



Terminal Emulation and Data Collection
Web Browser
For Windows CE / Windows Mobile Handheld Devices



CETerm | CE3270 | CE5250 | CEVT220

User's Manual

for version 5.1

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Software Version

This user's manual is for version 5.1 of Naurtech Terminal Emulation (TE) and Data Collection Web Browser Smart Clients. Additionally, two separate reference manuals are also provided for version 5.1. These provide programming specifics for the Web Browser and the Scripting Automation, which are part of our products.

- **Naurtech Web Browser Programming Guide**
- **Naurtech CETerm Scripting Guide**

Both these manuals are available for download from www.naurtech.com → support

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Preface

All of us at Naurtech Corporation constantly strive to deliver the highest quality products and services to our customers. We are always looking for ways to improve our solutions. If you have comments or suggestions, please direct these to:

Naurtech Corporation

e-mail: support@naurtech.com

Phone: +1 (425) 837.0800

Assumptions

This manual assumes you have working knowledge of:

- Microsoft Windows user interface metaphor and terminology
- Stylus based touch screen navigation terminology
- Basic knowledge of concepts and terms for computer networking
- Basic operations and requirements of the host applications you want to access with the Naurtech Terminal Emulation Clients.
- Basic Web Browser terminology
- Basic knowledge of JavaScript


Conventions used in this Manual

This manual uses the following typographical conventions:

- All user actions and interactions with the application are in bold, as in **[Session] [Configure]**

- Any precautionary notes or tips are presented as shaded text, as in

Tip: Text associated with a specific tip

-  represents new information introduced in this version.
- All text associated with sample or configuration files is presented in special font, as in

```
# #####  
# This is a sample configuration file for...  
#  
# #####  
  
[options]  
recursion=true  
silent=true  
checkonly=false
```

Online Knowledgebase

Although we continually strive to keep this manual up to date, you may find our online support knowledgebase useful for the latest issues, troubleshooting tips and bug fixes. You can access the support knowledgebase from our website at:

www.naurtech.com → support → knowledgebase

Introduction

Naurtech Terminal Emulation (TE) and Data Collection Web Browser allows users to connect to applications running on IBM3270, AS/400, VT, or HTML servers from ANY Windows CE or Windows Mobile (Pocket PC) handheld device over ANY wired or wireless TCP/IP data network.

You can use our clients to directly communicate with host applications running on legacy hosts or web servers. No middleware gateway is required. Users can connect and log on to a legacy host or web application from a handheld Windows CE device, enabling the device to function as a wireless mobile terminal.

Device tailored versions of each product are available for specific terminal models from every major hardware device manufacturer. These versions integrate with the peripherals available on each device, such as barcode scanner, imager scanner, RFID reader, magnetic stripe reader and Bluetooth printers.

This manual applies to the following Naurtech smart clients. CETerm is the all inclusive product which offers three terminal emulations and an integrated Data Collection Web Browser. Single emulation products also include the Data Collection Web Browser.

| Products | | | | | |
|----------|------|-------|-------|------|------|
| | HTML | VT100 | VT220 | 5250 | 3270 |
| CETERM | ✓ | ✓ | ✓ | ✓ | ✓ |
| CE5250 | ✓ | | | ✓ | |
| CEVT220 | ✓ | ✓ | ✓ | | |
| CE3270 | ✓ | | | | ✓ |

NOTE: Separate documentation is provided for web browser extensions, HTML meta-tags, and ActiveX controls in the Web Browser Programming Guide. Please refer to that documentation for building web-based applications, which will be used with our smart clients.

NOTE: Separate documentation is also provided for the Workflow Automation Engine, which provides a fully scriptable platform to automate application interaction, device and peripheral control and data collection workflow. Please refer to the Naurtech CETerm Scripting Guide for details.

WHAT'S NEW IS VERSION 5.1

We have been listening to our customers and partners in developing new functionality within our products. In addition to all maintenance service patches, the following new capabilities have also been added to version 5.1.

- **Support for new Windows CE 5.0 and Windows Mobile 5.0 OS.** Most device manufacturers are migrating their terminals to the latest Windows CE 5.0 and Windows Mobile 5.0 operating system versions from Microsoft. Versions 5.1 of our Smart Clients fully support these new OS platforms and are device tailored for various terminals.
- **New “device tailored” versions.** We have been working closely with every major hardware device manufacturer to provide “device tailored” versions of our Smart clients for their latest terminals. Version 5.1 will support several new terminals. These are listed in the “Supported Device Tailored Versions” section.
- **Continued Enhancements to Data Collection Web Browser.** We believe that web based applications will continue to play a key role in handheld data collection solutions. As such, we have added even more capability to our integrated Data Collection Web Browser, to leverage new support available from the Operating System. We have added new events and extensions to our browser, including tighter control with RFID reader and Barcode scanner peripherals. The Web Browser also supports a full CETerm JavaScript engine to extend the behavior of our Smart Clients for customization and automation of your data collection solution workflows.
- **Scripting Workflow Automation Engine.** This is one of the key features of version 5.1 product release. It introduces a full JavaScript environment running inside our Smart Clients, which is separate from the Browser JavaScript engine. It allows the ability to write scripts to customize and automate both terminal emulation and web browser applications using JavaScript scripts. The CETerm JavaScript engine (Workflow Automation Engine) provides capability to examine and control the OS, device and its peripherals (barcode scanner, RFID reader, printer) through terminal emulation and browser sessions. This makes our Smart Clients a robust platform to build any customized data collection application.
- **RFID Read / Write control.** Unlike barcode scanner data, which is scanned and decoded a single entity at a time, RFID data can be read from multiple entities with a single read. Further, this data may require being parsed, validated, sequenced, filtered, computed or possibly reformatted prior to submitting it via a terminal emulation or web browser session to the backend host application. Tight integration of our Smart Clients with the device RFID readers allows for this data processing to happen right on the device, as opposed to the backend host application or some middleware. This eliminates the need to make any changes to the backend legacy host application for RFID enabled solutions. The Scripting Workflow Automation Engine provides association with barcode scanner and RFID data read events to build device local intelligence in your data collection solutions.
- **Network Awareness Features.** This is set of capabilities, first introduced in version 5.0, added throughout the product to keep our Smart Clients aware of the network connection / disconnection states, RF signal strength and host / server availability. Version 5.1 builds on these “Net Awareness” capabilities to allow users to better manage their operational workflows during network connectivity exceptions such as roaming out of RF range or loss of

network connectivity to host / web server. We plan to add even more Network Awareness capabilities in subsequent releases, so end customers may benefit from productivity gains of seamless roaming and “casually connected” workflow operations.

- **Indicators (RF & Battery Strength...).** Version 5.1 adds more visual indicators to provide real-time “state” of some device / session specifics such as RF signal, battery strength, keyboard mode or web browser page loading status. You can display, position and control these indicators for your terminal emulation and web browser sessions. Depending upon the Indicator, alerts can be set for notification, in cases the strength falls below a certain threshold. All indicators can be fully controlled using Scripts.
- **Other Enhancements.** There are many additional enhancements and optimizations specific to supporting legacy applications, scanner performance for etc, including support with device tailored versions of our products for several new terminals. Please refer to the device specific notes for details.

FEATURE HIGHLIGHTS & BENEFITS

Multiple host sessions

Supports up to four simultaneous pre-defined host sessions. Interactive, per-session configuration settings are maintained. Users may connect with any permutation of 3270, 5250, VT host or HTML Web Browser sessions.

Hotkeys and menu context are available to jump between these sessions.

- Simultaneously connect to different hosts
- Multiple Web Browser sessions
- Maintain independent session contexts
- Easily switch between sessions

Data Collection Web Browser

Many customers view Pocket PC / Windows CE devices as multi-purpose handheld devices, from which they should not only access their legacy host applications, but also web based applications. The integrated Web Browser addresses specialized data collection functionality requirements, such as key remapping, device lockdown, RFID and scanner integration etc that are not possible otherwise.

- Web based applications
- Multi-purpose device applications
- Migration path from green screen to newer web based applications

Scripting Workflow Automation Engine

The CETerm JavaScript engine provides a full JavaScript environment, which allows you to automate and extend the behavior of your data collection application. You can use pre-defined scripts and modify these to customize your business process workflow.

- A rich, scriptable platform to customize and automate business process
- Integrated control of scanner and RFID reader allows to differentiate your data collection solutions

Custom Keyboard mapping

Physical keys on the device can be re-mapped to invoke any application operation or host key action. Keys can be remapped to:

- another key
- an application operation such as “Print”
- a host specific key such as “F4” or “Field Exit”
- a text string such as “My input string”
- a null operation (to disable the key)

- Remap any hardware key to any application operation
- Works for both TE and Browser sessions
- Minimize user re-training

Full Screen Mode

You can now hide the Start Bar, the Application menu and toolbars so that the end user has no control to navigate away from the application. In addition you also get two precious rows of screen real estate as part of your terminal display area.

- Additional rows for display area
- Minimize production downtime by preventing users from changing device configuration and application settings.

Device Lockdown / Access Control

Device Lockdown allows administrators to prevent users from exiting our Smart Client. You can hide the Windows CE “Start” button, Start bar and also the application menu and tool bars so that the whole device display area is occupied by the terminal display. Administrators can “lock out” users from the operating system so as to prevent users from being able to change the application and device configurations. This also prevents users from running any other application on the device. The device may be configured to automatically boot into our application and auto-connect to the host.

- Provides administrators the ability to lock down the device so users cannot navigate away from core business processes
- Minimizes support costs
- Simplifies business application workflow

Indicators

Visual Indicators for network RF signal, device battery strength, keyboard state and browser “page loading” animation can be configured. You can display, position and control these indicators for your Terminal Emulation and Web Browser sessions. You can also configure to receive notification if the RF signal or battery strength falls below a certain threshold. The same information may also be displayed as a Keybar button.

- Visual Indicators are available in full screen locked down configuration. This allows more screen real estate for the host application display area.
- Alert notifications if Indicator strength falls below a configured threshold

Internationalization: Code Pages

All popular Western European languages are supported to display and input language specific special characters. Single byte language code pages are provided. Examples of supported code pages are Swedish, French, German, Italian, Spanish, and Finnish etc. Additional languages, which are represented by single byte code pages, such as Thai, Cyrillic, Greek and Turkish are also supported.

- International customers

Multi-Byte Character set: Asia Pacific language support

Support for multi-byte character set (MBCS) languages, such as Chinese (Traditional and Simplified), Japanese, Korean, Thai etc, is provided only for VT emulation. VT emulations also support the UTF-8 encoding and Single Byte Character Set (SBCS) encoding to support other languages such as Greek and Hebrew. Equivalent support for IBM emulations is not available yet.

- Asia Pacific language support
- UTF-8 encoding support for VT emulations

Network Aware Features

Users can now configure to “Check network on Connect” or “Check network on Resume” to ensure network availability prior to establishing a connection if network coverage is lost or if the device is resuming from a suspended state. Additional capabilities include notifying the user to return to coverage area if network connectivity is lost while roaming out of coverage.

- Minimizes user interaction during connection / re-connection attempts
- Maximizes user productivity

For browser sessions, which are stateless and do not require continuous connectivity, users can also check network availability before every data send operation.

Configurable KeyBar & Context Menus

The configurable KeyBar allows users to customize a set of soft buttons to control and invoke any host specific keys or application operation. Users can select from a set of pre-defined KeyBar templates. In addition they can also configure up to six custom templates of their own. Users can navigate between a selected set of KeyBar templates.

- Can make any host key or application operation available from a KeyBar soft button
- Customize KeyBar buttons to associated with proprietary VT escape sequences

A Keybar can also be made to appear as a Context Menu, which would appear when you tap and hold the stylus on the terminal display screen.

Meta keys

Meta keys are special keys that that you can configure to act much like the state keys "Shift", "Alt" and "Ctrl" on a regular keyboard. They are used together with other keys to activate special actions. Meta keys can be assigned to hardware keys for use in key remapping. They are especially helpful on devices with limited number of physical keys.

- More key remapping options on devices with limited keys
- Allows configuration of less key presses to achieve an action

Auto-start Sessions

Users may launch multiple host sessions when our Smart Client is started. This can simply be enabled via session specific checkbox configuration.

- Eliminates intermediate manual step
- Minimizes retraining. Gives user direct access to familiar host application screen

Automatic login

Pre-recorded macros can be configured to launch automatically when a session is started and log into the host system. Users can configure their devices to go from "cold boot" to a host application screen without a single stylus tap.

- Automates manual steps to enhance device usability

HotSpots

A HotSpot is an invisible field on the terminal screen where a user can tap with a stylus to execute a function. A Hotspot thus allows a user to interact with the host application with minimal needs for the special keypads. Instead the user can directly tap on the text in the terminal display to invoke the desired operation. All our Smart Clients support HotSpots for 3270, 5250 and VT host sessions.

- Leverages the "touch screen" interface of Windows CE to allow enhanced usability
- Minimizes need for host specific keys

Dynamic Cursor View modes

Multiple cursor modes are available to support automatic scrolling, so that the cursor / input field is visible. The terminal display window will "track" and follow the cursor. In addition, you can lock a screen display to a specific row and column. These view modes are configurable for each session.

- Automatic scrolling to current cursor location enhances user productivity and usability
- Lock row / column position of display; backward compatibility with pre-existing applications

Legacy Extensions

All our terminal emulations support proprietary protocols used by legacy hardware terminal vendors so as to easily migrate customers to new / upgrade terminals. These include "Intermec Extended Commands", "Symbol IBM PRN", "Telxon VT extensions" and "LXE block mode".

- Seamless migration from legacy DOS / proprietary terminals to Windows CE / Pocket PC terminals

Screen Panning

Screen Panning allows an additional row and column on the display by providing an alternative to horizontal and vertical scroll bars. Imagine the host application screen as a large sheet under the display on the handheld device. Screen Panning allows users to "tap", "hold" and "drag" the terminal display screen in any direction to move hidden areas of the host display into view on the handheld device without the use of scroll bars.

- Faster alternative to scrolling
- Easier "Touch screen" usability

Configurable fonts

All our Smart Clients allow users to include new fonts for displaying the terminal text. Any fixed-width true type font file (.ttf) may be placed on the device and selected for terminal display. VT emulation also allows proportional fonts. Font sizes can easily be increased or decreased from the toolbar with a single stylus tap. Font weight can be changed as well.

- Enhanced readability on both color and monochrome display screens
- Single tap font size change

Macro Record and Playback

All our Smart Clients have capability to record input keystrokes for a connected host session and subsequently play the recorded macros for easy, automated navigation through multiple host screens. A single macro may be recorded and associated with a host session. This macro may also be auto-launched upon a session connection to get "auto-logon" capability.

- Automates login steps to host application
- Automate host application navigation

SmartPads

All host applications have specific keyboard requirements. The Smartpad is a floating button pad, which provides support for special emulation host keys. Depending upon the current configured host emulation type, the appropriate Smartpad for that emulation is displayed. The Smartpad supports all the popular 3270, 5250 and VT host keys.

- Access emulation specific host keys

Color Schemes

Support for color displays. A color scheme is a collection of colors mapped to a set of terminal display attributes. Users can select from a pre-defined color schemes or create a custom scheme based upon their preferences. Non-color displays will default to a Black-on-White or White-on-Black scheme.

- Enhanced readability in varied lighting conditions

Cold boot persistence

Windows CE devices are diskless devices, which lose all installed applications and their configuration settings if the device cold boots or completely loses battery charge. All our Smart Clients can be setup, to self install and restore all device and application configuration settings. Such setup varies by manufacturer and terminal.

- Minimizes support costs and production down time

With the new Workflow Automation Engine, cold boot persistence scripts can be written specific for each terminal to reduce this setup into a single key press.

Host Session password

Any host session may be password protected with the user being prompted for a password when connecting that session.

- Secure host session connection

Device / LU Name support

For IBM emulations (3270 and 5250), logical unit device name resource configuration is supported. This is used during connection negotiations.

- Allows to better management and administration of SNA host resources

Integrated Demo modes

Simulated host terminal screens are integrated within our Smart Clients for evaluation and sales demonstrations. No server component or network connection is required to run demo modes. Simply set the host name to “demo.naurtech.com” and connect.

- Easy demonstrations without need for live host connection

Text Input Tool

For Windows CE devices without keypads, data entry is usually performed using a stylus with an integrated soft keypad. This requires the user to spell-type text strings. This is a slow and tedious process. The Text Input Tool addresses this issue by allowing users to send text strings to the display window at the current cursor location, without spell typing. A user can preload often used text strings in the Input Tool, highlight the string and “send” the selected string to the session display.

- Optimizes usability and user productivity
- User configurable strings allow for individual customization

VT220 DEC Multinational & NRC support

VT emulations fully support the DEC multinational character sets and National Replacement Character sets (NRC). This support is provided for over a dozen western European languages.

- Supports international character sets for VT host sessions

VT Line Mode / Block Mode

This is a special optimization for VT host sessions. Data is buffered locally within the device prior to sending it to the host. Line mode optimizes usage of the network bandwidth and host resources.

- Optimized network bandwidth usage for VT emulation sessions

VT Answerback String

This is a configurable text string that certain host applications require to identify the terminal.

- Legacy application compatibility

Hot Keys

Predefined hot keys are available to interact with and invoke emulator operations.

- User productivity

Automated Licensing

Simplifies the software registration process by querying a configurable Web server for an XML based registration file.

- Easier deployment as individual devices do not have to be registered manually

Benefits of Naurtech TE and Data Collection Web Browser

Terminal Emulation remains the well-proven, cost-effective solution for host access and automatic data collection solutions that result in the fastest ROI. With the proliferation of web-based applications, the Web Browser is becoming the new standard to access business processes and data. Naurtech smart clients running on a handheld device allow users to automate their business processes and to implement productivity solutions.

Here are some benefits of using our handheld Terminal Emulation and Data Collection Web Browser:

- We provide a seamless migration path for accessing legacy green screen and newer web based applications.
- The data collection web browser sessions allow you to write custom applications in HTML, giving you full control over the device and its attached peripherals. It provides capabilities to build real world web based applications, which cannot be implemented using the built in browser, which comes with the Windows CE operating system.
- The Scriptable workflow automation engine allows you to customize and automate your workflows for both Terminal Emulation and Web based applications.
- With our Terminal Emulation client running on the device, users do not have to make any changes to their existing backend / host applications.
- Combined with integrated support for barcode scanners and RFID readers, our Smart Clients deliver a well-proven, optimized workflow solution for data collection and data access.
- Our Smart Clients are device tailored for complete product families of terminals from every major hardware device manufacturer. We are the only vendor with such a breadth of offering in choosing a hardware platform.
- We support all proprietary extensions that have proliferated within the industry. This includes “Extended Commands” from Intermec, proprietary TE extensions from Telxon and Symbol, Block mode from LXE, HTML META tags from Symbol (Pocket Browser) and Intermec (iBrowse). This gives our customers and partners a complete and concise growth path
- Easy to configure, painless to deploy, simple to manage.
- A native smart client running on the device delivers a higher productivity, higher usability solution. This is because the native client is able to conform to the ergonomics and form factor of the device while interfacing with the attached peripherals.
- You do not require any expensive middleware. No modifications are required to the host applications.


System Requirements

Following are the system requirements to run Naurtech smart clients.

| | |
|--------------------------------|--|
| Windows CE Version | Windows CE 5.0, Windows Mobile 5.0 or greater, Windows CE.NET 4.2, Windows Mobile 2003 |
| Operating RAM on device | 8 MB (Recommended 32MB or higher) |
| Connectivity | TCP/IP enabled LAN, WLAN (802.11B) or WWAN (GPRS), Bluetooth |
| Desktop connectivity | ActiveSync 3.7 or higher |
| Flash / Storage Card | Recommended 4MB |

Version 5.1 no longer supports terminals with older Windows CE and Pocket PC OS platforms. Any terminals running below Windows CE 4.2 or Windows Mobile 2003 are only supported with earlier versions of our product. Please contact us at support@naurtech.com if you have a need for older terminals.

Supported “Device Tailored” Terminals

 Naurtech TE and Web Browser smart clients run on ANY Windows CE / Pocket PC device, from Windows Based Terminals (WBT) to Pocket PC handhelds to vehicle mounted sub-notebook computers and everything in between. "Device Tailored" versions are available for ruggedized terminals with integrated support for barcode scanners and RFID readers. Complete product families from all major hardware device manufacturers are supported. Here is a sampling of devices supported with device tailored versions of Naurtech TE and Data Collection Web Browser Smart Clients.

| Device Manufacturer | Device Model | OS Platform | Comments |
|---------------------|---------------|------------------------|--------------------------------------|
| Bluebird Soft | BIP-5000 | CE 5.0 | |
| CASIO | DT-X11 | CE 5.0 | Scheduled availability for Q2/2006 |
| | IT-600 | CE 5.0 | |
| | DT-X5 | CE .NET 4.1 | |
| | DT-X10 | CE .NET 4.1 | Both Laser and Imager versions |
| | IT-500 | CE 4.1 | Only supported by CETerm version 5.0 |
| Compsee | MAT 203 / 204 | CE 5.0 and CE .NET 4.1 | |
| Datalogic | Jet | CE 5.0 and CE .NET 4.2 | Scheduled availability for Q2/2006 |
| | Kyman-NET | CE 5.0 | Scheduled availability for Q2/2006 |
| Denso T.D. Scan | BHT-400 | CE 5.0 | Scheduled availability for Q2/2006 |
| | BHT-200 | CE 5.0 and CE .NET 4.1 | |
| Fujitsu | iPAD | CE .NET 4.2 | Only supported by CETerm version 5.0 |
| | ShopperScan | | |
| Gotive | H42 | CE 5.0 and CE .NET 4.2 | |
| Hand Held Products | 9500 | WM 5.0 WM 2003 SE | |
| | 7900 | WM 5.0 WM 2003 SE | |
| | 7400 | CE 3.0 | Only supported by CETerm version 4.5 |
| Intermec | CK60 | CE 5.0 and WM 5.0 | |
| | CN30 | WM 5.0 | |
| | CK31 | CE .NET 4.2 | |

| | | | |
|----------------|--------------------|--|---------------------------------------|
| | CN2A & CN2B | CE 5.0 and WM 5.0 CE .NET 4.2 | |
| | 700 series | WM 2003 | |
| | CV60 | CE .NET 4.2 | Use non-scanner integrated version |
| Motorola | HC700 | WM 5.0 WM 2003 | |
| Nordic ID | PL3000 | CE .NET 4.2 | Scheduled availability for Q2/2006 |
| | PL2000 | CE .NET 4.2 | |
| LXE | MX7 | CE 5.0 CE .NET 4.2 | Scheduled availability for Q2/2006 |
| | MX6 | WM 5.0 WM 2003 | |
| Psion Teklogix | 7530 / 7535 | CE .NET 4.2 | |
| | Workabout Pro | CE .NET 4.2 | |
| | 8525 / 8530 | CE .NET 4.2 | |
| | iROC | WM 2003 | |
| PSC | 4420 / 4410 | CE .NET 4.2 | |
| Symbol | MC9000 | WM 5.0 WM 2003 CE 5.0 CE .NET 4.2 | |
| | MC9000 w/RFID | WM 5.0 WM 2003 | Scheduled availability for Q2/2006 |
| | MC3000 | WM 5.0 WM 2003 CE 5.0 CE .NET 4.2 | |
| | MC50 | WM 5.0 WM 2003 | |
| | MC70 | WM 5.0 WM 2003 | |
| | PPT 8800 | CE .NET 4.2 | |
| | PDT 8100 | WM 2003 | |
| | VRC 8900 / 7900 | CE .NET 4.2 | |
| Unitech | PA 970 / PA 960 | CE 5.0 CE .NET 4.2 | |
| | PA 950 | CE .NET 4.2 | |

Installation

All Naurtech smart clients are distributed electronically and are packaged as a Zip file. Once you download the product from our website, follow these instructions to install the product to your handheld device.

After unzipping the downloaded file on the desktop, you should have the following files in your local directory

```
CExxxx.cab
CExxxx.ini
License.txt
yyyy_readme.txt
Setup.exe
ReleaseNotes.htm
```

where xxx is the product and platform descriptor for the target CE device. Multiple CAB files may be present for different CPU targets. [e.g CETerm_WM50PPC_ARMV4I.CAB]

where yyyy is a manufacturer and device descriptor for a "device tailored" version of the product. It has specific notes pertaining to the device tailored version.


- Make sure your handheld device is connected to your desktop via a USB, serial or wireless 802.11x connection.
- Make sure you have ActiveSync installed. Version 3.8 or higher is recommended. You can get a free copy from Microsoft at:
<http://www.microsoft.com/windowsmobile/downloads/activesync38.mspx>
- Make sure your device is connected to the desktop via ActiveSync.
- Run Setup.exe on your desktop.
- You will need to read and accept the EULA to proceed. Click the "Install>>" button if you accept the license terms. This will launch the application manager to install the Naurtech client on your device.
- Once installed, you will see the application in your <Start> menu. For Windows CE OS platform devices, you will also see a shortcut on the desktop.

NOTE: You can select the install location on your device from the Setup application. If you want to preserve the application during a device cold boot, you may want to install it on a Compact Flash or Secure Digital Disk, if available on the device

NOTE: You can also copy the CAB file directly to the terminal and run it directly from there to install the product.

Quick Start

This section is for advanced users who are comfortable with navigation within Windows CE and are familiar with host terminal emulation and web browser terminology. Follow these steps to connect to your host application with minimal configuration setup. For details on various configuration parameters, it is recommended that you read through corresponding sections later in the manual.

- Install the Naurtech smart client: CETerm, CE3270, CE5250 or CEVT220 on to the device. Follow instruction is the "Installation" section of the manual.
- Make sure the device network settings are configured and the device is on the network. If you are connecting over wireless LAN (802.11B), make sure your device is communicating with the Access Point.
- From the [Start] menu, run the Naurtech smart client CETerm, CEVT220, CE5250 or CE3270.
- Select [Session] [Configure] from the application menu and select the "host type" that you wish to connect to; i.e. 3270 mainframe, AS/400 5250 server, VT host or HTML for Web browser application.
- Enter the "Host Address" of the host system that you wish to connect to. This may either be a DNS name or an IP address of the host system or a URL (Universal Resource Locator such as <http://www.myhostname.com>) for your web based application.
- Update the telnet port number, if your host application is configured to listen on a specific port. If not, just use the default telnet port.
- Select [OK]
- Select [Session] [Connect] from the application menu or tap the "Connect" button  on the Toolbar. Upon a successful connection, you should see the host application screen displayed.

NOTE: There are built-in "demo" modes available, which may be used to test the look and feel of our client, even if you may not have a live network connection to connect to your host.

Quick “How To” Tips

Automatically submit a barcode (Postamble ENTER)

All device tailored versions of Naurtech smart clients directly interface with the barcode scanner engines. If you would like to configure your barcode scanning such that a key operation such as [Enter] or [Tab] or [Field Exit] etc is automatically appended after a barcode scan, you can set the postamble in the scanner configuration. For [Enter] place a “\r”, for [Tab] place a “\t”. Refer to barcode scanner configuration for a list of pre and post ambles.

Change the font to fit rows and columns on the screen

You can dynamically increase or decrease the font size of the displayed text in all terminal emulation sessions. This allows you to configure the number of rows and columns such that they fit on the display screen. Select “Font Up” or “Font Down” from the [Display] menu. You can also use the corresponding buttons on the toolbar. You must be connected to a host session for the settings to take effect.

Configure a session to automatically connect on startup

You can configure any session to automatically connect when the client starts. To do so, configure your session for a connection. Then enable “Auto Connect” checkbox option from [Session] -> [Configure] -> [Connection] -> [Advanced]. Each session can maintain its separate setting.

You can also setup automatic launch of the application upon device boot, by placing a shortcut to the application in the \Windows\Startup folder

Setup Automatic login

Automatic login capability is provided via Macros. Record a macro with all the steps to login to your host. You can then configure the macro script to be launched automatically once the session connects. Enable the “Macro on Connect” checkbox option from [Session] -> [Configure] -> [Connection] -> [Advanced]. You can have only one macro associated with each session. Refer to the Macros section in this manual for more details on how you can record a macro.

Remap hardware keys

You can re-map any physical keyboard key on the device to any other key, text string, application operation or a script. You can also map the key to a NULL operation, which will prevent use of that key. All key remapping is done on the device through application configuration settings. No additional components are necessary. This remapping may be configured specific to either a session or an emulation type (such as VT, 5250, 3270, HTML etc).

All key remapping configuration settings are performed from the dialog [Session] -> [Configure] -> [Options] -> [Configure KeyBars and Keys]-> [Select Keymap] / [Edit Keymap]. Refer to the key remapping section for detailed steps.

Configure Full Screen mode

You can configure the application such that the display area occupies the complete display screen on the device. The “Start” bar, Application menu, toolbar and any KeyBars can be hidden. To configure full screen mode go to [Session] -> [Configure] -> [Display] -> [Advanced] -> [Hide/Show] tab. Enable the checkbox “Hide Menu Bar”, “Hide Keybar” and “Hide Toolbar”. Now go to [Session] -> [Configure] -> [Options] -> [Advanced] -> [Access Control] and enable checkboxes “Hide Start Bar”.

You can get back to your configuration dialogs from the full screen mode via a special Context Menu. If you double tap (on Windows Mobile) or tap and hold (on Windows CE) the stylus on the top left vertical edge of the display screen, you will see a context menu appear. Choose the “Configure” option to enter the configuration.

Lock down the device

You can prevent the users from being able to access any application menu or configuration options. To do so, configure the device in full screen mode. Next enable the checkbox option “Disable App Exit” from [Session] -> [Configure] -> [Options] -> [Advanced] -> [Access Control] configuration settings. Also set an access control password here. The user will be prompted for this password if an attempt is made to enter the configuration dialogs. Refer to the Access Control section in this manual for more detailed instructions.

Display Indicators

You can display RF signal and battery strength Indicators, either as floating icons or as part of KeyBar buttons. To display the Indicators, go to [Session] -> [Configure] -> [Options] -> [Advanced] -> [Info Items]. Select the Indicator from the dropdown list.

