLUSTER_INCOMPATIBLE_VERSIONS        | The cluster join operation failed due to incompatible software versions between the joining node and its sponsor.                                                                                     |
| 5076    | 0x000013D4  | ERROR_CLUSTER_MAXNUM_OF_RESOURCES_EXCEEDED | This resource cannot be created because the cluster has reached the limit on the number of resources it can monitor.                                                                                  |

| Error   |             |                                           | Description                                                                                                                                                                                                               |
|---------|-------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                      |                                                                                                                                                                                                                           |
| 5077    | 0x000013D5  | ERROR_CLUSTER_SYSTEM_CONFIG_CHANGED       | The system configuration changed during the cluster join or form operation. The join or form operation was aborted.                                                                                                       |
| 5078    | 0x000013D6  | ERROR_CLUSTER_RESOURCE_TYPE_NOT_FOUND     | The specified resource type was not found.                                                                                                                                                                                |
| 5079    | 0x000013D7  | ERROR_CLUSTER_RESTYPE_NOT_SUPPORTED       | The specified node does not support a resource of this type. This may be due to version inconsistencies or due to the absence of the resource DLL on this node.                                                           |
| 5080    | 0x000013D8  | ERROR_CLUSTER_RESNAME_NOT_FOUND           | The specified resource name is supported by this resource DLL. This may be due to a bad (or changed) name supplied to the resource DLL.                                                                                   |
| 5081    | 0x000013D9  | ERROR_CLUSTER_NO_RPC_PACKAGES_REGISTERED  | No authentication package could be registered with the RPC server.                                                                                                                                                        |
| 5082    | 0x000013DA  | ERROR_CLUSTER_OWNER_NOT_IN_PREFLIST       | You cannot bring the group online because the owner of the group is not in the preferred list for the group. To change the owner node for the group, move the group.                                                      |
| 5083    | 0x000013DB  | ERROR_CLUSTER_DATABASE_SEQMISMATCH        | The join operation failed because the cluster database sequence number has changed or is incompatible with the locker node. This may happen during a join operation if the cluster database was changing during the join. |
| 5084    | 0x000013DC  | ERROR_RESMON_INVALID_STATE                | The resource monitor will not allow the fail operation to be performed while the resource is in its current state. This may happen if the resource is in a pending state.                                                 |
| 5085    | 0x000013DD  | ERROR_CLUSTER_GUM_NOT_LOCKER              | A non locker code got a request to reserve the lock for making global updates.                                                                                                                                            |
| 5086    | 0x000013DE  | ERROR_QUORUM_DISK_NOT_FOUND               | The quorum disk could not be located by the cluster service.                                                                                                                                                              |
| 5087    | 0x000013DF  | ERROR_DATABASE_BACKUP_CORRUPT             | The backup up cluster database is possibly corrupt.                                                                                                                                                                       |
| 5088    | 0x000013E0  | ERROR_CLUSTER_NODE_ALREADY_HAS_DFS_ROOT   | A DFS root already exists in this cluster node.                                                                                                                                                                           |
| 5089    | 0x000013E1  | ERROR_RESOURCE_PROPERTY_UNCHANGEABLE      | An attempt to modify a resource property failed because it conflicts with another existing property.                                                                                                                      |
| 5890    | 0x00001702  | ERROR_CLUSTER_MEMBERSHIP_INVALID_STATE    | An operation was attempted that is incompatible with the current membership state of the node.                                                                                                                            |
| 5891    | 0x00001703  | ERROR_CLUSTER_QUORUMLOG_NOT_FOUND         | The quorum resource does not contain the quorum log.                                                                                                                                                                      |
| 5892    | 0x00001704  | ERROR_CLUSTER_MEMBERSHIP_HALT             | The membership engine requested shutdown of the cluster service on this node.                                                                                                                                             |
| 5893    | 0x00001705  | ERROR_CLUSTER_INSTANCE_ID_MISMATCH        | The join operation failed because the cluster instance ID of the joining node does not match the cluster instance ID of the sponsor node.                                                                                 |
| 5894    | 0x00001706  | ERROR_CLUSTER_NETWORK_NOT_FOUND_FOR_IP    | A matching network for the specified IP address could not be found. Please also specify a subnet mask and a cluster network.                                                                                              |
| 5895    | 0x00001707  | ERROR_CLUSTER_PROPERTY_DATA_TYPE_MISMATCH | The actual data type of the property did not match the expected data type of the property.                                                                                                                                |
| 5896    | 0x00001708  | ERROR_CLUSTER_EVICT_WITHOUT_CLEANUP       | The cluster node was evicted from the cluster successfully. The node was not cleaned up because it does not support the evict cleanup functionality.                                                                      |

| Error   |             |                                      | Description                                                                                                                                                   |
|---------|-------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                 |                                                                                                                                                               |
| 6000    | 0x00001770  | ERROR_ENCRYPTION_FAILED              | The specified file could not be encrypted.                                                                                                                    |
| 6001    | 0x00001771  | ERROR_DECRIPTION_FAILED              | The specified file could not be decrypted.                                                                                                                    |
| 6002    | 0x00001772  | ERROR_FILE_ENCRYPTED                 | The specified file is encrypted and the user does not have the ability to decrypt it.                                                                         |
| 6003    | 0x00001773  | ERROR_NO_RECOVERY_POLICY             | There is no valid encryption recovery policy configured for this system.                                                                                      |
| 6004    | 0x00001774  | ERROR_NO_EFS                         | The required encryption driver is not loaded for this system.                                                                                                 |
| 6005    | 0x00001775  | ERROR_WRONG_EFS                      | The file was encrypted with a different encryption driver than is currently loaded.                                                                           |
| 6006    | 0x00001776  | ERROR_NO_USER_KEYS                   | There are no EFS keys defined for the user.                                                                                                                   |
| 6007    | 0x00001777  | ERROR_FILE_NOT_ENCRYPTED             | The specified file is not encrypted.                                                                                                                          |
| 6008    | 0x00001778  | ERROR_NOT_EXPORT_FORMAT              | The specified file is not in the defined EFS export format.                                                                                                   |
| 6009    | 0x00001779  | ERROR_FILE_READ_ONLY                 | The specified file is read only.                                                                                                                              |
| 6010    | 0x0000177A  | ERROR_DIR_EFS_DISALLOWED             | The directory has been disabled for encryption.                                                                                                               |
| 6011    | 0x0000177B  | ERROR_EFS_SERVER_NOT_TRUSTED         | The server is not trusted for remote encryption operation.                                                                                                    |
| 6012    | 0x0000177C  | ERROR_BAD_RECOVERY_POLICY            | Recovery policy configured for this system contains invalid recovery certificate.                                                                             |
| 6013    | 0x0000177D  | ERROR_EFS_ALG_BLOB_TOO_BIG           | The encryption algorithm used on the source file needs a bigger key buffer than the one on the destination file.                                              |
| 6014    | 0x0000177E  | ERROR_VOLUME_NOT_SUPPORT_EFS         | The disk partition does not support file encryption.                                                                                                          |
| 6118    | 0x000017E6  | ERROR_NO_BROWSER_SERVERS_FOUND       | The list of servers for this workgroup is not currently available.                                                                                            |
| 6200    | 0x00001838  | SCHED_E_SERVICE_NOT_LOCALSYSTEM      | The Task Scheduler service must be configured to run in the System account to function properly. Individual tasks may be configured to run in other accounts. |
| 7001    | 0x00001B59  | ERROR_CTX_WINSTATION_NAME_INVALID    | The specified session name is invalid.                                                                                                                        |
| 7002    | 0x00001B5A  | ERROR_CTX_INVALID_PD                 | The specified protocol driver is invalid.                                                                                                                     |
| 7003    | 0x00001B5B  | ERROR_CTX_PD_NOT_FOUND               | The specified protocol driver was not found in the system path.                                                                                               |
| 7004    | 0x00001B5C  | ERROR_CTX_WD_NOT_FOUND               | The specified terminal connection driver was not found in the system path.                                                                                    |
| 7005    | 0x00001B5D  | ERROR_CTX_CANNOT_MAKE_EVENTLOG_ENTRY | A registry key for event logging could not be created for this session.                                                                                       |
| 7006    | 0x00001B5E  | ERROR_CTX_SERVICE_NAME_COLLISION     | A service with the same name already exists on the system.                                                                                                    |
| 7007    | 0x00001B5F  | ERROR_CTX_CLOSE_PENDING              | A close operation is pending on the session.                                                                                                                  |
| 7008    | 0x00001B60  | ERROR_CTX_NO_OUTBUF                  | There are no free output buffers available.                                                                                                                   |
| 7009    | 0x00001B61  | ERROR_CTX_MODEM_INF_NOT_FOUND        | The MODEM.INF file was not found.                                                                                                                             |
| 7010    | 0x00001B62  | ERROR_CTX_INVALID_MODEMNAME          | The modem name was not found in MODEM.INF.                                                                                                                    |
| 7011    | 0x00001B63  | ERROR_CTX_MODEM_RESPONSE_ERROR       | The modem did not accept the command sent to it. Verify that the configured modem name matches the attached modem.                                            |
| 7012    | 0x00001B64  | ERROR_CTX_MODEM_RESPONSE_TIMEOUT     | The modem did not respond to the command sent to it. Verify that the modem is properly cabled and powered on.                                                 |
| 7013    | 0x00001B65  | ERROR_CTX_MODEM_RESPONSE_NO_CARRIER  | Carrier detect has failed or carrier has been dropped due to disconnect.                                                                                      |
| 7014    | 0x00001B66  | ERROR_CTX_MODEM_RESPONSE_NO_DIALTONE | Dial tone not detected within the required time. Verify that the phone cable is properly attached and functional.                                             |
| 7015    | 0x00001B67  | ERROR_CTX_MODEM_RESPONSE_BUSY        | Busy signal detected at remote site on callback.                                                                                                              |
| 7016    | 0x00001B68  | ERROR_CTX_MODEM_RESPONSE_VOICE       | Voice detected at remote site on callback.                                                                                                                    |
| 7017    | 0x00001B69  | ERROR_CTX_TD_ERROR                   | Transport driver error                                                                                                                                        |
| 7022    | 0x00001B6E  | ERROR_CTX_WINSTATION_NOT_FOUND       | The specified session cannot be found.                                                                                                                        |
| 7023    | 0x00001B6F  | ERROR_CTX_WINSTATION_ALREADY_EXISTS  | The specified session name is already in use.                                                                                                                 |
| 7024    | 0x00001B70  | ERROR_CTX_WINSTATION_BUSY            | The requested operation cannot be completed because the terminal connection is currently busy processing a connect, disconnect, reset, or delete operation.   |

| Error   |             |                                    | Description                                                                                                                                                                                                                     |
|---------|-------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                               |                                                                                                                                                                                                                                 |
| 7025    | 0x00001B71  | ERROR_CTX_BAD_VIDEO_MODE           | An attempt has been made to connect to a session whose video mode is not supported by the current client.                                                                                                                       |
| 7035    | 0x00001B7B  | ERROR_CTX_GRAPHICS_INVALID         | The application attempted to enable DOS graphics mode. DOS graphics mode is not supported.                                                                                                                                      |
| 7037    | 0x00001B7D  | ERROR_CTX_LOGON_DISABLED           | Your interactive logon privilege has been disabled. Please contact your administrator.                                                                                                                                          |
| 7038    | 0x00001B7E  | ERROR_CTX_NOT_CONSOLE              | The requested operation can be performed only on the system console. This is most often the result of a driver or system DLL requiring direct console access.                                                                   |
| 7040    | 0x00001B80  | ERROR_CTX_CLIENT_QUERY_TIMEOUT     | The client failed to respond to the server connect message.                                                                                                                                                                     |
| 7041    | 0x00001B81  | ERROR_CTX_CONSOLE_DISCONNECT       | Disconnecting the console session is not supported.                                                                                                                                                                             |
| 7042    | 0x00001B82  | ERROR_CTX_CONSOLE_CONNECT          | Reconnecting a disconnected session to the console is not supported.                                                                                                                                                            |
| 7044    | 0x00001B84  | ERROR_CTX_SHADOW_DENIED            | The request to control another session remotely was denied.                                                                                                                                                                     |
| 7045    | 0x00001B85  | ERROR_CTX_WINSTATION_ACCESS_DENIED | The requested session access is denied.                                                                                                                                                                                         |
| 7049    | 0x00001B89  | ERROR_CTX_INVALID_WD               | The specified terminal connection driver is invalid.                                                                                                                                                                            |
| 7050    | 0x00001B8A  | ERROR_CTX_SHADOW_INVALID           | The requested session cannot be controlled remotely. This may be because the session is disconnected or does not currently have a user logged on.                                                                               |
| 7051    | 0x00001B8B  | ERROR_CTX_SHADOW_DISABLED          | The requested session is not configured to allow remote control.                                                                                                                                                                |
| 7052    | 0x00001B8C  | ERROR_CTX_CLIENT_LICENSE_IN_USE    | Your request to connect to this Terminal Server has been rejected. Your Terminal Server client license number is currently being used by another user. Please call your system administrator to obtain a unique license number. |
| 7053    | 0x00001B8D  | ERROR_CTX_CLIENT_LICENSE_NOT_SET   | Your request to connect to this Terminal Server has been rejected. Your Terminal Server client license number has not been entered for this copy of the Terminal Server client. Please contact your system administrator.       |
| 7054    | 0x00001B8E  | ERROR_CTX_LICENSE_NOT_AVAILABLE    | The system has reached its licensed logon limit. Please try again later.                                                                                                                                                        |
| 7055    | 0x00001B8F  | ERROR_CTX_LICENSE_CLIENT_INVALID   | The client you are using is not licensed to use this system. Your logon request is denied.                                                                                                                                      |
| 7056    | 0x00001B90  | ERROR_CTX_LICENSE_EXPIRED          | The system license has expired. Your logon request is denied.                                                                                                                                                                   |
| 7057    | 0x00001B91  | ERROR_CTX_SHADOW_NOT_RUNNING       | Remote control could not be terminated because the specified session is not currently being remotely controlled.                                                                                                                |

| Error   |             |                                       | Description                                                                                                                                                             |
|---------|-------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                  |                                                                                                                                                                         |
| 8001    | 0x00001F41  | FRS_ERR_INVALID_API_SEQUENCE          | The file replication service API was called incorrectly.                                                                                                                |
| 8002    | 0x00001F42  | FRS_ERR_STARTING_SERVICE              | The file replication service cannot be started.                                                                                                                         |
| 8003    | 0x00001F43  | FRS_ERR_STOPPING_SERVICE              | The file replication service cannot be stopped.                                                                                                                         |
| 8004    | 0x00001F44  | FRS_ERR_INTERNAL_API                  | The file replication service API terminated the request. The event log may have more information.                                                                       |
| 8005    | 0x00001F45  | FRS_ERR_INTERNAL                      | The file replication service terminated the request. The event log may have more information.                                                                           |
| 8006    | 0x00001F46  | FRS_ERR_SERVICE_COMM                  | The file replication service cannot be contacted. The event log may have more information.                                                                              |
| 8007    | 0x00001F47  | FRS_ERR_INSUFFICIENT_PRIV             | The file replication service cannot satisfy the request because the user has insufficient privileges. The event log may have more information.                          |
| 8008    | 0x00001F48  | FRS_ERR_AUTHENTICATION                | The file replication service cannot satisfy the request because authenticated RPC is not available. The event log may have more information.                            |
| 8009    | 0x00001F49  | FRS_ERR_PARENT_INSUFFICIENT_PRIV      | The file replication service cannot satisfy the request because the user has insufficient privileges on the domain controller. The event log may have more information. |
| 8010    | 0x00001F4A  | FRS_ERR_PARENT_AUTHENTICATION         | The file replication service cannot satisfy the request because authenticated RPC is not available on the domain controller. The event log may have more information.   |
| 8011    | 0x00001F4B  | FRS_ERR_CHILD_TO_PARENT_COMM          | The file replication service cannot communicate with the file replication service on the domain controller. The event log may have more information.                    |
| 8012    | 0x00001F4C  | FRS_ERR_PARENT_TO_CHILD_COMM          | The file replication service on the domain controller cannot communicate with the file replication service on this computer. The event log may have more information.   |
| 8013    | 0x00001F4D  | FRS_ERR_SYSVOL_POPULATE               | The file replication service cannot populate the system volume because of an internal error. The event log may have more information.                                   |
| 8014    | 0x00001F4E  | FRS_ERR_SYSVOL_POPULATE_TIMEOUT       | The file replication service cannot populate the system volume because of an internal timeout. The event log may have more information.                                 |
| 8015    | 0x00001F4F  | FRS_ERR_SYSVOL_IS_BUSY                | The file replication service cannot process the request. The system volume is busy with a previous request.                                                             |
| 8016    | 0x00001F50  | FRS_ERR_SYSVOL_DEMOTE                 | The file replication service cannot stop replicating the system volume because of an internal error. The event log may have more information.                           |
| 8017    | 0x00001F51  | FRS_ERR_INVALID_SERVICE_PARAMETER     | The file replication service detected an invalid parameter.                                                                                                             |
| 8200    | 0x00002008  | ERROR_DS_NOT_INSTALLED                | An error occurred while installing the directory service. For more information, see the event log.                                                                      |
| 8201    | 0x00002009  | ERROR_DS_MEMBERSHIP_EVALUATED_LOCALLY | The directory service evaluated group memberships locally.                                                                                                              |
| 8202    | 0x0000200A  | ERROR_DS_NO_ATTRIBUTE_OR_VALUE        | The specified directory service attribute or value does not exist.                                                                                                      |
| 8203    | 0x0000200B  | ERROR_DS_INVALID_ATTRIBUTE_SYNTAX     | The attribute syntax specified to the directory service is invalid.                                                                                                     |
| 8204    | 0x0000200C  | ERROR_DS_ATTRIBUTE_TYPE_UNDEFINED     | The attribute type specified to the directory service is not defined.                                                                                                   |
| 8205    | 0x0000200D  | ERROR_DS_ATTRIBUTE_OR_VALUE_EXISTS    | The specified directory service attribute or value already exists.                                                                                                      |
| 8206    | 0x0000200E  | ERROR_DS_BUSY                         | The directory service is busy.                                                                                                                                          |
| 8207    | 0x0000200F  | ERROR_DS_UNAVAILABLE                  | The directory service is unavailable.                                                                                                                                   |
| 8208    | 0x00002010  | ERROR_DS_NO_RIDS_ALLOCATED            | The directory service was unable to allocate a relative identifier.                                                                                                     |
| 8209    | 0x00002011  | ERROR_DS_NO_MORE_RIDS                 | The directory service has exhausted the pool of relative identifiers.                                                                                                   |
| 8210    | 0x00002012  | ERROR_DS_INCORRECT_ROLE_OWNER         | The requested operation could not be performed because the directory service is not the master for that type of operation.                                              |