For the selected Indicator, make sure you enable the “Update” checkbox and the “Enabled” checkbox under “Screen Display”. You can also select the status buttons to be displayed on a Custom KeyBar. Refer to the Indicators section in this manual for more details.

Configure to display International language character sets

We fully support all European language codepages for all terminal emulations. We support multi-byte character set languages, such as Chinese, Japanese, Korean, Hebrew etc for VT emulations only.

For IBM emulations, you can select your language specific codepage table from our support website. Once installed, the codepage will appear as a selectable option under [Session] -> [Configure] -> [Connection] -> [Advanced] -> [IBM Options] settings.

For VT emulations, you must have the language specific codepage table installed on the device. You can then select the encoding mode and the corresponding codepage from the options under [Session] -> [Configure] -> [Connection] -> [Advanced] -> [VT Extensions] settings.

Run sessions over Secure Sockets Layer (SSL)

You can encrypt all data exchanged with your host applications over SSL. Enable the "Enable SSL" checkbox option under [Session] -> [Configure] -> [Connection] -> [Security]

Exiting out from the registration dialog

When running the software in evaluation mode, you may enter the registration dialog by pressing the "Register" button when you are notified that you are running an evaluation version. At this point you are expected to enter a User ID and a registration key. The device unique License ID is shown in the registration dialog. If you do not yet have your registration key and need to exit back to the splash screen, press the cancel 'X' button or press the Esc key. On PocketPC, you may need to enter at least 4 characters in the User ID field and press OK. You will be told that the registration key did not match. Repeat this step three times to return to the splash screen.

Automatic Licensing Registration

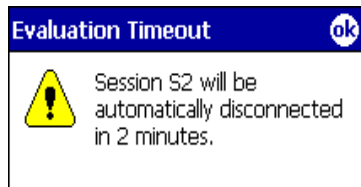
Rather than having to type the registration key to register your software license, with version 5.0, we can provide you your registration key(s) in an XML file format. You can either place this file on a Web server or locally on your device. You can then configure a reference to this file to automatically register the device. To configure automated licensing, go to [Session] -> [Configure] -> [Options] -> [Advanced] -> [Manage]. Under "Server URL" enter the complete URL to the registration license XML file. Please refer to the Automated Licensing section later in this manual.

Evaluation Mode

You can download fully featured evaluation versions of our smart clients from our website (www.naurtech.com). In the evaluation mode, there is a limitation on the number of host connection attempts and the length of time for each “connected” session. When running in evaluation mode, users will be given a warning for the evaluation connection attempts and connected time.

The evaluation period will expire once the number of host connection attempts are exhausted.

For each connected session during the evaluation mode, the session will be disconnected after a fixed length of time. In evaluation mode, you are allowed to connect to at most two sessions simultaneously.




These limitations and warnings are strictly part of the evaluation mode. They are not seen in a registered version of the application. To register the application, you must purchase a legal registration key and register your copy of the software installation. Contact our sales department at sales@aurtech.com for more information.

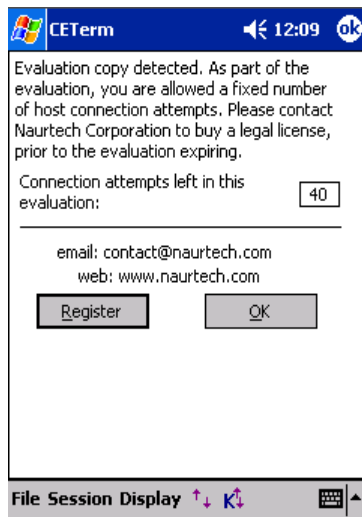
Software Registration

Although the evaluation versions of all Naurtech smart clients are fully featured, they are restricted by evaluation limitations. Following the expiration of evaluation limits, the application will fail to connect to the host and you must purchase a registration key to activate the product. You can purchase registration keys by contacting your Systems Integrator / Reseller, Distributor or Naurtech Corporation

Phone: +1. 425.837.0800
 E-Mail: sales@nurtech.com
 Web: <http://www.nurtech.com>

☞ Once you have received your user id and associated registration key, follow these instructions to register the product.

- Launch the product application on your Windows CE / Pocket PC device
- From the application menu, select [Session] [Connect]. Alternatively, you may tap the "Connect" button  on the application ToolBar
- If your copy of the product is not yet registered, you will receive the following dialog

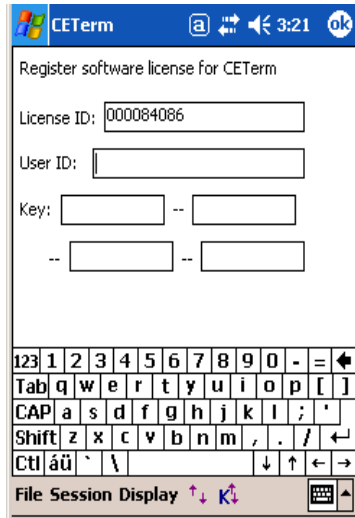


Windows Mobile

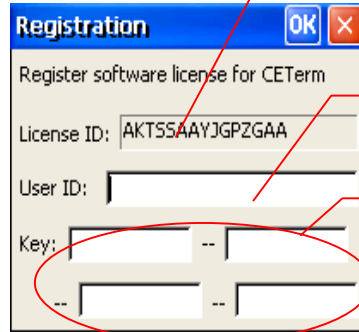


Windows CE

- Tap the "Register" button. This will indicate your device license ID and prompt you for your User ID and Key to register your software license.
- Enter the purchased Registration Key using the soft keypad on the device. Note that your registration key is provided as 4 hyphenated values such as `aaaa-bbbb-cccc-dddd`. Make sure you enter these in the correct order as indicated in the picture below.
- Tap OK



Windows Mobile



Windows CE

This is a device unique License ID on which your license registration key is based on. It can be your device serial number, MAC address or another unique ID. You would have provided this License ID to Naurtech when purchasing the license.

Enter your company name here

Enter the registration key, which you purchase from Naurtech here. This is a unique key based upon your device license ID.

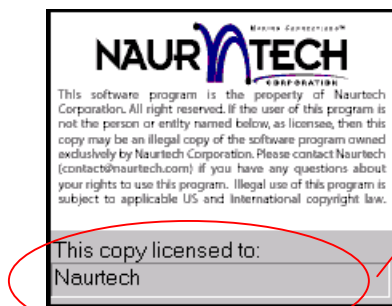
NOTE: Your registration key is unique to your device License ID. It is case sensitive and must be entered in the correct order.

NOTE: The registration key does not include any references to the number zero [0], capital alphabet O, the number one [1] and lowercase letter L [l].

NOTE: If you do not yet have a registration key and would like to exit back to the splash screen, press the cancel button 'X' or the Esc key. On Windows Mobile platform devices, you must enter at least two characters in the User ID field. Tap OK. Repeat this step three times to return to the splash screen.

If your User ID and Key are correct, your product will be registered. If the keys do not match, you will be prompted with a failure message accordingly. Please make sure both the User ID and Key are entered correctly. Both of these are case sensitive. If the problem persists, please send e-mail to support@naurtech.com.

Once the product is registered, your User ID will appear on the Splash bitmap and in the About dialog box.

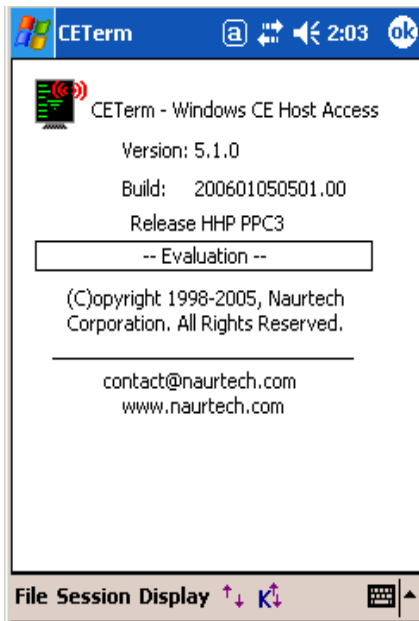


Once the registration is successful, your user id will be displayed under the Splash screen and in the About dialog box.

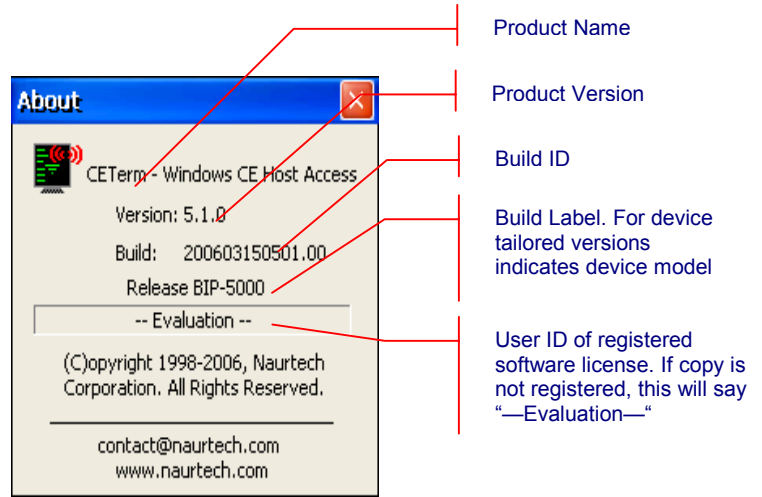
Product Version

You can check your product registration and version number from the “About” dialog. Please keep the product registration key handy. You may be asked to provide this for technical support issues. Follow these steps to determine your product version number and licensing registration information.

- Launch the product application on your Windows CE / Windows Mobile device
- From the application menu, select [File] [About]. You will see the About dialog as shown below. The build version and license registration information is shown.



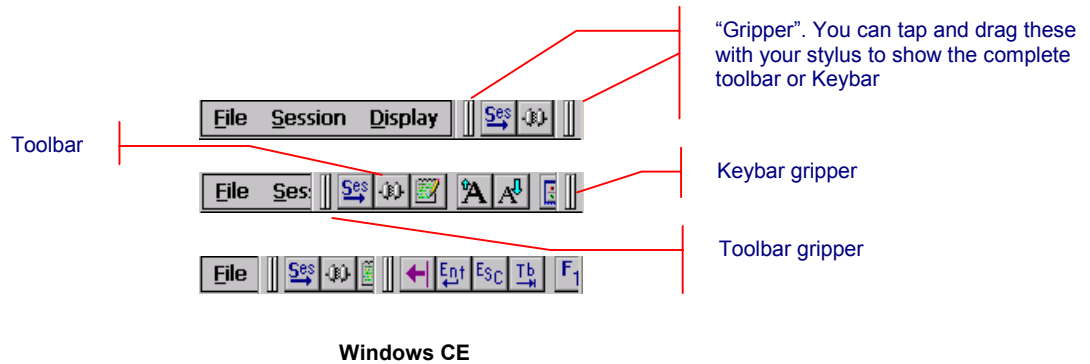
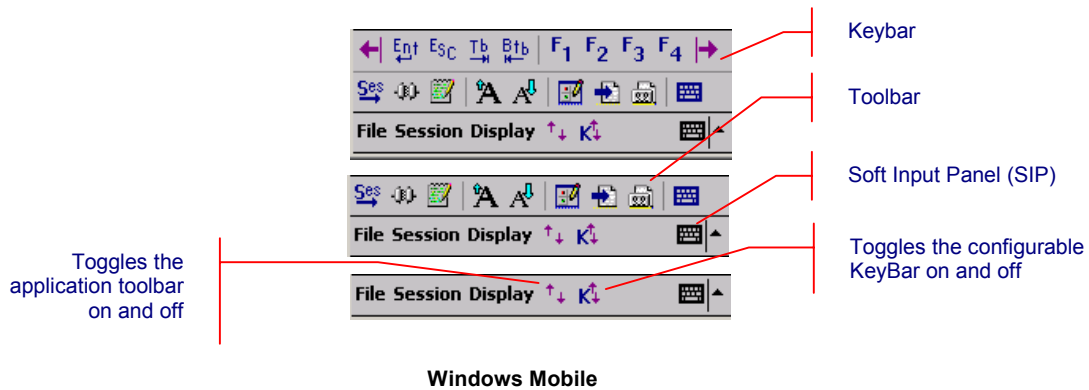
Windows Mobile



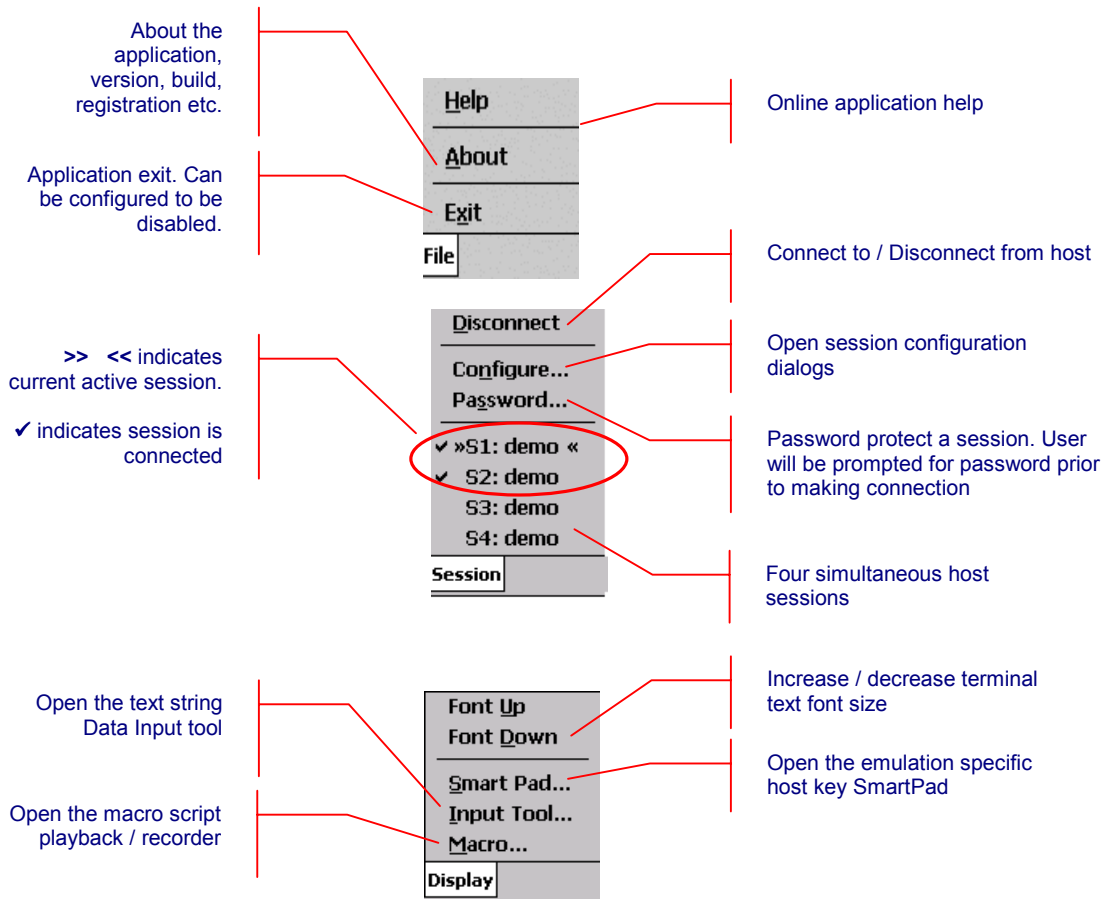
Windows CE

Application Menu


One of the benefits of using Windows CE / Windows Mobile platform devices is that they follow the popular desktop “Windows” metaphor. Naurtech smart clients follow the user interface guidelines as recommended by Microsoft. Windows CE uses command bars, which combine menus and toolbars together. The following image shows the application toolbar.

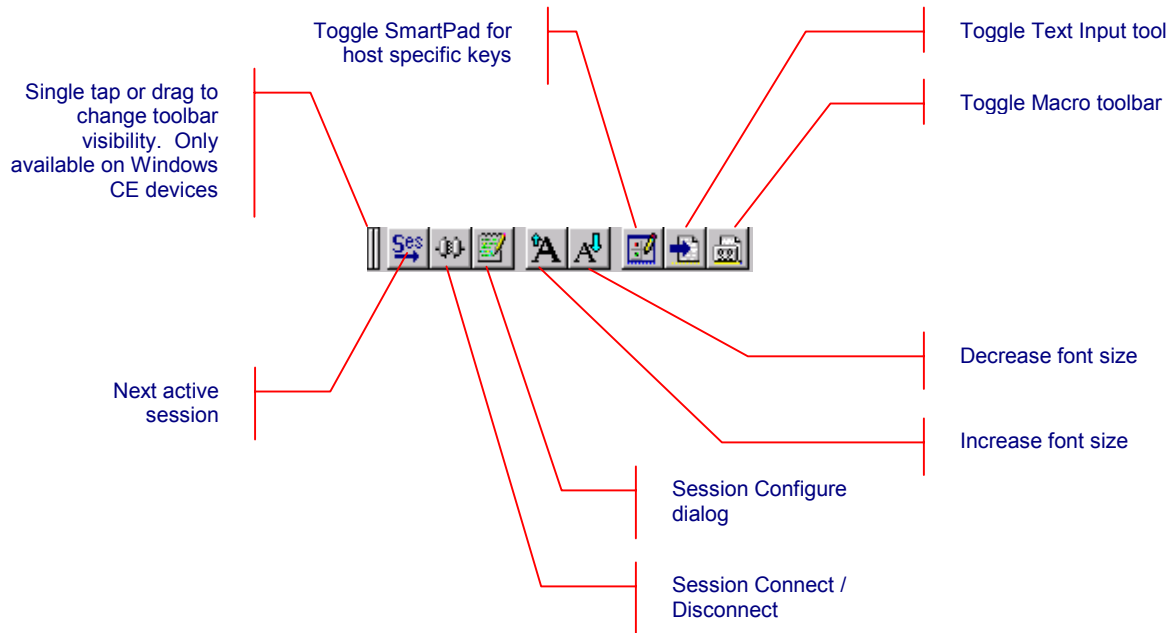


The operations associated with application sub-menu options are shown below



Application Toolbar

An integrated application toolbar is provided for touch screen navigation. For Windows CE platform devices, this toolbar is available next to the Application menu. For Windows Mobile platform devices, you can bring up the toolbar by invoking the toolbar button  next to the application menu. Below is a description of the toolbar buttons. You can also tap and hold the toolbar button to get a “toolbar tip” indicating its functionality.



Configuration

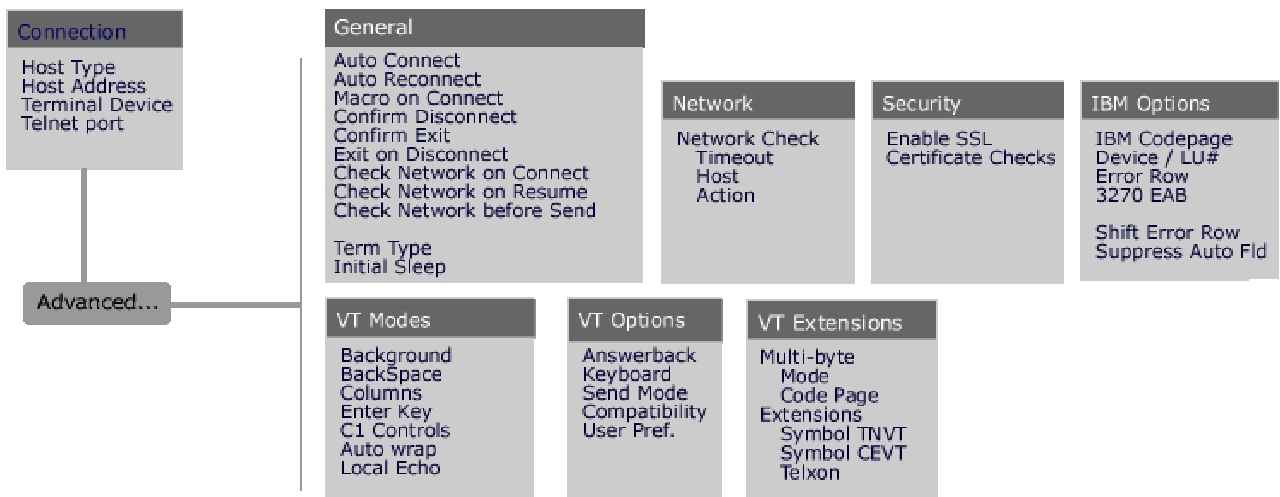
This section describes various configuration parameters for host connections. All these parameters are set using the configuration dialogs accessed from the [Session] [Configure] application menu. Except for "Connection" parameters, you can change or update any parameters at any time, whether the host / browser session is connected or disconnected.

All configuration attributes are associated with the currently active session. Every session can have a different set of configuration attributes.


NOTE: The positioning of some of the user interface widgets on the dialogs shown might appear slightly different on your device. This is because Windows CE devices come in various screen form factors and the placement of the user interface widgets is performed dynamically, based upon the device screen dimensions and characteristics.

CONNECTION

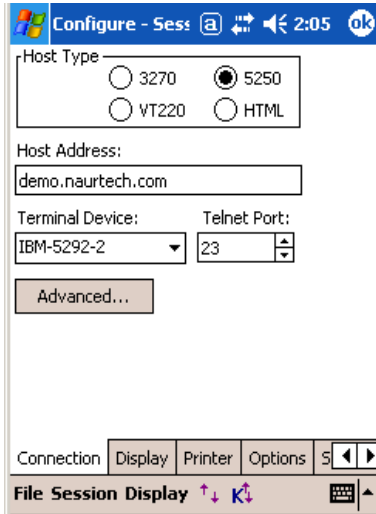
The diagram below shows the hierarchy of configuration attributes for the Connection configuration attributes. Each title represents a configuration dialog tab.



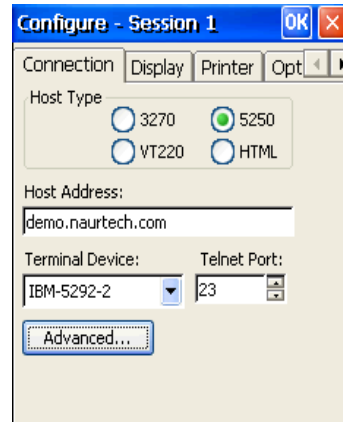
Before you make a connection to your host or web server application, at a minimum, you must know the host name, IP address or URL and the port number of the host system to configure your host session.

- From the application menu, Select [Session] [Configure] or tap the "Configure" button  on the toolbar.
- A "Configure" dialog box will come up.
- Choose the "Connection" tab. This is the first (and default) tab.

This following dialogs show the Connection tab of the host session configuration dialog.



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Windows CE

NOTE: The default settings will change depending upon the current selection of "Host Type".

Host Type: This is the type of session required to connect to your host / web server application. Your choices are 3270, 5250, VT220 or HTML. The first three represent terminal emulation sessions. The last option (HTML) represents a Web Browser session. You may select any one emulation type for the session. If you have a single emulation product (CE3270, CE5250 or CEVT220), certain emulation types may not be selectable. HTML host session types are available with all products. Other connection options may change depending upon the host emulation type selected.

Host Address: This is the address of a host system or an intermediate gateway managing connections to the host system. Enter the host name or numeric IP address, using up to 64 characters. Default is `demo.naurtech.com`, which connects to a simulated demo host. For HTML browser sessions, the host address should be the URL (Universal resource Locator) of the host application site such as `"http://myIntranetApp.myCompany.com/start.php"`. For HTML sessions, if you are trying to view a page local to the device, the URL format should be `"file:///absolute/path/myPage.htm"` where "absolute/path" is the absolute path to the web page from the root folder.

Terminal Device: This is the terminal type string that determines a specific terminal to emulate. For 3270 emulations only model 2 screen geometry is supported. CEVT220 supports VT52, VT100 and VT220 terminal types. Each host emulation type has its own default terminal type. This setting does not apply to HTML sessions.

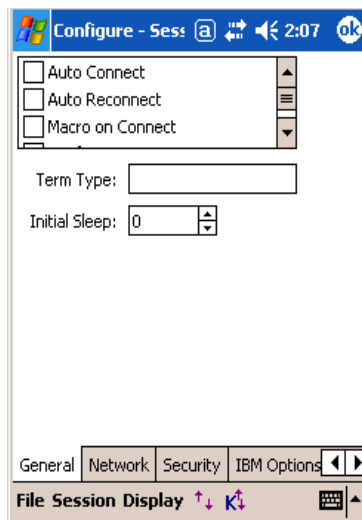
Telnet Port: This is the TCP socket port number to be used to connect to the host system. The default is 23. You may change this to the telnet port on which your host application is listing. This setting does not apply to HTML sessions.

Advanced

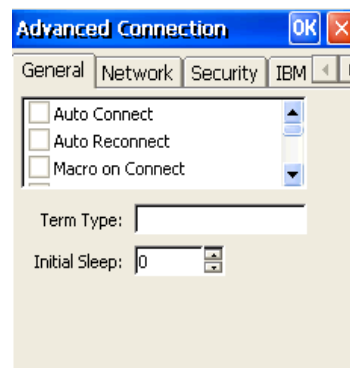
This button opens an advanced connection configuration dialogs.

General

This tab maintains all general configuration attributes relating to automatic connection and reconnection.



Windows Mobile



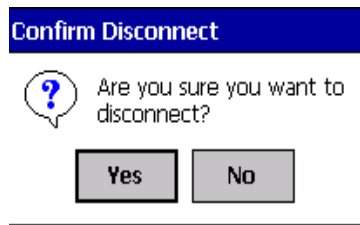
Windows CE

Auto Connect: Checking this box will automatically connect this host session when the application is started. If you want to automatically connect to your host configured for this session when the application starts, enable this checkbox. You may have one or more host sessions configured for auto connections.

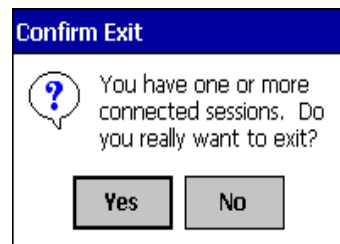
Auto Reconnect: Checking this box will cause the emulator to attempt to reconnect to the host if the connection is lost or closed by the host.

Macro on Connect: Check this option if you want to invoke a pre-recorded macro when the session connects. You may use this capability for automatic login to a host application or automate any steps that require to be performed upon session connection.


Confirm Disconnect: Check this option if you want to be prompted prior to disconnecting a connected session. The prompt will force a user action before proceeding ahead with disconnection of the host session.





Confirm Exit (Connected): Check this option if you want to be prompted prior to exiting the application if one or more sessions are connected.



Exit on Disconnect: Check this option to exit the application when one or more of the connected sessions disconnects. The disconnection may be triggered by either the user or by the host.

 **Check Network on Connect:** When enabled, the network signal presence will be automatically checked when an attempt is made to connect / reconnect to the host. The user will be prompted if the device is out of RF range or if the network cannot be detected.

 **Check Network on Resume:** On certain devices, depending on your configuration settings, the OS withdraws power from the WLAN card when the device is suspended. This may be done to prolong battery life. When enabled, this setting ensures presence of a network signal when the device is resuming itself from a "Suspend" state. The user will be prompted if the device is not associated, is out of RF range or if the network cannot be detected.


 **Check Network before Send:** For version 5.1, this setting is only applicable to HTML browser sessions. It does not effect any of the terminal emulation sessions. When enabled, the network signal presence and availability will be checked every time before sending any data to the host server. The user will be prompted if the device is out of RF range or if the network cannot be detected.

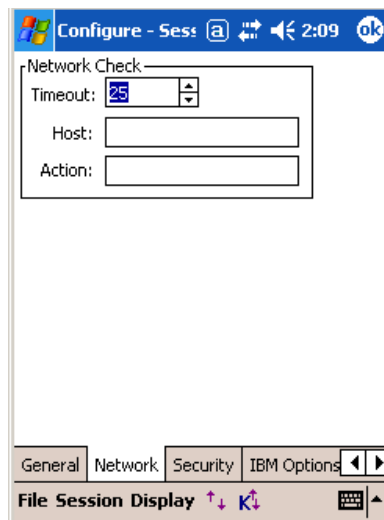
Term Type: Leave this blank unless required. If not empty, this value is reported as the terminal type in the Telnet negotiations. Use this only if your host has a special Telnet server that uses the value to identify devices or special situations.

Initial Sleep: This is the time, in seconds, which the Naurtech smart client will wait during startup. This setting is useful when the client automatically starts during a device cold boot and connects to your host application. The “Initial Sleep” allows the underlying wireless network to initialize prior to the Naurtech smart client attempting to establish a connection. The default value is 0, which means no delay.

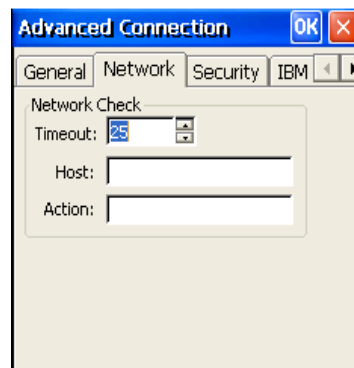
NOTE: You will not need to use this setting if you enable the “Check Network on Connect” setting.

Network

 This tab maintains configuration settings to enable detection, presence and availability of the network.



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Timeout: This is the length of time for which CETerm will try to find the host by sending multiple ping requests. You can specify a navigation error page in the Action setting to manage RF connection loss. You can also use the Scripting event "OnNavigateError", to recover when RF is lost during a navigation or if web server is not responsive. See the Scripting Guide for details.

Host: This is the URL or IP address of the host server that you would like to check to determine presence of network and availability of the host server. This may be different from the URL or IP address of the host to which you are connected.

NOTE: If this **Network** -> **Host** setting is blank, the network check extracts the hostname from the pending connection URL and sends an ICMP Ping to determine if the path to the host is available. This effectively checks if the RF is available, the device is associated, any security protocols are established, and

the host is alive. The network check is only performed if the pending URL is a HTTP or HTTPS type. Note that this does not check if your host web server has crashed.


If this **Network** -> **Host** setting is specified, then that this host is the target of the ping. This can be useful if you have a network component or alternate host that can be used to query.