| Error   |             |                                     | Description                                                                                              |
|---------|-------------|-------------------------------------|----------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                |                                                                                                          |
| 8211    | 0x00002013  | ERROR_DS RIDMGR_INIT_ERROR          | The directory service was unable to initialize the subsystem that allocates relative identifiers.        |
| 8212    | 0x00002014  | ERROR_DS_OBJ_CLASS_VIOLATION        | The requested operation did not satisfy one or more constraints associated with the class of the object. |
| 8213    | 0x00002015  | ERROR_DS_CANT_ON_NON_LEAF           | The directory service can perform the requested operation only on a leaf object.                         |
| 8214    | 0x00002016  | ERROR_DS_CANT_ON_RDN                | The directory service cannot perform the requested operation on the RDN attribute of an object.          |
| 8215    | 0x00002017  | ERROR_DS_CANT_MOD_OBJ_CLASS         | The directory service detected an attempt to modify the object class of an object.                       |
| 8216    | 0x00002018  | ERROR_DS_CROSS_DOM_MOVE_ERROR       | The requested cross-domain move operation could not be performed.                                        |
| 8217    | 0x00002019  | ERROR_DS_GC_NOT_AVAILABLE           | Unable to contact the global catalog server.                                                             |
| 8218    | 0x0000201A  | ERROR_SHARED_POLICY                 | The policy object is shared and can only be modified at the root.                                        |
| 8219    | 0x0000201B  | ERROR_POLICY_OBJECT_NOT_FOUND       | The policy object does not exist.                                                                        |
| 8220    | 0x0000201C  | ERROR_POLICY_ONLY_IN_DS             | The requested policy information is only in the directory service.                                       |
| 8221    | 0x0000201D  | ERROR_PROMOTION_ACTIVE              | A domain controller promotion is currently active.                                                       |
| 8222    | 0x0000201E  | ERROR_NO_PROMOTION_ACTIVE           | A domain controller promotion is not currently active                                                    |
| 8224    | 0x00002020  | ERROR_DS_OPERATIONS_ERROR           | An operations error occurred.                                                                            |
| 8225    | 0x00002021  | ERROR_DS_PROTOCOL_ERROR             | A protocol error occurred.                                                                               |
| 8226    | 0x00002022  | ERROR_DS_TIMELIMIT_EXCEEDED         | The time limit for this request was exceeded.                                                            |
| 8227    | 0x00002023  | ERROR_DS_SIZELIMIT_EXCEEDED         | The size limit for this request was exceeded.                                                            |
| 8228    | 0x00002024  | ERROR_DS_ADMIN_LIMIT_EXCEEDED       | The administrative limit for this request was exceeded.                                                  |
| 8229    | 0x00002025  | ERROR_DS_COMPARE_FALSE              | The compare response was false.                                                                          |
| 8230    | 0x00002026  | ERROR_DS_COMPARE_TRUE               | The compare response was true.                                                                           |
| 8231    | 0x00002027  | ERROR_DS_AUTH_METHOD_NOT_SUPPORTED  | The requested authentication method is not supported by the server.                                      |
| 8232    | 0x00002028  | ERROR_DS_STRONG_AUTH_REQUIRED       | A more secure authentication method is required for this server.                                         |
| 8233    | 0x00002029  | ERROR_DS_INAPPROPRIATE_AUTH         | Inappropriate authentication.                                                                            |
| 8234    | 0x0000202A  | ERROR_DS_AUTH_UNKNOWN               | The authentication mechanism is unknown.                                                                 |
| 8235    | 0x0000202B  | ERROR_DS_REFERRAL                   | A referral was returned from the server.                                                                 |
| 8236    | 0x0000202C  | ERROR_DS_UNAVAILABLE_CRIT_EXTENSION | The server does not support the requested critical extension.                                            |
| 8237    | 0x0000202D  | ERROR_DS_CONFIDENTIALITY_REQUIRED   | This request requires a secure connection.                                                               |
| 8238    | 0x0000202E  | ERROR_DS_INAPPROPRIATE_MATCHING     | Inappropriate matching.                                                                                  |
| 8239    | 0x0000202F  | ERROR_DS_CONSTRAINT_VIOLATION       | A constraint violation occurred.                                                                         |
| 8240    | 0x00002030  | ERROR_DS_NO_SUCH_OBJECT             | There is no such object on the server.                                                                   |
| 8241    | 0x00002031  | ERROR_DS_ALIAS_PROBLEM              | There is an alias problem.                                                                               |
| 8242    | 0x00002032  | ERROR_DS_INVALID_DN_SYNTAX          | An invalid dn syntax has been specified.                                                                 |
| 8243    | 0x00002033  | ERROR_DS_IS_LEAF                    | The object is a leaf object.                                                                             |
| 8244    | 0x00002034  | ERROR_DS_ALIAS_DEREF_PROBLEM        | There is an alias dereferencing problem.                                                                 |
| 8245    | 0x00002035  | ERROR_DS_UNWILLING_TO_PERFORM       | The server is unwilling to process the request.                                                          |
| 8246    | 0x00002036  | ERROR_DS_LOOP_DETECT                | A loop has been detected.                                                                                |
| 8247    | 0x00002037  | ERROR_DS_NAMING_VIOLATION           | There is a naming violation.                                                                             |
| 8248    | 0x00002038  | ERROR_DS_OBJECT_RESULTS_TOO_LARGE   | The result set is too large.                                                                             |
| 8249    | 0x00002039  | ERROR_DS_AFFECTS_MULTIPLE_DSAS      | The operation affects multiple DSAs                                                                      |
| 8250    | 0x0000203A  | ERROR_DS_SERVER_DOWN                | The server is not operational.                                                                           |
| 8251    | 0x0000203B  | ERROR_DS_LOCAL_ERROR                | A local error has occurred.                                                                              |
| 8252    | 0x0000203C  | ERROR_DS_ENCODING_ERROR             | An encoding error has occurred.                                                                          |
| 8253    | 0x0000203D  | ERROR_DS_DECODING_ERROR             | A decoding error has occurred.                                                                           |
| 8254    | 0x0000203E  | ERROR_DS_FILTER_UNKNOWN             | The search filter cannot be recognized.                                                                  |
| 8255    | 0x0000203F  | ERROR_DS_PARAM_ERROR                | One or more parameters are illegal.                                                                      |
| 8256    | 0x00002040  | ERROR_DS_NOT_SUPPORTED              | The specified method is not supported.                                                                   |
| 8257    | 0x00002041  | ERROR_DS_NO_RESULTS_RETURNED        | No results were returned.                                                                                |

| Error   |             |                                   | Description                                                                                                        |
|---------|-------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                              |                                                                                                                    |
| 8258    | 0x00002042  | ERROR_DS_CONTROL_NOT_FOUND        | The specified control is not supported by the server.                                                              |
| 8259    | 0x00002043  | ERROR_DS_CLIENT_LOOP              | A referral loop was detected by the client.                                                                        |
| 8260    | 0x00002044  | ERROR_DS_REFERRAL_LIMIT_EXCEEDED  | The preset referral limit was exceeded.                                                                            |
| 8261    | 0x00002045  | ERROR_DS_SORT_CONTROL_MISSING     | The search requires a SORT control.                                                                                |
| 8262    | 0x00002046  | ERROR_DS_OFFSET_RANGE_ERROR       | The search results exceed the offset range specified.                                                              |
| 8301    | 0x0000206D  | ERROR_DS_ROOT_MUST_BE_NC          | The root object must be the head of a naming context. The root object cannot have an instantiated parent.          |
| 8302    | 0x0000206E  | ERROR_DS_ADD_REPLICA_INHIBITED    | The add replica operation cannot be performed. The naming context must be writable in order to create the replica. |
| 8303    | 0x0000206F  | ERROR_DS_ATT_NOT_DEF_IN_SCHEMA    | A reference to an attribute that is not defined in the schema occurred.                                            |
| 8304    | 0x00002070  | ERROR_DS_MAX_OBJ_SIZE_EXCEEDED    | The maximum size of an object has been exceeded.                                                                   |
| 8305    | 0x00002071  | ERROR_DS_OBJ_STRING_NAME_EXISTS   | An attempt was made to add an object to the directory with a name that is already in use.                          |
| 8306    | 0x00002072  | ERROR_DS_NO_RDN_DEFINED_IN_SCHEMA | An attempt was made to add an object of a class that does not have an RDN defined in the schema.                   |
| 8307    | 0x00002073  | ERROR_DS_RDN_DOESNT_MATCH_SCHEMA  | An attempt was made to add an object using an RDN that is not the RDN defined in the schema.                       |
| 8308    | 0x00002074  | ERROR_DS_NO_REQUESTED_ATTS_FOUND  | None of the requested attributes were found on the objects.                                                        |
| 8309    | 0x00002075  | ERROR_DS_USER_BUFFER_TO_SMALL     | The user buffer is too small.                                                                                      |
| 8310    | 0x00002076  | ERROR_DS_ATT_IS_NOT_ON_OBJ        | The attribute specified in the operation is not present on the object.                                             |
| 8311    | 0x00002077  | ERROR_DS_ILLEGAL_MOD_OPERATION    | Illegal modify operation. Some aspect of the modification is not permitted.                                        |
| 8312    | 0x00002078  | ERROR_DS_OBJ_TOO_LARGE            | The specified object is too large.                                                                                 |
| 8313    | 0x00002079  | ERROR_DS_BAD_INSTANCE_TYPE        | The specified instance type is not valid.                                                                          |
| 8314    | 0x0000207A  | ERROR_DS_MASTERDSA_REQUIRED       | The operation must be performed at a master DSA.                                                                   |
| 8315    | 0x0000207B  | ERROR_DS_OBJECT_CLASS_REQUIRED    | The object class attribute must be specified.                                                                      |
| 8316    | 0x0000207C  | ERROR_DS_MISSING_REQUIRED_ATT     | A required attribute is missing.                                                                                   |
| 8317    | 0x0000207D  | ERROR_DS_ATT_NOT_DEF_FOR_CLASS    | An attempt was made to modify an object to include an attribute that is not legal for its class                    |
| 8318    | 0x0000207E  | ERROR_DS_ATT_ALREADY_EXISTS       | The specified attribute is already present on the object.                                                          |
| 8320    | 0x00002080  | ERROR_DS_CANT_ADD_ATT_VALUES      | The specified attribute is not present, or has no values.                                                          |
| 8321    | 0x00002081  | ERROR_DS_SINGLE_VALUE_CONSTRAINT  | Multiple values were specified for an attribute that can have only one value.                                      |
| 8322    | 0x00002082  | ERROR_DS_RANGE_CONSTRAINT         | A value for the attribute was not in the acceptable range of values.                                               |
| 8323    | 0x00002083  | ERROR_DS_ATT_VAL_ALREADY_EXISTS   | The specified value already exists.                                                                                |
| 8324    | 0x00002084  | ERROR_DS_CANT_REM_MISSING_ATT     | The attribute cannot be removed because it is not present on the object.                                           |
| 8325    | 0x00002085  | ERROR_DS_CANT_REM_MISSING_ATT_VAL | The attribute value cannot be removed because it is not present on the object.                                     |
| 8326    | 0x00002086  | ERROR_DS_ROOT_CANT_BE_SUBREF      | The specified root object cannot be a subref.                                                                      |
| 8327    | 0x00002087  | ERROR_DS_NO_CHAINING              | Chaining is not permitted.                                                                                         |
| 8328    | 0x00002088  | ERROR_DS_NO_CHAINED_EVAL          | Chained evaluation is not permitted.                                                                               |
| 8329    | 0x00002089  | ERROR_DS_NO_PARENT_OBJECT         | The operation could not be performed because the object's parent is either uninstantiated or deleted.              |
| 8330    | 0x0000208A  | ERROR_DS_PARENT_IS_AN_ALIAS       | Having a parent that is an alias is not permitted. Aliases are leaf objects.                                       |
| 8331    | 0x0000208B  | ERROR_DS_CANT_MIX_MASTER_AND_REPS | The object and parent must be of the same type, either both masters or both replicas.                              |

| Error   |             |                                  | Description                                                                                                           |
|---------|-------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                             |                                                                                                                       |
| 8332    | 0x0000208C  | ERROR_DS_CHILDREN_EXIST          | The operation cannot be performed because child objects exist. This operation can only be performed on a leaf object. |
| 8333    | 0x0000208D  | ERROR_DS_OBJ_NOT_FOUND           | Directory object not found.                                                                                           |
| 8334    | 0x0000208E  | ERROR_DS_ALIASED_OBJ_MISSING     | The aliased object is missing.                                                                                        |
| 8335    | 0x0000208F  | ERROR_DS_BAD_NAME_SYNTAX         | The object name has bad syntax.                                                                                       |
| 8336    | 0x00002090  | ERROR_DS_ALIAS_POINTS_TO_ALIAS   | It is not permitted for an alias to refer to another alias.                                                           |
| 8337    | 0x00002091  | ERROR_DS_CANT_DEREF_ALIAS        | The alias cannot be dereferenced.                                                                                     |
| 8338    | 0x00002092  | ERROR_DS_OUT_OF_SCOPE            | The operation is out of scope.                                                                                        |
| 8339    | 0x00002093  | ERROR_DS_OBJECT_BEING_REMOVED    | The operation cannot continue because the object is in the process of being removed.                                  |
| 8340    | 0x00002094  | ERROR_DS_CANT_DELETE_DSA_OBJ     | The DSA object cannot be deleted.                                                                                     |
| 8341    | 0x00002095  | ERROR_DS_GENERIC_ERROR           | A directory service error has occurred.                                                                               |
| 8342    | 0x00002096  | ERROR_DS_DSA_MUST_BE_INT_MASTER  | The operation can only be performed on an internal master DSA object.                                                 |
| 8343    | 0x00002097  | ERROR_DS_CLASS_NOT_DSA           | The object must be of class DSA.                                                                                      |
| 8344    | 0x00002098  | ERROR_DS_INSUFF_ACCESS_RIGHTS    | Insufficient access rights to perform the operation.                                                                  |
| 8345    | 0x00002099  | ERROR_DS_ILLEGAL_SUPERIOR        | The object cannot be added because the parent is not on the list of possible superiors.                               |
| 8346    | 0x0000209A  | ERROR_DS_ATTRIBUTE_OWNED_BY_SAM  | Access to the attribute is not permitted because the attribute is owned by the Security Accounts Manager (SAM).       |
| 8347    | 0x0000209B  | ERROR_DS_NAME_TOO_MANY_PARTS     | The name has too many parts.                                                                                          |
| 8348    | 0x0000209C  | ERROR_DS_NAME_TOO_LONG           | The name is too long.                                                                                                 |
| 8349    | 0x0000209D  | ERROR_DS_NAME_VALUE_TOO_LONG     | The name value is too long.                                                                                           |
| 8350    | 0x0000209E  | ERROR_DS_NAME_UNPARSEABLE        | The directory service encountered an error parsing a name.                                                            |
| 8351    | 0x0000209F  | ERROR_DS_NAME_TYPE_UNKNOWN       | The directory service cannot get the attribute type for a name.                                                       |
| 8352    | 0x000020A0  | ERROR_DS_NOT_AN_OBJECT           | The name does not identify an object; the name identifies a phantom.                                                  |
| 8353    | 0x000020A1  | ERROR_DS_SEC_DESC_TOO_SHORT      | The security descriptor is too short.                                                                                 |
| 8354    | 0x000020A2  | ERROR_DS_SEC_DESC_INVALID        | The security descriptor is invalid.                                                                                   |
| 8355    | 0x000020A3  | ERROR_DS_NO_DELETED_NAME         | Failed to create name for deleted object.                                                                             |
| 8356    | 0x000020A4  | ERROR_DS_SUBREF_MUST_HAVE_PARENT | The parent of a new subref must exist.                                                                                |
| 8357    | 0x000020A5  | ERROR_DS_NCNAME_MUST_BE_NC       | The object must be a naming context.                                                                                  |
| 8358    | 0x000020A6  | ERROR_DS_CANT_ADD_SYSTEM_ONLY    | It is not permitted to add an attribute which is owned by the system.                                                 |
| 8359    | 0x000020A7  | ERROR_DS_CLASS_MUST_BE_CONCRETE  | The class of the object must be structural; you cannot instantiate an abstract class.                                 |
| 8360    | 0x000020A8  | ERROR_DS_INVALID_DMD             | The schema object could not be found.                                                                                 |
| 8361    | 0x000020A9  | ERROR_DS_OBJ_GUID_EXISTS         | A local object with this GUID (dead or alive) already exists.                                                         |
| 8362    | 0x000020AA  | ERROR_DS_NOT_ON_BACKLINK         | The operation cannot be performed on a back link.                                                                     |
| 8363    | 0x000020AB  | ERROR_DS_NO_CROSSREF_FOR_NC      | The cross reference for the specified naming context could not be found.                                              |
| 8364    | 0x000020AC  | ERROR_DS_SHUTTING_DOWN           | The operation could not be performed because the directory service is shutting down.                                  |
| 8365    | 0x000020AD  | ERROR_DS_UNKNOWN_OPERATION       | The directory service request is invalid.                                                                             |
| 8366    | 0x000020AE  | ERROR_DS_INVALID_ROLE_OWNER      | The role owner attribute could not be read.                                                                           |
| 8367    | 0x000020AF  | ERROR_DS_COULDNT_CONTACT_FSMO    | The requested FSMO operation failed. The current FSMO holder could not be reached.                                    |
| 8368    | 0x000020B0  | ERROR_DS_CROSS_NC_DN_RENAME      | Modification of a DN across a naming context is not permitted.                                                        |
| 8369    | 0x000020B1  | ERROR_DS_CANT_MOD_SYSTEM_ONLY    | The attribute cannot be modified because it is owned by the system.                                                   |
| 8370    | 0x000020B2  | ERROR_DS_REPLICATOR_ONLY         | Only the replicator can perform this function.                                                                        |
| 8371    | 0x000020B3  | ERROR_DS_OBJ_CLASS_NOT_DEFINED   | The specified class is not defined.                                                                                   |
| 8372    | 0x000020B4  | ERROR_DS_OBJ_CLASS_NOT_SUBCLASS  | The specified class is not a subclass.                                                                                |
| 8373    | 0x000020B5  | ERROR_DS_NAME_REFERENCE_INVALID  | The name reference is invalid.                                                                                        |

| Error   |             |                                     | Description                                                                                       |
|---------|-------------|-------------------------------------|---------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                |                                                                                                   |
| 8374    | 0x000020B6  | ERROR_DS_CROSS_REF_EXISTS           | A cross reference already exists.                                                                 |
| 8375    | 0x000020B7  | ERROR_DS_CANT_DEL_MASTER_CROSSREF   | It is not permitted to delete a master cross reference.                                           |
| 8376    | 0x000020B8  | ERROR_DS_SUBTREE_NOTIFY_NOT_NC_HEAD | Subtree notifications are only supported on NC heads.                                             |
| 8377    | 0x000020B9  | ERROR_DS_NOTIFY_FILTER_TOO_COMPLEX  | Notification filter is too complex.                                                               |
| 8378    | 0x000020BA  | ERROR_DS_DUP_RDN                    | Schema update failed: duplicate RDN.                                                              |
| 8379    | 0x000020BB  | ERROR_DS_DUP_OID                    | Schema update failed: duplicate OID                                                               |
| 8380    | 0x000020BC  | ERROR_DS_DUP_MAPI_ID                | Schema update failed: duplicate MAPI identifier.                                                  |
| 8381    | 0x000020BD  | ERROR_DS_DUP_SCHEMA_ID_GUID         | Schema update failed: duplicate schema-id GUID.                                                   |
| 8382    | 0x000020BE  | ERROR_DS_DUP_LDAP_DISPLAY_NAME      | Schema update failed: duplicate LDAP display name.                                                |
| 8383    | 0x000020BF  | ERROR_DS_SEMANTIC_ATT_TEST          | Schema update failed: range-lower less than range upper                                           |
| 8384    | 0x000020C0  | ERROR_DS_SYNTAX_MISMATCH            | Schema update failed: syntax mismatch                                                             |
| 8385    | 0x000020C1  | ERROR_DS_EXISTS_IN_MUST_HAVE        | Schema deletion failed: attribute is used in must-contain                                         |
| 8386    | 0x000020C2  | ERROR_DS_EXISTS_IN_MAY_HAVE         | Schema deletion failed: attribute is used in may-contain                                          |
| 8387    | 0x000020C3  | ERROR_DS_NONEXISTENT_MAY_HAVE       | Schema update failed: attribute in may-contain does not exist                                     |
| 8388    | 0x000020C4  | ERROR_DS_NONEXISTENT_MUST_HAVE      | Schema update failed: attribute in must-contain does not exist                                    |
| 8389    | 0x000020C5  | ERROR_DS_AUX_CLS_TEST_FAIL          | Schema update failed: class in aux-class list does not exist or is not an auxiliary class         |
| 8390    | 0x000020C6  | ERROR_DS_NONEXISTENT_POSS_SUP       | Schema update failed: class in poss-superiors does not exist                                      |
| 8391    | 0x000020C7  | ERROR_DS_SUB_CLS_TEST_FAIL          | Schema update failed: class in subclassof list does not exist or does not satisfy hierarchy rules |
| 8392    | 0x000020C8  | ERROR_DS_BAD_RDN_ATT_ID_SYNTAX      | Schema update failed: Rdn-Att-Id has wrong syntax                                                 |
| 8393    | 0x000020C9  | ERROR_DS_EXISTS_IN_AUX_CLS          | Schema deletion failed: class is used as auxiliary class                                          |
| 8394    | 0x000020CA  | ERROR_DS_EXISTS_IN_SUB_CLS          | Schema deletion failed: class is used as sub class                                                |
| 8395    | 0x000020CB  | ERROR_DS_EXISTS_IN_POSS_SUP         | Schema deletion failed: class is used as poss superior                                            |
| 8396    | 0x000020CC  | ERROR_DS_RECALCSHEMA_FAILED         | Schema update failed in recalculating validation cache.                                           |
| 8397    | 0x000020CD  | ERROR_DS_TREE_DELETE_NOT_FINISHED   | The tree deletion is not finished.                                                                |
| 8398    | 0x000020CE  | ERROR_DS_CANT_DELETE                | The requested delete operation could not be performed.                                            |
| 8399    | 0x000020CF  | ERROR_DS_ATT_SCHEMA_REQ_ID          | Cannot read the governs class identifier for the schema record.                                   |
| 8400    | 0x000020D0  | ERROR_DS_BAD_ATT_SCHEMA_SYNTAX      | The attribute schema has bad syntax.                                                              |
| 8401    | 0x000020D1  | ERROR_DS_CANT_CACHE_ATT             | The attribute could not be cached.                                                                |
| 8402    | 0x000020D2  | ERROR_DS_CANT_CACHE_CLASS           | The class could not be cached.                                                                    |
| 8403    | 0x000020D3  | ERROR_DS_CANT_REMOVE_ATT_CACHE      | The attribute could not be removed from the cache.                                                |
| 8404    | 0x000020D4  | ERROR_DS_CANT_REMOVE_CLASS_CACHE    | The class could not be removed from the cache.                                                    |
| 8405    | 0x000020D5  | ERROR_DS_CANT_RETRIEVE_DN           | The distinguished name attribute could not be read.                                               |
| 8406    | 0x000020D6  | ERROR_DS_MISSING_SUPREF             | A required subref is missing.                                                                     |
| 8407    | 0x000020D7  | ERROR_DS_CANT_RETRIEVE_INSTANCE     | The instance type attribute could not be retrieved.                                               |
| 8408    | 0x000020D8  | ERROR_DS_CODE_INCONSISTENCY         | An internal error has occurred.                                                                   |
| 8409    | 0x000020D9  | ERROR_DS_DATABASE_ERROR             | A database error has occurred.                                                                    |
| 8410    | 0x000020DA  | ERROR_DS_GOVERNSID_MISSING          | The attribute GOVERNSID is missing.                                                               |
| 8411    | 0x000020DB  | ERROR_DS_MISSING_EXPECTED_ATT       | An expected attribute is missing.                                                                 |
| 8412    | 0x000020DC  | ERROR_DS_NCNAME_MISSING_CR_REF      | The specified naming context is missing a cross reference.                                        |
| 8413    | 0x000020DD  | ERROR_DS_SECURITY_CHECKING_ERROR    | A security checking error has occurred.                                                           |
| 8414    | 0x000020DE  | ERROR_DS_SCHEMA_NOT_LOADED          | The schema is not loaded.                                                                         |

| Error   |             |                                         | Description                                                                                                                                                           |
|---------|-------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                    |                                                                                                                                                                       |
| 8415    | 0x000020DF  | ERROR_DS_SCHEMA_ALLOC_FAILED            | Schema allocation failed. Please check if the machine is running low on memory.                                                                                       |
| 8416    | 0x000020E0  | ERROR_DS_ATT_SCHEMA_REQ_SYNTAX          | Failed to obtain the required syntax for the attribute schema.                                                                                                        |
| 8417    | 0x000020E1  | ERROR_DS_GCVERIFY_ERROR                 | The global catalog verification failed. The global catalog is not available or does not support the operation. Some part of the directory is currently not available. |
| 8418    | 0x000020E2  | ERROR_DS_DRA_SCHEMA_MISMATCH            | The replication operation failed because of a schema mismatch between the servers involved.                                                                           |
| 8419    | 0x000020E3  | ERROR_DS_CANT_FIND_DSA_OBJ              | The DSA object could not be found.                                                                                                                                    |
| 8420    | 0x000020E4  | ERROR_DS_CANT_FIND_EXPECTED_NC          | The naming context could not be found.                                                                                                                                |
| 8421    | 0x000020E5  | ERROR_DS_CANT_FIND_NC_IN_CACHE          | The naming context could not be found in the cache.                                                                                                                   |
| 8422    | 0x000020E6  | ERROR_DS_CANT_RETRIEVE_CHILD            | The child object could not be retrieved.                                                                                                                              |
| 8423    | 0x000020E7  | ERROR_DS_SECURITY_ILLEGAL MODIFY        | The modification was not permitted for security reasons.                                                                                                              |
| 8424    | 0x000020E8  | ERROR_DS_CANT_REPLACE_HIDDEN_REC        | The operation cannot replace the hidden record.                                                                                                                       |
| 8425    | 0x000020E9  | ERROR_DS_BAD_HIERARCHY_FILE             | The hierarchy file is invalid.                                                                                                                                        |
| 8426    | 0x000020EA  | ERROR_DS_BUILD_HIERARCHY_TABLE FAILED   | The attempt to build the hierarchy table failed.                                                                                                                      |
| 8427    | 0x000020EB  | ERROR_DS_CONFIG_PARAM_MISSING           | The directory configuration parameter is missing from the registry.                                                                                                   |
| 8428    | 0x000020EC  | ERROR_DS_COUNTING_AB_INDICES FAILED     | The attempt to count the address book indices failed.                                                                                                                 |
| 8429    | 0x000020ED  | ERROR_DS_HIERARCHY_TABLE_MAL LOC FAILED | The allocation of the hierarchy table failed.                                                                                                                         |
| 8430    | 0x000020EE  | ERROR_DS_INTERNAL_FAILURE               | The directory service encountered an internal failure.                                                                                                                |
| 8431    | 0x000020EF  | ERROR_DS_UNKNOWN_ERROR                  | The directory service encountered an unknown failure.                                                                                                                 |
| 8432    | 0x000020F0  | ERROR_DS_ROOT_REQUIRES_CLASS_TOP        | A root object requires a class of 'top'.                                                                                                                              |
| 8433    | 0x000020F1  | ERROR_DS_REFUSING_FSMO_ROLES            | This directory server is shutting down, and cannot take ownership of new floating single-master operation roles.                                                      |
| 8434    | 0x000020F2  | ERROR_DS_MISSING_FSMO_SETTINGS          | The directory service is missing mandatory configuration information, and is unable to determine the ownership of floating single-master operation roles.             |
| 8435    | 0x000020F3  | ERROR_DS_UNABLE_TO_SURRENDER_ROLES      | The directory service was unable to transfer ownership of one or more floating single-master operation roles to other servers.                                        |
| 8436    | 0x000020F4  | ERROR_DS_DRA_GENERIC                    | The replication operation failed.                                                                                                                                     |
| 8437    | 0x000020F5  | ERROR_DS_DRA_INVALID_PARAMETER          | An invalid parameter was specified for this replication operation.                                                                                                    |
| 8438    | 0x000020F6  | ERROR_DS_DRA_BUSY                       | The directory service is too busy to complete the replication operation at this time.                                                                                 |
| 8439    | 0x000020F7  | ERROR_DS_DRA_BAD_DN                     | The distinguished name specified for this replication operation is invalid.                                                                                           |
| 8440    | 0x000020F8  | ERROR_DS_DRA_BAD_NC                     | The naming context specified for this replication operation is invalid.                                                                                               |
| 8441    | 0x000020F9  | ERROR_DS_DRA_DN_EXISTS                  | The distinguished name specified for this replication operation already exists.                                                                                       |
| 8442    | 0x000020FA  | ERROR_DS_DRA_INTERNAL_ERROR             | The replication system encountered an internal error.                                                                                                                 |
| 8443    | 0x000020FB  | ERROR_DS_DRA_INCONSISTENT_DIT           | The replication operation encountered a database inconsistency.                                                                                                       |
| 8444    | 0x000020FC  | ERROR_DS_DRA_CONNECTION FAILED          | The server specified for this replication operation could not be contacted.                                                                                           |
| 8445    | 0x000020FD  | ERROR_DS_DRA_BAD_INSTANCE_TYPE          | The replication operation encountered an object with an invalid instance type.                                                                                        |
| 8446    | 0x000020FE  | ERROR_DS_DRA_OUT_OF_MEM                 | The replication operation failed to allocate memory.                                                                                                                  |
| 8447    | 0x000020FF  | ERROR_DS_DRA_MAIL_PROBLEM               | The replication operation encountered an error with the mail system.                                                                                                  |