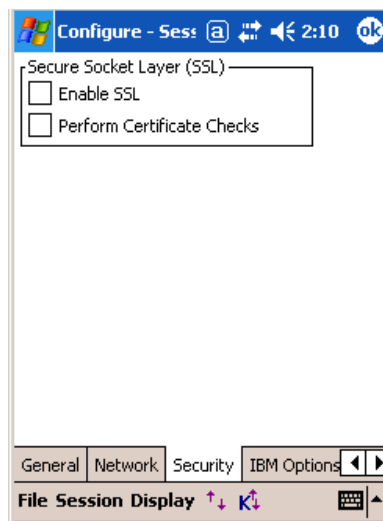
Possible problems are, if you always navigate to the error page:

- Your host or host firewall is configured so that it won't respond to a ping.
- You have a character in the "host" configuration of CETerm. Even a space will be parsed to try to determine the host. Make sure it is empty.

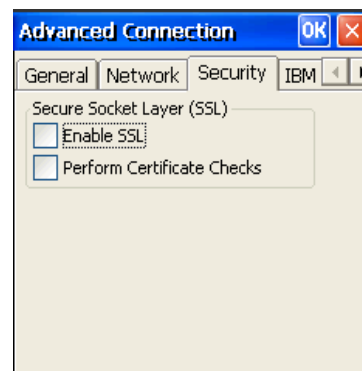
Action: This is the action URL to which the Browser session is redirected if the network is determined to be unavailable. This URL will typically be a device local error page such as "file:///<myDeviceLocalPath>/myErrorPage.htm" URL. If you specify an action, the Cancel button is disabled on the Network Check dialog.

Security

 This tab maintains all advanced connection configuration attributes for data encryption security related settings. Secure Sockets Layer (SSL) encryption is provided for all terminal emulations and web Browser sessions. Use https: connections to provide SSL for HTML sessions.



Windows Mobile




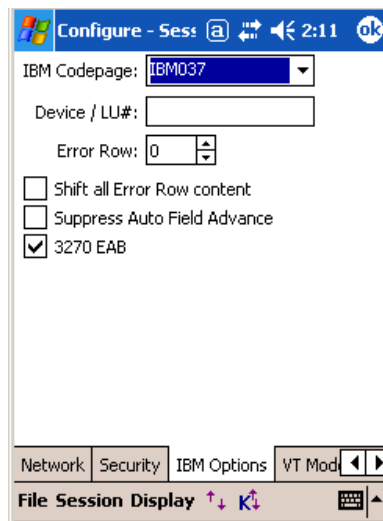
Windows CE

Enable SSL: Check this option to enable data encryption. Once enabled, all data sent to the host application is encrypted. All data received is decrypted

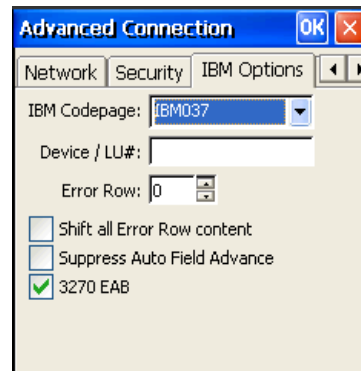
Perform Certificate Checks: Check this option if you want the client to perform checks for valid certificate on the SSL server.

IBM Options

 This tab maintains all advanced configuration attributes relating to IBM (3270 or 5250) terminal emulations.



Windows Mobile





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IBM Codepage: All popular Western European and Eastern European codepages are supported for IBM emulations. By default, only the US English code page (IBM037) is selectable. Codepages for other languages are available from the support section of our website. You can download a codepage from our website for the desired language (CAB file) and install it on your device. Once installed, you will then be able to select your language codepage from this list. IBM codepages for popular languages are available for download from the **Support -> Knowledgebase** portion of our website. If you have a need for an unlisted code page, please contact us at support@naurtech.com

Device / LU#: The device name / LU# represents a dedicated LU name or number on the server that you want to connect through. Device names are used within IBM SNA world to optimize management of host connection resources. A device name may be associated with a "LU pool" or a specific LU. Device names

may also be allocated when connecting to an IBM host through an intermediate gateway. Default is blank.

 **Error Row:** In 5250 emulation sessions, the host application can send an error message for display on the terminal. The host application controls the row on which this error message is displayed. Setting this Error Row value displays the error message on this row. Default is 0 implying no change in the row on which the error message is displayed. Valid error row values are between 1 and 24.

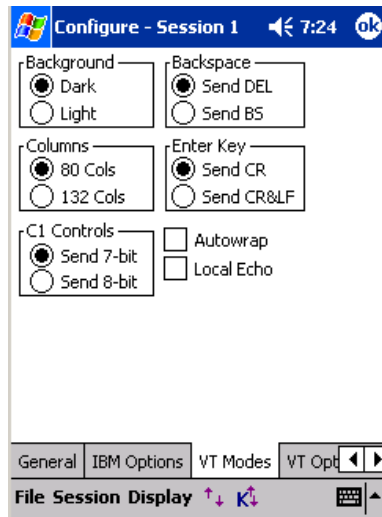
 **Shift all Error Row content:** Typically, a 5250 host application displays an error message on an error row. This error message is only displayed during an actual error. Certain legacy applications require the error row to always be displayed, irrespective of an error message being present on it. Enabling this attribute will force the error row to always be displayed.

 **Suppress Auto Field Advance:** On IBM emulations (5250 and 3270), a host application can define attributes on an input field to automatically advance the cursor to the next field, if the existing field is full. Enabling this flag will ignore this automatic field advance. This support is provided for compatibility with some legacy applications.

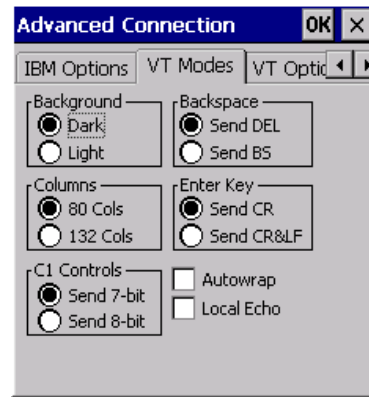
3270 EAB: This is an optional 3270 terminal emulation parameter. If checked, this will allocate an Enhanced Attribute Buffer. EAB support allows for advanced display features such as color and highlighting. This attribute does not apply to 5250 host sessions.

VT Modes

This tab shows standard VT input and display attribute preferences.



Windows Mobile



Windows CE

Background: This option controls the background shade for VT host sessions.

Backspace: This option configures the backspace key to send either the Delete character or the Backspace character.

Columns: This option specifies the number of columns for the VT host session to be 80 or 132.

Enter Key: This option configures the Enter key to send either a carriage return or a carriage return and line feed.

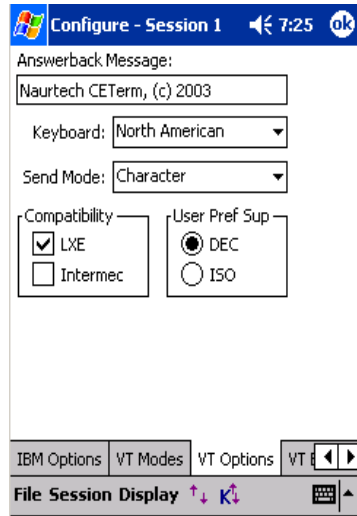
C1 Controls: This option selects 7-bit or 8-bit ASCII control sequences for the host session.

Autowrap: Check this option to enable automatic wrapping of text once it reaches the maximum column width.

Local Echo: Check this option to echo typed text locally on the terminal.

VT Options

This tab shows additional VT options including support for proprietary protocol extensions.



Windows Mobile



Windows CE

Answerback Message: Host applications may query the VT terminal for a text message answerback response. This response may be used to identify the terminal. Configure the answerback text string as per your VT host application requirement. Default is a Naurtech copyright message string.

Keyboard: Select the keyboard character locale for DEC multinational and National Replacement Character set support. You can select from:

- North American
- British
- Flemish
- Canadian (French)
- Danish
- Finnish
- German / Austrian
- Dutch
- Italian
- Swiss (French)
- Swiss (German)
- Swedish
- Norwegian
- French / Belgian
- Spanish
- Portuguese
- Canadian (English)

Default is "North American".

Send Mode: Check this option to select buffering of text prior to being sent to the host.

Character: This is the default VT behavior. Every character is sent to the host application as soon as it is typed. There is no local buffering.

Line buffered: When enabled, all typed characters are buffered locally until a function key, editing key, Enter, or other non-character is typed. It then sends the buffered keys to the host.

Local Edit (Block): This is an ANSI mode, which allows a host application to define entry fields on a screen. All typing is stored locally until a function key or Enter is typed. The contents of the screen are then returned to the host, depending on the modes set by the host application.

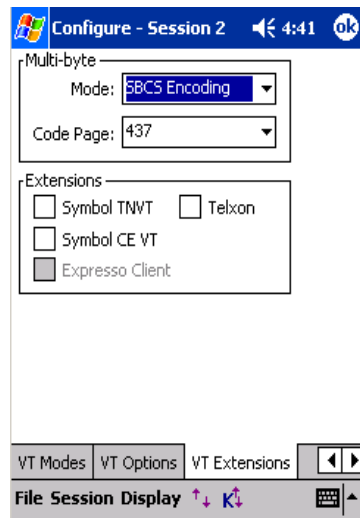
Both Line buffered and Local Edit modes optimize usage of network bandwidth and host resources. However compatibility with these modes is dependent upon the VT host applications.

Compatibility: Hardware vendors Intermec Technologies and LXE have proprietary implementations of block mode support for VT host sessions. Check the appropriate box for block mode compatibility.

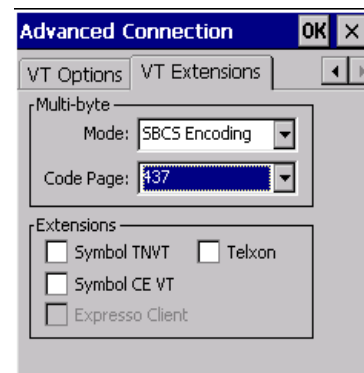
User Preference Supplemental: This is the user preferred supplemental character set. Default is DEC

VT Extensions

This tab shows proprietary extensions for international multi-byte character sets and legacy VT extensions.



Windows Mobile



Windows CE

Multi-byte: This group box wraps all configuration settings for international languages such as Chinese Traditional, Chinese Simplified, Japanese, Korean, Thai, Hebrew, Greek and others. This support is only available for VT emulation sessions.

Mode: This selects one of the several multi-byte modes to support single-byte and double byte character sets. Select the type of character set encoding. You can select from:

None: Use standard VT international character sets or National Replacement Character (NRC) Sets.

DBCS: Double Byte Character Set. Selecting this encoding will process double-byte characters based on the selected code page. Note that 8-bit VT commands are illegal in DBCS mode.

SBCS: Single Byte Character Set. Selecting this encoding will process single-byte characters based on the selected code page. Note that 8-bit VT commands are illegal in SBCS mode.

UTF-8: Selecting this encoding will process the data stream as Unicode in the UTF-8 encoding. Note that most 8-bit VT commands are illegal in UTF-8 mode.

Code Page: When DBCS or SBCS modes are selected, this setting allows selection of the appropriate code page. Only the code pages available on the device will be listed. If none are available, the mode will be forced back to None.

All our TE applications display international character sets using Windows CE

Font Linking. This makes it possible to link one or more fonts, called *linked fonts*, to another font, called the *base font*. Once you link fonts, characters that do not exist in the base font are displayed from the linked fonts. For example, linking a Japanese font to a Latin font gives you the ability to display Japanese characters when using a Latin font.

Font linking is typically used to enable Roman fonts to display non-Roman characters. To extend font linking on your device, you can examine the following registry setting to determine the mappings of linked fonts to base fonts.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\FontLink\SystemLink
```

You can add additional links by creating additional registry values:

```
"base font face name" = "path and file to link to," "face name of the font to link"
```

Example: In this example, the Japanese-specific font MSGothic is linked to the base Tahoma font. When searching for a character, the Tahoma font is searched first followed by the MSGothic font. This enables support for a larger variety of characters without switching fonts.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\FontLink\SystemLink]
    "Tahoma"=\Windows\msgothic.ttc,MS PGothic
```

Extensions: This group box wraps all VT protocol extensions that are proprietary to legacy emulations. These are provided to easy migration from legacy terminals to newer Windows CE terminals.

Symbol TNVT: Enable extensions from Symbols 3000 series and Telxon TE such as enabling the scanner, setting fixed screen mode, reporting the IP address, exiting the program, and sending special control characters.

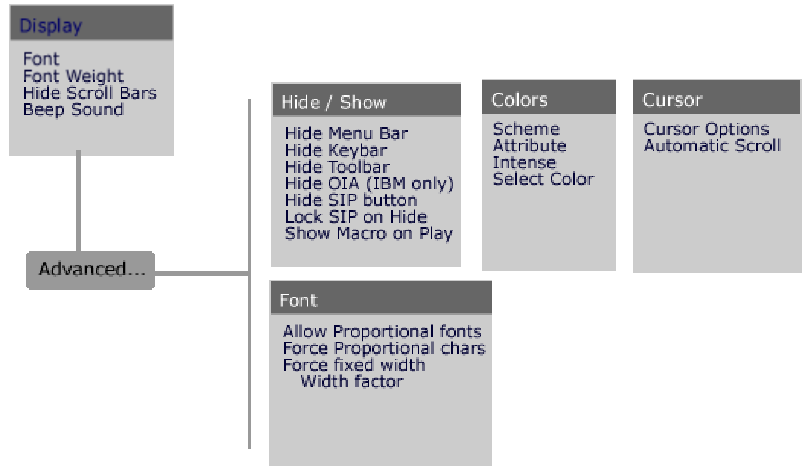
Symbol CE VT: Enable extensions in Symbols VT220 CE TE, such as reporting the MAC address, enabling the scanner, sounding tones, and setting block or character modes.


Telxon: These are similar to the Symbol TNVT extensions.

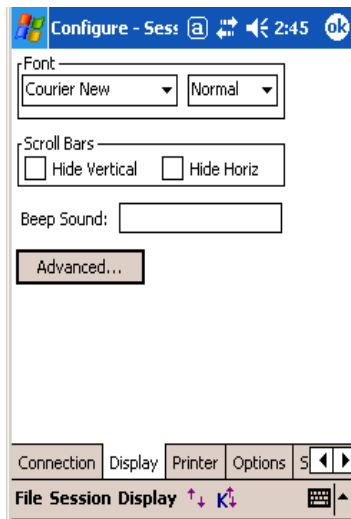
DISPLAY

This diagram shows the hierarchy of configuration attributes for the Display attributes

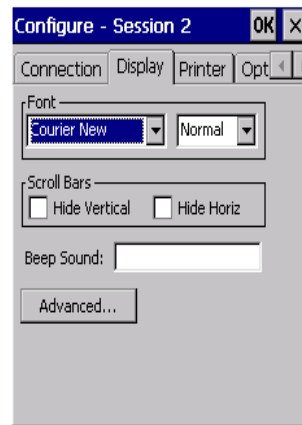
The terminal display may be configured to optimize screen real estate and readability. These options may be configured for connected or non-connected host sessions. Hot keys are available to toggle the options on and off.



- From the application menu, Select [Session] [Configure] or tap the "Configure" button  on the toolbar.
- A "Configure" dialog box will come up.
- Choose the "Display" tab



Windows Mobile



Windows CE

Font: This group allows configuration for a selectable font and its weight.

The font name is a fixed-width True Type font that is used to display the terminal text. To enhance readability, you may install additional fixed-width True Type fonts on the device by copying the associated .TTF file to the \Windows or \Windows\fonts directory. Your font may then be selected from this font selection option.


NOTE: Except in special cases, only fixed pitch true type fonts will be visible in this dropdown list. If VT emulation has proportional fonts enabled, then you will also see proportional fonts


The font weight selects the boldness level used to display the terminal text. The following shows the selectable options.

Default
Thin
Light
Normal
Medium
Bold
Xbold
Heavy

NOTE: The appearance of these weights is dependant on the selected font and the device. In some cases, only 2 or 3 different weights can be seen.

Scroll Bars: This group of attributes configures hide and show settings for the horizontal and vertical scroll bars.

Hide Vertical: Checking this box will hide the vertical scroll bar. Pressing the hotkey [Ctrl] [Shift] [V] or the toolbar button  will alternate between the hide and visible states.

Hide Horiz : Checking this box will hide the horizontal scroll bar. Pressing the hotkey [Ctrl] [Shift] [H] or the toolbar button  will alternate between the hide and visible states.

NOTE: For HTML sessions, the visibility of scroll bars may be overridden by the HTML page contents. Also, changes to these settings may not take effect until the next page is loaded.

Beep Sound: This is an optional beep sound configuration. It controls the sound of the standard terminal bell or beep. For devices that support .wav files, you can enter any .wav file available in the standard sound locations on the device. For devices that support tone generators, you can specify a custom tone. The custom tone has the following format:

vvFFFttt or vvFFFtttvvFFFttt or vvFFFtttvvFFFtttvvFFFttt, etc.

where

| | | |
|-----|-----------|--|
| vv | Volume | is the volume of the beep. The range is 00-10 where 0 is off and 10 is loudest. |
| FFF | Frequency | is frequency in 10 Hertz units. A value of 200 is 2000 Hertz, 300 is 3000 Hertz. |
| ttt | Time | is the length of the beep in 10ms units. A value of 050 is |

½ second. 100 is one second.

An example of the setting can be 05300100. This will play a one second beep of 3000 Hz at half volume. Don't forget the leading zeros.

Advanced: This button opens an advanced display configuration dialogs.

Hide / Show

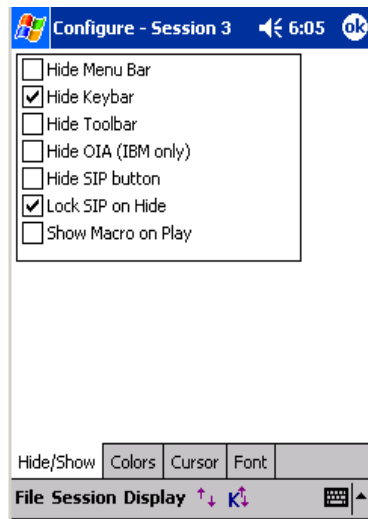
This tab holds attributes to control the visibility of various application and display widgets

At Bottom: Checking this box will move the menu to the bottom of the screen. Pressing the hotkey [Ctrl] [Shift] [B] will alternate the location between the top and bottom of the screen. This option is only accessible for Windows devices.

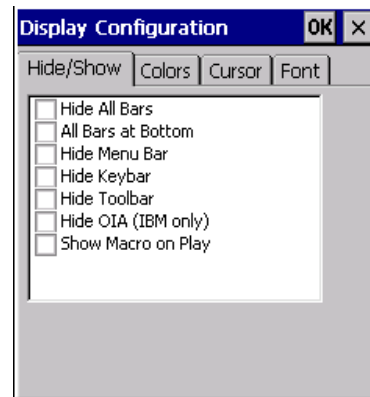
Hide Menu Bar: Checking this box will hide the application menu. This is the main application menu with [File] [Session] [Display] options.

Hide Keybar: Checking this box will hide the configurable Keybar. The Keybar is a set of configurable buttons that can be associated with application operations.

Hide Toolbar: Checking this box will hide the application toolbar. The toolbar is the main application toolbar.



Windows Mobile



Windows CE


Hide OIA: Checking this box will toggle hiding of the OIA or the Operator Information Area. This option applies only to IBM 3270 and 5250 emulations. Pressing the hotkey [Ctrl] [Shift] [O] will alternate between the hide and visible states.

NOTE: Hiding the application Menu, Toolbar and Keybar will give you additional rows of screen real estate and assist in locking down the device.

Hide SIP Button : Checking this box will hide Windows Mobile SIP (Soft Input Panel) button.

NOTE: You must restart the client after changing this setting. If not, the visibility may be inconsistent.

Lock SIP on Hide: Checking this box will cause the SIP (Soft Input Panel) to be locked down when closed. This parameter only applies to Windows Mobile platform devices.

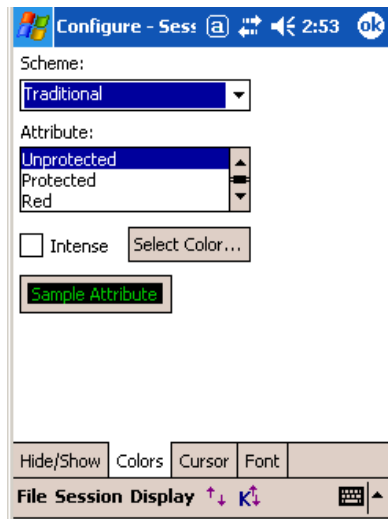
 **Show Macro on Play :** By default, the macro toolbar bar is no longer visible when a macro is being played back. Checking this option will make the macro toolbar visible during playback.

NOTE: It may be necessary to make the macro toolbar visible so that CETerm receives application focus to ensure the “played back” keystrokes are sent to CETerm.

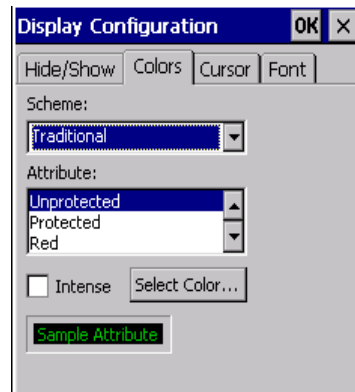
If you run an auto-login macro and do not get focus back to your application, you should enable this flag. Doing so will ensure you receive focus back in CETerm

Colors

Windows CE devices are available with a wide variety of display screens (LCD, Color, Active Matrix etc.). We provide predefined color schemes to enhance readability of the terminal text on the device. In addition to the predefined color schemes, a "Custom" color scheme is provided. The Custom scheme may be configured to suit the user's preferences.



Windows Mobile



Windows CE

Scheme: To select a predefined color scheme, choose one from the "Scheme" drop down box. The sample box will change to reflect the current selected attribute foreground and background colors. The following pre-defined color schemes are available.

| | |
|-----------------------|--|
| Traditional | The traditional IBM terminal "green screen" color scheme |
| Black on White | Used primarily on devices with non-color LCD displays |
| White on Black | Inverse of Black on White |
| Factory | Scheme optimized for factory lighting and color displays |
| Custom | User configurable scheme |

Attribute: This lists display attributes for which colors may be changed as part of creating a "Custom" color scheme. Under VT emulation, the attributes correspond as follows.

| VT Attribute | IBM Attribute |
|-------------------|--------------------------------|
| Normal | Unprotected |
| Bold | Intense version of Unprotected |
| Blinking | Protected |
| Blinking and Bold | Intense version of Protected |

Select Color: This button invokes the "Color" dialog to select a color for an attribute



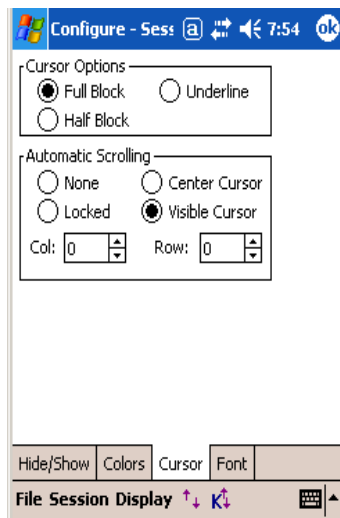
Intense: This check box, when selected, applies the custom color to the "intense" version of the selected attribute. This option applies to 3270 and VT emulations.

Sample Attribute: This is a sample box that shows the foreground and background color of the currently selected attribute. To create a custom color scheme, select the attribute from the attribute list box.

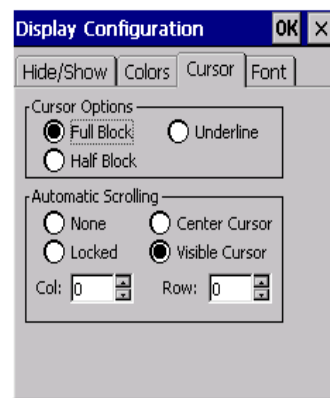
- Choose the attribute, whose color is to be changed
- Tap the `Select Color...` button.
- You will see a "Color" dialog.
- Select the desired color for the attribute. Press OK
- The Sample box will change to reflect the newly selected color.
- For updating colors associated with the "Intense" mode of an attribute, check the "Intense" box then select the desired color.

Cursor

Cursor options are provided for easy identification of input fields. They also allow automatic scrolling to make the row and column for the current cursor position visible. You may configure cursor type and auto-scrolling options for the terminal.



Windows Mobile



Windows CE

Cursor Options: This option allows you to change the cursor appearance. Three options are available:

Full Block: The cursor appears as a full character block (**█**)

Half Block: The cursor appears as a bottom half block (**▀**)


Underline: The cursor appears as an underscore line (**—**)

Automatic Scrolling: This option enables automatic scrolling so the current cursor position is always visible. This option is particularly helpful on devices with small screens. The following auto-scrolling options are available

None: No automatic scrolling is preferred.

Center Cursor: In this mode the cursor is always as close as possible to the center of the screen. When scrolling limits are reached, the cursor will move toward the edge of the terminal display.

Visible Cursor: In this mode the cursor is always visible. The display is scrolled vertically and horizontally to prevent the cursor from moving out of view.

 **Locked:** In this mode you can specify a starting row and column position at which to lock the cursor. This would force every new screen to automatically start its top left edge at the specified row and column position.

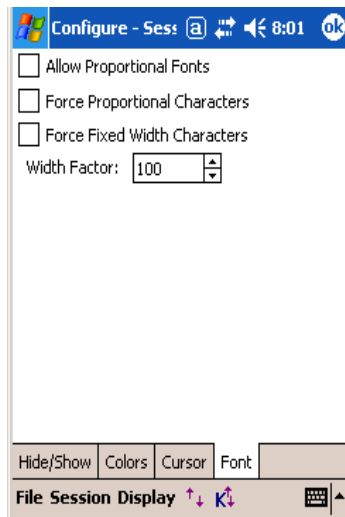
Col: This is column number for the top left position of display. It is applicable only with the “Locked” scrolling option

Row: This is row number for the top left position of display. It is applicable only with the “Locked” scrolling option

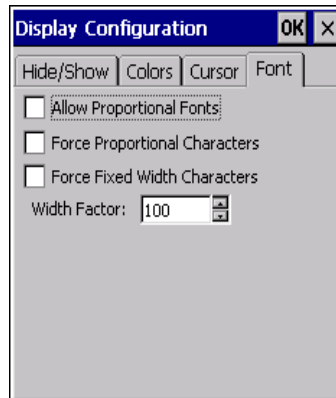
NOTE: Only the starting position is locked. The user can still use scroll bars, touch stylus, buttons, and remapped keys to scroll the screen. If no scrolling is desired, you must hide or unmap these other controls.

Font

This tab holds advanced font settings for enhanced readability and international language character glyphs.



Windows Mobile



Windows CE

Allow Proportional Fonts: Traditionally, only fixed pitch fonts have been used with terminal emulation. This option, when enabled, will allow proportional fonts in the font selection box. Some Asian language fonts are only available with proportional spacing. Usually, the Asian fonts are “linked” to the Tahoma font, which is also proportional. To display all characters, this box can be checked and the Tahoma font selected. Proportional fonts can also be used to improve readability of the display if the host application does not require column alignment of the screen (see Force Fixed Width Characters).

Force Proportional Characters: This option is enabled to force the display to draw with proportional spacing even when the selected font is fixed pitch. This setting may be required when a proportional Asian font is linked to a fixed pitch font such as Courier New and Courier New is the selected font. This setting overrides “Force Fixed Width Characters”.

Force Fixed Width Characters: This option will force the display to draw proportional fonts with a fixed width spacing. This can result in irregular displays where the narrow characters (e.g., 'i') appear scrunched to the left of their "cell" and the wide characters (e.g., 'm') to overlap their neighbors on the right. This setting is used to force a display into traditional column alignment and may be needed with host applications that display tables or character based graphics.

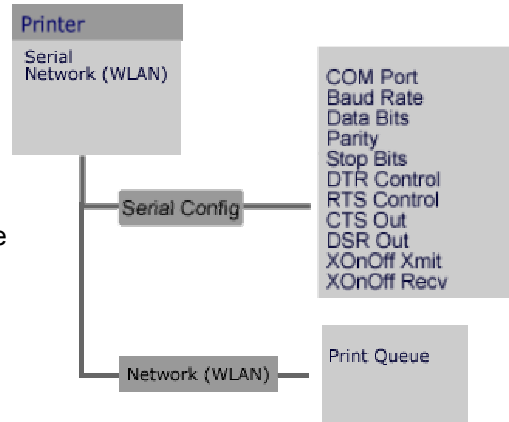
When forcing to fixed width, a "nominal" width must be computed for the font and it is narrower than the widest characters. The next parameter can be used to spread out the characters.

Width Factor: This applies to a factor to the "nominal" width used when forcing proportional fonts to fixed width. A value of 100 is 100% of the "nominal" width. Values larger than 100 spread out the characters and values smaller than 100 squeeze them together. You may use "Force Fixed Width" and the "Width Factor" with fixed-pitch fonts to get more readable displays.

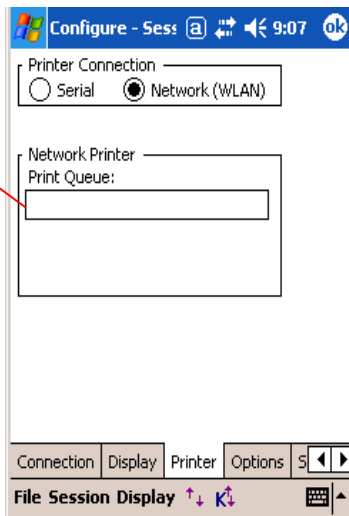
PRINTER

This diagram shows the hierarchy of configuration attributes for the Printer configuration.

Host applications may print to serial, IrDA, Bluetooth or 802.11B network attached printers. You can configure the printer from the "Printer" options tab.