| Error   |             |                                            | Description                                                                                                                                                                                                                                                                                         |
|---------|-------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                       |                                                                                                                                                                                                                                                                                                     |
| 8448    | 0x00002100  | ERROR_DS_DRA_REF_ALREADY_EXISTS            | The replication reference information for the target server already exists.                                                                                                                                                                                                                         |
| 8449    | 0x00002101  | ERROR_DS_DRA_REF_NOT_FOUND                 | The replication reference information for the target server does not exist.                                                                                                                                                                                                                         |
| 8450    | 0x00002102  | ERROR_DS_DRA_OBJ_IS_REP_SOURCE             | The naming context cannot be removed because it is replicated to another server.                                                                                                                                                                                                                    |
| 8451    | 0x00002103  | ERROR_DS_DRA_DB_ERROR                      | The replication operation encountered a database error.                                                                                                                                                                                                                                             |
| 8452    | 0x00002104  | ERROR_DS_DRA_NO_REPLICA                    | The naming context is in the process of being removed or is not replicated from the specified server.                                                                                                                                                                                               |
| 8453    | 0x00002105  | ERROR_DS_DRA_ACCESS_DENIED                 | Replication access was denied.                                                                                                                                                                                                                                                                      |
| 8454    | 0x00002106  | ERROR_DS_DRA_NOT_SUPPORTED                 | The requested operation is not supported by this version of the directory service.                                                                                                                                                                                                                  |
| 8455    | 0x00002107  | ERROR_DS_DRA_RPC_CANCELLED                 | The replication remote procedure call was cancelled.                                                                                                                                                                                                                                                |
| 8456    | 0x00002108  | ERROR_DS_DRA_SOURCE_DISABLED               | The source server is currently rejecting replication requests.                                                                                                                                                                                                                                      |
| 8457    | 0x00002109  | ERROR_DS_DRA_SINK_DISABLED                 | The destination server is currently rejecting replication requests.                                                                                                                                                                                                                                 |
| 8458    | 0x0000210A  | ERROR_DS_DRA_NAME_COLLISION                | The replication operation failed due to a collision of object names.                                                                                                                                                                                                                                |
| 8459    | 0x0000210B  | ERROR_DS_DRA_SOURCE_REINSTALLED            | The replication source has been reinstalled.                                                                                                                                                                                                                                                        |
| 8460    | 0x0000210C  | ERROR_DS_DRA_MISSING_PARENT                | The replication operation failed because a required parent object is missing.                                                                                                                                                                                                                       |
| 8461    | 0x0000210D  | ERROR_DS_DRA_PREEMPTED                     | The replication operation was preempted.                                                                                                                                                                                                                                                            |
| 8462    | 0x0000210E  | ERROR_DS_DRA_ABANDON_SYNC                  | The replication synchronization attempt was abandoned because of a lack of updates.                                                                                                                                                                                                                 |
| 8463    | 0x0000210F  | ERROR_DS_DRA_SHUTDOWN                      | The replication operation was terminated because the system is shutting down.                                                                                                                                                                                                                       |
| 8464    | 0x00002110  | ERROR_DS_DRA_INCOMPATIBLE_PARTIAL_SET      | The replication synchronization attempt failed as the destination partial attribute set is not a subset of source partial attribute set.                                                                                                                                                            |
| 8465    | 0x00002111  | ERROR_DS_DRA_SOURCE_IS_PARTIAL_REPLICA     | The replication synchronization attempt failed because a master replica attempted to sync from a partial replica.                                                                                                                                                                                   |
| 8466    | 0x00002112  | ERROR_DS_DRA_EXTN_CONNECTION_FAILED        | The server specified for this replication operation was contacted, but that server was unable to contact an additional server needed to complete the operation.                                                                                                                                     |
| 8467    | 0x00002113  | ERROR_DS_INSTALL_SCHEMA_MISMATCH           | The version of the Active Directory schema of the source forest is not compatible with the version of Active Directory on this computer. You must upgrade the operating system on a domain controller in the source forest before this computer can be added as a domain controller to that forest. |
| 8468    | 0x00002114  | ERROR_DS_DUP_LINK_ID                       | Schema update failed: An attribute with the same link identifier already exists.                                                                                                                                                                                                                    |
| 8469    | 0x00002115  | ERROR_DS_NAME_ERROR_RESOLVING              | Name translation: Generic processing error.                                                                                                                                                                                                                                                         |
| 8470    | 0x00002116  | ERROR_DS_NAME_ERROR_NOT_FOUND              | Name translation: Could not find the name or insufficient right to see name.                                                                                                                                                                                                                        |
| 8471    | 0x00002117  | ERROR_DS_NAME_ERROR_NOT_UNIQUE             | Name translation: Input name mapped to more than one output name.                                                                                                                                                                                                                                   |
| 8472    | 0x00002118  | ERROR_DS_NAME_ERROR_NO_MAPPING             | Name translation: Input name found, but not the associated output format.                                                                                                                                                                                                                           |
| 8473    | 0x00002119  | ERROR_DS_NAME_ERROR_DOMAIN_ONLY            | Name translation: Unable to resolve completely, only the domain was found.                                                                                                                                                                                                                          |
| 8474    | 0x0000211A  | ERROR_DS_NAME_ERROR_NO_SYNTACTICAL_MAPPING | Name translation: Unable to perform purely syntactical mapping at the client without going out to the wire.                                                                                                                                                                                         |
| 8475    | 0x0000211B  | ERROR_DS_CONSTRUCTED_ATT_MOD               | Modification of a constructed att is not allowed.                                                                                                                                                                                                                                                   |
| 8476    | 0x0000211C  | ERROR_DS_WRONG_OM_OBJ_CLASS                | The OM-Object-Class specified is incorrect for an attribute with the specified syntax.                                                                                                                                                                                                              |
| 8477    | 0x0000211D  | ERROR_DS_DRA_REPL_PENDING                  | The replication request has been posted; waiting for reply.                                                                                                                                                                                                                                         |

| Error   |             |                                          | Description                                                                                                                                                                                                                                                                                                                                                                                          |
|---------|-------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                     |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 8478    | 0x0000211E  | ERROR_DS_DS_REQUIRED                     | The requested operation requires a directory service, and none was available.                                                                                                                                                                                                                                                                                                                        |
| 8479    | 0x0000211F  | ERROR_DS_INVALID_LDAP_DISPLAY_NAME       | The LDAP display name of the class or attribute contains non-ASCII characters.                                                                                                                                                                                                                                                                                                                       |
| 8480    | 0x00002120  | ERROR_DS_NON_BASE_SEARCH                 | The requested search operation is only supported for base searches.                                                                                                                                                                                                                                                                                                                                  |
| 8481    | 0x00002121  | ERROR_DS_CANT_RETRIEVE_ATTS              | The search failed to retrieve attributes from the database.                                                                                                                                                                                                                                                                                                                                          |
| 8482    | 0x00002122  | ERROR_DS_BACKLINK_WITHOUT_LINK           | The schema update operation tried to add a backward link attribute that has no corresponding forward link.                                                                                                                                                                                                                                                                                           |
| 8483    | 0x00002123  | ERROR_DS_EPOCH_MISMATCH                  | Source and destination of a cross domain move do not agree on the object's epoch number. Either source or destination does not have the latest version of the object.                                                                                                                                                                                                                                |
| 8484    | 0x00002124  | ERROR_DS_SRC_NAME_MISMATCH               | Source and destination of a cross domain move do not agree on the object's current name. Either source or destination does not have the latest version of the object.                                                                                                                                                                                                                                |
| 8485    | 0x00002125  | ERROR_DS_SRC_AND_DST_NC_IDENTICAL        | Source and destination of a cross domain move operation are identical. Caller should use local move operation instead of cross domain move operation.                                                                                                                                                                                                                                                |
| 8486    | 0x00002126  | ERROR_DS_DST_NC_MISMATCH                 | Source and destination for a cross domain move are not in agreement on the naming contexts in the forest. Either source or destination does not have the latest version of the Partitions container.                                                                                                                                                                                                 |
| 8487    | 0x00002127  | ERROR_DS_NOT_AUTHORITIVE_FOR_DST_NC      | Destination of a cross domain move is not authoritative for the destination naming context.                                                                                                                                                                                                                                                                                                          |
| 8488    | 0x00002128  | ERROR_DS_SRC_GUID_MISMATCH               | Source and destination of a cross domain move do not agree on the identity of the source object. Either source or destination does not have the latest version of the source object.                                                                                                                                                                                                                 |
| 8489    | 0x00002129  | ERROR_DS_CANT_MOVE_DELETED_OBJECT        | Object being moved across domains is already known to be deleted by the destination server. The source server does not have the latest version of the source object.                                                                                                                                                                                                                                 |
| 8490    | 0x0000212A  | ERROR_DS_PDC_OPERATION_IN_PROGRESS       | Another operation which requires exclusive access to the PDC PSMO is already in progress.                                                                                                                                                                                                                                                                                                            |
| 8491    | 0x0000212B  | ERROR_DS_CROSS_DOMAIN_CLEANUP_REQD       | A cross domain move operation failed such that the two versions of the moved object exist - one each in the source and destination domains. The destination object needs to be removed to restore the system to a consistent state.                                                                                                                                                                  |
| 8492    | 0x0000212C  | ERROR_DS_ILLEGAL_XDOM_MOVE_OPERATION     | This object may not be moved across domain boundaries either because cross domain moves for this class are disallowed, or the object has some special characteristics, eg: trust account or restricted RID, which prevent its move.                                                                                                                                                                  |
| 8493    | 0x0000212D  | ERROR_DS_CANT_WITH_ACCT_GROUP_MEMBERSHPS | Can't move objects with memberships across domain boundaries as once moved, this would violate the membership conditions of the account group. Remove the object from any account group memberships and retry.                                                                                                                                                                                       |
| 8494    | 0x0000212E  | ERROR_DS_NC_MUST_HAVE_NC_PARENT          | A naming context head must be the immediate child of another naming context head, not of an interior node.                                                                                                                                                                                                                                                                                           |
| 8495    | 0x0000212F  | ERROR_DS_CR_IMPOSSIBLE_TO_VALIDATE       | The directory cannot validate the proposed naming context name because it does not hold a replica of the naming context above the proposed naming context. Please ensure that the domain naming master role is held by a server that is configured as a global catalog server, and that the server is up to date with its replication partners. (Applies only to Windows 2000 Domain Naming masters) |
| 8496    | 0x00002130  | ERROR_DS_DST_DOMAIN_NOT_NATIVE           | Destination domain must be in native mode.                                                                                                                                                                                                                                                                                                                                                           |

| Error   |             |                                           | Description                                                                                                                |
|---------|-------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                      |                                                                                                                            |
| 8497    | 0x00002131  | ERROR_DS_MISSING_INFRASTRUCTURE_CONTAINER | The operation can not be performed because the server does not have an infrastructure container in the domain of interest. |
| 8498    | 0x00002132  | ERROR_DS_CANT_MOVE_ACCOUNT_GROUP          | Cross-domain move of non-empty account groups is not allowed.                                                              |
| 8499    | 0x00002133  | ERROR_DS_CANT_MOVE_RESOURCE_GROUP         | Cross-domain move of non-empty resource groups is not allowed.                                                             |

| Error   |             |                                                   | Description                                                                                                                                                                                                                                                                                                      |
|---------|-------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                              |                                                                                                                                                                                                                                                                                                                  |
| 8500    | 0x00002134  | ERROR_DS_INVALID_SEARCH_FLAG                      | The search flags for the attribute are invalid. The ANR bit is valid only on attributes of Unicode or Teletex strings.                                                                                                                                                                                           |
| 8501    | 0x00002135  | ERROR_DS_NO_TREE_DELETE_ABOVE_NC                  | Tree deletions starting at an object which has an NC head as a descendant are not allowed.                                                                                                                                                                                                                       |
| 8502    | 0x00002136  | ERROR_DS_COULDNT_LOCK_TREE_FOR_DELETE             | The directory service failed to lock a tree in preparation for a tree deletion because the tree was in use.                                                                                                                                                                                                      |
| 8503    | 0x00002137  | ERROR_DS_COULDNT_IDENTIFY_OBJECTS_FOR_TREE_DELETE | The directory service failed to identify the list of objects to delete while attempting a tree deletion.                                                                                                                                                                                                         |
| 8504    | 0x00002138  | ERROR_DS_SAM_INIT_FAILURE                         | Security Accounts Manager initialization failed because of the following error: %1. Error Status: 0x%2. Click OK to shut down the system and reboot into Directory Services Restore Mode. Check the event log for detailed information.                                                                          |
| 8505    | 0x00002139  | ERROR_DS_SENSITIVE_GROUP_VIOLATION                | Only an administrator can modify the membership list of an administrative group.                                                                                                                                                                                                                                 |
| 8506    | 0x0000213A  | ERROR_DS_CANT_MOD_PRIMARYGROUPID                  | Cannot change the primary group ID of a domain controller account.                                                                                                                                                                                                                                               |
| 8507    | 0x0000213B  | ERROR_DS_ILLEGAL_BASE_SCHEMA_MOD                  | An attempt is made to modify the base schema.                                                                                                                                                                                                                                                                    |
| 8508    | 0x0000213C  | ERROR_DS_NONSAFE_SCHEMA_CHANGE                    | Adding a new mandatory attribute to an existing class, deleting a mandatory attribute from an existing class, or adding an optional attribute to the special class Top that is not a backlink attribute (directly or through inheritance, for example, by adding or deleting an auxiliary class) is not allowed. |
| 8509    | 0x0000213D  | ERROR_DS_SCHEMA_UPDATE_DISALLOWED                 | Schema update is not allowed on this DC because the DC is not the schema FSMO Role Owner.                                                                                                                                                                                                                        |
| 8510    | 0x0000213E  | ERROR_DS_CANT_CREATE_UNDER_SCHEMA                 | An object of this class cannot be created under the schema container. You can only create attribute-schema and class-schema objects under the schema container.                                                                                                                                                  |
| 8511    | 0x0000213F  | ERROR_DS_INSTALL_NO_SRC_SCH_VERSION               | The replica/child install failed to get the objectVersion attribute on the schema container on the source DC. Either the attribute is missing on the schema container or the credentials supplied do not have permission to read it.                                                                             |
| 8512    | 0x00002140  | ERROR_DS_INSTALL_NO_SCH_VERSION_IN_INIFILE        | The replica/child install failed to read the objectVersion attribute in the SCHEMA section of the file schema.ini in the system32 directory.                                                                                                                                                                     |
| 8513    | 0x00002141  | ERROR_DS_INVALID_GROUP_TYPE                       | The specified group type is invalid.                                                                                                                                                                                                                                                                             |
| 8514    | 0x00002142  | ERROR_DS_NO_NEST_GLOBAL_GROUP_IN_MIXEDDOMAIN      | Cannot nest global groups in a mixed domain if the group is security-enabled.                                                                                                                                                                                                                                    |
| 8515    | 0x00002143  | ERROR_DS_NO_NEST_LOCAL_GROUP_IN_MIXEDDOMAIN       | Cannot nest local groups in a mixed domain if the group is security-enabled.                                                                                                                                                                                                                                     |
| 8516    | 0x00002144  | ERROR_DS_GLOBAL_CANT_HAVE_LOCAL_MEMBER            | A global group cannot have a local group as a member.                                                                                                                                                                                                                                                            |
| 8517    | 0x00002145  | ERROR_DS_GLOBAL_CANT_HAVE_UNIVERSAL_MEMBER        | A global group cannot have a universal group as a member.                                                                                                                                                                                                                                                        |
| 8518    | 0x00002146  | ERROR_DS_UNIVERSAL_CANT_HAVE_LOCAL_MEMBER         | A universal group cannot have a local group as a member.                                                                                                                                                                                                                                                         |
| 8519    | 0x00002147  | ERROR_DS_GLOBAL_CANT_HAVE_CROSSDOMAIN_MEMBER      | A global group cannot have a cross-domain member.                                                                                                                                                                                                                                                                |
| 8520    | 0x00002148  | ERROR_DS_LOCAL_CANT_HAVE_CROSSDOMAIN_LOCAL_MEMBER | A local group cannot have another cross-domain local group as a member.                                                                                                                                                                                                                                          |
| 8521    | 0x00002149  | ERROR_DS_HAVE_PRIMARY_MEMBERS                     | A group with primary members cannot change to a security-disabled group.                                                                                                                                                                                                                                         |
| 8522    | 0x0000214A  | ERROR_DS_STRING_SD_CONVERSION_FAILED              | The schema cache load failed to convert the string default SD on a class-schema object.                                                                                                                                                                                                                          |
| 8523    | 0x0000214B  | ERROR_DS_NAMING_MASTER_GC                         | Only DSAs configured to be Global Catalog servers should be allowed to hold the Domain Naming Master FSMO role. (Applies only to Windows 2000 servers)                                                                                                                                                           |
| 8524    | 0x0000214C  | ERROR_DS_LOOKUP_FAILURE                           | The DSA operation is unable to proceed because of a DNS lookup failure.                                                                                                                                                                                                                                          |

| Error   |             |                                            | Description                                                                                                                                                                                                       |
|---------|-------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                       |                                                                                                                                                                                                                   |
| 8525    | 0x0000214D  | ERROR_DS_COULDNT_UPDATE_SPNS               | While processing a change to the DNS Host Name for an object, the Service Principal Name values could not be kept in sync.                                                                                        |
| 8526    | 0x0000214E  | ERROR_DS_CANT_RETRIEVE_SD                  | The Security Descriptor attribute could not be read.                                                                                                                                                              |
| 8527    | 0x0000214F  | ERROR_DS_KEY_NOT_UNIQUE.                   | The object requested was not found, but an object with that key was found.                                                                                                                                        |
| 8528    | 0x00002150  | ERROR_DS_WRONG_LINKED_ATT_SYNTAX           | The syntax of the linked attributed being added is incorrect. Forward links can only have syntax 2.5.5.1, 2.5.5.7, and 2.5.5.14, and backlinks can only have syntax 2.5.5.1.                                      |
| 8529    | 0x00002151  | ERROR_DS_SAM_NEED_BOOTKEY_PASSWORD         | Security Account Manager needs to get the boot password.                                                                                                                                                          |
| 8530    | 0x00002152  | ERROR_DS_SAM_NEED_BOOTKEY_FLOPPY           | Security Account Manager needs to get the boot key from floppy disk.                                                                                                                                              |
| 8531    | 0x00002153  | ERROR_DS_CANT_START                        | Directory Service cannot start.                                                                                                                                                                                   |
| 8532    | 0x00002154  | ERROR_DS_INIT_FAILURE                      | Directory Services could not start.                                                                                                                                                                               |
| 8533    | 0x00002155  | ERROR_DS_NO_PKT_PRIVACY_ON_CONNECTION      | The connection between client and server requires packet privacy or better.                                                                                                                                       |
| 8534    | 0x00002156  | ERROR_DS_SOURCE_DOMAIN_IN_FOREST           | The source domain may not be in the same forest as destination.                                                                                                                                                   |
| 8535    | 0x00002157  | ERROR_DS_DESTINATION_DOMAIN_NOT_IN_FOREST  | The destination domain must be in the forest.                                                                                                                                                                     |
| 8536    | 0x00002158  | ERROR_DS_DESTINATION_AUDITING_NOT_ENABLED  | The operation requires that destination domain auditing be enabled.                                                                                                                                               |
| 8537    | 0x00002159  | ERROR_DS_CANT_FIND_DC_FOR_SRC_DOMAIN       | The operation couldn't locate a DC for the source domain.                                                                                                                                                         |
| 8538    | 0x0000215A  | ERROR_DS_SRC_OBJ_NOT_GROUP_OR_USER         | The source object must be a group or user.                                                                                                                                                                        |
| 8539    | 0x0000215B  | ERROR_DS_SRC_SID_EXISTS_IN_FOREST          | The source object's SID already exists in destination forest.                                                                                                                                                     |
| 8540    | 0x0000215C  | ERROR_DS_SRC_AND_DST_OBJECT_CLASS_MISMATCH | The source and destination object must be of the same type.                                                                                                                                                       |
| 8541    | 0x0000215D  | ERROR_SAM_INIT_FAILURE                     | Security Accounts Manager initialization failed because of the following error: %1. Error Status: 0x%2. Click OK to shut down the system and reboot into Safe Mode. Check the event log for detailed information. |
| 8542    | 0x0000215E  | ERROR_DS_DRA_SCHEMA_INFO_SHIP              | Schema information could not be included in the replication request.                                                                                                                                              |
| 8543    | 0x0000215F  | ERROR_DS_DRA_SCHEMA_CONFLICT               | The replication operation could not be completed due to a schema incompatibility.                                                                                                                                 |
| 8544    | 0x00002160  | ERROR_DS_DRA_EARLIER_SCHEMA_CONFLICT       | The replication operation could not be completed due to a previous schema incompatibility.                                                                                                                        |
| 8545    | 0x00002161  | ERROR_DS_DRA_OBJ_NC_MISMATCH               | The replication update could not be applied because either the source or the destination has not yet received information regarding a recent cross-domain move operation.                                         |
| 8546    | 0x00002162  | ERROR_DS_NC_STILL_HAS_DSAS                 | The requested domain could not be deleted because there exist domain controllers that still host this domain.                                                                                                     |
| 8547    | 0x00002163  | ERROR_DS_GC_REQUIRED                       | The requested operation can be performed only on a global catalog server.                                                                                                                                         |
| 8548    | 0x00002164  | ERROR_DS_LOCAL_MEMBER_OF_LOCAL_ONLY        | A local group can only be a member of other local groups in the same domain.                                                                                                                                      |
| 8549    | 0x00002165  | ERROR_DS_NO_FPO_IN_UNIVERSAL_GROUPS        | Foreign security principals cannot be members of universal groups.                                                                                                                                                |
| 8550    | 0x00002166  | ERROR_DS_CANT_ADD_TO_GC                    | The attribute is not allowed to be replicated to the GC because of security reasons.                                                                                                                              |
| 8551    | 0x00002167  | ERROR_DS_NO_CHECKPOINT_WITH_PDC            | The checkpoint with the PDC could not be taken because there are too many modifications being processed currently.                                                                                                |
| 8552    | 0x00002168  | ERROR_DS_SOURCE_AUDITING_NOT_ENABLED       | The operation requires that source domain auditing be enabled.                                                                                                                                                    |
| 8553    | 0x00002169  | ERROR_DS_CANT_CREATE_IN_NONDOMAIN_NC       | Security principal objects can only be created inside domain naming contexts.                                                                                                                                     |

| Error   |             |                                             | Description                                                                                                                                                                                                                   |
|---------|-------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                        |                                                                                                                                                                                                                               |
| 8554    | 0x0000216A  | ERROR_DS_INVALID_NAME_FOR_SPN               | A Service Principal Name (SPN) could not be constructed because the provided hostname is not in the necessary format.                                                                                                         |
| 8555    | 0x0000216B  | ERROR_DS_FILTERUSES_CONTRUCTED_ATTRIBUTES   | A Filter was passed that uses constructed attributes.                                                                                                                                                                         |
| 8556    | 0x0000216C  | ERROR_DS_UNICODEPWD_NOT_IN_QUOTES           | The unicodePwd attribute value must be enclosed in double quotes.                                                                                                                                                             |
| 8557    | 0x0000216D  | ERROR_DS_MACHINE_ACCOUNT_QUOTA_EXCEEDED     | Your computer could not be joined to the domain. You have exceeded the maximum number of computer accounts you are allowed to create in this domain. Contact your system administrator to have this limit reset or increased. |
| 8558    | 0x0000216E  | ERROR_DS_MUST_BE_RUN_ON_DST_DC              | For security reasons, the operation must be run on the destination DC.                                                                                                                                                        |
| 8559    | 0x0000216F  | ERROR_DS_SRC_DC_MUST_BE_SP4_OR_GREATER      | For security reasons, the source DC must be NT4SP4 or greater.                                                                                                                                                                |
| 8560    | 0x00002170  | ERROR_DS_CANT_TREE_DELETE_CRITICAL_OBJ      | Critical Directory Service System objects cannot be deleted during tree delete operations. The tree delete may have been partially performed.                                                                                 |
| 8561    | 0x00002171  | ERROR_DS_INIT_FAILURE_CONSOLE               | Directory Services could not start because of the following error: %1. Error Status: 0x%2. Please click OK to shutdown the system. You can use the recovery console to diagnose the system further.                           |
| 8562    | 0x00002172  | ERROR_DS_SAM_INIT_FAILURE_CONSOLE           | Security Accounts Manager initialization failed because of the following error: %1. Error Status: 0x%2. Please click OK to shutdown the system. You can use the recovery console to diagnose the system further.              |
| 8563    | 0x00002173  | ERROR_DS_FOREST_VERSION_TOO_HIGH            | This version of Windows is too old to support the current directory forest behavior. You must upgrade the operating system on this server before it can become a domain controller in this forest.                            |
| 8564    | 0x00002174  | ERROR_DS_DOMAIN_VERSION_TOO_HIGH            | This version of Windows is too old to support the current domain behavior. You must upgrade the operating system on this server before it can become a domain controller in this domain.                                      |
| 8565    | 0x00002175  | ERROR_DS_FOREST_VERSION_TOO_LOW             | This version of Windows no longer supports the behavior version in use in this directory forest. You must advance the forest behavior version before this server can become a domain controller in the forest.                |
| 8566    | 0x00002176  | ERROR_DS_DOMAIN_VERSION_TOO_LOW             | This version of Windows no longer supports the behavior version in use in this domain. You must advance the domain behavior version before this server can become a domain controller in the domain.                          |
| 8567    | 0x00002177  | ERROR_DS_INCOMPATIBLE_VERSION               | The version of Windows is incompatible with the behavior version of the domain or forest.                                                                                                                                     |
| 8568    | 0x00002178  | ERROR_DS_LOW_DSA_VERSION                    | The behavior version cannot be increased to the requested value because Domain Controllers still exist with versions lower than the requested value.                                                                          |
| 8569    | 0x00002179  | ERROR_DS_NO_BEHAVIOR_VERSION_IN_MIXEDDOMAIN | The behavior version value cannot be increased while the domain is still in mixed domain mode. You must first change the domain to native mode before increasing the behavior version.                                        |
| 8570    | 0x0000217A  | ERROR_DS_NOT_SUPPORTED_SORT_ORDER           | The sort order requested is not supported.                                                                                                                                                                                    |
| 8571    | 0x0000217B  | ERROR_DS_NAME_NOT_UNIQUE                    | Found an object with a non unique name.                                                                                                                                                                                       |
| 8572    | 0x0000217C  | ERROR_DS_MACHINE_ACCOUNT_CREATED_PRENT4     | The machine account was created pre-NT4. The account needs to be recreated.                                                                                                                                                   |
| 8573    | 0x0000217D  | ERROR_DS_OUT_OF_VERSION_STORE               | The database is out of version store.                                                                                                                                                                                         |
| 8574    | 0x0000217E  | ERROR_DS_INCOMPATIBLE_CONTROLS_USED         | Unable to continue operation because multiple conflicting controls were used.                                                                                                                                                 |
| 8575    | 0x0000217F  | ERROR_DS_NO_REF_DOMAIN                      | Unable to find a valid security descriptor reference domain for this partition.                                                                                                                                               |

| Error   |             |                                               | Description                                                                                                                                                                                                                                                                                                                                                                  |
|---------|-------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                          |                                                                                                                                                                                                                                                                                                                                                                              |
| 8576    | 0x00002180  | ERROR_DS_RESERVED_LINK_ID                     | Schema update failed: The link identifier is re-served.                                                                                                                                                                                                                                                                                                                      |
| 8577    | 0x00002181  | ERROR_DS_LINK_ID_NOT_AVAILABLE                | Schema update failed: There are no link identifiers available.                                                                                                                                                                                                                                                                                                               |
| 8578    | 0x00002182  | ERROR_DS_AG_CANT_HAVE_UNIVERSAL_MEMBER        | An account group can not have a universal group as a member.                                                                                                                                                                                                                                                                                                                 |
| 8579    | 0x00002183  | ERROR_DS MODIFYDN_DISALLOWED_BY_INSTANCE_TYPE | Rename or move operations on naming context heads or read-only objects are not allowed.                                                                                                                                                                                                                                                                                      |
| 8580    | 0x00002184  | ERROR_DS_NO_OBJECT_MOVE_IN_SCHEMA_NC          | Move operations on objects in the schema naming context are not allowed.                                                                                                                                                                                                                                                                                                     |
| 8581    | 0x00002185  | ERROR_DS MODIFYDN_DISALLOWED_BY_FLAG          | A system flag has been set on the object and does not allow the object to be moved or renamed.                                                                                                                                                                                                                                                                               |
| 8582    | 0x00002186  | ERROR_DS MODIFYDN_WRONG_GRANDPARENT           | This object is not allowed to change its grandparent container. Moves are not forbidden on this object, but are restricted to sibling containers.                                                                                                                                                                                                                            |
| 8583    | 0x00002187  | ERROR_DS_NAME_ERROR_TRUST_REFERRAL            | Unable to resolve completely, a referral to another forest is generated.                                                                                                                                                                                                                                                                                                     |
| 8584    | 0x00002188  | ERROR_NOT_SUPPORTED_ON_STANDARD_SERVER        | The requested action is not supported on standard server.                                                                                                                                                                                                                                                                                                                    |
| 8585    | 0x00002189  | ERROR_DS_CANT_ACCESS_REMOTE_PART_OF_AD        | Could not access a partition of the Active Directory located on a remote server. Make sure at least one server is running for the partition in question.                                                                                                                                                                                                                     |
| 8586    | 0x0000218A  | ERROR_DS_CR_IMPOSSIBLE_TO_VALIDATE_V2         | The directory cannot validate the proposed naming context (or partition) name because it does not hold a replica nor can it contact a replica of the naming context above the proposed naming context. Please ensure that the parent naming context is properly registered in DNS, and at least one replica of this naming context is reachable by the Domain Naming master. |
| 8587    | 0x0000218B  | ERROR_DS_THREAD_LIMIT_EXCEEDED                | The thread limit for this request was exceeded.                                                                                                                                                                                                                                                                                                                              |
| 8588    | 0x0000218C  | ERROR_DS_NOT_CLOSEST                          | The Global catalog server is not in the closet site.                                                                                                                                                                                                                                                                                                                         |

| Error   |             |                                     | Description                                                 |
|---------|-------------|-------------------------------------|-------------------------------------------------------------|
| decimal | Hexadecimal | Name                                |                                                             |
| 9001    | 0x00002329  | DNS_ERROR_RCODE_FORMAT_ERROR        | DNS server unable to interpret format.                      |
| 9002    | 0x0000232A  | DNS_ERROR_RCODE_SERVER_FAILURE      | DNS server failure.                                         |
| 9003    | 0x0000232B  | DNS_ERROR_RCODE_NAME_ERROR          | DNS name does not exist.                                    |
| 9004    | 0x0000232C  | DNS_ERROR_RCODE_NOT_IMPLEMENTED     | DNS request not supported by name server.                   |
| 9005    | 0x0000232D  | DNS_ERROR_RCODE_REFUSED             | DNS operation refused.                                      |
| 9006    | 0x0000232E  | DNS_ERROR_RCODE_YXDOMAIN            | DNS name that ought not exist, does exist.                  |
| 9007    | 0x0000232F  | DNS_ERROR_RCODE_YXRRSET             | DNS RR set that ought not exist, does exist.                |
| 9008    | 0x00002330  | DNS_ERROR_RCODE_NXRRSET             | DNS RR set that ought to exist, does not exist.             |
| 9009    | 0x00002331  | DNS_ERROR_RCODE_NOTAUTH             | DNS server not authoritative for zone.                      |
| 9010    | 0x00002332  | DNS_ERROR_RCODE_NOTZONE             | DNS name in update or prereq is not in zone.                |
| 9016    | 0x00002338  | DNS_ERROR_RCODE_BADSIG              | DNS signature failed to verify.                             |
| 9017    | 0x00002339  | DNS_ERROR_RCODE_BADKEY              | DNS bad key.                                                |
| 9018    | 0x0000233A  | DNS_ERROR_RCODE_BADTIME             | DNS signature validity expired.                             |
| 9501    | 0x0000251D  | DNS_INFO_NO_RECORDS                 | No records found for given DNS query.                       |
| 9502    | 0x0000251E  | DNS_ERROR_BAD_PACKET                | Bad DNS packet.                                             |
| 9503    | 0x0000251F  | DNS_ERROR_NO_PACKET                 | No DNS packet.                                              |
| 9504    | 0x00002520  | DNS_ERROR_RCODE                     | DNS error, check rcode.                                     |
| 9505    | 0x00002521  | DNS_ERROR_UNSECURE_PACKET           | Unsecured DNS packet.                                       |
| 9551    | 0x0000254F  | DNS_ERROR_INVALID_TYPE              | Invalid DNS type.                                           |
| 9552    | 0x00002550  | DNS_ERROR_INVALID_IP_ADDRESS        | Invalid IP address.                                         |
| 9553    | 0x00002551  | DNS_ERROR_INVALID_PROPERTY          | Invalid property.                                           |
| 9554    | 0x00002552  | DNS_ERROR_TRY AGAIN_LATER           | Try DNS operation again later.                              |
| 9555    | 0x00002553  | DNS_ERROR_NOT_UNIQUE                | Record for given name and type is not unique.               |
| 9556    | 0x00002554  | DNS_ERROR_NON RFC_NAME              | DNS name does not comply with RFC specifications.           |
| 9557    | 0x00002555  | DNS_STATUS_FQDN                     | DNS name is a fully-qualified DNS name.                     |
| 9558    | 0x00002556  | DNS_STATUS_DOTTED_NAME              | DNS name is dotted (multi-label).                           |
| 9559    | 0x00002557  | DNS_STATUS_SINGLE_PART_NAME         | DNS name is a single-part name.                             |
| 9560    | 0x00002558  | DNS_ERROR_INVALID_NAME_CHAR         | DNS name contains an invalid character.                     |
| 9561    | 0x00002559  | DNS_ERROR_NUMERIC_NAME              | DNS name is entirely numeric.                               |
| 9601    | 0x00002581  | DNS_ERROR_ZONE_DOES NOT_EXIST       | DNS zone does not exist.                                    |
| 9602    | 0x00002582  | DNS_ERROR_NO_ZONE_INFO              | DNS zone information not available.                         |
| 9603    | 0x00002583  | DNS_ERROR_INVALID_ZONE_OPERATION    | Invalid operation for DNS zone.                             |
| 9604    | 0x00002584  | DNS_ERROR_ZONE_CONFIGURATION_ERROR  | Invalid DNS zone configuration.                             |
| 9605    | 0x00002585  | DNS_ERROR_ZONE_HAS_NO_SO_A_RECORD   | DNS zone has no start of authority (SOA) record.            |
| 9606    | 0x00002586  | DNS_ERROR_ZONE_HAS_NO_NS_RECORDS    | DNS zone has no name server (NS) record.                    |
| 9607    | 0x00002587  | DNS_ERROR_ZONE_LOCKED               | DNS zone is locked.                                         |
| 9608    | 0x00002588  | DNS_ERROR_ZONE_CREATION_FAILED      | DNS zone creation failed.                                   |
| 9609    | 0x00002589  | DNS_ERROR_ZONE_ALREADY_EXISTS       | DNS zone already exists.                                    |
| 9610    | 0x0000258A  | DNS_ERROR_AUTOZONE_ALREADY_EXISTS   | DNS automatic zone already exists.                          |
| 9611    | 0x0000258B  | DNS_ERROR_INVALID_ZONE_TYPE         | Invalid DNS zone type.                                      |
| 9612    | 0x0000258C  | DNS_ERROR_SECONDARYQUIRES_MASTER_IP | Secondary DNS zone requires master IP address.              |
| 9613    | 0x0000258D  | DNS_ERROR_ZONE_NOT_SECONDARY        | DNS zone not secondary.                                     |
| 9614    | 0x0000258E  | DNS_ERROR_NEED_SECONDARY_ADDRESSES  | Need secondary IP address.                                  |
| 9615    | 0x0000258F  | DNS_ERROR_WINS_INIT_FAILED          | WINS initialization failed.                                 |
| 9616    | 0x00002590  | DNS_ERROR_NEED_WINS_SERVERS         | Need WINS servers.                                          |
| 9617    | 0x00002591  | DNS_ERROR_NBSTAT_INIT_FAILED        | NBTSTAT initialization call failed.                         |
| 9618    | 0x00002592  | DNS_ERROR_SO_DELETE_INVALID         | Invalid delete of start of authority (SOA)                  |
| 9619    | 0x00002593  | DNS_ERROR_FORWARDER_ALREADY_EXISTS  | A conditional forwarding zone already exists for that name. |
| 9651    | 0x000025B3  | DNS_ERROR_PRIMARYQUIRES_DATAFILE    | Primary DNS zone requires datafile.                         |
| 9652    | 0x000025B4  | DNS_ERROR_INVALID_DATAFILE_NAME     | Invalid datafile name for DNS zone.                         |
| 9653    | 0x000025B5  | DNS_ERROR_DATAFILE_OPEN_FAILURE     | Failed to open datafile for DNS zone.                       |
| 9654    | 0x000025B6  | DNS_ERROR_FILE_WRITEBACK_FAILED     | Failed to write datafile for DNS zone.                      |
| 9655    | 0x000025B7  | DNS_ERROR_DATAFILE_PARSING          | Failure while reading datafile for DNS zone.                |
| 9701    | 0x000025E5  | DNS_ERROR_RECORD_DOES NOT_EXIST     | DNS record does not exist.                                  |
| 9702    | 0x000025E6  | DNS_ERROR_RECORD_FORMAT             | DNS record format error.                                    |