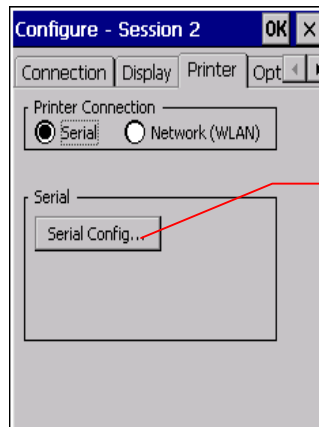


Shows network printer connection settings



Windows Mobile

Shows Serial printer connection settings



Windows CE

Printer Connection: Select the type of connection used to access the printer. This may be serial or a Network connection.

Serial: Select this button for printers attached via a serial port, IrDA or Bluetooth protocols

Network (WLAN): Select this button to print to a Windows print queue or directly to a network attached printer.

Serial Config: This button opens a serial port configuration dialog.

COM Port: This is the serial communications port to which the printer is attached. Choices depend on the device. Users may select from COM, IrDA, Bluetooth, None, or one of the Virtual COM (VCOM0 - 9) ports. The default value varies with the hardware device. The None value can be selected to act as a "sink". Printing to the None device will always succeed. For printing to an infrared printer, select IrDA port. If IrDA is selected, all settings except Timeout are ignored. Use the VCOMx ports for custom connections such as virtual Bluetooth ports.

Baud Rate: The baud rate at which the communication device operates. It varies from 110 to 256K bits per second. Default is 9600.

Data Bits: The number of bits in the bytes transmitted and received. Default is 8.

Parity: The parity scheme to be used to communicate with the printer device. Default is "None".

Stop Bits: The number of stop bits to be used. Default is 1.

Timeout: The amount of time to wait prior to aborting a connection if the printer is not responding.

DTR Control: The DTR (data-terminal-ready) flow control. Default is "Disable".

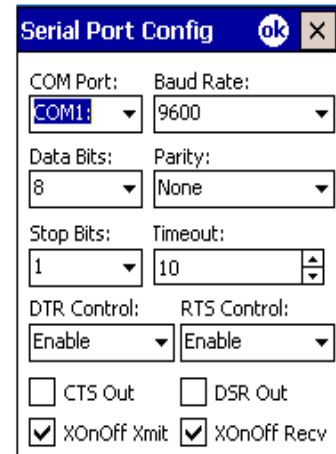
RTS Control: The RTS (request-to-send) flow control. Default is "Disable"

CTS Out: The CTS (clear-to-send) signal monitoring for output flow control. If box is checked and CTS is turned off, output is suspended until CTS is asserted again.

DSR Out: The DSR (data-set-ready) signal monitoring for output flow control. If this member is TRUE and DSR is turned off, output is suspended until DSR is asserted again

XOnOff Xmit: When checked, use XON/XOFF flow control during transmission.

XOnOff Recv: When checked, use XON/XOFF flow control during reception.

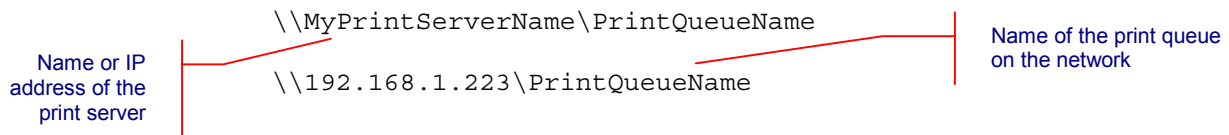


Network Printer: Configuration settings for a network printer

Print Queue: This is the Windows print queue name or the hostname of a printer.

The Windows print queue uses Windows print protocols and assumes that the queue is available on the network. You may be prompted for username and password if the print queue is secured. Also, you should receive notification when the print job completes.

The print queue uses the following naming convention:



To print directly to a network connected printer, enter the hostname or IP address of the printer. By default this will connect to port 6101 and send all print content directly to this port. Optionally, you can specify a different port.

The hostname uses the following naming convention:

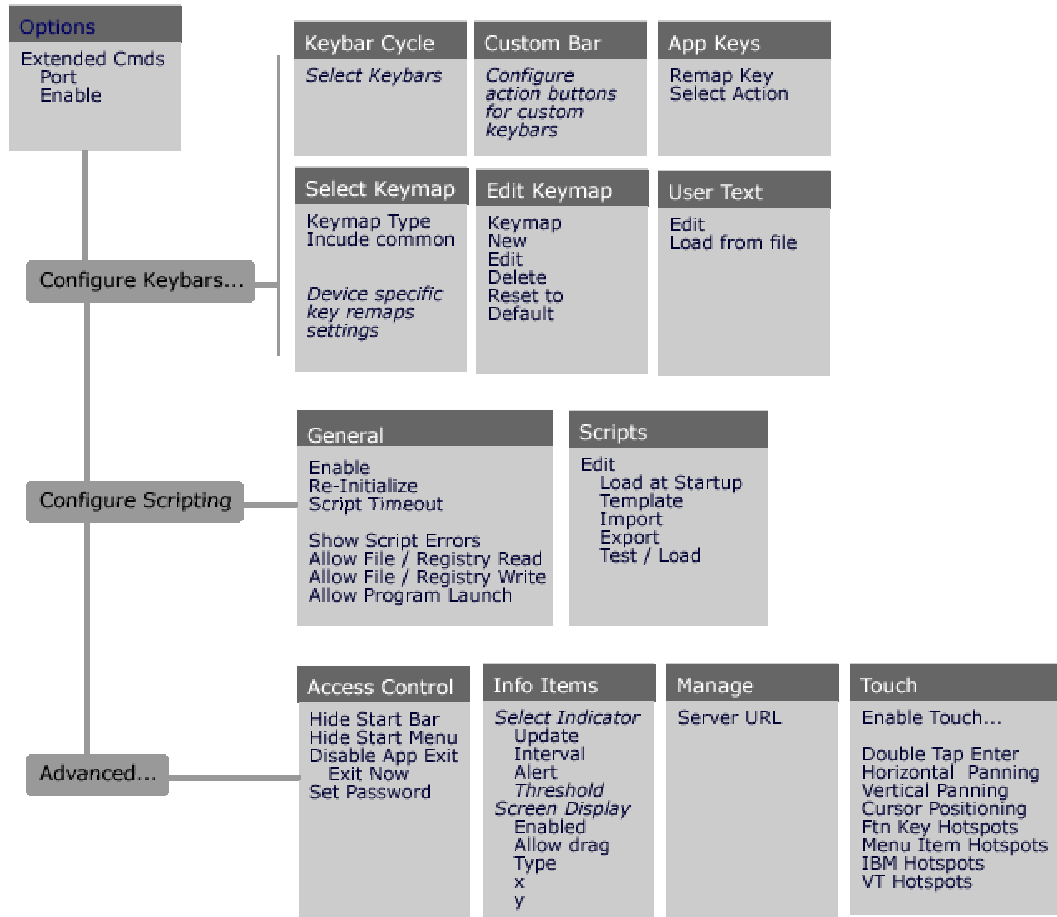
`hostname:port`


where hostname is either a symbolic name or an IP address and port is a number.

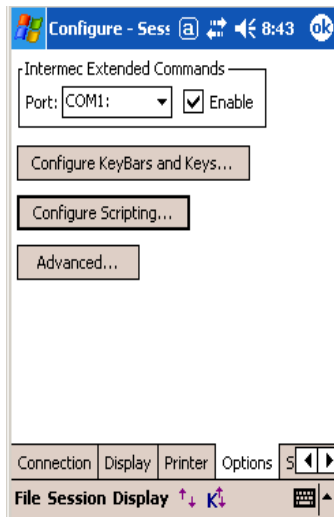
OPTIONS

The diagram below shows the hierarchy of configuration attributes for the Options tab.

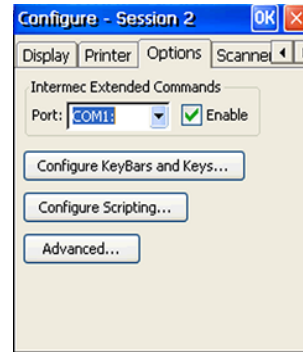
The Options tab includes configuration for key remapping, Scripting, device access control, Indicators, Automatic licensing and touch screen features. All key remapping is configured right on the device. Configuration dialogs are accessible through the “Configure Keybars and Keys...” button. Custom remapping DLLs are no longer supported.



 With version 5.1, we have added a new Scripting capability. You can import, edit, test and run scripts right on the device. Scripts provide a powerful mechanism to automate workflows. All scripting is configuration is accessible through the “Configure Scripting” button.



Windows Mobile



Windows CE

Intermec Extended Commands: This attribute enables proprietary extensions from Intermec for controlling peripheral devices. "Extended Commands" are extensions to the terminal emulation protocol data stream (3270, 5250 or VT) that allow host applications to control serial printers, card readers etc. All Naurtech Terminal Emulation sessions support Extended Commands for bi-directional communication with peripherals such as Serial printers and Magnetic Card Readers for all three terminal emulations.

Port: Intermec Extended Commands are sent to this port to access and control peripheral devices.

Enable: Checking this box will enable support for Intermec Extended commands

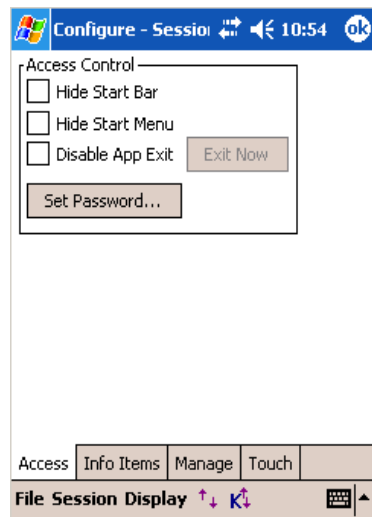
Configure KeyBars and Keys: This button invokes tabs for key remapping and Keybar configuration.

Configure Scripting: This button invokes tabs for Scripting configuration.

Advanced: This button invokes tabs for access control and touch screen attributes.

Access

The following configuration tab is invoked from the Advanced button. It maintains all settings for configuration Access control and Operating System lockout.



Windows Mobile



Windows CE

Hide Start Bar: When checked, the Windows CE or Windows Mobile “Start” bar will be hidden. This option prevents users from launching other applications on the device. For Windows Mobile platform devices, it also removes the smart minimize control (little “x” on the top right of the Start bar which may be used to “close” the application) and allows the terminal screen to occupy the full display area of the device. This also provides an additional row, which may be used by the terminal display.

Hide Start Menu / Disable Start Menu: When checked, the “Start” button will be hidden (for Windows Mobile devices) or disabled (for Windows CE devices). The Start bar however will still be present. This setting prevents users from launching other applications yet provides the visual status controls (volume, WLAN, battery, clock, etc) on the Start bar.

Disable App Exit: When checked, this option disables the application exit button. This prevents the users from exiting out of our application.

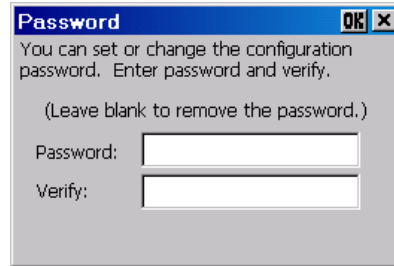
Exit Now: This button is enabled only when the “Disable App Exit” option is checked. It allows the administrator to save the configuration and exit when “Disable App Exit” is checked. Typical use would be for an administrator to set all configuration settings including a configuration password and exit the application using this button. Subsequently, users will not be able to exit the application and a password will be required to access the configuration options.

Set Password: This button prompts the user for a configuration password. When set, users are prompted for this password prior to viewing or modifying the session

configuration. This capability prevents users from changing the configuration settings in controlled environments.



Windows Mobile

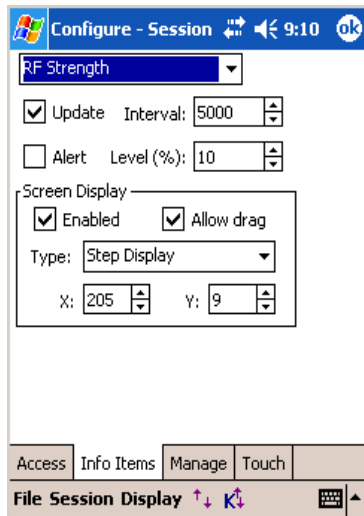


Windows CE

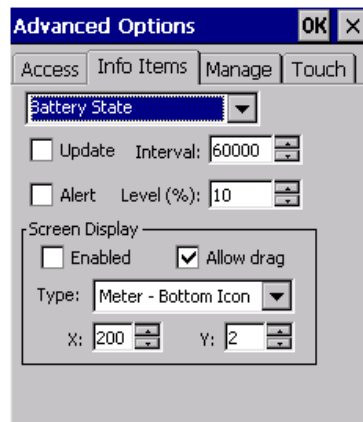
NOTE: To remove the password, clear the password fields and press OK..

Info Items

The Info Items tab holds attributes related to configuration and display of various Indicators. Indicators may be displayed in both terminal emulation or Web Browser sessions to give visual status for RF signal strength, battery level etc. Indicators may also be controlled and managed using scripts. These Indicators attributes should not be confused with the “Information buttons” in a Configurable Keybar.



Windows Mobile



Windows CE

Indicator: This is the type of Indicator for which the various configuration settings will be applied. Selection includes Battery State, RF Strength, Keyboard Mode and Browser Loading Indicators.

Update: Enabling this check box will force a repaint update of the Indicator status. This setting should be enabled if the Indicator is displayed on the screen.

Interval: This is the frequency of update in milli-seconds.

Alert: Enabling this check box will configure an alert notification message if the Indicator strength falls below a certain threshold level.

Level: This is the threshold level, in percentage, below which a notification prompt is generated if Alert notification is enabled.

Screen Display: This group box lists all attributes, which are related to the display of the configured Indicator on the screen.

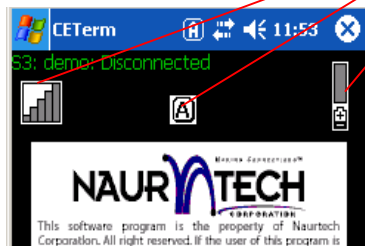
Enabled: This check box should be enabled to show the Indicator in this session.

Allow Drag: Enable this checkbox if you want the user to have the ability to tap-hold and drag the Indicator icon to different locations on the screen.

Type: Select the type of Indicator icon of your preference. These are designed for minimal use of screen real estate in the orientation, which best conforms to your host application.

X & Y: These are the top-left starting co-ordinates of the Indicator icon

You can tap the Indicator icon on for detailed status popup information. You can also control the configuration and display of the Indicators from HTML META tags for Web Browser sessions. Please refer to the Web Browser Programming Reference for details.

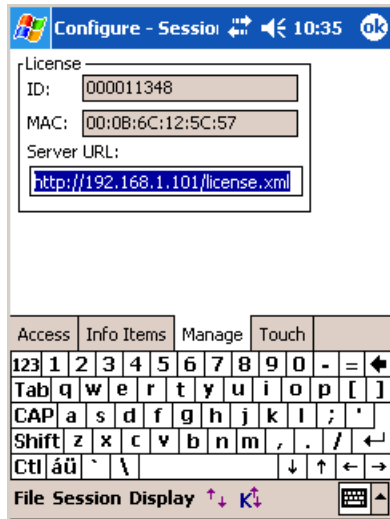


Battery Strength, RF Signal and Keyboard State Indicators.

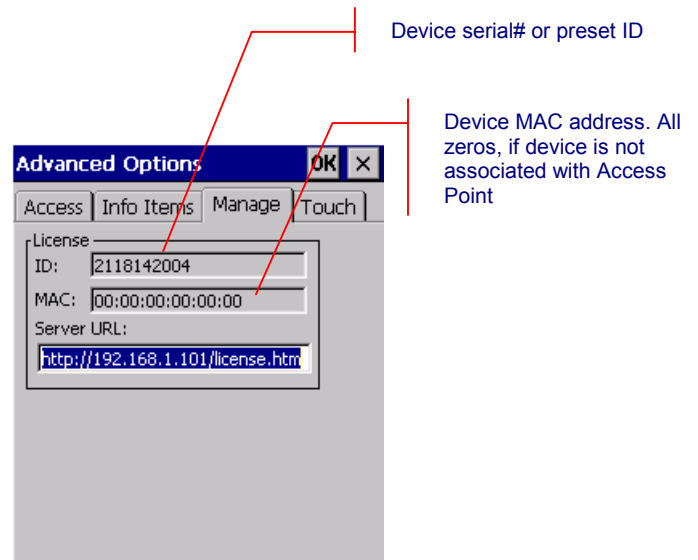
- Double tap to get detailed status in popup dialog.
- Tap, hold and drag to screen location
- Automatic update of strength icons
- Can also be displayed as a Keybar button
- Configure notification message if strength falls

Manage (Automated Licensing)

The Manage tab maintains all configuration attributes to manage the licensing, configuration and deployment of the application. For now, it maintains attributes for automated licensing.



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Server URL: This is the URL to the XML based license registration file. It may be local to the device or may reside on a web server. Exact format of the URL should be:

XML file on the device:

```
file:///license.xml
file:///Flash FX/license.xml
```

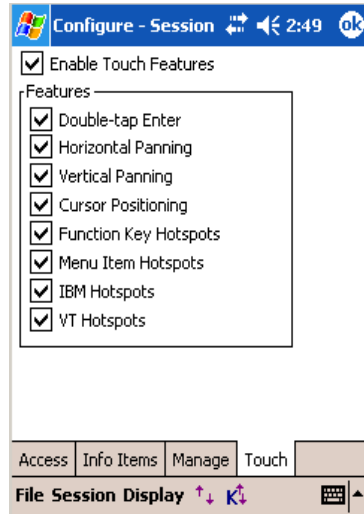
XML file on a Web server:

```
http://MyWebServerAlias/license.xml
http://x.y.z.w/license.xml
```

Please refer to the Automated Licensing section for more details.

Touch

This tab provides attributes to control touch screen interactions.



Windows Mobile



Windows CE

Enable Touch Features: This is a global setting for all touch features. When checked, touch screen features are enabled, but must also be individually enabled. When un-checked, no touch features are enabled.

Double-tap Enter: When checked, a double-tap action with the stylus will simulate pressing the Enter key

Horizontal Panning: When checked, allows panning in the horizontal direction

Vertical Panning: When checked, allows panning in the vertical direction.

NOTE: Using the **screen panning** functionality, you can “tap-hold and drag” the terminal display screen with a stylus, to scroll to areas of the host screen which were not visible.

Cursor Positioning: When checked, a single stylus tap moves the cursor to the location of the tap (IBM emulation only).

Function Key Hotspots: When checked, enables Hotspot functionality for function keys. When enabled, you will be able to just tap on the function key text (such as **F7 = Prev** **F8 = Next** etc) on the terminal display to invoke the corresponding function key

NOTE: A Hotspot is a field on the terminal display where a user can tap with a stylus to execute a function. This allows a user to interact with a host application with minimal needs for special host keys.

A simple example might be the use of PF Keys. An operation associated with a PF key might be displayed on the terminal as "PF1 = Help". CETerm automatically detects this as a Hotspot and will send a PF1 key to the host when you tap on the PF1 key on the terminal display. Refer to the Hotspots section for further details.

Menu Item Hotspots: Check this attribute to enable Hotspot functionality for menu items. When enabled, you will be able to just tap the menu item number on the terminal display to invoke the corresponding menu item operation. An example of this would be a menu such as:

```
1. Shipping
2. Receiving
3. Inventory
```

The user can just tap on "1." to invoke a "Shipping operation.

IBM Hotspots: 3270 and 5250 applications have several keywords, which are commonly used across many applications. Check this attribute to enable these commonly used keywords as Hotspots. Examples are "Enter", "More" and "Bottom". IBM Mouse and light pen activation must have IBM Hotspots enabled.

VT Hotspots: VT host applications have several keywords, which are commonly used across many applications.

Configure KeyBars and Keys

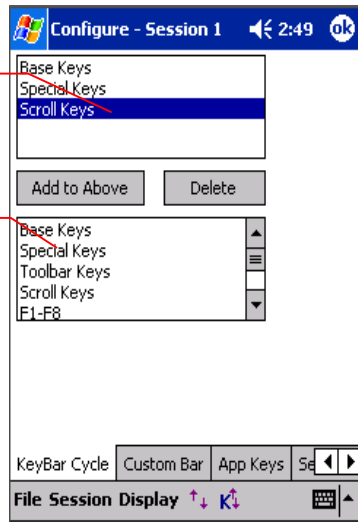
The "Config KeyBars and Keys..." button is used to configure custom KeyBars, associate device application keys with operations, remap device hardware keys and

Keybar Cycle

A KeyBar configuration consists of both the KeyBar Cycle and any Custom or template KeyBars. A KeyBar is a set of keys visible at one time. The KeyBar Cycle is a collection of KeyBars that can be visible. The user "cycles" through the collection of KeyBars by tapping the arrow buttons on either end of the current KeyBar. Each key on the KeyBar is associated with a host or emulator operation. Users are allowed a maximum of eighteen KeyBars, six of which can be customized. The same KeyBar may be added multiple times to the KeyBar Cycle.

Order in which the KeyBars will "cycle". Can include pre-defined KeyBars and Custom KeyBars

This is the complete list of available for the KeyBars. You can select from these predefined KeyBars



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Add to Above: Tapping this button will add the highlighted Keybar from the bottom listbox to the top (selected) list of KeyBars. Users will be able to cycle through only the selected Keybars in the application.

Delete: This button removes the highlighted Keybar from the selected list of KeyBars (top listbox)

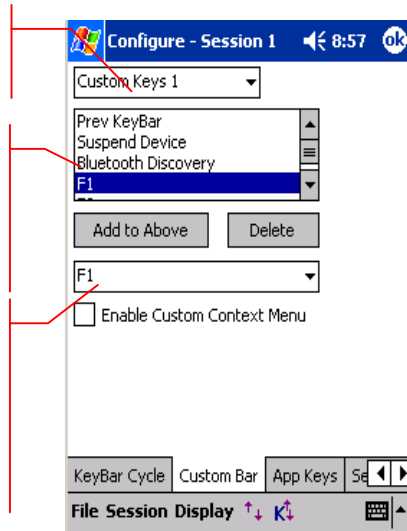
Custom Bar

If a Custom KeyBar ("Custom Keys 1" through "Custom Keys 6") is selected in the KeyBar Cycle, it can be configured by tapping the "Custom Bar" tab.

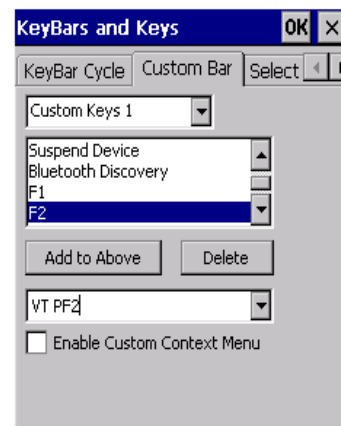
Select the Custom KeyBar that you want to configure

This is a list of keys that will appear on the Custom KeyBar Cycle. The order of keys in this list dictates the order of appearance on the Custom KeyBar

This is a list of all the available "action" keys and operations, which can be selected. A "Separator" places a vertical separation line. The "Empty" key leaves an empty space on the KeyBar.



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Add to Above: Tapping this button will add the highlighted key from the bottom listbox to the top (selected) list of KeyBar keys.

Delete: This button removes the highlighted Keybar key from the selected list of keys (top listbox)

Enable Custom Context Menu: The keys on “Custom Keys 6” Keybar can also appear on the Context Menu. Enable this checkbox to enable the context menu, which may be invoked by tapping and holding the stylus anywhere in the terminal display area. Any operation configured in Custom Keybar 6 will appear on this context menu.

You can add up to a total of 9 key buttons on each Custom Bar (Fewer on some devices). The entry for "Previous KeyBar" cannot be removed and must exist in each KeyBar to allow for "cycling" between KeyBars. Typically, the last key should be “Next KeyBar” for cycling to the next KeyBar.

One powerful capability of the KeyBar is the ability to associate keys with User Text and Scripts. Key entries "Text 1" through "Text 20" or “Script 1” through “Script 20” may be associated with Keybar keys as well. The “x” in Text x or Script x corresponds to the respective User Text or Script value. Thus if you have a text string configured in the User Text, this string can be submitted to the host application by tapping on the "Text X" key in a Custom KeyBar.

Tapping this key will send the complete text string to the current cursor location. For VT terminal sessions, escape sequences can be added to the User Text string. This allows users to configure custom escape sequences as required by their host applications. Escape sequences can be entered into the User Text in the following format:

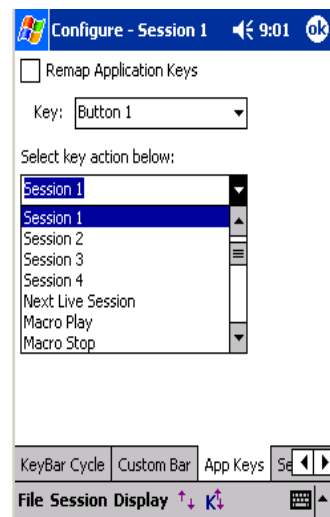
```
\e = Escape
\n = Newline
\r = Enter or Return
\t = Tab
\xDD = Hexadecimal value
```

App Keys

Windows Mobile devices have hardware buttons that launch specific applications. These “Application Keys” are configured via a “Buttons” applet in the Control Panel. You can re-map these keys to invoke emulator or host operations. The App Keys dialog is used to configure the Application button remapping.

NOTE: This functionality is typically associated with Windows Mobile platform devices.

NOTE: If “Record” is one of the default application key



actions, you may need to change it in [Start] [Settings] [Buttons] so that the application keys can be remapped

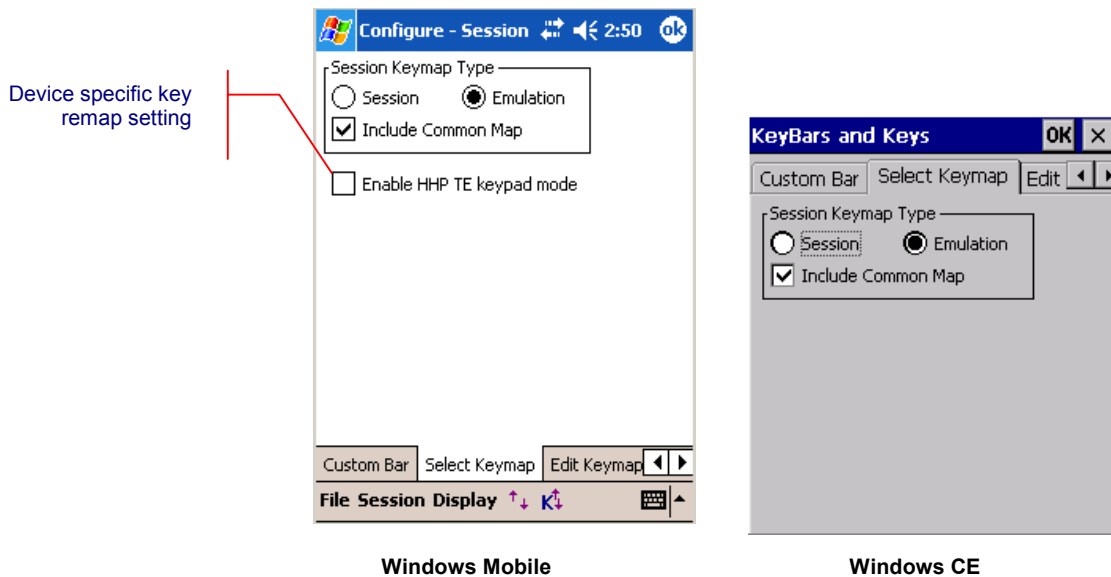
Remap Application Keys: Checking this box will allow remapping of the application keys

Key: This is a list of the all the hardware application keys available on the device. This list will vary depending on the device. Select the Application key that you would like to remap.

Select key action below: This is a list of actions and operations that you can associate with the Application Key selected above. After selecting the Key to remap, select the desired action. Only one action may be associated with a Key.

Select Keymap

Most hardware keys can be remapped to perform any action such as simulating a function key, entering a string of text or sending a custom VT escape sequence or running a Script. Keys that control screen brightness, sound volumes, and other Windows CE actions, often cannot be remapped. The two main steps for key remapping are selecting the type of keymap to use, and editing the keymap.



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Select Keymap Type: Selects a custom keymap that will apply to connected host sessions. Available choices are:

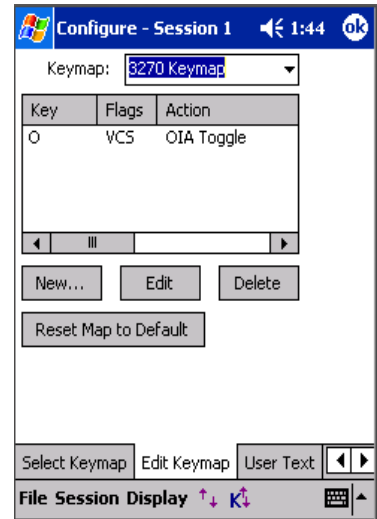
Session: The custom key remapping is associated with this host session only (say S1). The key remap bindings will not be available in another session (say S2 or S3 etc).

Emulation: The custom key remapping is associated with a particular type of emulation such as 3270, 5250, VT or HTML. This keymap can be shared with other host sessions running the same host type emulation.

NOTE: The external key remap, where the key remap bindings are loaded as part of a separate DLL, is no longer supported.

Include Common Map: When checked, the Common keymap will be added to the session or emulation keymap. You can configure the Common keymap binding separately.

Device Specific Key remap configurations: Certain devices, like the HHP Dolphin series and the Compsee MAT terminals may have device specific key remap bindings which can be loaded. These key remaps are based on popular legacy overlays for various emulations. You can enable inclusion of these key remaps using the device specific configuration attributes.



Windows Mobile

Edit Keymap

You can add, modify and remove key remap map bindings from this tab. The current bindings for the selected keymap are visible in the table.

Key: This is the key being remapped

Flags: These are the modifier / state keys which must be pressed along with the hardware key being remapped

Select the keymap that you want to create or update

This is the remapping table. It displays the present key remapping associated with the selected keymap

Action: This is the new action operation, which the remapped key will now invoke

Keymap: Select the keymap you wish to edit. You may select the session specific map for the current session (Session #), an emulation map (3270, 5250, HTML, or VT), the Base map, or the Common map.

Key: This column shows the ASCII character or "Virtual Key" symbol for the remapped physical key. If a symbol is not available, the key may be shown as a hexadecimal value.

Flags: This column shows the type of key and modifier keys, which must be pressed.

V indicates a Virtual Key.

A indicates "Alt" is pressed with the key.

C indicates "Ctrl" is pressed with the key.

S indicates "Shift" is pressed with the key.

NOTE: If you have Meta Keys configured, you may see additional state key options.

Action: This column shows the action that the remapping invokes. If the key invokes a "Text #" action, the current text is shown.

New: This button opens a **New Key** dialog to add a new key to the map.

Edit: This button allows modification of the highlighted key mapping from the list. Tapping this button will open an **Edit Key** dialog. Alternatively you may double-tap the entry in the list to modify it.

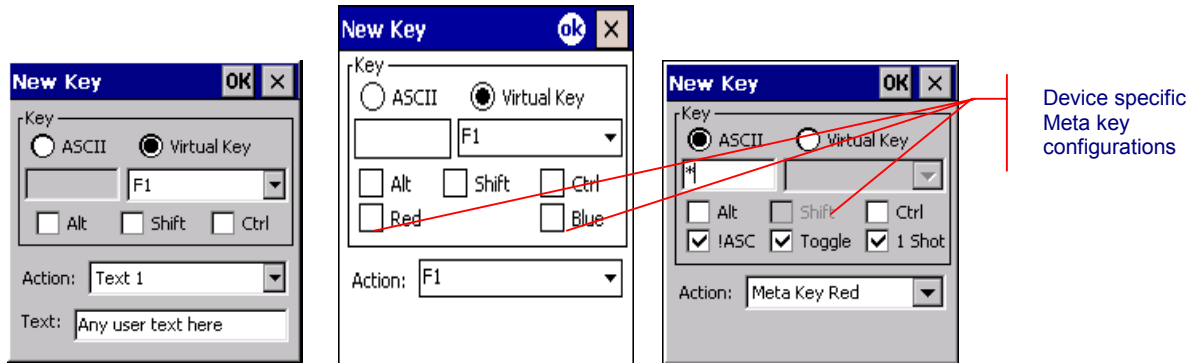
Delete: This will delete the current highlighted key remapping from the list.

Restore Map to Default: Tap this button to reset the current map to the default contents.

NOTE: If you have enabled device specific key remaps to be included under the "Select Keymap" tab, you must tap "Restore Map to Default" button to include the default key remap bindings for the selected emulation. You will see the table being populated with the new key remap bindings for that emulation.

The same is true if you are disabling the use of device specific key remap bindings.

New / Edit Key Dialog This dialog is used to edit existing entries and add new mappings. If a new or edited mapping conflicts with an existing mapping, you will be given a choice to apply or reject the new mapping. Note that this dialog may vary in its configuration attributes depending upon specific device tailored versions of CETerm, which may include default key remap bindings for legacy support.



ASCII: When creating new keys, always use the "Virtual Key" (VK) mode unless the VK code cannot be determined. This usually only happens for non-standard hardware keys. If you know that the key you want to remap generates an ASCII character but you cannot determine the VK code, then use the "ASCII" mode and enter the character that is generated. Enter the desired character in the box below.

Virtual Key: Map the specified Virtual Key. Select the virtual key from the dropdown list or enter a hexadecimal value in the form "0x5a".

Alt: If checked, "Alt" must be pressed with the key.

Shift: If checked, "Shift" must be pressed with the key.

Ctrl: If checked, "Ctrl" must be pressed with the key.

IASC - This option is only available for Meta key configuration. It means "Ignore Alt, Shift and Control" states. When checked, the Meta key will be effective regardless of the Alt, Shift, or Control states. Usually this option is checked to allow the most flexible key combinations.

Toggle - This option is only available for Meta key configuration. When enabled the Meta key will "toggle its state" each time the key is pressed. Otherwise, the state is set when pressed and cleared when the key is released. Usually, this option is checked.

NOTE: Some keyboards require the "key up" action of a key before another key can be pressed. For these keyboards, the "toggle" option *must* be checked, otherwise no other key can ever "see" the Meta state.

One-shot - This option is only available for Meta key configuration. Enabling this setting will force the Meta key state to reset after the next key is pressed, whether or not the next key was part of a Meta key translation. If this option is unchecked, the Meta state remains set until the Meta key is pressed again. Usually, this option is checked.

Action: Select the desired action from the list.

Text: This edit field is visible only if a "Text #" action is selected. You may edit the associated text directly.

User Text

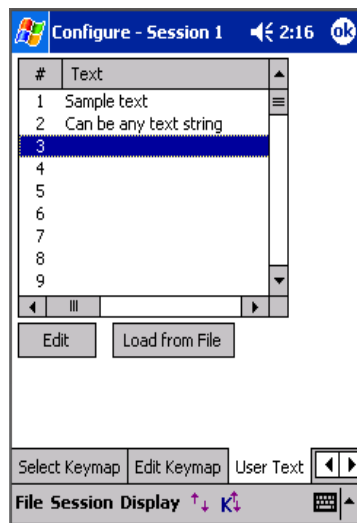
All user text strings may be edited via this tab. Text strings may contain special escape sequences for VT or sequences of actions:

```

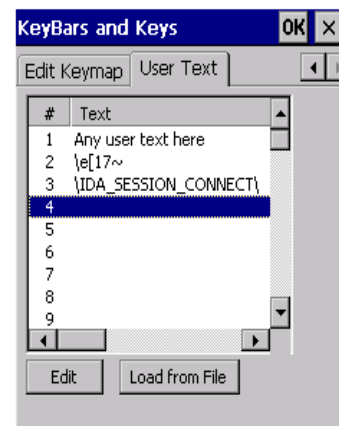
\r          - return
\t          - tab
\e          - ESC for VT sequences
\x5a       - hexadecimal value
\IDA_action\ - invoke action

```

NOTE: The \IDA_action\ text is proprietary to Naurtech. This allows users to invoke almost any application operation or event. Please contact us if you have a specific need and are looking for a particular IDA_action reference



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Edit: Select a text string from the list and tap this button to open the edit mode. Alternatively you may tap (not double-tap) the entry a second time to open the edit mode.

Load from File: Tap this button to select a file for loading. The file *replaces* the current text contents using one line per entry.

Configure Scripting

The “Configure Scripting...” button is used to create, import, edit, test and associate scripts. Our Scripting capability provides a platform to automate workflows with powerful JavaScript scripting and Workflow automation objects. It provides a "solutions platform" to build and customize business workflows.

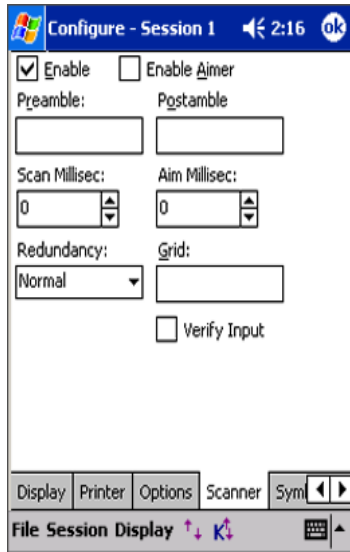
Scripts can be launched by button or key presses, or triggered by events such as new host data or scanner input. Scripts can be edited and tested directly on the device. Scripts can also interact with the Web Browser and native JavaScript. A script can be as simple as an automated login or as complex as reformatting a TE session with a Web Browser interface to improve productivity.

Configuration and Programming for Scripting is covered in detail in the **Naurtech CETerm Scripting Guide**, which is available from our website.

SCANNER

Device tailored versions of Naurtech smart clients provide integrated support for barcode scanners. Scanner options may be configured and updated from the "Scanner" tab.

- From the application menu, Select [Session] [Configure] or tap the "Configure" button on the toolbar.
- A "Configure" dialog box will come up.
- Choose the "Scanner" tab



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Enable: Checking this box will enable control of the barcode scanner. The scanner should be disabled if you must use a separate scanner wedge application. Default is enabled.

Enable Aimer: Some devices support an "Aimer" option with their barcode scanner that appears as a laser pointer prior to scanning a barcode. Checking this box enables such an aimer pointer. Default is unchecked.

Preamble: This is a prefix ASCII string that will be pre-pended to any scanned data. Default is blank.

Postamble: This is a suffix ASCII string or control command that will be sent after completion of a successful scan. Default is blank.

Some of the more commonly used preamble and postamble codes are listed in the following table. You can join multiple codes with printable text in any combination.

| String | Description |
|--------|-----------------|
| \t | Tab |
| \r | Return or Enter |

| | |
|---------------------------|---|
| <code>\n</code> | New line |
| <code>\\</code> | Backslash character |
| <code>\xYY</code> | where YY is a hexadecimal digit between 00 and FF to represent a character value |
| <code>%A</code> | ASCII label type (Symbol or HHP only) |
| <code>%C</code> | Custom label type, see config |
| <code>%D</code> | Date |
| <code>%H</code> | Device manufacturers labeltype as hex value |
| <code>%I</code> | AIM identifier letter of symbology, will be "*" if unsupported. |
| <code>%M</code> | AIM modifier digit of symbology, will be "*" if unsupported. |
| <code>%L</code> | Labeltype, custom (if defined) or same as %H |
| <code>%T</code> | Time stamp |
| <code>%%</code> | Percent sign character |
| <code>\IDA_action\</code> | where IDA_action is a Naurtech proprietary symbolic value that represents an action. Please refer to the table below for some of the popular actions. |

NOTE: You can use Naurtech proprietary IDA codes for popular operations. You can specify the IDA_action action using the following format:

`\IDA_action\` where IDA_action is an IDA symbolic code.

Some of these are listed in the table below. A full list of IDA codes is available in the Appendix at the end of this manual

| Ref Name | Key / Action |
|-----------------|----------------------------------|
| IDA_ENTER | Enter key action |
| IDA_NEWLINE | Newline key action |
| IDA_ERASE_EOF | Erase to end of field key action |
| IDA_ERASE_INPUT | Erase input key action |
| IDA_FIELD_EXIT | Field exit key action |
| IDA_FIELD_PLUS | Field+ key action |
| IDA_HOME | Home key action |
| IDA_DOWN | Down arrow key action |
| IDA_UP | Up arrow key action |
| IDA_LEFT | Left arrow key action |
| IDA_RIGHT | Right arrow key action |

Redundancy: This configuration describes the redundancy or linear security level used during decoding. Default is "Short Twice".

Scan Millisec: This attribute controls the scan duration. If a barcode is not read within this time, the scanner will shut off and a failure tone is sounded. The default value is 0 which is unlimited. Some scanners do not timeout regardless of this setting.

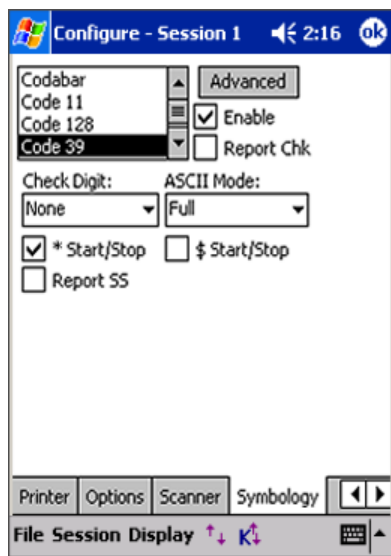
Aim Millisec: This attribute controls the duration of the aimer pattern prior to scanning of a barcode.

Verify Input: When using IBM 5250 emulation and if Verify Input is checked, the input field at the cursor location will be checked to determine if there is sufficient space for the scanned data. If there is no input field or there is insufficient space, a warning will be displayed and the data will be discarded.

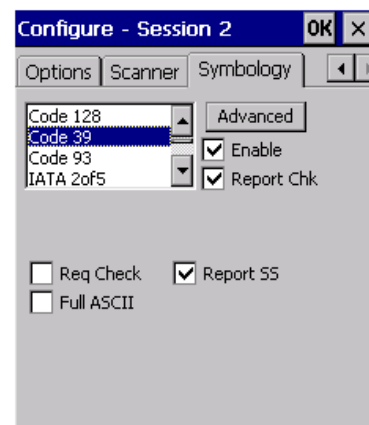
SYMBOLGY

Depending upon the device and scanner, Naurtech smart clients support between ten and twenty two different barcode symbologies. Individual symbologies may be enabled, disabled and configured.

- From the application menu, Select [Session] [Configure] or tap the "Configure" button on the toolbar.
- A "Configure" dialog box will come up.
- Choose the "Symbology" tab



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The list box on the top left contains a list of barcode symbologies supported by the scanner. This list of symbologies varies with every device. Configuration parameters associated with each symbology vary depending upon the symbology selected.

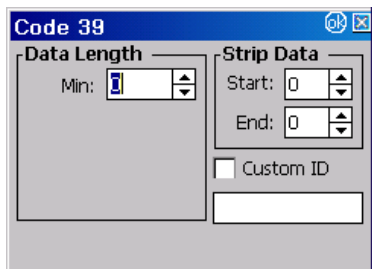
Enable: Check this box to enable the selected symbology for decode. If desired, you may enable a subset of symbologies from the complete list. On certain devices, barcode symbology initialization can take a couple of seconds. To minimize this initialization time on

such devices, it is recommended that you can enable only those symbologies that are being used for scanning and disable all other symbologies.

Report Check: Check this box to report (or return) the check digit as part of the barcode data.

NOTE: Each symbology has a separate set of configuration parameters associated with it. Selecting the symbology from the list will make these visible for configuration and update. Please refer to the individual barcode symbology references in the documentation for the handheld device.

Advanced: This button opens advanced configuration dialog for the selected barcode symbology. All settings configured and updated in this dialog are associated with the currently selected symbology.



Data Length Min: This is the minimum length, in characters, for the decoded barcode. Specifying a minimum length will require every scanned barcode to be at least the minimum length. Possible values depend on the symbology. Default is usually 0 which implies no minimum length.

Data Length Max: This is the maximum length, in characters, for the decoded barcode. Specifying a maximum length will require every scanned barcode to be at most the maximum length. Possible values depend on the symbology. Default is usually 0 which implies no maximum length.

Strip Data Start: This is the number of characters to be stripped from the beginning of the decoded barcode. Default is 0, which does not strip any characters.

Strip Data End: This is the number of characters to be stripped from the end of the decoded barcode. Default is 0, which does not strip any characters.

Custom ID: Checking this box will enable the Custom ID when used with the %L pre-amble or post-amble code. A %C in a pre-amble or post-amble will insert the custom ID regardless of the setting of this box. The custom ID text may be configured in the edit box.

NOTE: Custom ID field may be used when you have a requirement to add different pre-amble or post-amble for two or more barcode symbologies. For example you may need to add a prefix "UPC" to all UPC-A barcodes and a prefix "C128" to all Code 128 barcodes. In such a case, you can set a custom id of

“UPC” for UPC-A symbology and a custom id “C128” for Code 128 symbology. Placing a “%C” in either the pre-amble or post-amble would then add the corresponding string based upon the symbology of the barcode decoded.

MAGNETIC STRIPE READER

The device tailored versions of all our TE clients contain a powerful feature to select the desired data fields from the Magnetic Card Reader and to present the data to the host. Support for MSR is configurable only for certain device tailored versions, which have an integrated MSR. Devices include Fujitsu iPad, Intermec 782 workpad

To select the desired data fields, a "Match" expression is specified, which can identify and "tag" fixed or variable character locations. The tagged matches are substituted into the "Replace" expression to send the desired data to the host application.

Match Expressions

The Match expression is a limited form of "regular expressions" as used in text processing languages such as Perl. As such, it is very powerful, but can seem complicated. If you need assistance configuring the Match, please contact support@naurtech.com. We will give some examples of Match and Replace expressions to illustrate their use.

When the data is read from the card, it is available in the format

```
"T1:DataFromTrackOneT2:DataFromTrackTwo".
```

Example 1

To remove the "T1:" and "T2:" identifiers and just return the data, use:

```
Match:      "^T1: (.*) T2: (.*) $"
Replace:   "\1\2"
```

The "hat" '^' at the beginning of the match forces it to start at the beginning of the data and the dollar sign (\$) at the end requires a match to the end of the data.

The first set of parenthesis surround the part of the match which is substituted for "\1" in the Replace string and similarly for the second set of parenthesis and "\2".

You may specify up to 9 sets of parenthesis to identify 9 substitutions.

The literal characters "T1:" in the match string must match the characters in the card data.

The special ".*" means to match zero or more characters; the '.' represents any character.

Example 2

We can also specify a fixed number of characters to identify fixed field locations:

```
Match:      "^T1: . {4} ( . {20} ) . *T2: ( [0-9] {10} ) "
```

Replace: "Name:\1 Account:\2"

The quantity between curly brackets "{}" is an exact number of characters to match.

The first "{4}" will match, and ignore, the first four characters of track 1.

The "{20}" will match the next 20 characters which can be specified in the replace text as "\1".

The next "." skips past the remainder of track 1 data.

The "[0-9]{10}" says to match exactly 10 digits and make them available as "\2" because this is the second set of parenthesis.

The "[0-9]" means any character in the set from '0' to '9'. This may also be represented as "[0123456789]".

Example 3

As a third example, we can identify the data between "delimiter" characters. Often, a cardholder name is found between '^' characters.

Match: "\^ ([^^]+) \^.*T2:.*= ([0-9]{20})"

Replace: "Name:\1 Account:\2"

The leading "\^" means to match the '^' character, not the start of the data.

The backslash '\' removes the "special" meaning of the '^'.

The "([^^]+)" may seem complicated. Remember that the "[...]" identifies a set of characters to match. If there is a leading '^' in the set, it means to match anything *except* the characters in the set. For example, "[^abc]" means any characters except for 'a', 'b', and 'c'. The second '^' in the set has *no* special meaning and is interpreted as a literal '^' character. So, this means to match any characters *except* a '^'.

The plus sign '+' means to match one or more of the characters designated by the set, so this will match one or more characters up to, but not including, the next '^' character. The result is that we identify all characters between a pair of '^' characters and assign this to "\1" for replacement.

After the "T2:" we have ".*=" which will match any characters and then an equal sign.

Following the equal sign is "[0-9]{20}" which will match a 20 digit account number.

Replace Expressions

The Replace string can have more than literal text and the match replacement symbols. You can insert special characters, special keys, and emulator actions. There are 3 levels of substitution for the Replace string.

Level 1

& - replaced by "whole match"

\d - where d is a digit [1-9] replaced by
matched substring.
\\ - replaced by \.

Level 2

%T - replaced by MSR read time
%D - replaced by MSR read date

Level 3

Additional special character replacements.

NOTE: Each of these must have the backslash doubled (escaped) to pass through Level 1 as a single backslash. We show only single backslashes below.

1. A backslash '\' introduces special characters:

\b - Backspace
\c - CSI character (VT)
\e - Escape character (VT)
\n - Newline
\r - Carriage Return (Enter for IBM)
\t - Tab
\xdd
\Xdd - where d is a hexadecimal digit 0-9,
a-f, or A-F, will insert the
equivalent ASCII character.

\IDA_xxx\ - replaced by the specified emulator
or program function. There must
be a trailing backslash at the
end of the IDA action name.
Use the single character versions
if they are available.

Some common IDA actions:

IDA_FIELD_EXIT - IBM field exit
IDA_ERASE_EOF - erase to end of field
IDA_PF6 - IBM PF6 key (F6 for VT)

Tips:

The quotes on the Match and Replace examples above are not entered into the configuration in CETerm.

Use the '^' and '\$' "anchors" when possible to improve the match reliability.

Use fixed field lengths when possible for more efficient matches.

Use '+' or a range {n,m} where possible rather than '*'. The '*' range can match "no data" and may result in more mis-reads.

Automated Licensing

The automated licensing capability simplifies setting of license registration keys. When the user attempts to connect a session, a license server can be queried to provide a license key. CETerm will only query the license server if the device is currently un-licensed and if a license server URL has been specified in the CETerm configuration.

The license server URL is saved with all other CETerm configuration variables. If a master configuration is created from this device, then all cloned devices will request their key on their first connection attempt. The license server URL may also be specified directly in a registry value that is preloaded into the device during a cold-boot restore or from a generic default configuration package.

In the simplest case, the URL specifies a static XML page, which can be returned by any web server. The XML is parsed to extract the key. Here is a sample of the XML document:

```
<?xml version='1.0'?>
<CETerm>
  <! Licenses for Symbol 9000 terminals -->
  <license>
    <id>1E00040099409997</id>
    <user>End User Company</user>
    <key>42AA330245FE55D245C60460D22C05B0</key>
  </license>
  <license>
    <id>290006000B401680</id>
    <user> End User Company </user>
    <key>D4A1189D796B0CFD969361ED72B77AB5</key>
  </license>

  <! Licenses for Intermec CV60 terminals -->
  <license>
    <id>00:A0:F8:6D:81:5D</id>
    <user> End User Company </user>
    <key>9C5D0D771BA849386D33A989AFECECDB</key>
  </license>

  <! Licenses HHP 9500 terminals -->
  <license>
    <id>000056627</id>
    <user> End User Company </user>
    <key>9C53837701784938222A989AF345CDB</key>
  </license>
</CETerm>
```

There may be any number of <license> elements in the file served to the device. Note that there are no hyphen separators in the <key> element. The product element, <CETerm> in this case, must match the Naurtech product in use. The license server URL may reference a file on a web server or on the device. The following syntax may be used to specify the license file:

If license file is residing locally on the device:

file:///license.xml

If license file is residing on a web server:

http://MyWebServerAlias/license.xml

http://192.168.5.221/license.xml

Some common error codes:

0x80070490 - License not found in XML document, check your XML.

0x800c0006 - XML document not found, check your URL and server.

0x80040154 - XML or SAX Parser not found on device. Unsupported or missing Microsoft components.

0x80004005 - General failure, cause unknown.

The following steps should be followed to install the new “automated licensing” capability:

1. Install the new version of CETerm on your terminal. This should be version 5.0 or above. Run it

2. On the device, go to the Manage tab
[Session] -> [Configure] -> [Options] -> [Advanced] -> [Manage]

Enter the URL to web server where CETerm should look for the license.xml file

The license.xml file should have a license ID and corresponding registration key for this Device. Tap OK, all the way out.

3. Configure and Connect to your host. If there are no errors, license registration is transparent. You can validate registration by looking at the About box

File -> About

You should see your registered company userid.

If you prefer to configure the server URL directly using a device / application management tool, you can directly write the following key into the device registry.

```
[HKEY_LOCAL_MACHINE]
[Software]
[Naurtech]
[CETerm]
    ConfigServerURL = SZ:http://192.168.1.101/license.xml
```

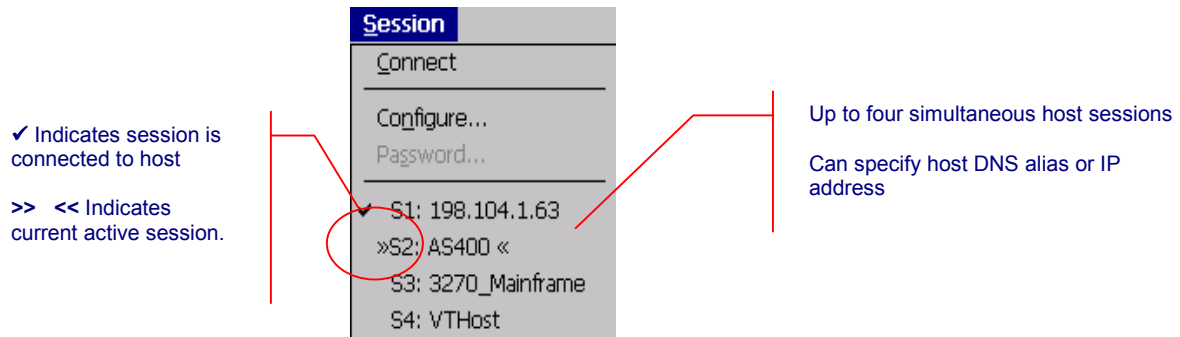
NOTE>> Please note the product name “CETerm” in the registry key above will change to respective product names for CE3270, CE5250 and CEVT220.

Session Interaction

All Naurtech smart clients allow up to four simultaneous host terminal sessions. Any or all of these sessions may be connected to a host, but only one session is in the foreground at any time. This is the active session and it receives all user interaction. Connected sessions in the background maintain their host session connections and update their (hidden) screen content.

MULTIPLE SESSIONS

You can navigate between multiple sessions either from the application menu or by using the "Next live session" hotkey. The current active session is indicated in the application [Session] menu as shown below. Host addresses configured for each of the host sessions are indicated as part of the session names.



Tip: To jump to the next connected host session; use the hotkey [Ctrl] [Shift] [J]

PASSWORD PROTECTION

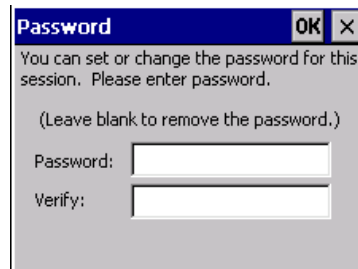
All sessions may be password protected for security. You can set a password for a host session by first configuring the session and connecting to the host.

- Once connected, from the application menu select [Session] [Password]. This will prompt with a password dialog.
- Enter the password.
- Next time you attempt to connect this session, you will be prompted to enter the session password. If the password is incorrect, session will not connect.

Note: If you forget your session password and can no longer access your session, please contact us at support@naurtech.com




Windows Mobile



Windows CE

CONNECTING / DISCONNECTING FROM HOST

To connect to a host, configure the session parameters and select "Connect" from the application menu. Only disconnected sessions may be connected. Once connected, you may disconnect the host session by selecting "Disconnect" from the application menu. You must configure the host session prior to attempting a connection.

- From the application menu select [Session] [Connect] to connect or [Session] [Disconnect] to disconnect. You may also tap the "Connect / Disconnect" button  on the toolbar.

AUTO-LAUNCH WHEN DEVICE BOOTS

You can configure Naurtech clients to automatically launch when the device boots. This can simply be done by placing a shortcut in the \Windows\StartUp folder on the device.

- Make sure the Naurtech client is installed correctly and you can see an icon on the Start Menu
- On the device, run Windows file explorer [Start] [Programs] [Windows Explorer]
- Navigate to the \Windows\Desktop folder
- Highlight the shortcut "Naurtech CExxx", where xxx is the product specified
- Select [Edit] [Copy] from the Windows Explorer menu
- Navigate back to the \Windows\StartUp folder
- From the Windows Explorer menu, select [Edit] [Paste]

NOTE: You can also follow these steps from the mobile device explorer running on your desktop, if your device is connected via active sync to it.

AUTO-START A HOST SESSION

You can configure sessions to automatically connect to the host when the emulator starts. This can be done using command line options or via an advanced connection configuration setting.

- From the application menu, select [Session] [Configure]
- In the "Connection" tab, select the **Advanced** button. This will open the advanced connection settings dialog
- Select the "General" tab
- Enable the "Auto Connect" checkbox
- Hit OK all the way out of the dialogs

NETWORK CHECK ON CONNECT

When any of the Naurtech smart clients are configured to automatically launch during a device boot and then connect to your host application, the underlying network may not have completed initialization before our application attempts to use the network. In such cases, the connection attempt to the host or web server will fail.

The best workaround is to enable the setting [Session] [Configure] [Advanced] [Check Network on connect]. This will cause our application to detect network availability prior to attempting a host connection.

As an alternative, you can also to introduce a delay during the startup process. This is the older approach to resolving the issue. A delay causes our application to wait until the underlying wireless TCP/IP network is available. The delay will allow time for the device to make an RF association with the access points and perform the needed network initialization.

The length of this initial delay will vary from one network to another. It is recommended that you change the "Initial Sleep" delay settings to match your network requirements.

- From the application menu, select [Session] [Configure]
- In the "Connection" tab, select the **Advanced** button. This will open the advanced connection settings dialog.
- Enter a value in the "Initial Sleep" edit box. The default is 0 meaning no delay. This value is in seconds.

Wherever possible, you may consider using the "Check Network on Connect" attribute to achieve a more optimal equivalent result.

RUN A SCRIPT

Please refer to the Naurtech CETerm Scripting Guide for detailed description.

USE BARCODES TO INVOKE OPERATIONS OR KEYSTROKES





Within all Naurtech smart clients applications, you can scan a barcode with special content to simulate Keystrokes. In fact, any application operation can be invoked via ID action (IDA) codes with this approach. The barcode can be any symbology, but "Extended Code 39" is a good choice. Extended Code 39 is also called the "Full ASCII" mode of Code 39. By using two-character sequences, it can represent the needed backslash and underscore characters.

With Extended Code 39 symbology, the scanner is often configured to require a "*" as a start and stop character. Make sure your generated barcodes are compliant with your scanner configuration whether you use Code 39 or some other symbology.

The content of the barcode is in the form: `*\IDA_name*` where `name` is the "Symbolic Name" of the IDA action. These values are unique to Naurtech clients.

There is a "Free 3 of 9 Extended" font available for Microsoft Windows operating systems, which may be used to represent text into Extended Code 39 barcode. You can download this from the Naurtech support knowledgebase.