| Error   |             |                                    | Description                                                                                     |
|---------|-------------|------------------------------------|-------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                               |                                                                                                 |
| 9703    | 0x000025E7  | DNS_ERROR_NODE_CREATION_FAILED     | Node creation failure in DNS.                                                                   |
| 9704    | 0x000025E8  | DNS_ERROR_UNKNOWN_RECORD_TYPE      | Unknown DNS record type.                                                                        |
| 9705    | 0x000025E9  | DNS_ERROR_RECORD_TIMED_OUT         | DNS record timed out.                                                                           |
| 9706    | 0x000025EA  | DNS_ERROR_NAME_NOT_IN_ZONE         | Name not in DNS zone.                                                                           |
| 9707    | 0x000025EB  | DNS_ERROR_CNAME_LOOP               | CNAME loop detected.                                                                            |
| 9708    | 0x000025EC  | DNS_ERROR_NODE_IS_CNAME            | Node is a CNAME DNS record.                                                                     |
| 9709    | 0x000025ED  | DNS_ERROR_CNAME_COLLISION          | A CNAME record already exists for given name.                                                   |
| 9710    | 0x000025EE  | DNS_ERROR_RECORD_ONLY_AT_ZONE_ROOT | Record only at DNS zone root.                                                                   |
| 9711    | 0x000025EF  | DNS_ERROR_RECORD_ALREADY_EXISTS    | DNS record already exists.                                                                      |
| 9712    | 0x000025F0  | DNS_ERROR_SECONDARY_DATA           | Secondary DNS zone data error.                                                                  |
| 9713    | 0x000025F1  | DNS_ERROR_NO_CREATE_CACHE_DATA     | Could not create DNS cache data.                                                                |
| 9714    | 0x000025F2  | DNS_ERROR_NAME_DOES_NOT_EXIST      | DNS name does not exist.                                                                        |
| 9715    | 0x000025F3  | DNS_WARNING_PTR_CREATE_FAILED      | Could not create pointer (PTR) record.                                                          |
| 9716    | 0x000025F4  | DNS_WARNING_DOMAIN_UNDELETED       | DNS domain was undeleted.                                                                       |
| 9717    | 0x000025F5  | DNS_ERROR_DS_UNAVAILABLE           | The directory service is unavailable.                                                           |
| 9718    | 0x000025F6  | DNS_ERROR_DS_ZONE_ALREADY_EXISTS   | DNS zone already exists in the directory service.                                               |
| 9719    | 0x000025F7  | DNS_ERROR_NO_BOOTFILE_IF_DS_ZONE   | DNS server not creating or reading the boot file for the directory service integrated DNS zone. |
| 9751    | 0x00002617  | DNS_INFO_AXFR_COMPLETE             | DNS AXFR (zone transfer) complete.                                                              |
| 9752    | 0x00002618  | DNS_ERROR_AXFR                     | DNS zone transfer failed.                                                                       |
| 9753    | 0x00002619  | DNS_INFO_ADDED_LOCAL_WINS          | Added local WINS server.                                                                        |
| 9801    | 0x00002649  | DNS_STATUS_CONTINUE_NEEDED         | Secure update call needs to continue update request.                                            |
| 9851    | 0x0000267B  | DNS_ERROR_NO_TCPIP                 | TCP/IP network protocol not installed.                                                          |
| 9852    | 0x0000267C  | DNS_ERROR_NO_DNS_SERVERS           | No DNS servers configured for local system.                                                     |
| 9901    | 0x000026AD  | DNS_ERROR_DP_DOES_NOT_EXIST        | The specified directory partition does not exist.                                               |
| 9902    | 0x000026AE  | DNS_ERROR_DP_ALREADY_EXISTS        | The specified directory partition already exists.                                               |
| 9903    | 0x000026AF  | DNS_ERROR_DP_NOT_ENLISTED          | The DS is not enlisted in the specified directory partition.                                    |
| 9904    | 0x000026B0  | DNS_ERROR_DP_ALREADY_ENLISTED      | The DS is already enlisted in the specified directory partition.                                |

| Error   |             |                    | Description                                                                                                                                                                                      |
|---------|-------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name               |                                                                                                                                                                                                  |
| 10004   | 0x00002714  | WSAEINTR           | A blocking operation was interrupted by a call to WSACancelBlockingCall.                                                                                                                         |
| 10009   | 0x00002719  | WSAEBADF           | The file handle supplied is not valid.                                                                                                                                                           |
| 10013   | 0x0000271D  | WSAEACCES          | An attempt was made to access a socket in a way forbidden by its access permissions.                                                                                                             |
| 10014   | 0x0000271E  | WSAEFAULT          | The system detected an invalid pointer address in attempting to use a pointer argument in a call.                                                                                                |
| 10022   | 0x00002726  | WSAEINVAL          | An invalid argument was supplied.                                                                                                                                                                |
| 10024   | 0x00002728  | WSAEMFILE          | Too many open sockets.                                                                                                                                                                           |
| 10035   | 0x00002733  | WSAEWOULDBLOCK     | A non-blocking socket operation could not be completed immediately.                                                                                                                              |
| 10036   | 0x00002734  | WSAEINPROGRESS     | A blocking operation is currently executing.                                                                                                                                                     |
| 10037   | 0x00002735  | WSAEALREADY        | An operation was attempted on a non-blocking socket that already had an operation in progress.                                                                                                   |
| 10038   | 0x00002736  | WSAENOTSOCK        | An operation was attempted on something that is not a socket.                                                                                                                                    |
| 10039   | 0x00002737  | WSAEDESTADDRREQ    | A required address was omitted from an operation on a socket.                                                                                                                                    |
| 10040   | 0x00002738  | WSAEMSGSIZE        | A message sent on a datagram socket was larger than the internal message buffer or some other network limit, or the buffer used to receive a datagram into was smaller than the datagram itself. |
| 10041   | 0x00002739  | WSAEPROTOTYPE      | A protocol was specified in the socket function call that does not support the semantics of the socket type requested.                                                                           |
| 10042   | 0x0000273A  | WSAENOPROTOOPT     | An unknown, invalid, or unsupported option or level was specified in a getsockopt or setsockopt call.                                                                                            |
| 10043   | 0x0000273B  | WSAEPROTONOSUPPORT | The requested protocol has not been configured into the system, or no implementation for it exists.                                                                                              |
| 10044   | 0x0000273C  | WSAESOCKTNOSUPPORT | The support for the specified socket type does not exist in this address family.                                                                                                                 |
| 10045   | 0x0000273D  | WSAEOPNOTSUPP      | The attempted operation is not supported for the type of object referenced.                                                                                                                      |
| 10046   | 0x0000273E  | WSAEPFNOSUPPORT    | The protocol family has not been configured into the system or no implementation for it exists.                                                                                                  |
| 10047   | 0x0000273F  | WSAEAFNOSUPPORT    | An address incompatible with the requested protocol was used.                                                                                                                                    |
| 10048   | 0x00002740  | WSAEADDRINUSE      | Only one usage of each socket address (protocol/network address/port) is normally permitted.                                                                                                     |
| 10049   | 0x00002741  | WSAEADDRNOTAVAIL   | The requested address is not valid in its context.                                                                                                                                               |
| 10050   | 0x00002742  | WSAENETDOWN        | A socket operation encountered a dead network.                                                                                                                                                   |
| 10051   | 0x00002743  | WSAENETUNREACH     | A socket operation was attempted to an unreachable network.                                                                                                                                      |
| 10052   | 0x00002744  | WSAENETRESET       | The connection has been broken due to keep-alive activity detecting a failure while the operation was in progress.                                                                               |
| 10053   | 0x00002745  | WSAECONNABORTED    | An established connection was aborted by the software in your host machine.                                                                                                                      |
| 10054   | 0x00002746  | WSAECONNRESET      | An existing connection was forcibly closed by the remote host.                                                                                                                                   |
| 10055   | 0x00002747  | WSAENOBUFS         | An operation on a socket could not be performed because the system lacked sufficient buffer space or because a queue was full.                                                                   |
| 10056   | 0x00002748  | WSAEISCONN         | A connect request was made on an already connected socket.                                                                                                                                       |
| 10057   | 0x00002749  | WSAENOTCONN        | A request to send or receive data was disallowed because the socket is not connected and (when sending on a datagram socket using a sendto call) no address was supplied.                        |
| 10058   | 0x0000274A  | WSAESHUTDOWN       | A request to send or receive data was disallowed because the socket had already been shut down in that direction with a previous shutdown call.                                                  |
| 10059   | 0x0000274B  | WSAETOOMANYREFS    | Too many references to some kernel object.                                                                                                                                                       |

| Error   |             |                           | Description                                                                                                                                                                             |
|---------|-------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                      |                                                                                                                                                                                         |
| 10060   | 0x0000274C  | WSAETIMEDOUT              | A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond. |
| 10061   | 0x0000274D  | WSAECONNREFUSED           | No connection could be made because the target machine actively refused it.                                                                                                             |
| 10062   | 0x0000274E  | WSAELOOP                  | Cannot translate name.                                                                                                                                                                  |
| 10063   | 0x0000274F  | WSAENAMETOOLONG           | Name component or name was too long.                                                                                                                                                    |
| 10064   | 0x00002750  | WSAEHOSTDOWN              | A socket operation failed because the destination host was down.                                                                                                                        |
| 10065   | 0x00002751  | WSAEHOSTUNREACH           | A socket operation was attempted to an unreachable host.                                                                                                                                |
| 10066   | 0x00002752  | WSAENOTEMPTY              | Cannot remove a directory that is not empty.                                                                                                                                            |
| 10067   | 0x00002753  | WSAEPROCLIM               | A Windows Sockets implementation may have a limit on the number of applications that may use it simultaneously.                                                                         |
| 10068   | 0x00002754  | WSAEUSERS                 | Ran out of quota.                                                                                                                                                                       |
| 10069   | 0x00002755  | WSAEDQUOT                 | Ran out of disk quota.                                                                                                                                                                  |
| 10070   | 0x00002756  | WSAESTALE                 | File handle reference is no longer available.                                                                                                                                           |
| 10071   | 0x00002757  | WSAEREMOTE                | Item is not available locally.                                                                                                                                                          |
| 10091   | 0x0000276B  | WSASYSNOTREADY            | WSAStartup cannot function at this time because the underlying system it uses to provide network services is currently unavailable.                                                     |
| 10092   | 0x0000276C  | WSAVERNOTSUPPORTED        | The Windows Sockets version requested is not supported.                                                                                                                                 |
| 10093   | 0x0000276D  | WSANOTINITIALISED         | Either the application has not called WSAStartup, or WSAStartup failed.                                                                                                                 |
| 10101   | 0x00002775  | WSAEDISCON                | Returned by WSARecv or WSARecvFrom to indicate the remote party has initiated a graceful shutdown sequence.                                                                             |
| 10102   | 0x00002776  | WSAENOMORE                | No more results can be returned by WSA-LookupServiceNext.                                                                                                                               |
| 10103   | 0x00002777  | WSAECANCELLED             | A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.                                                                                |
| 10104   | 0x00002778  | WSAEINVALIDPROCTABLE      | The procedure call table is invalid.                                                                                                                                                    |
| 10105   | 0x00002779  | WSAEINVALIDPROVIDER       | The requested service provider is invalid.                                                                                                                                              |
| 10106   | 0x0000277A  | WSAEPROVIDERFAILEDINIT    | The requested service provider could not be loaded or initialized.                                                                                                                      |
| 10107   | 0x0000277B  | WSASYSCALLFAILURE         | A system call that should never fail has failed.                                                                                                                                        |
| 10108   | 0x0000277C  | WSASERVICE_NOT_FOUND      | No such service is known. The service cannot be found in the specified name space.                                                                                                      |
| 10109   | 0x0000277D  | WSATYPE_NOT_FOUND         | The specified class was not found.                                                                                                                                                      |
| 10110   | 0x0000277E  | WSA_E_NO_MORE             | No more results can be returned by WSA-LookupServiceNext.                                                                                                                               |
| 10111   | 0x0000277F  | WSA_E_CANCELLED           | A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.                                                                                |
| 10112   | 0x00002780  | WSAEREFUSED               | A database query failed because it was actively refused.                                                                                                                                |
| 11001   | 0x00002AF9  | WSAHOST_NOT_FOUND         | No such host is known.                                                                                                                                                                  |
| 11002   | 0x00002AFA  | WSATRY AGAIN              | This is usually a temporary error during hostname resolution and means that the local server did not receive a response from an authoritative server.                                   |
| 11003   | 0x00002AFB  | WSANO_RECOVERY            | A non-recoverable error occurred during a database lookup.                                                                                                                              |
| 11004   | 0x00002AFC  | WSANO_DATA                | The requested name is valid and was found in the database, but it does not have the correct associated data being resolved for.                                                         |
| 11005   | 0x00002AFD  | WSA_QOS_RECEIVERS         | At least one reserve has arrived.                                                                                                                                                       |
| 11006   | 0x00002AFE  | WSA_QOS_SENDERS           | At least one path has arrived.                                                                                                                                                          |
| 11007   | 0x00002AFF  | WSA_QOS_NO_SENDERS        | There are no senders.                                                                                                                                                                   |
| 11008   | 0x00002B00  | WSA_QOS_NO_RECEIVERS      | There are no receivers.                                                                                                                                                                 |
| 11009   | 0x00002B01  | WSA_QOS_REQUEST_CONFIRMED | Reserve has been confirmed.                                                                                                                                                             |