Note that if an IDA action is decoded at the start of a barcode, all additional characters are ignored. Also, there is no "stripping" of characters and no pre- or post-ambles are sent. Any barcode length restrictions may still be imposed by the symbology configuration. Here are some samples containing special host key and application operation barcodes

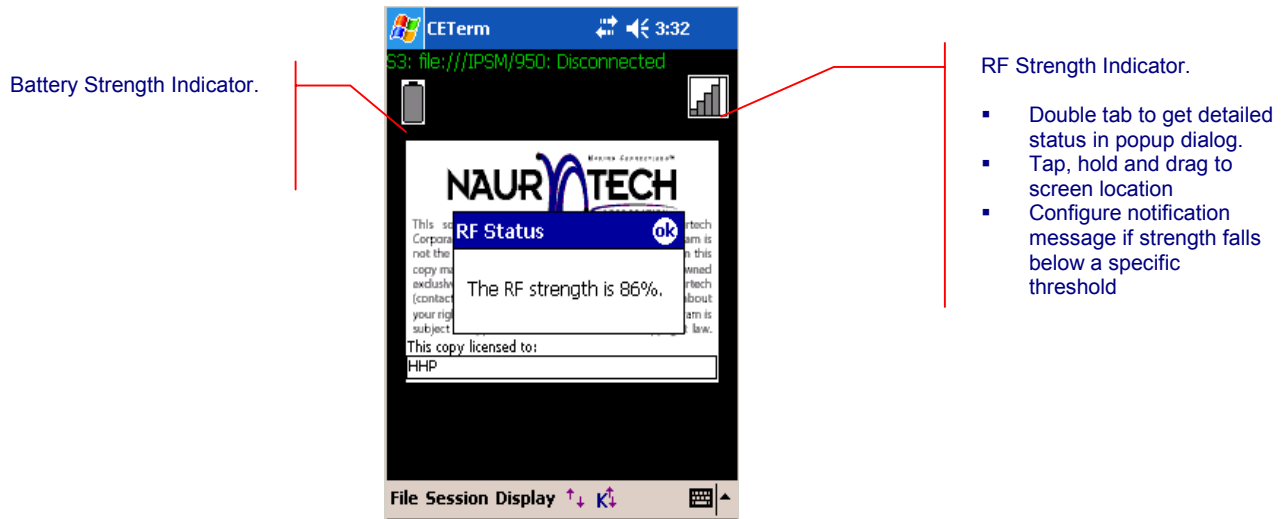
| Action | Barcode Content | Extended Code 39 barcode |
|-----------------|-------------------------|--|
| F2 | *\IDA_PF2* |  |
| Tab | *\IDA_TAB* |  |
| Session Connect | *\IDA_SESSION_CONNECT* |  |
| Field Exit | *\IDA_FIELD_EXIT* |  |

Please contact technical support for more information on available ID action (IDA) codes.

DISPLAY INDICATORS (RF & BATTERY STRENGTH ...)

You can display visual Indicators for RF and Battery strength in your TE or Web Browser sessions. For optimal usage of the precious screen real estate, you can select an Indicator icon of your preference. You may drag the Indicator or lock it at a specific location. Double tapping on the indicator will display a popup dialog with details information. You can also configure a low threshold percentage. If the Indicator strength falls below this threshold, you will receive a notification. To configure:

- From the application menu, select [Session] [Configure] [Options] tab
- Select the **Advanced** button and then the [Info Items] tab.
- To enable an Indicator, select it from the list and enable the "Update" and "Enabled" checkboxes.

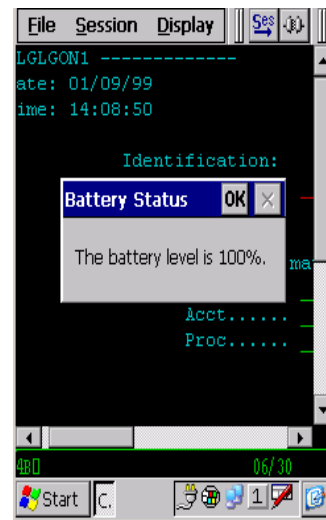


You can also include the RF and Battery strength Indicators on the Configurable Keybar so these appear as status buttons.

DISPLAY DEVICE PARAMETERS (SERIAL #, MAC ADDRESS, BATTERY...)

You can remap a hardware key to display device specific information such as serial number, MAC address, IP address and Battery level. This is done via popup messages. The steps for this configuration are equivalent to key remapping. The only difference is in the selection of the "Action".

1. Navigate to [Session] -> [Configure] -> options tab -> Config Keybar and keys -> Edit Keymap tab
2. Select the **Common** Keymap from the Keymap dropdown list
3. Hit **New** to add a new key remapping
4. Select the key in the **Virtual Key** dropdown that you would like to associate with the device setting.
5. In the **Action** list box, select device setting for which you want to associate a popup message. The following table show the possible action selections



| Action | IDA code |
|------------------|----------------------|
| Show IP Address | IDA_POPUP_IPADDRESS |
| Show MAC address | IDA_POPUP_MACADDRESS |
| Show Battery | IDA_POPUP_BATTERY |

| | |
|---------------|------------------------|
| Show Time | IDA_POPUP_TIME |
| Show Serial # | IDA_POPUP_SERIALNUMBER |

6. You may want to add the same remapping to the base (unconnected) keymap as well

NOTE: The device specific information, which may be queried, is dependent upon the device. All information may not be available on all devices

PLAY A DIFFERENT AUDIO TONE / SOUND ON MY DEVICE

Audio tones can be played using the built in Extended command support within all Naurtech TE clients. Users can use the "Tone" extended command to cause the system to play a specified tone. This is supported through the "extended commands". The syntax is:

```
#T<volume><frequency><length>
```

```
<volume>      is specified in columns 4-6. Range is between 000 and 255
<frequency>   is specified in columns 7-9. Range is between 000 and 030
<length>      is specified in columns 10-12. Range is between 001 and 010
```

You can also play any "system sound" or a .wav file on CE devices that support .wav files. To play any .wav file on the device the syntax is the same except that the "Volume", "Frequency", and "Length" parameters are used directly to construct a filename. You may use any 9 characters for the sound name / filename. Do not put in the (.wav) extension, it is assumed. More than 9 characters are ignored. If you have a shorter filename, insert leading spaces so that the filename ends at the 9th character.

If the requested sound does not exist on the device, a default sound will play. For development purposes you may want to use a standard system sound and then find or create your custom "alert sound" later. You can look for .wav files in the \Windows directory for standard sounds.

If only one unique sound is needed, it will be easier to configure that sound in the "Beep Sound" under [Session] -> [Configure] -> [Display]. The normal VT Bell character will activate this sound

Key Remapping and Configuration

All Naurtech smart clients provide functionality for key remapping and input. Users can choose one or more of the following mechanisms for key remapping and input.

- Remap physical hardware keys on the device. Details for this functionality are discussed in the “Keyboard Key Remapping” section below.
- Remap hardware keys or Keybar buttons and associate these with a Script. Details for this functionality are discussed in the “Naurtech CETerm Scripting Guide”. You can download this from our website.
- Configure Windows CE application keys. Details for this functionality are discussed in the “Keyboard Key Remapping” section below.
- Configure “Meta Keys” which may be used in conjunction with other keys to create unique key combinations to remap application operations or host key actions.
- Configure one or more soft KeyBars. Users may select from predefined templates or customize their own KeyBars. Details for this functionality are discussed in the “Configurable KeyBar” section below
- Configure a Context Menu KeyBars. Details for this functionality are discussed in the “Context Menu” section below.

KEYBOARD KEY REMAPPING

All Naurtech smart client applications can be configured to map any physical keyboard key on the device to any host action, application operation, macro or Script.

For key remappings users can directly configure the keys using on-device dialogs. The typical approach should be to use "emulation specific" maps, which apply to all sessions using the same emulation type, such as VT220. In special cases, it may be necessary to define a map, which applies only to one session. In this case you should define and use the "session specific" map.

Session specific maps are more work to configure because they must be defined individually for each session.

To simplify configuration of keys that are common to all sessions and emulations, there is a "Common" map, which can be "added" to the "Emulation" or "Session" maps by checking the "Include Common Map" box. The Common map can be edited.

Lastly, there is the situation when a session is not connected to the host. In this disconnected state, all sessions share a common key mapping which is independent of the session emulation type. This mapping is called the "Unconnected" or "Base" map. The Base map can be edited or an external Base can be selected.

Please refer to the configuration section of the manual for details on creating customized key remappings.

NOTE: External key remappings, involving a DLL file that may be built by Naurtech and placed on the device by the user is no longer supported. This is the old way of configuring key remapping. All custom key remapping DLLs (KMAPCET.DLL) from prior versions, if present, are supported.

The external mapping has been preserved for backward compatibility, but all new key mappings should be done using the internal remapping features. Naurtech no longer provides external remapping DLLs.

Remap a hardware key

You can configure your device to re-map any physical keyboard key on the device to any of the following:

- Another key
- An application operation such as "Jump to Next Session" or "Print"
- A host specific key such as "F4" or "Field Exit"
- An escape sequence such as "Esc[15~"
- A text string such as "My input string"
- A NULL or no operation which will prevent use of that key
- A Script

This remapping may be configured specific to either a session or an emulation type (such as VT, 5250, 3270 etc). Follow these steps to remap a hardware key:

1. From the application menu, select **[Session] [Configure]**
2. Go to the "Options" tab and click the "Configure Keybars and Keys..." button
3. Go to the "Select Keymap" tab. Select the custom keymap to be specific to this particular session or an emulation type (3270, 5250 or VT). Generally it is recommended that you use an "Emulation" keymap type. The "Unconnected Keymap" is used when the session is not connected to the host.
4. Go to the "Edit Keymap" tab. Say you want to customize the following key remap:

| Key Sequence | New key remapping |
|--------------|-------------------------------|
| F1 | "W" key |
| Ctrl + 1 | "Next live session" |
| F5 | "Esc[13~" escape sequence |
| F8 | "Erase Input" |
| F9 | "my custom input" text string |
| Up Arrow | Disable this key |

5. From the "keymap" dropdown list, select the type of keymap you want to customize. For an emulation keymap, (selected in 3 above) select the "VT Keymap" for all VT sessions or "5250 Keymap" for all 5250 sessions, "3270 Keymap" for all 3270 sessions. There might be some predefined entries, which will appear in the keymap table for each keymap selection. For details on the keymap table columns, please refer to the Options section under Configuration.

6. Select the "New..." button. You will be prompted with a New key dialog. This is identical to the "Edit" key dialog

6.1 Select the key type to be "Virtual Key".

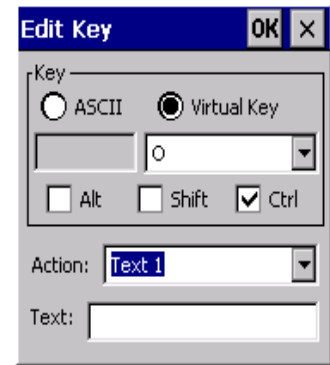
6.2 From the dropdown list, select the key you want to remap. In our remap example, you want to remap the F1 key so that when it is pressed a "W" is generated instead. (F1 → "W"). Select the key to be "F1"

6.3 Check any modifier state key checkboxes. In our custom remap example, none of these will be checked for the F1 → "W" key remapping. The "Ctrl" checkbox will be checked for the remap Ctrl + 1 → "Next live session"

6.4 In the "Action" dropdown, Select the new action that the key is being remapped to. In our remap example (F1 → "W"), this should be a "W"

6.5 Click OK. This remap will be displayed in the table.

6.6 To remap a key to an Escape sequence or text string, select the Action "Text n" (where n is the number between 1 and 65). This will result in an edit box appearing, where you can specify the custom text string. Text strings may contain special escape sequences for VT or sequences of actions:



| Text String | Description |
|--------------|----------------------|
| \r | Return |
| \t | Tab |
| \e | ESC for VT sequences |
| \x5a | Hexadecimal value |
| \IDA_action\ | Invoke ID action |

The \IDA_action\ text is proprietary to Naurtech CETerm. This allows users to invoke almost any application operation or event programmatically. Please contact us if you have a specific need and are looking for a particular IDA_action reference

Follow steps 6.1 through 6.5 to remap other keys. To disable a key, you can map it to a "Null" Action.

7. Click OK. Connect to the host application and invoke the remapped keys to test the remap.

META KEYS

Meta keys are special keys that set and clear a Meta state. They act much like the state keys "Shift", "Alt" and "Ctrl" on a regular keyboard. Similar to these normal state keys, Meta keys are used together with other keys to activate special actions. Meta keys are named with colors. Typically these can include: Red, Green, Blue, and Yellow. For device tailored versions of CETerm, whenever possible, Meta key colors are synonymous with physical keys on these devices.

Meta keys can be assigned to hardware keys in much the same way that other key mapping is configured in CETerm. After Meta keys are assigned to hardware keys, they can be used in other key re-mapping assignments. For example, after the Blue Meta key is assigned, you may create the mapping where Blue + '1' switches to Session 1, etc.

Defining Meta Keys

Meta keys are defined in the Edit Keymap tab of the key remapping. Simply select the "Meta" keymap. There is one basic restriction for the Meta keymap. There may only be one key for each Meta state. Typically this means a key for each of Red, Green, and Blue.

When defining (or editing) a Meta key, there are three special attributes:

"!ASC" - This checkbox means "Ignore Alt, Shift and Control". When checked, the Meta key will be effective regardless of the Alt, Shift, or Control states. Usually this option is checked to allow the most flexible key combinations.

"Toggle" - This checkbox means to "toggle the state" of a Meta key each time the key is pressed. Otherwise, the state is set when pressed and cleared when the key is released. Usually, this option is checked. Some keyboards require the "key up" action of a key before another key can be pressed. For these keyboards, the "toggle" option *must* be checked, otherwise no other key can ever "see" the Meta state.

"One-shot" - This checkbox means that the Meta state is reset after the next key is pressed, whether or not the next key was part of a Meta key translation. If this option is unchecked, the Meta state remains set until the meta key is pressed again. Usually, this option is checked.

Using Meta Keys for Remapping

When Meta keys are available for key remapping, you will see corresponding checkboxes on the "New Key" / "Edit Key" dialogs. Meta state flags may also appear in the "Flags" column of the keymap. The flags meanings are:

- V - Virtual Key remap
- A - Alt state
- C - Ctrl state
- S - Shift state
- R - Red meta state
- G - Green meta state
- B - Blue meta state
- Y - Yellow meta state

To require a Meta state for a key, simply check the corresponding checkbox.

NOTE: You should define the corresponding Meta key in the Meta keymap before creating key remap bindings that use the Meta key.

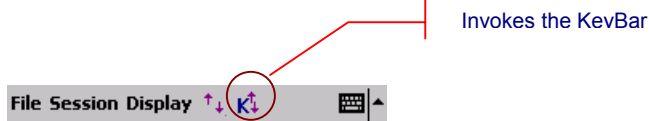
CONFIGURABLE KEYBAR

Most Windows Mobile and Windows CE devices have a limited keypad. They often rely upon the Soft Input Panel (SIP) to "spell type" data. However, the SIP usage is cumbersome and it does not provide any special host keys such as those needed in a terminal emulation program.

The configurable KeyBar functionality allows users to customize a set of soft keys to invoke any host specific keys or application operations. Users can select from a set of pre-defined KeyBar templates. In addition, they can also configure up to six Custom KeyBars of their own. Users can navigate or "cycle" within a selected subset of KeyBars.

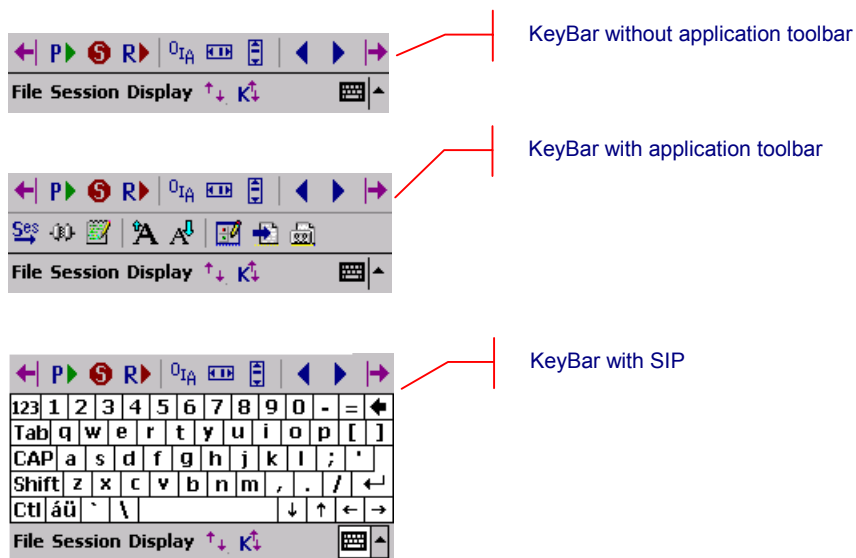
For Windows CE devices, the KeyBar appears next to the application Menu and Toolbar. These can be dragged and placed in separate rows, if so desired.

For Windows Mobile devices, the KeyBar appears as a toolbar. You can toggle it on or off by pressing the KeyBar icon next to the application menu. The emulator screen automatically adjusts to provide the maximum possible screen real estate.

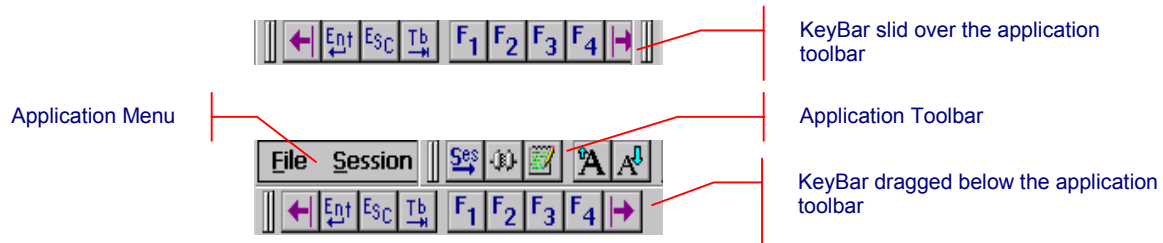


To configure the KeyBar, please refer to the Options section under Configuration. Take some time to customize the KeyBar and become familiar with it's use, it will be time well spent.

When enabled, the KeyBar appears on "top" of either the application menu, application toolbar or SIP, depending upon their visibility state. Tap the arrow button on either end to cycle backward or forward through the configured KeyBars.



Windows Mobile



Windows CE

There are several pre-defined KeyBars that are provided with the application. These serve as emulation specific or operation specific templates. You may use these in addition to the customized KeyBars. The following table shows these pre-defined KeyBar templates.

| KeyBar Name | KeyBar Buttons | | |
|-----------------|----------------|---------------|--|
| Base Keys | | IBM 2 | |
| Special Keys | | IBM 3 | |
| Info Keys | | VT 1 | |
| Scroll Keys | | VT 2 | |
| F1 - F8 | | VT 3 | |
| F9 - F16 | | UDK11 - UDK18 | |
| F17 - F24 | | Digits 0 - 5 | |
| IBM 1 | | Digits 5 - 9 | |
| HTML / SIP keys | | | |













The following table shows bitmaps and associated action text for all the actions and operations that can be associated with the configurable keys.











| Bmp | Action Description |
|-----|--------------------------------|
| | Previous KeyBar |
| | Next KeyBar |
| | (Empty) no action |
| | ? character |
| | Enter key |
| | Escape key |
| | Tab key |
| | Field Backspace (Back Tab key) |
| | Insert Toggle |
| | Delete key |
| | Backspace key |
| | Left arrow key |
| | Right arrow key |
| | Up arrow key |
| | Down arrow key |
| | OIA Toggle |
| | Jump to Session 1 (S1) |
| | Jump to Session 2 (S2) |
| | Jump to Session 3 (S3) |
| | Jump to Session 4 (S4) |
| | Jump to Next Session (active) |
| | Macro Play |
| | Macro Stop |
| | Macro Record |
| | Program Exit (emulator) |
| | Print Screen |
| | F1 function key |
| | F2 function key |
| | F3 function key |
| | F4 function key |
| | F5 function key |
| | F6 function key |
| | F7 function key |
| | F8 function key |
| | F9 function key |
| | F10 function key |
| | F11 function key |
| | F12 function key |
| | F13 function key |
| | F14 function key |
| | F15 function key |

| | |
|--|------------------|
| | F16 function key |
| | F17 function key |
| | F18 function key |
| | F19 function key |
| | F20 function key |
| | F21 function key |
| | F22 function key |
| | F23 function key |
| | F24 function key |
| | PA1 key |
| | PA2 key |
| | PA3 key |
| | Erase EOF |
| | Erase Input |
| | Attn |
| | Reset |
| | Clear |
| | DUP |
| | Newline |
| | IBM Home |
| | System Request |
| | Field Mark |
| | Field Exit |
| | Field + |
| | Field - |
| | Roll Up |
| | Roll Down |
| | IBM Help |
| | IBM Print |
| | Find |
| | Insert Here |
| | Remove |
| | Select |
| | Previous |
| | Next |
| | Hold |
| | Cancel |
| | Answerback |
| | DEL (VT) |
| | Linefeed |
| | VT PF1 |

| | |
|--|---------------------|
| | VT PF2 |
| | VT PF3 |
| | VT PF4 |
| | Numpad 0 |
| | Numpad 1 |
| | Numpad 2 |
| | Numpad 3 |
| | Numpad 4 |
| | Numpad 5 |
| | Numpad 6 |
| | Numpad 7 |
| | Numpad 8 |
| | Numpad 9 |
| | Numpad Enter |
| | Numpad Minus |
| | Numpad Comma |
| | Numpad Period |
| | VT CSI M (custom) |
| | VT CSI N (custom) |
| | VT CSI O (custom) |
| | VT CSI P (custom) |
| | VT CSI Q (custom) |
| | VT CSI R (custom) |
| | VT CSI S (custom) |
| | VT CSI T (custom) |
| | VT SAP0135 (custom) |
| | ASCII 0 |
| | ASCII 1 |
| | ASCII 2 |
| | ASCII 3 |
| | ASCII 4 |
| | ASCII 5 |
| | ASCII 6 |
| | ASCII 7 |
| | ASCII 8 |
| | ASCII 9 |
| | ASCII + |
| | ASCII - |
| | UDK F6 |
| | UDK F7 |
| | UDK F8 |
| | UDK F9 |
| | UDK F10 |
| | UDK F11 |

| | |
|--|-----------------------------|
| | UDK F12 |
| | UDK F13 |
| | UDK F14 |
| | UDK F15 |
| | UDK F16 |
| | UDK F17 |
| | UDK F18 |
| | UDK F19 |
| | UDK F20 |
| | Text 1 (User Text) |
| | Text 2 (User Text) |
| | Text 3 (User Text) |
| | Text 4 (User Text) |
| | Text 5 (User Text) |
| | Text 6 (User Text) |
| | Text 7 (User Text) |
| | (Text 8 (User Text) |
| | Text 9 (User Text) |
| | Text 10 (User Text) |
| | Text 11 (User Text) |
| | Text 12 (User Text) |
| | Text 13 (User Text) |
| | Text 14 (User Text) |
| | Text 15 (User Text) |
| | Text 16 (User Text) |
| | Text 17 (User Text) |
| | Text 18 (User Text) |
| | Text 19 (User Text) |
| | Text 20 (User Text) |
| | VScroll Toggle |
| | HScroll Toggle |
| | HScroll Left (Page) |
| | HScroll Right (Page) |
| | VScroll Top (Page) |
| | VScroll Down (Page) |
| | Scroll Upper Left quadrant |
| | Scroll Upper Right quadrant |
| | Scroll Lower Left quadrant |
| | Scroll Lower Right quadrant |
| | Scroll Center quadrant |
| | Scroll Cursor Center |
| | Scroll Cursor Visible |
| | HScroll Left (End) |
| | HScroll Right (End) |
| | VScroll Top (End) |

| | |
|---|--|
|  | VScroll Down (End) |
|  | Home page (HTML) |
|  | Go Back (HTML) |
|  | Go Forward (HTML) |
|  | Page refresh (HTML) |
|  | SIP Up (HTML) |
|  | SIP Down (HTML) |
|  | Red / Blue Meta key press state info |
|  | Yellow / Green Meta key press state info |
|  | Device Serial Number |
|  | Device MAC address |
|  | Device IP address |

| | |
|---|--|
|  | Battery charge level |
|  | Time |
|  | Enables barcode scan trigger |
|  | Scanner enabled status |
|  | Battery strength meter |
|  | RF Strength meter (tower) |
|  | RF Strength meter (steps) |
|  | Run Script 1 |
|  | Run Script 2 |
|  | Run Script 3 (and so on until Run Script 20) |

Create a Custom KeyBar

- In the KeyBar Cycle tab, add a Custom Bar to the KeyBar Cycle
- In the Custom Bar tab, select the Custom Bar that you want to configure
- Select the Key or operation that you want to appear on this custom bar
- Tap "Add to Above". The selected key / operation will appear in the list.
- Delete unwanted keys by selecting them and tapping "Delete".

You can add up to a total of 9 key buttons on each Custom Bar (Fewer on some devices). The entry for "Previous KeyBar" cannot be removed and must exist in each KeyBar to allow for "cycling" between KeyBars. Typically, the last key should be "Next KeyBar" for cycling to the next KeyBar.

With this version you can also add informational / status buttons for Meta key states, RF and Battery strength, scanner status etc. These status buttons can be interspersed with normal Keybar action buttons and are configured the exact same way.

One powerful capability of the KeyBar is the ability to associate keys with the User Text values. Key entries "Text 1" through "Text 20" are tied to the corresponding twenty entries in the User Text. Thus if you have a text string configured in the User Text, this string can be submitted to the host application by tapping on the "Text X" key in a Custom KeyBar. Tapping this key will send the complete text string to the current cursor location. For VT terminal sessions, escape sequences can be added to the User Text. This allows users to configure custom escape sequences as required by their host applications.

Escape sequences can be entered into the User Text in the following format:

```
\e = Escape
\n = Newline
```

```

\r = Enter or Return
\t = Tab
\xDD = Hexadecimal value

```

Customize User Text

User Text is any arbitrary text that may be configured so that this does not have to be spell typed using either the hardware keys or the soft input panel on the device. You can associate the user text strings with the either software button keys on the Configurable Keybar or hardware keys. User text strings can be any escaped text string, escape sequence or Naurtech ID action (IDA) codes. Please refer to the “User Text” section under Options configuration.

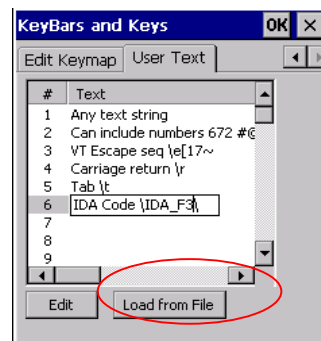
Text strings do not have to be created on the device. You can create a simple text file, copy this file to the device and “load” your text strings from this file. Each text entry should be on a separate line. An example is shown below.

```

Any text string
Can include numbers 672 #@
VT Escape seq \e[17~
Carriage return \r
Tab \t
IDA Code \IDA_F3\

```

Text file



The user text entries are automatically assigned a numeric order value. This is for representation only. This order numbering value is not part of the user text. Once configured the user text entries are referenced as **Text n** within CETerm configuration, where **n** is the assigned order number. In our example above, text entry **Text 4**, within CETerm, will be associated with the text string “Carriage return \r”

You can also edit the text strings directly on the device.

REMAPPING APPLICATION KEYS

Most Windows Mobile devices have hardware application keys (buttons) that may be associated with installed applications. These keys may be used to launch associated applications. It is possible to remap these buttons to perform application or emulation actions. This remapping is valid only while the Naurtech client is running.

Follow these steps to remap your device application keys to host keys or application operation.

1. From the application menu, select [Session] [Configure] to open the configuration dialog.
2. Select the [Options] tab
3. Select [Config Keybars and Keys] button. This will open another tabbed dialog.
4. Select the [App Keys] tab
5. Enable the checkbox "**Remap Application Keys**". If this check box is not enabled, device application keys will not be remapped
6. From the "**Key**" dropdown box, select the device application key that you wish to remap to an emulation host key or TE client operation
7. From the list box "**Select key action below:**" select the action association
8. To remap other device application keys, repeat steps 6 and 7.

NOTE: If any of the device application keys is associated with the Windows Mobile "Record" application, then this association must be changed. Otherwise, the remap configuration for that key may not work. You can use the "Buttons" applet to change this association.

- From the "Start" menu, select "Settings". This will launch the device control panel
- Select the [Personal] tab
- Run the "Buttons" application
- Under the button assignment list box, look for the device application button, which has an association with "Record". Highlight this button
- From the "Button assignment:" dropdown list, select anything but "Record" to change the device application key association
- Now proceed with the application key remapping procedure described above.

3270 HOST KEY DESCRIPTIONS

ATTN

The Attention key interrupts the host application.

SYS_REQ

The System Request key gives context to the System Software such as the SSCP (System Services Control Point)

CLEAR

The Clear key causes a CLEAR Attention Identifier key to be sent to the host and the host responds according to the host application.

RESET

The Reset key resets the terminal. Depending upon the current state, it removes the host application from a keyboard inhibit state, terminates the System Request functions and exits terminal from insert mode.

ERASE INPUT

This key clears all unprotected input fields and moves the cursor to the beginning of the first input field.

ERASE to END OF FIELD (EOF)

This key erases all data in an input field from the current cursor location to the end of the input field

DELETE

The Delete key deletes data from an input field. When you press this key, the character at the cursor location is deleted, and all characters to the right of the cursor shift one position to the left.

INSERT

This key toggles the insert mode on and off. In insert mode, characters are inserted at the current cursor location if space is available. The characters to the right of the cursor are shifted one character position to the right.

HOME

This key repositions the cursor to the first input location of the first input field.

TAB or NEXT

This key moves the cursor forward to the next input field. When the cursor is not on an input field it moves to the next input field from the current cursor location.

BACKTAB or PREVIOUS

This key moves the cursor back to the previous input field. When the cursor is not on an input field, the cursor moves to the previous input field from the current cursor location. This key is equivalent to [Shift] [Tab].

ENTER

The Enter key submits control to the host application.

NEW LINE

This function moves the cursor to the first input field on the next line.

PA1, PA2, PA3

The PA1 through PA3 keys communicate with the host application. Their use is defined by the host application.

PF1 - PF24

The Program Function keys PF1 - PF24 communicate with the host application. Their use is defined by the host application.

5250 HOST KEY DESCRIPTIONS

ATTN

The Attention key interrupts the host application.

SYS_REQ

The System Request key gives context to the System Software such as the SSCP (System Services Control Point)

CLEAR

The Clear key causes a CLEAR Attention Identifier key to be sent to the host and the host responds according to the host application.

RESET

The Reset key resets the terminal. Depending upon the current state, it removes the host application from a keyboard inhibit state, terminates the System Request functions and exits terminal from insert mode.

ERASE INPUT

This key clears all unprotected input fields and moves the cursor to the beginning of the first input field.

ERASE to END OF FIELD (EOF)

This key erases all data in an input field from the current cursor location to the end of the input field

FIELD MINUS

This key causes the cursor to advance to the next field and a minus sign is inserted in the last position of a signed numeric-only field.

FIELD PLUS

This key causes the cursor to exit an input field and insert null characters from the current cursor location to the end of the field.

FIELD EXIT

This key behaves similar to the Field Plus key. It causes the cursor to exit an input field and insert null characters from the current cursor location to the end of the field.

ROLL UP

The Roll Up key sends a request to the host computer to roll up the information on the display.

ROLL DOWN

The Roll Down key sends a request to the host computer to roll down the information on the display.

DUP

This DUP key is used to insert DUP characters in a field for host processing.

FIELD MARK

The Field Mark key is used to insert a Field Mark character in a field for host processing.

DELETE

The Delete key deletes data from an input field. When you press this key, the character at the cursor location is deleted, and all characters to the right of the cursor shift one position to the left.

INSERT

This key toggles the insert mode on and off. In insert mode, characters are inserted at the current cursor location if space is available. The characters to the right of the cursor are shifted one character position to the right.

HOME

This key moves the cursor to the first input location of the first input field.

TAB or NEXT

This key moves the cursor forward to the next input field. When the cursor is not on an input field it moves to the next input field from the current cursor location.

BACKTAB or PREVIOUS

This key moves the cursor back to the previous input field. When the cursor is not on an input field, the cursor moves to the previous input field from the current cursor location. This key is equivalent to [Shift] [Tab].

ENTER

The Enter key submits control to the host application.

NEW LINE

This function moves the cursor to the first input field on the next line.

PA1, PA2, PA3

The PA1 through PA3 keys communicate with the host application. Their use is defined by the host application.

PF1 - PF24

The Program Function keys PF1 - PF24 communicate with the host application. Their use is defined by the host application.

VT HOST KEY DESCRIPTIONS

The following legend is used to indicate escape sequence values associated with various keys:

Bold Orange Indicates 7 bit ASCII mode
Bold blue Indicates 8 bit ASCII mode

HOLD

The Hold key has no current action.

ENTER

The Enter or Return key transmits either a carriage return (CR) character or a carriage return and line feed (LF) character, depending on the VT configuration.

COMPOSE CHAR

The Compose Character key does not transmit a code. Pressing the Compose character key starts a compose sequence which is used to generate characters that cannot be typed directly from the keyboard. Because accented characters are accessible from the SIP, this key is not implemented.

TAB

The TAB key transmits a tab character .

DELETE

This key transmits a DEL character.

FIND

This key transmits the escape sequence **ESC [1 ~** or **CSI 1 ~**

INSERT HERE

This key transmits the escape sequence **ESC [2 ~** or **CSI 2 ~**

REMOVE

This key transmits the escape sequence **ESC [3 ~** or **CSI 3 ~**

SELECT

This key transmits the escape sequence **ESC [4 ~** or **CSI 4 ~**

PREV SCREEN

This key transmits the escape sequence **ESC [5 ~** or **CSI 5 ~**

NEXT SCREEN

This key transmits the escape sequence **ESC [6 ~** or **CSI 6 ~**

PF1 – PF4

The numeric keypad keys PF1 through PF4 transmit the following escape sequences

| Key | ANSI Mode | VT 52 Mode |
|-----|--------------------------------|------------|
| PF1 | SS3 P or ESC O P | ESC P |
| PF2 | SS3 Q or ESC O Q | ESC Q |
| PF3 | SS3 R or ESC O R | ESC R |
| PF4 | SS3 S or ESC O S | ESC S |

The 5 keys F1-F5 on a VT terminal are local function keys and do not send codes. When a device has physical keys for F1-F5, we send PF1-PF4 for the corresponding F1-F4 and send a custom escape sequence for F5, which depends on the device.

VT KEYS ESCAPE SEQUENCE TABLE

The following table shows the default association of escape key sequence with action for VT emulation within CETerm. There are no spaces in the key code sequence. Both 7 bit and 8 bit escape sequences are shown.

| Key | 7 Bit Escape Sequence | | 8 Bit Escape Sequence | |
|--------------------|-----------------------|----------------|-----------------------|-------------|
| | Code | Hex | Code | Hex |
| Line Feed | <10> | 0A | <10> | 0A |
| Enter | <13> | 0D | <13> | 0D |
| Backspace (Delete) | <127> | 7F | <127> | 7F |
| Backspace | <8> | 08 | <8> | 08 |
| Tab | <9> | 09 | <9> | 09 |
| Back Tab | <Esc>[Z | 1B 5B 5A | <155>Z | 9B 5A |
| Up Arrow | <Esc>[A | 1B 5B 41 | <155>A | 9B 41 |
| Down Arrow | <Esc>[B | 1B 5B 42 | <155>B | 9B 42 |
| Left Arrow | <Esc>[D | 1B 5B 43 | <155>C | 9B 43 |
| Right Arrow | <Esc>[C | 1B 5B 44 | <155>B | 9B 44 |
| VT PF1 | <Esc>OP | 1B 4F 50 | <143>P | 8F 50 |
| VT PF2 | <Esc>OQ | 1B 4F 51 | <143>Q | 8F 51 |
| VT PF3 | <Esc>OR | 1B 4F 52 | <143>R | 8F 52 |
| VT PF4 | <Esc>OS | 1B 4F 53 | <143>S | 8F 53 |
| F5* | <Esc>[M | 1B 4F 4D | <143>M | 8F 4D |
| F6 | <Esc>[17~ | 1B 5B 31 37 7E | <155>17~ | 9B 31 37 7E |
| F7 | <Esc>[18~ | 1B 5B 31 38 7E | <155>18~ | 9B 31 38 7E |
| F8 | <Esc>[19~ | 1B 5B 31 39 7E | <155>19~ | 9B 31 39 7E |
| F9 | <Esc>[20~ | 1B 5B 32 30 7E | <155>20~ | 9B 32 30 7E |
| F10 | <Esc>[21~ | 1B 5B 32 31 7E | <155>21~ | 9B 32 31 7E |
| F11 | <Esc>[23~ | 1B 5B 32 33 7E | <155>23~ | 9B 32 33 7E |
| F12 | <Esc>[24~ | 1B 5B 32 34 7E | <155>24~ | 9B 32 34 7E |
| F13 | <Esc>[25~ | 1B 5B 32 35 7E | <155>25~ | 9B 32 35 7E |
| F14 | <Esc>[26~ | 1B 5B 32 36 7E | <155>26~ | 9B 32 36 7E |
| F15 / Help | <Esc>[28~ | 1B 5B 32 38 7E | <155>28~ | 9B 32 38 7E |
| F16 / Do | <Esc>[29~ | 1B 5B 32 39 7E | <155>29~ | 9B 32 39 7E |
| F17 | <Esc>[31~ | 1B 5B 33 31 7E | <155>31~ | 9B 33 31 7E |
| F18 | <Esc>[32~ | 1B 5B 33 32 7E | <155>32~ | 9B 33 32 7E |
| F19 | <Esc>[33~ | 1B 5B 33 33 7E | <155>33~ | 9B 33 33 7E |
| F20 | <Esc>[34~ | 1B 5B 33 34 7E | <155>34~ | 9B 33 34 7E |
| Find | <Esc>[1~ | 1B 5B 31 7E | <155>1~ | 9B 31 7E |
| Insert Here | <Esc>[2~ | 1B 5B 32 7E | <155>2~ | 9B 32 7E |
| Remove | <Esc>[3~ | 1B 5B 33 7E | <155>3~ | 9B 33 7E |
| Select | <Esc>[4~ | 1B 5B 34 7E | <155>4~ | 9B 34 7E |
| Previous Screen | <Esc>[5~ | 1B 5B 35 7E | <155>5~ | 9B 35 7E |
| Next Screen | <Esc>[6~ | 1B 5B 36 7E | <155>6~ | 9B 36 7E |

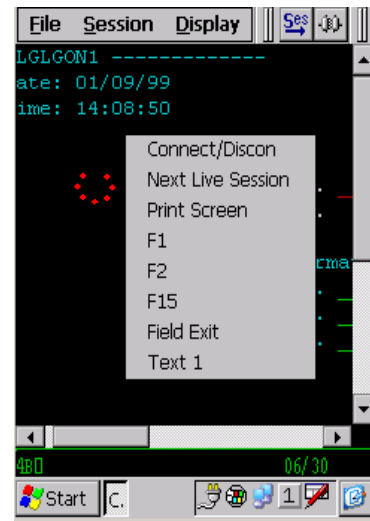
* F5 key is undefined by VT specifications. It can be remapped to any escape sequence.

CREATING CONTEXT MENUS

If configured, you can tap and hold your stylus anywhere within the terminal display area of your device to invoke a context menu. This menu can be customized with specific entries. A special context menu is invoked when the user taps and holds the stylus in to top left edge of the display screen. This special context menu is never disabled.

Configurable Keybar **Custom Keys 6** is associated with the Context menu. Any actions associated with **Custom Keys 6** shows up in the context menu when it is enabled. To enable the context menu

1. Navigate to [Session] -> [Configure] -> Options tab -> [Configure KeyBars and Keys] -> [Custom Bar]
2. Enable the **Enable Custom Context Menu** checkbox
3. Add the desired key operations which you want to appear in the Context Menu to Custom Keybar **Custom Keys 6**
4. To trigger the Context Menu, tap and hold the stylus anywhere on the terminal display area. Appearance of a red dotted circle, as shown in the screenshot, indicates that the Context Menu is being invoked. Hold the stylus until the menu appears.



NOTE: If you have a User Text entry in the context menu, it appears as "Text x" where x is the user text entry order number. The actual value of the User Text is not shown since this can be too long to display.

Hotkey shortcuts

All Naurtech smart clients have several predefined hot keys. These may normally be used with devices that have a keypad. The following table lists the default hotkeys. On some devices, [Ctrl] [Shift] may be replaced by [Alt] or [Alt] [Shift]

| Hotkey | Description |
|-----------------------|--|
| [Ctrl] [Shift] [C] | Connect to the host |
| [Ctrl] [Shift] [D] | Disconnect a connected host session |
| [Ctrl] [Shift] [M] | Hides or displays the command menu bar |
| [Ctrl] [Shift] [B] | Display the command menu bar at the bottom |
| [Ctrl] [Shift] [K] | Configure host session |
| [Ctrl] [Shift] [Up] | Increase font size |
| [Ctrl] [Shift] [Down] | Decrease font size |
| [Ctrl] [Shift] [!] | Toggle between bold and normal font |
| [Ctrl] [Shift] [P] | Display or Hide SmartPad |
| [Ctrl] [Shift] [I] | Display or Hide Text Input Tool |
| [Shift] [Up] | Scroll up one row |
| [Shift] [Down] | Scroll down one row |
| [Shift] [Left] | Scroll left one column |
| [Shift] [Right] | Scroll right one column |
| [Ctrl] [Shift] [X] | Exit the emulator |
| | |

Access Control / Device Lockdown

In certain workflow scenarios, there is a need to prevent users from being able to change the application configuration. Further there may be a requirement to prevent users from exiting the application or launching other applications on the Windows CE device. The Access Control features address these needs. Refer to the Options configuration section for details on configuring these features.

Access control functionality allows for the following:

- Administrators can password protect access to session configuration settings. This prevents users from changing the application configuration
- Prevent users from invoking another application. This is done by disabling the Start menu button.
- Prevent users from exiting the application.

Please refer to the Quick reference and configuration sections of this manual for details on configuring this functionality.

Device Lockdown

You can lock down your device by configuring the following three options. These will prevent the user from exiting the smart client, launching any other application, or changing the configuration.

- Hide the Start button / Start bar
 - Disable application exit
 - Set a configuration access password
1. Navigate to [Session] -> [Configure] -> [Options] -> [Advanced] -> [Access Control]
 2. Check "Hide Start Bar" checkbox
 3. Check "Disable App Exit" checkbox
 4. Tap the "Set Password" button and enter a configuration access password. Hit OK
 5. Tap the "Exit Now" button in the Advanced Options dialog.
 6. Launch CETerm. You will be in full screen mode, with no access to any application menu or Start Bar

NOTE: On Windows CE, "Hide Start button" will disable the Start button but leave the start bar. Under Windows Mobile, it will remove the button and also remove the "Smart Minimize" (x) button. You can also select "Hide Start Bar", which will remove the whole start navigation bar.

Full Screen Mode

You can configure the Naurtech smart client such that all device and application control menus are hidden and the whole display area is occupied by the terminal screen.. This is the full screen mode. To set up the full screen mode, you need to do the following:

- Hide application menu
- Hide application Toolbar and Keybars
- Hide Start bar

To configure full screen mode follow these steps

1. Go to [Session] -> [Configure] -> [Display] -> [Advanced] -> [Hide/Show]
2. Enable the checkboxes “Hide Menu Bar”, “Hide Keybar” and “Hide Toolbar”.
3. Hit OK
4. Go to [Session] -> [Configure] -> [Options] -> [Advanced] -> [Access Control]
5. Enable the checkbox “Hide Start Bar”
6. Hit OK all the way out

Your display area will be completely occupied by the terminal display window.

Accessing configuration dialogs from Full Screen mode

When configured in full screen mode, the whole device display area is occupied by the terminal. The user does not have access to the Windows CE Start button. The application menu and toolbars are all hidden.

You can still access configuration dialogs via a special Context Menu. If you tap and hold the stylus very near the top left edge of the display screen, you will see a context menu appear. If the Start bar is visible, then tap and hold on the top left edge just below the Start bar. Your choices will be “Connect”, “Configure” and “Program Exit”.

Choosing Configure will bring up the configuration dialog. If you have a configuration password, you will be required to enter this, prior to gaining access to the configuration dialogs.

The screenshot on the right shows the top left area, which will invoke the special context menu. This is circled in red.



International Character Set & Code Pages

In terminal emulation, support for international languages can be provided in two areas. They include (1) localizing the application and (2) input and display of language specific characters. Localization means that application dialogs; menus and other widgets are translated into the specific language. Currently, Naurtech clients are only provided with English menus and dialogs. However, we provide rich support for the display and processing of host applications in international languages.

For IBM emulations (3270 and 5250), this support is provided via code pages. International language support for VT emulations is provided through the National Replacement Character set, MBCS (Multi Byte Character set Encoding), SBCS (Single Byte Character set Encoding) and UTF-8 encoding

A codepage is a list of selected character codes in a certain order. Codepages are usually defined to support specific languages or groups of languages, which share common writing systems. For example, codepage 1253 provides character codes required in the Greek writing system. The order of the character codes in a codepage provides the appropriate character code for an application when a user presses a key on the keyboard. When a new codepage is loaded, different character codes are provided to the application.

Codepages can be changed on-the-fly by the user, without changing the default language system in use on the device. Language specific fonts are required to be installed on the device, to correctly display the character glyphs for the codepage language.

Code pages for IBM emulations (3270 & 5250)

In order to display European language character set for IBM (3270 and 5250) emulations, you will need to install the corresponding language code page. You can download a CAB file associated with your code page from the support section of our website and install this on your device. The code page will then appear as a selection in the list under [Session] -> [Configure] -> [Advanced] -> [IBM Options]. By default, only IBM037 codepage (US English) is enabled.

The following is a list of available code pages. If you have a need for a codepage, which is not available on this list, please contact us at support@naurtech.com

| Language | Codepage * | Codepage CAB |
|------------|------------|------------------------------|
| US English | 037 | IBM01140.CAB |
| Austrian | 273 | IBM01141.CAB |
| German | 273 | IBM01141.CAB |
| Danish | 277 | IBM01142.CAB |
| Norwegian | 277 | IBM01142.CAB |

| | | |
|------------------------|-------------|------------------------------|
| Finnish | 278 | IBM01143.CAB |
| Swedish | 278 | IBM01143.CAB |
| Italian | 280 | IBM01144.CAB |
| Spanish | 284 | IBM01145.CAB |
| UK English | 285 | IBM01146.CAB |
| French | 297 | IBM01147.CAB |
| Belgian | 500 | IBM01148.CAB |
| Icelandic | 861 | IBM861.CAB |
| Poland Romania Hungary | 870 | IBM870.CAB |
| Greek | 875 | IBM875.CAB |
| Swiss | 871 | IBM01149.CAB |
| Turkish | 1026 | IBM01026.CAB |
| Thai | 838 | IBM838.CAB |
| Multinational | 256 | IBM256.CAB |
| Cyrillic | 1154 / 1381 | IBM1154.CAB |

For VT emulations, you need to install the correct codepage on the device and select this language option from [Session] -> [Configure] -> [Advanced] -> [VT Extensions]

Code pages for VT emulations

For VT emulations, we support native Windows CE codepages, which are already installed on the device.

Asia Pacific language character sets

International character sets for Asian languages such as Chinese (Simplified and Traditional), Japanese, Korean, Thai etc. are supported for VT emulations only. This allows users to view the host text in the international language character set. This functionality for VT emulation also supports European language character sets. All application menus and dialogs still remain in English.

Follow these steps to configure your terminal to be able to display Asia-Pacific language character set:

1. Go to [Session] [Configure] [Connection]
2. Make sure that the Host Type selected is VT220
3. Go to [Advanced] [VT Extensions] under the Connection configuration
3. Select the encoding mode. This indicates the type of encoding which is sent by the host for display of the international language character set. For VT emulation, your choices

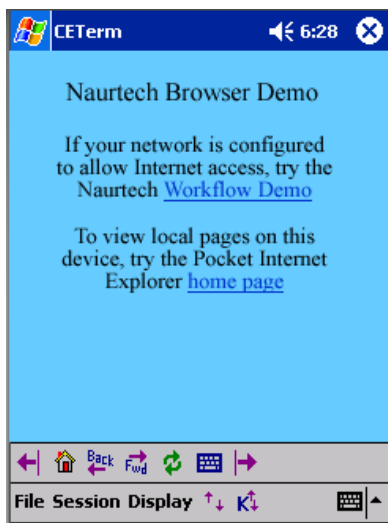


- can be SBCS (Single Byte Character Set), DBCS (Double Byte Character Set), or UTF-8 encoding. If you are unsure, speak to your VT host application administrator.
4. Depending upon your encoding selection, the “Code Page” combo box will dynamically populate itself with all code pages available on your device. These code page numbers are well defined. Code page for the desired language must be pre-installed on the device. Not all devices contain double-byte code pages. UTF-8 does not require a codepage
 5. Hit OK all the way out and Connect to your host

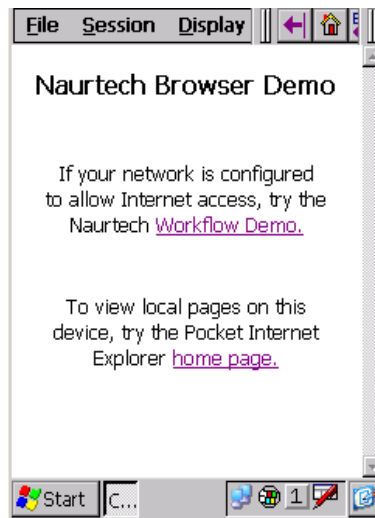
HTML Browser Sessions

One of the best value propositions, for upgrading to Windows CE or Windows Mobile handheld devices is the multi-application versatility and graphical user interface. The devices provide a migration path from legacy host applications, using text based terminal emulation to web-based applications with rich content. Previously the only solution to this mixed use was to run both a terminal emulation client, and the Pocket IE browser as two separate applications. This scenario can be a recipe for disaster in a controlled access environment.

Using the integrated Data Collection Web Browser, you can run browser sessions along side terminal emulation sessions in any combination. Now a user can have both terminal emulation and web applications together within a single application. You get the application features, access control, and peripheral support of Naurtech emulators for your web based application. Here are some of the benefits of the Naurtech integrated browser:



Windows Mobile



Windows CE

- **Full Screen readability and Context Menus.** You can hide the “Start” bar and application menu to maximize usage of your screen real estate giving you the full 320 x 240, ¼ VGA screen for display. “Tap and hold” Context Menus are available for application control
- **Operating System Lockout.** The address and navigation bars are inaccessible within the HTML browser sessions. The application may be configured to prevent users from exiting the application, launching any other application, or browsing to unauthorized websites. This locks down the device completely.
- **SIP Control.** The Soft Input Panel (SIP) popup can be fully controlled.
- **Tab Key.** Within Pocket IE, you are not able to use the Tab key to jump from one input field to the next. A TAB will not work in a barcode post-amble to jump to the next field after filling the current field. This results in compromised usability. The Naurtech browser fully supports

Tab and Back Tab navigation with native HTML text objects. Tabs also work in the barcode post-ambles.

- **Device and Peripheral Control.** Full control over barcode scanner and other peripherals (MSR, Smart Card Reader etc.) for browser based applications. Using HTML meta-tags, you can programmatically invoke any application operation from a web page.
- **Parse scanner decoded data.** Web applications can have the ability to validate, manipulate and parse the barcode scan data. A single 1D or 2D barcode can automatically be read into multiple input fields within a web form.
- **Associate Keypad hardware keys.** Touch screen navigation may not be suitable in every ADC solution. Therefore CETerm provides the ability to associate a menu option, URL, text string or any application operation to a hardware key
- **Single Application.** You do not need to run two separate applications for legacy TE and web based applications. Eliminates the need to support two separate applications
- **Multiple HTML Sessions.** You can run multiple simultaneous web applications and quickly switch between them. With other browsers, you can only have one web application active
- **Invoke Java Script functions.** Using embedded HTML meta-tags, you can invoke java script functions on the HTML page, based on various triggers such as page load, input selection, button press etc.
- **Full support of Symbol and Intermec meta-tags.** We fully support Symbol and Intermec proprietary HTML meta-tags. In addition there are many Naurtech meta-tags that allow for further device configuration, control and notification.

Please refer to the Connection configuration section for details on how to configure a connection to a web server.


NOTE: This section provides just an introduction to this powerful new capability within our smart clients. Separate documentation for the Web browser sessions, including HTML samples, is available on our website (www.naurtech.com)

Macros

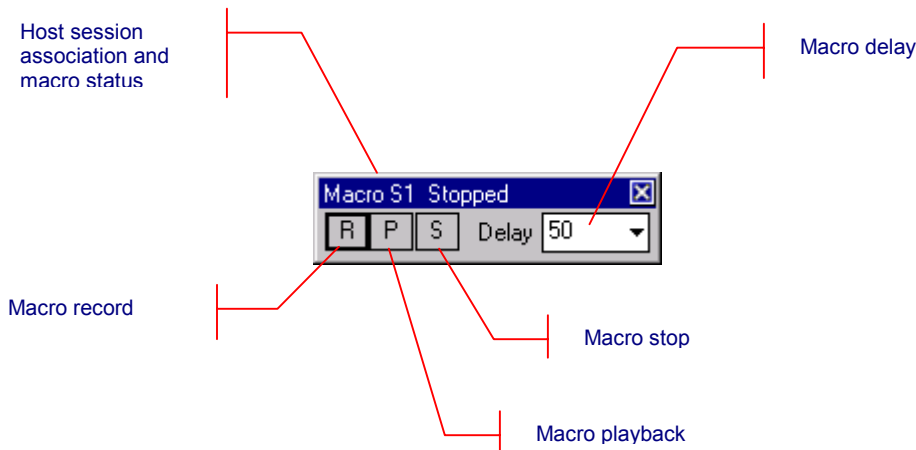
You can use macros to automate navigation across multiple host screens within a session. One simple use of macros is to automate the login sequence to the host application. Naurtech smart clients provide a Macro toolbar to control all macro operations. After recording a macro you can play this recorded macro any number of times.

Because user input and host response is specific to the host application, macros are specific to the host application in use. In addition, macros are sensitive to the network propagation delay, which may vary with every connection to the host. Naurtech smart clients use a complex algorithm to record and playback a macro to account for various network and host application delays.

Each macro is associated with a specific host session. Only one macro may be recorded for each session. Re-recording a macro for a session will overwrite the previously recorded macro.

You can invoke the Macro toolbar from the application menu by selecting [Display] [Macro]. You may also tap the "Macro " button  on the toolbar.

Tip: You may use the Macro hotkey [Ctrl] [Shift] [S] to invoke this operation





Macro Status: The macro toolbar window title displays the host session association and current status of the macro. Macro status may be "Stopped", "Recording" or "Playback".

Delay: Due to parameters such as network propagation delays, host application response times may vary slightly with every host session connection. This slight variation in response times can contribute to the failure of a macro during playback. The "Delay" attribute is a forced delay inserted during playback between sending recorded keystrokes and receiving host application responses. Increase the delay timing when interacting with slower host systems or over a slower network. The maximum delay that may be entered is 1600 milliseconds (1.6 seconds)


RECORDING

Prior to recording a macro it is helpful to rehearse the desired actions. To record a macro, follow these steps.

- Configure and connect a terminal session to the host application
- Invoke the macro toolbar
- Tap the “Record” button  to start recording the macro. Focus will shift to the terminal application. The Macro toolbar title status will change to “Recording...”. You can interact with the host application as you would normally by entering text and host keys and getting response screens.
- During the recording phase, all inputs are saved. Once you are done navigating the host screens, you can stop recording by tapping the “Stop” button 
- The macro is automatically saved for the current active session. No explicit save is required.

PLAYBACK

You must successfully record a macro prior to playing it back. Macro playback must be invoked at the exact same point, within the host application, at which the recording started. Attempting a macro playback at any other point will most likely fail except for trivial text entry. To playback a macro, follow these steps.

- Connect to the host application on the session for which the macro was recorded. Navigate to the starting point within the host application at which the macro was recorded. This may be the opening screen if the macro is used to auto-login.
- Invoke the macro toolbar
- Tap the “Playback” button  to start playing the macro. Focus will shift to the terminal application. The Macro toolbar title status will change to “Playback...”. The macro toolbar will hide. You will see the cursor relocate and keystrokes automatically being typed. The host application will respond. The macro playback engine will appropriately wait until all host response is received and then type subsequent recorded keystrokes to navigate across additional host screens.
- It is recommended that you review your recorded macro to ensure that it successfully runs to completion.

WARNING: Playback of macros is sensitive the host screen and associated keystrokes. Do not press any extraneous keys or the macro playback might fail. Macro playback should be started at the point where recording started.

By default the Macro toolbar will not be visible when you are playing a macro. If you want the macro toolbar to be visible when the macro is playing, please check the “Show Macro on Play” checkbox under [Session] [Configure] [Display] [Advanced] [Hide/Show].

AUTOMATIC LOGIN

You can automate the login process to a host application for a given session. To do so, configure the host terminal session.

- Starting at the first screen, record a macro for logging into the host application and navigating to the desired host application screen.
- Logout and playback the macro manually, using the macro toolbar, to ensure it works properly.
- Once satisfied, check the “Macro on Connect” option. You can do this from the “Advanced” dialog of the “Connection” tab from the [Session] [Configure] dialog.

CREATING A MINI-MACRO

Within the Naurtech smart clients, most application operations have an associated ID Action (or IDA) code defined. These IDA codes can be chained to create a sequence of events, which is called a mini macro. This sequence of events can be remapped to any key.

You can use the User Text configuration to define a sequence of IDA operations which will get executed in serial order. This is a mini-macro. To create your mini macro:

1. Navigate to [Session] -> [Configure] -> [Options] -> [Config KeyBars and Keys] -> [User Text]
2. Enter your IDA sequences for **Text n** entries, where **n** is an index number between 1 and 64. The syntax is demonstrated via examples below.
3. Now you can remap **Text n** to any application, hardware or KeyBar key. Note that there are KeyBar buttons only for Text 1 through 20

```
Text 1 = \IDA_SESSION_S1\\IDA_SLEEP_5000\\IDA_SESSION_CONNECT\
```

In the example above, Text 1 will trigger the following operations in order:

- It will switch to session S1
- Wait for 5 seconds (5000 milliseconds)
- Attempt to connect to the configured host on this session

```
Text 2 = \IDA_SESSION_DISCON_ALL\\IDA_PROGRAM_EXIT\
```

In the example above, Text 2 will trigger the following operations in order:

- Disconnect all connected host sessions
- Exit CETerm application

You can join several IDA actions to create an elaborate macro to automate application navigation steps. Please contact us at support@naurtech.com for more information on IDA codes to create mini macros.

Printing

All Naurtech smart clients support printing to a printer connected via a serial port, infrared (IrDA), Bluetooth, or over a WiFi (802.11x) network

VT PRINTING

VT terminal emulation in CETerm and CEVT220 support all VT printing commands. You can invoke VT pass-through printing to any configured printer.

For serial attached printers, make sure that your printer is attached to the serial port via a serial cable and the serial port configuration is correct. Please refer to your printer manuals for serial port configurations required by your printer.

For IrDA printing, make sure that there is a clear path between the IrDA port on the handheld and the IrDA port on the printer.

For Bluetooth printer device, you must have a terminal that is Bluetooth enabled. Some of our smart clients support automatic device discovery, you will be prompted with a list of “discovered” Bluetooth devices within range to which a print job may be redirected..

For network printing, make sure you have the correct printer queue or IP address defined for your printer configuration.

To print, issue print commands from the host application.

INTERMEC EXTENDED COMMANDS

Intermec Extended Commands are special commands implemented by the host application to control and interact with peripherals attached to the handheld device. These are generally used to transmit and receive data on the serial (RS-232) port of the device. Refer to reference documents from Intermec for details on their command set.

Extended commands can be used under 3270, 5250, and VT emulations. They can be used to print receipts or read from an attached scale or magnetic stripe reader.

PRINTING TO A NETWORK / 802.11x WiFi PRINTER

You can either use the network printer queue or directly print to an IP printer over 802.11x. All Network printer configuration is set from:

```
[Session] -> [Configure] -> [Printer] ->Network (WLAN)
```

To print to a Windows print queue follow the syntax:

```
\\MyNetworkPrintQueueName\MyPrinter
```

Prior to printing, you may be prompted to provide a username and password.