| Error   |             |                            | Description                                                                                     |
|---------|-------------|----------------------------|-------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                       |                                                                                                 |
| 11010   | 0x00002B02  | WSA_QOS_ADMISSION_FAILURE  | Error due to lack of resources.                                                                 |
| 11011   | 0x00002B03  | WSA_QOS_POLICY_FAILURE     | Rejected for administrative reasons - bad credentials.                                          |
| 11012   | 0x00002B04  | WSA_QOS_BAD_STYLE          | Unknown or conflicting style.                                                                   |
| 11013   | 0x00002B05  | WSA_QOS_BAD_OBJECT         | Problem with some part of the filterspec or providerspecific buffer in general.                 |
| 11014   | 0x00002B06  | WSA_QOS_TRAFFIC_CTRL_ERROR | Problem with some part of the flowspec.                                                         |
| 11015   | 0x00002B07  | WSA_QOS_GENERIC_ERROR      | General QOS error.                                                                              |
| 11016   | 0x00002B08  | WSA_QOS_ESERVICETYPE       | An invalid or unrecognized service type was found in the flowspec.                              |
| 11017   | 0x00002B09  | WSA_QOS_EFLOWSPEC          | An invalid or inconsistent flowspec was found in the QOS structure.                             |
| 11018   | 0x00002B0A  | WSA_QOS_EPROVSPECBUF       | Invalid QOS provider-specific buffer.                                                           |
| 11019   | 0x00002B0B  | WSA_QOS_EFILTERSTYLE       | An invalid QOS filter style was used.                                                           |
| 11020   | 0x00002B0C  | WSA_QOS_EFILTERTYPE        | An invalid QOS filter type was used.                                                            |
| 11021   | 0x00002B0D  | WSA_QOS_EFILTERCOUNT       | An incorrect number of QOS FILTERSPECS were specified in the FLOWDESCRIPTOR.                    |
| 11022   | 0x00002B0E  | WSA_QOS_EOBJLENGTH         | An object with an invalid ObjectLength field was specified in the QOS provider-specific buffer. |
| 11023   | 0x00002B0F  | WSA_QOS_EFLOWCOUNT         | An incorrect number of flow descriptors was specified in the QOS structure.                     |
| 11024   | 0x00002B10  | WSA_QOS_EUNKNOWNPSOBJ      | An unrecognized object was found in the QOS provider-specific buffer.                           |
| 11025   | 0x00002B11  | WSA_QOS_EPOLICYOBJ         | An invalid policy object was found in the QOS provider-specific buffer.                         |
| 11026   | 0x00002B12  | WSA_QOS_EFLOWDESC          | An invalid QOS flow descriptor was found in the flow descriptor list.                           |
| 11027   | 0x00002B13  | WSA_QOS_EPSFLOWSPEC        | An invalid or inconsistent flowspec was found in the QOS provider-specific buffer.              |
| 11028   | 0x00002B14  | WSA_QOS_EPSFILTERSPEC      | An invalid FILTERSPEC was found in the QOS provider-specific buffer.                            |
| 11029   | 0x00002B15  | WSA_QOS_ESDMODEOBJ         | An invalid shape discard mode object was found in the QOS provider-specific buffer.             |
| 11030   | 0x00002B16  | WSA_QOS_ESHAPERATEOBJ      | An invalid shaping rate object was found in the QOS provider-specific buffer.                   |
| 11031   | 0x00002B17  | WSA_QOS_RESERVED_PETYPE    | A reserved policy element was found in the QOS provider-specific buffer.                        |

| Error   |             |                                                          | Description                                                                                                                                 |
|---------|-------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                                     |                                                                                                                                             |
| 12000   | 0x00002EE0  | ERROR_SXS_SECTION_NOT_FOUND                              | The requested section was not present in the activation context.                                                                            |
| 12001   | 0x00002EE1  | ERROR_SXS_CANT_GEN_ACTCTX                                | This application has failed to start because the application configuration is incorrect. Reinstalling the application may fix this problem. |
| 12002   | 0x00002EE2  | ERROR_SXS_INVALID_ACTCTXDATA_FORMAT                      | The application binding data format is invalid.                                                                                             |
| 12003   | 0x00002EE3  | ERROR_SXS_ASSEMBLY_NOT_FOUND                             | The referenced assembly is not installed on your system.                                                                                    |
| 12004   | 0x00002EE4  | ERROR_SXS_MANIFEST_FORMAT_ERROR                          | The manifest file does not begin with the required tag and format information.                                                              |
| 12005   | 0x00002EE5  | ERROR_SXS_MANIFEST_PARSE_ERROR                           | The manifest file contains one or more syntax errors.                                                                                       |
| 12006   | 0x00002EE6  | ERROR_SXS_ACTIVATION_CONTEXT_DISABLED                    | The application attempted to activate a disabled activation context.                                                                        |
| 12007   | 0x00002EE7  | ERROR_SXS_KEY_NOT_FOUND                                  | The requested lookup key was not found in any active activation context.                                                                    |
| 12008   | 0x00002EE8  | ERROR_SXS_VERSION_CONFLICT                               | A component version required by the application conflicts with another component version already active.                                    |
| 12009   | 0x00002EE9  | ERROR_SXS_WRONG_SECTION_TYPE                             | The type requested activation context section does not match the query API used.                                                            |
| 12010   | 0x00002EEA  | ERROR_SXS_THREAD_QUERIES_DISABLED                        | Lack of system resources has required isolated activation to be disabled for the current thread of execution.                               |
| 12011   | 0x00002EEB  | ERROR_SXS_PROCESS_DEFAULT_ALREADY_SET                    | An attempt to set the process default activation context failed because the process default activation context was already set.             |
| 12012   | 0x00002EEC  | ERROR_SXS_UNKNOWN_ENCODING_GROUP                         | The encoding group identifier specified is not recognized.                                                                                  |
| 12013   | 0x00002EED  | ERROR_SXS_UNKNOWN_ENCODING                               | The encoding requested is not recognized.                                                                                                   |
| 12014   | 0x00002EEE  | ERROR_SXS_INVALID_XML_NAMESPACE_URI                      | The manifest contains a reference to an invalid URI.                                                                                        |
| 12015   | 0x00002EEF  | ERROR_SXS_ROOT_MANIFEST_DEPENDENCY_NOT_INSTALLED         | The application manifest contains a reference to a dependent assembly which is not installed.                                               |
| 12016   | 0x00002EF0  | ERROR_SXS_LEAF_MANIFEST_DEPENDENCY_NOT_INSTALLED         | The manifest for an assembly used by the application has a reference to a dependent assembly which is not installed.                        |
| 12017   | 0x00002EF1  | ERROR_SXS_INVALID_ASSEMBLY_IDENTITY_ATTRIBUTE            | The manifest contains an attribute for the assembly identity which is not valid.                                                            |
| 12018   | 0x00002EF2  | ERROR_SXS_MANIFEST_MISSING_REQUIRED_DEFAULT_NAMESPACE    | The manifest is missing the required default namespace specification on the assembly element.                                               |
| 12019   | 0x00002EF3  | ERROR_SXS_MANIFEST_INVALID_REQUIRED_DEFAULT_NAMESPACE    | The manifest has a default namespace specified on the assembly element but its value is not "urn:schemas-microsoft-com:asm.v1".             |
| 12020   | 0x00002EF4  | ERROR_SXS_PRIVATE_MANIFEST_CROSS_PATH_WITH_REPARSE_POINT | The private manifest probe has crossed the reparse-point-associated path.                                                                   |
| 12021   | 0x00002EF5  | ERROR_SXS_DUPLICATE_DLL_NAME                             | Two or more components referenced directly or indirectly by the application manifest have files by the same name.                           |
| 12022   | 0x00002EF6  | ERROR_SXS_DUPLICATE_WINDOW_CLASS_NAME                    | Two or more components referenced directly or indirectly by the application manifest have window classes with the same name.                |
| 12023   | 0x00002EF7  | ERROR_SXS_DUPLICATE_CLSID                                | Two or more components referenced directly or indirectly by the application manifest have the same COM server CLSIDs.                       |
| 12024   | 0x00002EF8  | ERROR_SXS_DUPLICATE_IID                                  | Two or more components referenced directly or indirectly by the application manifest have proxies for the same COM interface IIDs.          |
| 12025   | 0x00002EF9  | ERROR_SXS_DUPLICATE_TLBID                                | Two or more components referenced directly or indirectly by the application manifest have the same COM type library TLBIDs.                 |
| 12026   | 0x00002EFA  | ERROR_SXS_DUPLICATE_PROGID                               | Two or more components referenced directly or indirectly by the application manifest have the same COM ProgIDs.                             |

| Error   |             |                                           | Description                                                                                                                                               |
|---------|-------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                      |                                                                                                                                                           |
| 12027   | 0x00002EFB  | ERROR_SXS_DUPLICATE_ASSEMBLY_NAME         | Two or more components referenced directly or indirectly by the application manifest are different versions of the same component which is not permitted. |
| 12028   | 0x00002EFC  | ERROR_SXS_FILE_HASH_MISMATCH              | A component's file does not match the verification information present in the component manifest.                                                         |
| 12029   | 0x00002EFD  | ERROR_SXS_POLICY_PARSE_ERROR              | The policy manifest contains one or more syntax errors.                                                                                                   |
| 12030   | 0x00002EFE  | ERROR_SXS_XML_E_MISSINGQUOTE              | Manifest Parse Error : A string literal was expected, but no opening quote character was found.                                                           |
| 12031   | 0x00002EFF  | ERROR_SXS_XML_E_COMMENTSYNTAX             | Manifest Parse Error : Incorrect syntax was used in a comment.                                                                                            |
| 12032   | 0x00002F00  | ERROR_SXS_XML_E_BADSTARTNAMECHAR          | Manifest Parse Error : A name was started with an invalid character.                                                                                      |
| 12033   | 0x00002F01  | ERROR_SXS_XML_E_BADNAMECHAR               | Manifest Parse Error : A name contained an invalid character.                                                                                             |
| 12034   | 0x00002F02  | ERROR_SXS_XML_E_BADCHARINSTRING           | Manifest Parse Error : A string literal contained an invalid character.                                                                                   |
| 12035   | 0x00002F03  | ERROR_SXS_XML_E_XMLDECLSYNTAX             | Manifest Parse Error : Invalid syntax for an XML declaration.                                                                                             |
| 12036   | 0x00002F04  | ERROR_SXS_XML_E_BADCHARDATA               | Manifest Parse Error : An invalid character was found in text content.                                                                                    |
| 12037   | 0x00002F05  | ERROR_SXS_XML_E_MISSINGWHITESPACE         | Manifest Parse Error : Required white space was missing.                                                                                                  |
| 12038   | 0x00002F06  | ERROR_SXS_XML_E_EXPECTINGTAGEND           | Manifest Parse Error : The character '>' was expected.                                                                                                    |
| 12039   | 0x00002F07  | ERROR_SXS_XML_E_MISSINGSEMICOLON          | Manifest Parse Error : A semi colon character was expected.                                                                                               |
| 12040   | 0x00002F08  | ERROR_SXS_XML_E_UNBALANCEDPAREN           | Manifest Parse Error : Unbalanced parentheses.                                                                                                            |
| 12041   | 0x00002F09  | ERROR_SXS_XML_E_INTERNALERROR             | Manifest Parse Error : Internal error.                                                                                                                    |
| 12042   | 0x00002F0A  | ERROR_SXS_XML_E_UNEXPECTED_WHITE-SPACE    | Manifest Parse Error : White space is not allowed at this location.                                                                                       |
| 12043   | 0x00002F0B  | ERROR_SXS_XML_E_INCOMPLETE_ENCODING       | Manifest Parse Error : End of file reached in invalid state for current encoding.                                                                         |
| 12044   | 0x00002F0C  | ERROR_SXS_XML_E_MISSING_PAREN             | Manifest Parse Error : Missing parenthesis.                                                                                                               |
| 12045   | 0x00002F0D  | ERROR_SXS_XML_E_EXPECTINGCLOSEQUOTE       | Manifest Parse Error : A single or double closing quote character (' or ') is missing.                                                                    |
| 12046   | 0x00002F0E  | ERROR_SXS_XML_E_MULTIPLE_COLONS           | Manifest Parse Error : Multiple colons are not allowed in a name.                                                                                         |
| 12047   | 0x00002F0F  | ERROR_SXS_XML_E_INVALID_DECIMAL           | Manifest Parse Error : Invalid character for decimal digit.                                                                                               |
| 12048   | 0x00002F10  | ERROR_SXS_XML_E_INVALID_HEXIDECIMAL       | Manifest Parse Error : Invalid character for hexadecimal digit.                                                                                           |
| 12049   | 0x00002F11  | ERROR_SXS_XML_E_INVALID_UNICODE           | Manifest Parse Error : Invalid Unicode character value for this platform.                                                                                 |
| 12050   | 0x00002F12  | ERROR_SXS_XML_E_WHITESPACEORQUES-TIONMARK | Manifest Parse Error : Expecting white space or '?'.                                                                                                      |
| 12051   | 0x00002F13  | ERROR_SXS_XML_E_UNEXPECTEDENDTAG          | Manifest Parse Error : End tag was not expected at this location.                                                                                         |
| 12052   | 0x00002F14  | ERROR_SXS_XML_E_UNCLOSEDTAG               | Manifest Parse Error : The following tags were not closed: %1.                                                                                            |
| 12053   | 0x00002F15  | ERROR_SXS_XML_E_DUPLICATEATTRIBUTE        | Manifest Parse Error : Duplicate attribute.                                                                                                               |
| 12054   | 0x00002F16  | ERROR_SXS_XML_E_MULTIPLEROOTS             | Manifest Parse Error : Only one top level element is allowed in an XML document.                                                                          |
| 12055   | 0x00002F17  | ERROR_SXS_XML_E_INVALIDATROOTLEVEL        | Manifest Parse Error : Invalid at the top level of the document.                                                                                          |
| 12056   | 0x00002F18  | ERROR_SXS_XML_E_BADXMLDECL                | Manifest Parse Error : Invalid XML declaration.                                                                                                           |
| 12057   | 0x00002F19  | ERROR_SXS_XML_E_MISSINGROOT               | Manifest Parse Error : XML document must have a top level element.                                                                                        |
| 12058   | 0x00002F1A  | ERROR_SXS_XML_E_UNEXPECTEDEOF             | Manifest Parse Error : Unexpected end of file.                                                                                                            |
| 12059   | 0x00002F1B  | ERROR_SXS_XML_E_BADPREFINSUBSET           | Manifest Parse Error : Parameter entities cannot be used inside markup declarations in an internal subset.                                                |
| 12060   | 0x00002F1C  | ERROR_SXS_XML_E_UNCLOSEDSTARTTAG          | Manifest Parse Error : Element was not closed.                                                                                                            |

| Error   |             |                                               | Description                                                                                         |
|---------|-------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                          |                                                                                                     |
| 12061   | 0x00002F1D  | ERROR_SXS_XML_E_UNCLOSEDENDTAG                | Manifest Parse Error : End element was missing the character '>'.                                   |
| 12062   | 0x00002F1E  | ERROR_SXS_XML_E_UNCLOSEDSTRING                | Manifest Parse Error : A string literal was not closed.                                             |
| 12063   | 0x00002F1F  | ERROR_SXS_XML_E_UNCLOSEDCOMMENT               | Manifest Parse Error : A comment was not closed.                                                    |
| 12064   | 0x00002F20  | ERROR_SXS_XML_E_UNCLOSEDDECL                  | Manifest Parse Error : A declaration was not closed.                                                |
| 12065   | 0x00002F21  | ERROR_SXS_XML_E_UNCLOSEDCDATA                 | Manifest Parse Error : A CDATA section was not closed.                                              |
| 12066   | 0x00002F22  | ERROR_SXS_XML_E_RESERVEDNAMESPACE             | Manifest Parse Error : The namespace prefix is not allowed to start with the reserved string "xml". |
| 12067   | 0x00002F23  | ERROR_SXS_XML_E_INVALIDENCODING               | Manifest Parse Error : System does not support the specified encoding.                              |
| 12068   | 0x00002F24  | ERROR_SXS_XML_E_INVALIDSWITCH                 | Manifest Parse Error : Switch from current encoding to specified encoding not supported.            |
| 12069   | 0x00002F25  | ERROR_SXS_XML_E_BADXMLCASE                    | Manifest Parse Error : The name 'xml' is reserved and must be lower case.                           |
| 12070   | 0x00002F26  | ERROR_SXS_XML_E_INVALID_STANDALONE            | Manifest Parse Error : The standalone attribute must have the value 'yes' or 'no'.                  |
| 12071   | 0x00002F27  | ERROR_SXS_XML_E_UNEXPECTED_STAND-ALONE        | Manifest Parse Error : The standalone attribute cannot be used in external entities.                |
| 12072   | 0x00002F28  | ERROR_SXS_XML_E_INVALID_VERSION               | Manifest Parse Error : Invalid version number.                                                      |
| 12073   | 0x00002F29  | ERROR_SXS_XML_E_MISSINGEQUALS                 | Manifest Parse Error : Missing equals sign between attribute and attribute value.                   |
| 13000   | 0x000032C8  | ERROR_IPSEC_QM_POLICY_EXISTS                  | The specified quick mode policy already exists.                                                     |
| 13001   | 0x000032C9  | ERROR_IPSEC_QM_POLICY_NOT_FOUND               | The specified quick mode policy was not found.                                                      |
| 13002   | 0x000032CA  | ERROR_IPSEC_QM_POLICY_IN_USE                  | The specified quick mode policy is being used.                                                      |
| 13003   | 0x000032CB  | ERROR_IPSEC_MM_POLICY_EXISTS                  | The specified main mode policy already exists.                                                      |
| 13004   | 0x000032CC  | ERROR_IPSEC_MM_POLICY_NOT_FOUND               | The specified main mode policy was not found.                                                       |
| 13005   | 0x000032CD  | ERROR_IPSEC_MM_POLICY_IN_USE                  | The specified main mode policy is being used.                                                       |
| 13006   | 0x000032CE  | ERROR_IPSEC_MM_FILTER_EXISTS                  | The specified main mode filter already exists.                                                      |
| 13007   | 0x000032CF  | ERROR_IPSEC_MM_FILTER_NOT_FOUND               | The specified main mode filter was not found.                                                       |
| 13008   | 0x000032D0  | ERROR_IPSEC_TRANSPORT_FILTER_EXISTS           | The specified transport mode filter already exists.                                                 |
| 13009   | 0x000032D1  | ERROR_IPSEC_TRANSPORT_FILTER_NOT_FOUND        | The specified transport mode filter does not exist.                                                 |
| 13010   | 0x000032D2  | ERROR_IPSEC_MM_AUTH_EXISTS                    | The specified main mode authentication list exists.                                                 |
| 13011   | 0x000032D3  | ERROR_IPSEC_MM_AUTH_NOT_FOUND                 | The specified main mode authentication list was not found.                                          |
| 13012   | 0x000032D4  | ERROR_IPSEC_MM_AUTH_IN_USE                    | The specified quick mode policy is being used.                                                      |
| 13013   | 0x000032D5  | ERROR_IPSEC_DEFAULT_MM_POLICY_NOT_FOUND       | The specified main mode policy was not found.                                                       |
| 13014   | 0x000032D6  | ERROR_IPSEC_DEFAULT_MM_AUTH_NOT_FOUND         | The specified quick mode policy was not found.                                                      |
| 13015   | 0x000032D7  | ERROR_IPSEC_DEFAULT_QM_POLICY_NOT_FOUND       | The manifest file contains one or more syntax errors.                                               |
| 13016   | 0x000032D8  | ERROR_IPSEC_TUNNEL_FILTER_EXISTS              | The application attempted to activate a disabled activation context.                                |
| 13017   | 0x000032D9  | ERROR_IPSEC_TUNNEL_FILTER_NOT_FOUND           | The requested lookup key was not found in any active activation context.                            |
| 13018   | 0x000032DA  | ERROR_IPSEC_MM_FILTER_PENDING_DELETION        | The Main Mode filter is pending deletion.                                                           |
| 13019   | 0x000032DB  | ERROR_IPSEC_TRANSPORT_FILTER_PENDING_DELETION | The transport filter is pending deletion.                                                           |
| 13020   | 0x000032DC  | ERROR_IPSEC_TUNNEL_FILTER_PENDING_DELETION    | The tunnel filter is pending deletion.                                                              |
| 13021   | 0x000032DD  | ERROR_IPSEC_MM_POLICY_PENDING_DELETION        | The Main Mode policy is pending deletion.                                                           |
| 13022   | 0x000032DE  | ERROR_IPSEC_MM_AUTH_PENDING_DELETION          | The Main Mode authentication bundle is pending deletion.                                            |
| 13023   | 0x000032DF  | ERROR_IPSEC_QM_POLICY_PENDING_DELETION        | The Quick Mode policy is pending deletion.                                                          |

| Error   |             |                                          | Description                                                          |
|---------|-------------|------------------------------------------|----------------------------------------------------------------------|
| decimal | Hexadecimal | Name                                     |                                                                      |
| 13801   | 0x000035E9  | ERROR_IPSEC_IKE_AUTH_FAIL                | IKE authentication credentials are unacceptable.                     |
| 13802   | 0x000035EA  | ERROR_IPSEC_IKE_ATTRIB_FAIL              | IKE security attributes are unacceptable.                            |
| 13803   | 0x000035EB  | ERROR_IPSEC_IKE_NEGOTIATION_PENDING      | IKE Negotiation in progress.                                         |
| 13804   | 0x000035EC  | ERROR_IPSEC_IKE_GENERAL_PROCESSING_ERROR | General processing error.                                            |
| 13805   | 0x000035ED  | ERROR_IPSEC_IKE_TIMED_OUT                | Negotiation timed out.                                               |
| 13806   | 0x000035EE  | ERROR_IPSEC_IKE_NO_CERT                  | IKE failed to find valid machine certificate.                        |
| 13807   | 0x000035EF  | ERROR_IPSEC_IKE_SA_DELETED               | IKE SA deleted by peer before establishment completed.               |
| 13808   | 0x000035F0  | ERROR_IPSEC_IKE_SA_REAPED                | IKE SA deleted before establishment completed.                       |
| 13809   | 0x000035F1  | ERROR_IPSEC_IKE_MM_ACQUIRE_DROP          | Negotiation request sat in Queue too long.                           |
| 13810   | 0x000035F2  | ERROR_IPSEC_IKE_QM_ACQUIRE_DROP          | Negotiation request sat in Queue too long.                           |
| 13811   | 0x000035F3  | ERROR_IPSEC_IKE_QUEUE_DROP_MM            | Negotiation request sat in Queue too long.                           |
| 13812   | 0x000035F4  | ERROR_IPSEC_IKE_QUEUE_DROP_NO_MM         | Negotiation request sat in Queue too long.                           |
| 13813   | 0x000035F5  | ERROR_IPSEC_IKE_DROP_NO_RESPONSE         | No response from peer.                                               |
| 13814   | 0x000035F6  | ERROR_IPSEC_IKE_MM_DELAY_DROP            | Negotiation took too long.                                           |
| 13815   | 0x000035F7  | ERROR_IPSEC_IKE_QM_DELAY_DROP            | Negotiation took too long.                                           |
| 13816   | 0x000035F8  | ERROR_IPSEC_IKE_ERROR                    | Unknown error occurred.                                              |
| 13817   | 0x000035F9  | ERROR_IPSEC_IKE_CRL_FAILED               | Certificate Revocation Check failed.                                 |
| 13818   | 0x000035FA  | ERROR_IPSEC_IKE_INVALID_KEY_USAGE        | Invalid certificate key usage.                                       |
| 13819   | 0x000035FB  | ERROR_IPSEC_IKE_INVALID_CERT_TYPE        | Invalid certificate type.                                            |
| 13820   | 0x000035FC  | ERROR_IPSEC_IKE_NO_PRIVATE_KEY           | No private key associated with machine certificate.                  |
| 13822   | 0x000035FE  | ERROR_IPSEC_IKE_DH_FAIL                  | Failure in Diffie-Helman computation.                                |
| 13824   | 0x00003600  | ERROR_IPSEC_IKE_INVALID_HEADER           | Invalid header.                                                      |
| 13825   | 0x00003601  | ERROR_IPSEC_IKE_NO_POLICY                | No policy configured.                                                |
| 13826   | 0x00003602  | ERROR_IPSEC_IKE_INVALID_SIGNATURE        | Failed to verify signature.                                          |
| 13827   | 0x00003603  | ERROR_IPSEC_IKE_KERBEROS_ERROR           | Failed to authenticate using Kerberos.                               |
| 13828   | 0x00003604  | ERROR_IPSEC_IKE_NO_PUBLIC_KEY            | Peer's certificate did not have a public key.                        |
| 13829   | 0x00003605  | ERROR_IPSEC_IKE_PROCESS_ERR              | Error processing error payload.                                      |
| 13830   | 0x00003606  | ERROR_IPSEC_IKE_PROCESS_ERR_SA           | Error processing SA payload.                                         |
| 13831   | 0x00003607  | ERROR_IPSEC_IKE_PROCESS_ERR_PROP         | Error processing Proposal payload.                                   |
| 13832   | 0x00003608  | ERROR_IPSEC_IKE_PROCESS_ERR_TRANS        | Error processing Transform payload.                                  |
| 13833   | 0x00003609  | ERROR_IPSEC_IKE_PROCESS_ERR_KE           | Error processing KE payload.                                         |
| 13834   | 0x0000360A  | ERROR_IPSEC_IKE_PROCESS_ERR_ID           | Error processing ID payload.                                         |
| 13835   | 0x0000360B  | ERROR_IPSEC_IKE_PROCESS_ERR_CERT         | Error processing Cert payload.                                       |
| 13836   | 0x0000360C  | ERROR_IPSEC_IKE_PROCESS_ERR_CERT_REQ     | Error processing Certificate Request payload.                        |
| 13837   | 0x0000360D  | ERROR_IPSEC_IKE_PROCESS_ERR_HASH         | Error processing Hash payload.                                       |
| 13838   | 0x0000360E  | ERROR_IPSEC_IKE_PROCESS_ERR_SIG          | Error processing Signature payload.                                  |
| 13839   | 0x0000360F  | ERROR_IPSEC_IKE_PROCESS_ERR_NONCE        | Error processing Nonce payload.                                      |
| 13840   | 0x00003610  | ERROR_IPSEC_IKE_PROCESS_ERR_NOTIFY       | Error processing Notify payload.                                     |
| 13841   | 0x00003611  | ERROR_IPSEC_IKE_PROCESS_ERR_DELETE       | Error processing Delete Payload.                                     |
| 13842   | 0x00003612  | ERROR_IPSEC_IKE_PROCESS_ERR_VENDOR       | Error processing VendorId payload.                                   |
| 13843   | 0x00003613  | ERROR_IPSEC_IKE_INVALID_PAYLOAD          | Invalid payload received.                                            |
| 13844   | 0x00003614  | ERROR_IPSEC_IKE_LOAD_SOFT_SA             | Soft SA loaded.                                                      |
| 13845   | 0x00003615  | ERROR_IPSEC_IKE_SOFT_SA_TORN_DOWN        | Soft SA torn down.                                                   |
| 13846   | 0x00003616  | ERROR_IPSEC_IKE_INVALID_COOKIE           | Invalid cookie received..                                            |
| 13847   | 0x00003617  | ERROR_IPSEC_IKE_NO_PEER_CERT             | Peer failed to send valid machine certificate.                       |
| 13848   | 0x00003618  | ERROR_IPSEC_IKE_PEER_CRL_FAILED          | Certification Revocation check of peer's certificate failed.         |
| 13849   | 0x00003619  | ERROR_IPSEC_IKE_POLICY_CHANGE            | New policy invalidated SAs formed with old policy.                   |
| 13850   | 0x0000361A  | ERROR_IPSEC_IKE_NO_MM_POLICY             | There is no available Main Mode IKE policy.                          |
| 13851   | 0x0000361B  | ERROR_IPSEC_IKE_NOTCBPRIV                | Failed to enabled TCB privilege.                                     |
| 13852   | 0x0000361C  | ERROR_IPSEC_IKE_SECLOADFAIL              | Failed to load SECURITY.DLL.                                         |
| 13853   | 0x0000361D  | ERROR_IPSEC_IKE_FAILSSPINIT              | Failed to obtain security function table dispatch address from SSPI. |
| 13854   | 0x0000361E  | ERROR_IPSEC_IKE_FAILQUERYSSP             | Failed to query Kerberos package to obtain max token size.           |

| decimal | Hexadecimal | Error                                             | Description                                                                                                                                                                                                                                           |
|---------|-------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |             | Name                                              |                                                                                                                                                                                                                                                       |
| 13855   | 0x0000361F  | ERROR_IPSEC_IKE_SRVACQFAIL                        | Failed to obtain Kerberos server credentials for ISAKMP/ERROR_IPSEC_IKE service. Kerberos authentication will not function. The most likely reason for this is lack of domain membership. This is normal if your computer is a member of a workgroup. |
| 13856   | 0x00003620  | ERROR_IPSEC_IKE_SRVQUERYCRED                      | Failed to determine SSPI principal name for ISAKMP/ERROR_IPSEC_IKE service (QueryCredentialsAttributes).                                                                                                                                              |
| 13857   | 0x00003621  | ERROR_IPSEC_IKE_GETSPIFAIL                        | Failed to obtain new SPI for the inbound SA from Ipsec driver. The most common cause for this is that the driver does not have the correct filter. Check your policy to verify the filters.                                                           |
| 13858   | 0x00003622  | ERROR_IPSEC_IKE_INVALID_FILTER                    | Given filter is invalid.                                                                                                                                                                                                                              |
| 13859   | 0x00003623  | ERROR_IPSEC_IKE_OUT_OF_MEMORY                     | Memory allocation failed.                                                                                                                                                                                                                             |
| 13860   | 0x00003624  | ERROR_IPSEC_IKE_ADD_UPDATE_KEY_FAILED             | Failed to add Security Association to IPsec Driver. The most common cause for this is if the IKE negotiation took too long to complete. If the problem persists, reduce the load on the faulting machine.                                             |
| 13861   | 0x00003625  | ERROR_IPSEC_IKE_INVALID_POLICY                    | Invalid policy.                                                                                                                                                                                                                                       |
| 13862   | 0x00003626  | ERROR_IPSEC_IKE_UNKNOWN_DOI                       | Invalid DOI.                                                                                                                                                                                                                                          |
| 13863   | 0x00003627  | ERROR_IPSEC_IKE_INVALID_SITUATION                 | Invalid situation.                                                                                                                                                                                                                                    |
| 13864   | 0x00003628  | ERROR_IPSEC_IKE_DH_FAILURE                        | Diffie-Hellman failure.                                                                                                                                                                                                                               |
| 13865   | 0x00003629  | ERROR_IPSEC_IKE_INVALID_GROUP                     | Invalid Diffie-Hellman group.                                                                                                                                                                                                                         |
| 13866   | 0x0000362A  | ERROR_IPSEC_IKE_ENCRYPT                           | Error encrypting payload.                                                                                                                                                                                                                             |
| 13867   | 0x0000362B  | ERROR_IPSEC_IKE_DECRYPT                           | Error decrypting payload.                                                                                                                                                                                                                             |
| 13868   | 0x0000362C  | ERROR_IPSEC_IKE_POLICY_MATCH                      | Policy match error.                                                                                                                                                                                                                                   |
| 13869   | 0x0000362D  | ERROR_IPSEC_IKE_UNSUPPORTED_ID                    | Unsupported ID.                                                                                                                                                                                                                                       |
| 13870   | 0x0000362E  | ERROR_IPSEC_IKE_INVALID_HASH                      | Hash verification failed.                                                                                                                                                                                                                             |
| 13871   | 0x0000362F  | ERROR_IPSEC_IKE_INVALID_HASH_ALG                  | Invalid hash algorithm.                                                                                                                                                                                                                               |
| 13872   | 0x00003630  | ERROR_IPSEC_IKE_INVALID_HASH_SIZE                 | Invalid hash size.                                                                                                                                                                                                                                    |
| 13873   | 0x00003631  | ERROR_IPSEC_IKE_INVALID_ENCRYPT_ALG               | Invalid encryption algorithm.                                                                                                                                                                                                                         |
| 13874   | 0x00003632  | ERROR_IPSEC_IKE_INVALID_AUTH_ALG                  | Invalid authentication algorithm.                                                                                                                                                                                                                     |
| 13875   | 0x00003633  | ERROR_IPSEC_IKE_INVALID_SIG                       | Invalid certificate signature.                                                                                                                                                                                                                        |
| 13876   | 0x00003634  | ERROR_IPSEC_IKE_LOAD_FAILED                       | Load failed.                                                                                                                                                                                                                                          |
| 13877   | 0x00003635  | ERROR_IPSEC_IKE_RPC_DELETE                        | Deleted via RPC call.                                                                                                                                                                                                                                 |
| 13878   | 0x00003636  | ERROR_IPSEC_IKE_BENIGN_REINIT                     | Temporary state created to perform reinitialization. This is not a real failure.                                                                                                                                                                      |
| 13879   | 0x00003637  | ERROR_IPSEC_IKE_INVALID_RESPONDER_LIFETIME_NOTIFY | The lifetime value received in the Responder Lifetime Notify is below the Windows 2000 configured minimum value. Please fix the policy on the peer machine.                                                                                           |
| 13880   | 0x00003638  | ERROR_IPSEC_IKE_QM_LIMIT_REAP                     | SA reaped because QM limit was reached.                                                                                                                                                                                                               |
| 13881   | 0x00003639  | ERROR_IPSEC_IKE_INVALID_CERT_KEYLEN               | Key length in certificate is too small for configured security requirements.                                                                                                                                                                          |
| 13882   | 0x0000363A  | ERROR_IPSEC_IKE_MM_LIMIT                          | Max number of established MM SAs to peer exceeded.                                                                                                                                                                                                    |
| 13883   | 0x0000363B  | ERROR_IPSEC_IKE_NEGOTIATION_DISABLED              | IKE received a policy that disables negotiation.                                                                                                                                                                                                      |
| 13884   | 0x0000363C  | ERROR_IPSEC_IKE_QM_LIMIT                          | Reached maximum quick mode limit for the main mode. New main mode will be started.                                                                                                                                                                    |

## 8.6 Support and Service

Beckhoff and their partners around the world offer comprehensive support and service, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

### Beckhoff's branch offices and representatives

Please contact your Beckhoff branch office or representative for [local support and service](#) on Beckhoff products!

The addresses of Beckhoff's branch offices and representatives round the world can be found on her internet pages:

<http://www.beckhoff.com>

You will also find further documentation for Beckhoff components there.

### **Beckhoff Headquarters**

Beckhoff Automation GmbH & Co. KG

Huelshorstweg 20  
33415 Verl  
Germany

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Fax: +49(0)5246/963-198  
e-mail: [info@beckhoff.com](mailto:info@beckhoff.com)

### **Beckhoff Support**

Support offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- support
- design, programming and commissioning of complex automation systems
- and extensive training program for Beckhoff system components

Hotline: +49(0)5246/963-157  
Fax: +49(0)5246/963-9157  
e-mail: [support@beckhoff.com](mailto:support@beckhoff.com)

### **Beckhoff Service**

The Beckhoff Service Center supports you in all matters of after-sales service:

- on-site service
- repair service
- spare parts service
- hotline service

Hotline: +49(0)5246/963-460  
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