To directly route data to an IP port use the syntax:

IPAddress:port

For example if the printer IP address is 192.168.1.10 and is listening on port 2345, then you can:

1. Select "Network (WLAN)" printer connection option under [Session] -> [Configure] -> [Printer].
2. Set the Print Queue value to be **192.168.1.10:2345**
3. If you have DNS enabled, you may also use a hostname instead of the IP address

HotSpots

A HotSpot is an area on the terminal screen where a user can tap with a stylus to execute a function. This allows a user to interact with a host application without using physical keys or the KeyBar. A simple example might be the use of PF Keys. An operation associated with a PF key might be displayed on the terminal as "PF1 = Help". All Naurtech emulators automatically detect this as a HotSpot and will send a PF1 key to the host when you tap on the PF1 text on the terminal display. To invoke a hotspot, tap anywhere on the text of that hotspot. Hotspots are not user configurable.

Hotspots are supported for 3270, 5250 and VT emulations. The emulations share some forms of HotSpots, such as function keys and menus, but others depend on the type of emulation.

The following table lists some text strings that are recognized as HotSpots

| HotSpot String | Sends |
|------------------|---|
| PFx= | Function key x. where x is between 1..9 |
| PFxx= | Function key x. where x is between 10..24 |
| xx. | Menu option xx. where xx is any one or two digit number |
| Fxx= | Function key x. where x is between 1..24 |
| <Fxx>= | Function key x. where x is between 1..24 |
| Enter | Sends Enter key |
| "X. Menu choice" | Selects menu choice X |
| Double Tap | Sends Enter key |
| + | Roll Up key (5250 only) |
| - | Roll Down Key (5250 only) |
| More | Roll Down AID (5250 only) |
| Bottom | Roll Down AID (5250 only) |

NOTE: Prior to using a "menu choice" HotSpot, the cursor must be in the input field where the menu choice is submitted. (Applies to IBM emulation only.)

TIP: HotSpots are sensitive to the stylus calibration on the device. To get accurate HotSpot taps, make sure your stylus is correctly calibrated.

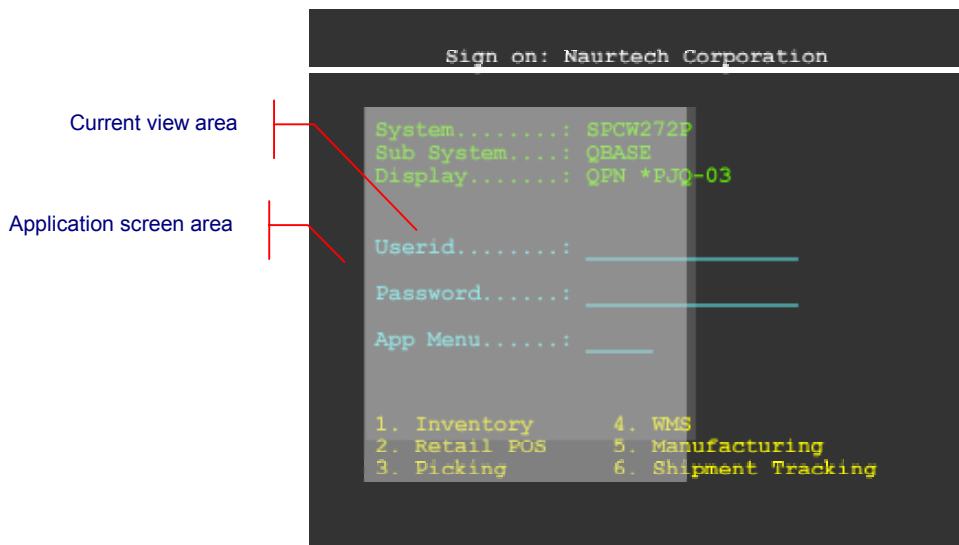
Screen Panning

Several host applications have been designed for the desktop screen form factor. These applications typically have 24 rows x 80 columns. When viewing these applications from a handheld device, only a portion of the host screen is visible because of the smaller display of the handheld device. Horizontal and vertical scroll bars are typically used to set the viewport location. As an alternative to scroll bars, the screen can be positioned by “dragging” the stylus.

Imagine the host application screen as a large sheet under the display on the handheld device. Screen Panning allows users to “tap, hold and drag” this sheet in any direction to move hidden areas of the host display into view on the handheld device without the use of scroll bars.

Follow these steps to use panning:

- Connect to a host application using the Naurtech emulator
- With the stylus, “tap and hold” anywhere on the terminal screen. Be careful not to tap on a HotSpot, if you do not also want a HotSpot action
- Drag the stylus, without lifting, to drag hidden areas of the screen into view



You can independently enable horizontal panning, vertical panning or both. This configuration is available under [Display] -> [Advanced] -> [Touch features]

SmartPads

Depending upon the terminal emulation type, certain keys may be required to navigate within the host application. The SmartPad is a soft keypad that provides access to all emulation specific keys. You can invoke the SmartPad only if the session is connected. The correct SmartPad appears for the emulation type of the current active session.

You can invoke the SmartPad from the application menu by selecting **[Display] [SmartPad]**.

You may also tap the "SmartPad " button  on the toolbar.

Tip: You may use the SmartPad hotkey **[Ctrl] [Shift] [P]** to invoke this operation

The SmartPad provides a quick and convenient access to all host keys when needed. SmartPads are not configurable dynamically. SmartPads for 3270, 5250 and VT host emulations are shown below.

| | | | | | |
|-----|-----|-----|-----|-----|------|
| F1 | F2 | F13 | F14 | Eof | Srq |
| F3 | F4 | F15 | F16 | Rst | Attn |
| F5 | F6 | F17 | F18 | Cr | NI |
| F7 | F8 | F19 | F20 | Hm | BSp |
| F9 | F10 | F21 | F22 | Tb | BTb |
| F11 | F12 | F23 | F24 | Ins | Del |
| Pa1 | Pa2 | Pa3 | EIn | Esc | Ent |


| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|------|
| F1 | F2 | F13 | F14 | EIn | Eof | Hlp | Prt |
| F3 | F4 | F15 | F16 | Srq | Attn | FEx | Sel |
| F5 | F6 | F17 | F18 | Cr | NI | F+ | F- |
| F7 | F8 | F19 | F20 | Hm | BSp | Dup | Mark |
| F9 | F10 | F21 | F22 | Tb | BTb | RUp | RDn |
| F11 | F12 | F23 | F24 | Ins | Del | | |
| Pa1 | Pa2 | Pa3 | | Rst | Ent | | |

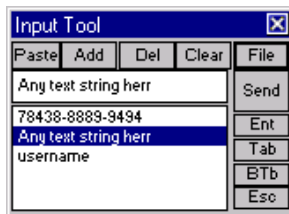
| | | | | | |
|-----|-----|-----|-----|-----|-----|
| Hld | Ent | PF1 | ESC | BS | LF |
| Cmp | Tab | PF2 | F6 | F7 | F8 |
| Brk | DEL | PF3 | F9 | F10 | F11 |
| CAN | ANS | PF4 | F12 | F13 | F14 |
| Fnd | Ins | Rem | Hlp | Do | F17 |
| Sel | Prv | Nxt | F18 | F19 | F20 |

NOTE: We recommend using the Configurable KeyBar with Custom bars to access frequently needed keys and conserve display space. The SmartPad functionality is provided for backward compatibility and will be phased out in later versions.

Text Input Tool

For Windows CE devices without a keyboard, data entry is usually performed using a stylus with the integrated soft keypad. This requires the user to spell-type text strings. This is a slow and tedious process. The Text Input Tool addresses this issue by sending complete text strings to the display window at the current cursor location. A user can record a set of often used text strings in the input tool.

You can invoke the Text Input Tool from the application menu by selecting **[Display] [Input Tool]**. You may also tap the "Input Tool" button  on the toolbar. On Pocket PC devices, the Text Input Tool may be made visible or hidden by alternatively selecting the toolbar button or hotkey.



Tip: You can also invoke the Text Input tool by using the hotkey **[Ctrl] [Shift] [I]**.

You can build your recorded list of text strings by pasting text from the clipboard (For example *[Edit][Copy]* in pocket word) directly into the Text Input Tool edit box. You can also directly type a text string into the edit box using the system soft keypad. Lastly, you can initialize this list from an ASCII text file.

Paste: Tapping the Paste button will copy any text from the clipboard into the edit box.

Add: Tapping the Add button adds any text in the edit box to the list. Blank strings are not added.

Del: Tapping the Del button deletes the currently selected text string from the list.

Clear: Tapping the Clear button clears the edit box.

File: Tapping the File button opens a dialog to select a text file that will be read to initialize the list. Each text string to be added to the list must be on a separate line delimited by a CRLF. The following file shows a sample input text file

```
78438-8889-9494
Any text string here
Username
```

We recommend that you create a file for initializing the list on your desktop PC and then copy it to the device.

Send: The Send button sends the text in the edit box to the current cursor location on the terminal display.

Enter: Is equivalent to the Enter key.

Tab: Is equivalent to the Tab key.

BTab: Is equivalent to the “back tab” or [Shift] [Tab] action.

Esc: Is equivalent to the ESC key.

Each entry in the list is preceded by an index value in the form “1. “ (Not shown in the image above.) This index, including the first space after the period, is stripped before sending. You can edit an existing list entry by selecting it, making your changes, then pressing Add. It will replace the existing entry contents with the new value. If there is no leading index value, for example on a new entry, then Add will append a new list entry.

To create an entry, which begins with text similar to an index, first create a dummy entry, then edit it to include your desired text. For example, to create an entry with the contents “1. My text”, first enter the text “new” and press Add. Assume that this becomes the third entry. Select the entry from the list and change “3. new” to “3. 1. My text”, then press Add again.

The index values are used to identify the text sent with the “Input n” keys on the KeyBar. Be careful when deleting entries. Doing so may change the text sent via an Input key. A better choice is to use the User Text feature.

Special characters can also be entered in the text. This can be especially useful under VT emulation when custom escape sequences are required. The following special characters are available:

| Operator | Meaning |
|----------|---------------------------|
| \e | ESC character/action |
| \n | Newline character/action |
| \r | Enter character/action |
| \t | TAB character/action |
| \xDD | Hexadecimal value of byte |

NOTE: The Input Tool functionality is similar to that provided by User Text. It is recommended that you use the User Text rather than the Input Tool

Command line options

All Naurtech smart clients support command line switches to launch host sessions. You can launch multiple configured sessions or one session via the following command line switch:

-Sx

where x is 1, 2, 3 or 4 to indicate one of the predefined session configurations S1, S2, S3 or S4 respectively. You can specify multiple predefined sessions on the same command line to directly connect to more than one session. For example (-S1 -S4) to connect to the 1st and 4th predefined session.

Tip: It is more convenient to use the “Auto Connect” option in the Advanced Connection dialog rather than to use the -Sx switch.

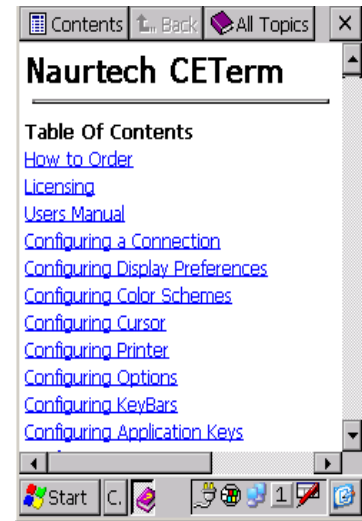
Online Help

All Naurtech smart clients have online help available on the device. This is provided through the Online Help feature of the Windows CE operating system.

You can access online help from the application menu by selecting **[File] [Help]**. Alternatively, you can invoke the device help from **[Start] [Help]** and then select "Naurtech CETerm"

You can navigate within the Online help via the Pocket Browser.

NOTE: The title in the help file, even for single emulation products (CE3270, CE5250 and CEVT220) is always indicated to be "CETerm". All content in the help file applies to all Naurtech clients.



NOTE: Although the online help is provided on the device, it is limited. For detailed explanation of features, configuration and functionality, please refer to this Users Manual, the Scripting Guide or the Web Browser Programming Reference.

Deployment: Cold Boot Setup

Since most handheld devices are diskless systems, during a cold boot, the handheld device will lose all installed applications, registry settings, shortcuts and application data. A device may cold boot for many reasons. This may be due to battery drain or hardware reset being performed by the user. If the device cold boots in a production environment, appropriate deployment setup must be in place to automatically bring the device back up in the same functional state as before the cold boot. All device settings, applications, configuration data and shortcuts should be restored automatically. Doing so is a “must have” requirement for production deployment to minimize device down time.

Since the entire device and most of the application configuration settings are maintained in the registry, a device cold boot would require complete re-configuration for all device settings such as screen calibration and network settings. Since all our smart client configurations are maintained in the registry, these will have to be reconfigured as well.

Cold boot persistence performs the following during a device cold boot:

- Automatically re-install desired applications
- Automatically restore device and application configuration settings

Currently there is no single standard procedure to restore settings on Windows CE devices after a cold boot. Although functionally similar, different manufacturers provide different procedures to achieve this functionality on their devices.

For cold boot setup, these steps should be followed in listed order. Since every device manufacturer provides a slight variation in intermediate steps during a cold boot, you should also review knowledgebase articles in the support section of our website for device specific details.

1. Calibrate device stylus and WLAN settings (SSID, WEP Key, DHCP etc)
2. Install and configure the Naurtech smart client. This includes host connection settings and any auto-login macros.
3. Copy our product CAB files to a specific location on the device compact flash card / SDMMC card
4. Run the registry backup utility. Most vendors provide a utility to backup the registry and have it automatically restore during a cold boot. The following table lists these for some of the popular device manufacturers

| Device Manufacturer | Utility |
|---------------------|---|
| Symbol | Restores any .reg file in the \Application folder; .CPY files |
| Intermec | Regflush |
| Hand Held Products | RegBackupRestore |
| CASIO | HTBackup |
| Psion Teklogix | Total Recall |

5. Cold boot the device
6. Validate device and application settings

Tip: The Naurtech tool CENERT, an Enhanced Registry Tool, can backup and restore the registry. CENERT can be used to restore the session configuration setting as well as device

and network settings. Visit our website at www.naurtech.com and go to the Knowledgebase articles on the support page for device specific details.

COPY DEVICE IMAGE

For larger deployments, it is beneficial to configure a single device and then replicate the device image settings to multiple devices. Different manufacturers provide different utilities to do this. The basic idea is the same however. To replicate a device image, you need to copy the following:

- Device settings including WLAN
- Installed applications such as the Naurtech smart client

Prior to replicating a device image to another device, please make sure that you completely configure the device, wireless network and our application settings.

If you have a registered Naurtech client license on the source device, replicating this device image to another will also copy the license key of this source device. Because your registration keys are based upon a License ID unique to each device, this will result in a licensing error message when you attempt to connect to your host application using the destination device. You will be prompted to re-register the license on the destination device with a registration key based on its License ID. To do so, enter the new registration key.

Troubleshooting

The following table helps you troubleshoot problems with Naurtech smart clients. Recommended resolutions are provided for some of the common problems.

| Problem | Resolution |
|---|--|
| I connect to the host, but my host application screen does not look right. | Make sure that you have correctly configured the "Host Type" within our application. Your Host Type emulation selected within our application must match what your host application is expecting. |
| When I run the setup application on the desktop to try to install the Naurtech TE client on my device, I get a message stating "...the target device is not supported" | This may be because of one of the following reasons. <ul style="list-style-type: none"> • The version of Windows CE running on the device may be older. We recommend upgrading the OS. • There is a mismatch in the actual target CPU platform of the device and the version of the Naurtech Smart Client you are trying to install on the device. Make sure you have downloaded and are installing the correct platform target application for your device. • The CPU of the device for the target platform is not supported. Download and install the correct version of our product which matches your device OS platform and version. |
| Can I bypass the setup application and directly install the Naurtech TE client? | Although this is not recommended, yes you can do this. All you need to do is copy the correct CAB file from your distribution to the device and double tap it. This will launch the CAB installer. Make sure that the cab file being copied corresponds to the CPU of the device. |
| I don't see the host application screen? | If you have successfully installed the application on to the device, you can launch it from the start menu. Tap the Start button and look for "Naurtech CExxxx" where CExxxx is the name of the Naurtech TE client. Make sure you have configured the IP address of the host correctly. |
| My device can ping an IP address but cannot ping a host alias address | Most likely, your DNS entries on your device for your TCP/IP network settings are either not set, or are incorrect. Setup the correct DNS server IP addresses from the "Network" applet of the control panel. Also make sure that the device is associated with the access point. |
| How can I tell the version of the Naurtech Smart Client that I have installed? | On the device, select [File] [About] from the application menu. The About dialog indicates the product name and version. |
| I cannot connect to my host application. | Make sure that the network configuration of the device is functional. Independent of our application, ping the host address that you have configured in our application. If you can ping this address, make sure you are using the correct type or terminal emulation to connect to the host application. Also make sure that you are using the correct telnet port number. This is the port number on which the host application is "listening" for client connection attempts. |
| I connect to my host application very briefly and then get disconnected | Make sure you are using the correct host emulation type. Also, some host applications do not allow multiple connections from the same client device. |
| How do I make sure that my session settings are maintained over a device cold boot / hardware reset? | Refer to the "Deployment: Cold Boot Setup" section of the manual. |
| Can I re-assign the application keys on my device to host specific key functions? | Yes you can remap device Application keys. Please refer to the "Remap Application Keys" section under Key remapping. |

| | |
|--|--|
| I cannot read the terminal screen very clearly. Is there a way to make the font bold? | Yes, there is. Change the font visibility settings on the Display configuration tab. You can change the font weight and font size. Additionally, you can also change the text and background color to enhance readability. |
| Can I change the foreground and background colors of my terminal? | Yes you can do this from the "Colors" tab under Display tab configuration. |
| Can I use a Naurtech CETerm smart client along with a virtual barcode scanner wedge application? | Yes you can. It is recommended that if you use a virtual barcode wedge application, you disable the integrated scanner control within our application. This setting is under the "Scanner" tab of the session configuration. |
| How can I check if I have a scanner-enabled version of Naurtech TE and Browser client installed? | Look for "Scanner" and "Symbology" tabs in the Session configuration dialog. If these tabs are present, the installed client has a device tailored version with integrated barcode scanning support. |
| I cannot scan barcodes. The scanner does not turn on | Make sure that you have the correct "device tailored" version of a Naurtech Smart Client installed. In the "Scanner" configuration, make sure the "Enable" checkbox is checked. |
| My barcode scanner turns on, however I cannot decode the barcodes | Make sure that the barcode symbology that you are trying to scan is enabled in the "Symbology" tab of the session configuration. |
| My scanned data is sometimes inconsistent. However when I go into [Session][Configure] and hit OK, the scanner resumes working correctly. | This typically happens when there is a conflict in initializing the scanner. Make sure there is no scan wedge application running in addition to Naurtech smart client. It is recommended, depending upon your requirements, that you either use the scan wedge application or the integrated scanner from within the Naurtech clients, but not both. |
| I recorded my macro, but it does not consistently playback to completion. Why? | Macro playback is sensitive to the host application response times and network propagation delays. These vary depending upon network traffic and concurrent host application usage. Increase the "Delay" setting for macro playback. This will give the more time for the host application to respond and you macros will playback to completion successfully. |
| How can I take a trace of my connection with my host application | You can use the HOSTSIM application to trace a host connection. Detailed instructions for using HOSTSIM are available in a knowledgebase article on the support page of the Naurtech website at www.naurtech.com |
| My device screen freezes or responds slowly | Close all applications and run these again. If this continues to happen, soft reset your device. Refer to the manufacturer's documentation for your device on how to do this. |
| The device screen is hard to read | Windows CE & Windows Mobile devices usually have backlighting, contrast and brightness controls to improve readability. Refer to the documentation from your device manufacturer on how to change these to your preference. When using Naurtech clients, you can further enhance readability by selecting color schemes, make the font bold and increase the display text point size. You can also install a new font on your device. Lastly you can also configure your device to "turn on" the backlight, when the stylus is tapped. You can control this from the "Backlight" applet from the System tab in [Start] [Settings] |
| My stylus taps seem to be giving an incorrect response | Adjust the touch screen to respond more accurately by running the screen alignment applet. You can do this by running the "Align" applet from the System tab in [Start] [Settings] |
| I would like more information on your Data Collection Web Browser and the Scripting Guide. Where are these available? | There are separate Web Browser Programmers Reference and a Scripting Guide provided. You can download these from the support section of our website. |

Glossary

3270

A well defined protocol used to communicate and control IBM mainframe display terminals.

5250

A well defined protocol used to communicate and control AS/400 display terminals.

802.11

An IEEE specification that provides interoperability between mobile clients and wireless LAN access points.

Access Point (AP)

Generally, a hardware product that bridges a Local Area Network (LAN) to a Radio Frequency (RF) network.

ASCII

A standard for assigning numerical values to the set of letters in the Roman alphabet and typographic characters.

Baud Rate

The number of bits per second transmitted between two devices.

Bar Code

A machine readable graphic image, using predefined patterns of linear bars or polygon elements to encode, typically, all of the ASCII character codes.

Clear To Send (CTS)

A serial (RS-232) signal used to control the exchange of data between the computer and a serial device. A hardware handshaking signal sent by the data communication equipment (DCE) to the data terminal equipment (DTE), which informs the DTE device it may send a message to the DCE device.

COM1, COM2, COM3, and COM4

Logical names for serial ports.

Cursor

A small rectangle or line, sometimes blinking, that indicates where characters will appear when typed.

DTR

Data Terminal Ready. An serial hardware handshaking signal sent from the data terminal equipment (DTE) indicating that it is ready for communication with the data communication equipment (DCE).

Emulation

Referred to in context of "Terminal Emulation" or "TE" where a software application is used to emulate a hardware terminal.

Emulator

The actual software program, CETerm, CE3270, CE5250, or CEVT220 that runs on a handheld device to emulate a hardware terminal.

Extended Binary Coded Decimal Interchange (EBCDIC)

An 8-bit character set, typically used in IBM mainframe environments.

Gateway

A computer device residing between a terminal device and an mainframe host to "load balance" and manage the host traffic. The term is also interchangeable used to refer to a computer device which serves as a link between two or more wide area networks.

Host Address

An address that identifies the host computer. Typically this is a numeric IP address or host name.

Host Application

An application program that runs on the host computer and is accessed from a hardware terminal or emulator.

Hot Key or HotKey

A key combination that is associated with a specific application operation.

Icon

A small graphic image displayed on the computer screen that visually represents a program applications.

IP address

An Internet Protocol address that identifies a specific computer or device on a TCP/IP network. It is represented as a 32-bit entity in dot notation such as 192.168.1.255

Local Area Network (LAN)

A group or set of physically connected computers / devices.

Logical Unit (LU)

An entity defined by IBM to represent a software element within an IBM SNA architecture. It represents a mainframe resource used to connect a terminal device

Mainframe

A large, powerful computer, which runs applications to serve many connected terminals or terminal emulation software clients.

Network Propagation Delay

The delay introduced in interactive computer communications due to routing, administration and management of data over networks.

Operator Information Area (OIA)

A single row area, typically used on IBM 3270 and 5250 terminals, that indicates the status of the terminal and the current cursor location.

Pocket PC

A version of the Windows CE graphical operating system for handheld devices. Also referred to as Windows Mobile OS.

Radio Frequency (RF)

Term used to indicate information exchange between computer devices where some or all of the communication uses radio transceivers.

Random Access Memory (RAM)

Fast computer memory used to store applications and data.

Reboot

A process to reset and restart a computer device.

Registry

A database residing in memory that is managed by the operating systems and shared by all applications on a computer device.

Response time

The time elapsed between submission of a query and receipt of a response

RTS

Request to Send. A serial handshaking signal that data terminal equipment (DTE) uses when it wants to send information to data communication equipment (DCE).

Scanner

A peripheral that enables a computer to read barcodes

Scrollbar

A graphical user interface component that is used to scroll horizontally or vertically within a window.

Serial port

A communication port used to attach a peripheral device, such as a printer.

Session

A logical interaction between a terminal device or terminal emulation application and a connected host application.

Stop bit

A data bit used in serial transmissions to signal the end of a character and indicate that the channel is idle.

Soft Input Panel (SIP)

A software key input application, typically available on Pocket PC devices

Telnet

An Internet communications protocol that enables a computer to function as a remote terminal.

Terminal

A device through which data or information can be entered or displayed interactively.

Terminal Type

A specific type or category of terminal. Generally it defines the capabilities of the terminal or terminal emulation client to the host application.

TN3270

A well defined Telnet protocol which defines the connection and interaction process for terminals to communicate with IBM 3270 mainframes.

TN5250

A well defined Telnet protocol which defines the connection and interaction process for terminals to communicate with IBM AS/400 servers.

Toolbar

A common graphical application component, consisting of a visible row of buttons which, when tapped by a stylus, cause the program to perform some action.

VT

Specifies a range of unintelligent visual terminals which are controlled using well defined protocols.

Windows CE

A graphical operating system for handheld devices

Wireless Wide Area Network (WWAN)

A wireless network extending over greater distances greater than a few miles.

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Appendix A: ID Action Codes (IDA Codes)

The following table lists all supported ID Action codes, which may be used with our Terminal Emulation and Web Browser sessions. Some IDA codes can only be used in restricted circumstances, such as IDA_URL.

| Symbolic Name | Friendly Name | Description |
|------------------------|-----------------|-------------|
| IDA_BEL | Bell | |
| IDA_BS | Backspace | |
| IDA_HT | Horizontal Tab | |
| IDA_TAB | Tab | |
| IDA_LF | Linefeed | |
| IDA_VT | Vertical Tab | |
| IDA_FF | Form Feed | |
| IDA_CR | Carriage Return | |
| Printable ASCII | | |
| IDA_SPACE | <Space> | |
| IDA_EXCLAMATION_MARK | ! | |
| IDA_DOUBLE_QUOTE | " | |
| IDA_NUMBER_SIGN | # | |
| IDA_DOLLAR_SIGN | \$ | |
| IDA_PERCENT | % | |
| IDA_AMPERSAND | & | |
| IDA_SINGLE_QUOTE | ' | |
| IDA_LEFT_PAREN | (| |
| IDA_RIGHT_PAREN |) | |
| IDA_ASTERISK | * | |
| IDA_PLUS | + | |
| IDA_COMMA | , | |
| IDA_HYPHEN | - | |
| IDA_PERIOD | . | |
| IDA_SLASH | / | |
| IDA_0 | 0 | |
| IDA_1 | 1 | |
| ... | ... | |
| IDA_9 | 9 | |
| IDA_COLON | : | |
| IDA_SEMICOLON | ; | |
| IDA_LESS_THAN | < | |
| IDA_EQUAL | = | |
| IDA_GREATER_THAN | > | |
| IDA_QUESTION_MARK | ? | |
| IDA_AT | @ | |
| IDA_A | A | |
| IDA_B | B | |
| ... | ... | |
| IDA_Z | Z | |
| IDA_LEFT_BRACKET | [| |
| IDA_BACKSLASH | \ | |
| IDA_RIGHT_BRACKET |] | |
| IDA_CARET | ^ | |
| IDA_UNDERSCORE | _ | |
| IDA_BACKTICK | ` | |
| IDA_a | a | |

| Symbolic Name | Friendly Name | Description |
|-----------------------------------|---------------------|-----------------------------|
| IDA_b | b | |
| ... | ... | |
| IDA_z | z | |
| IDA_LEFT_BRACE | { | |
| IDA_PIPE | | |
| IDA_RIGHT_BRACE | } | |
| IDA_TILDE | ~ | |
| IDA_DEL | DEL | |
| | | |
| C1 ASCII Controls | | |
| IDA_IND | Index | |
| IDA_NEL | Next Line | |
| IDA_HTS | Horiz Tab Set | |
| IDA_RI | Reverse Index | |
| IDA_SS2 | Single Shift 2 | |
| IDA_SS3 | Single Shift 3 | |
| IDA_DCS | Device Ctrl Str | |
| IDA_PU1 | Private Use One | |
| IDA_PU2 | Private Use Two | |
| IDA_CSI | Ctrl Seq Intro | |
| IDA_ST | String Term | |
| IDA_OSC | OS Command | |
| IDA_PM | Private Msg | |
| IDA_APC | App Prog Cmd | |
| | | |
| Internal Actions (TE only) | | |
| IDA_UPDATE_CURSOR | Update Cursor | |
| IDA_INHIBIT_UPDATE | Inhibit Update | Don't update display |
| IDA_UNINHIBIT_UPDATE | Uninhibit Update | Allow display update |
| IDA_UPDATE | Update | Force display update |
| IDA_INHIBIT_SEND | Inhibit Send | VT buffer characters |
| IDA_UNINHIBIT_SEND | Uninhibit Send | VT stop buffering |
| IDA_SEND_PENDING | Send Pending Chars | VT send buffered chars |
| | | |
| Program Actions | | |
| IDA_PROGRAM_ABOUT | Program About | Display About dialog |
| IDA_PROGRAM_EXIT | Program Exit | Exit program |
| IDA_PROGRAM_HELP | Program Help | Display Help |
| | | |
| IDA_SUSPEND_DEVICE | Suspend Device | Enter suspend state |
| IDA_BLUETOOTH_DISCOVERY | Bluetooth Discovery | Start discovery |
| | | |
| IDA_WARMBOOT | Warm Boot | Warm boot device |
| IDA_COLDBOOT | Cold Boot | Cold boot device |
| | | |
| IDA_MENU_TOPBOTTOM | Menu Top/Bot | Toggle menu location |
| IDA_MENU_TOGGLEHIDE | Menu Toggle | Toggle menu visibility |
| IDA_TOOLBAR_TOGGLE | ToolBar Toggle | Toggle toolbar visibility |
| IDA_START_TOGGLEHIDE | Start Menu Toggle | Toggle Start visibility |
| IDA_MENUBAR_TOGGLEHIDE | MenuBar Toggle | Toggle menubar visibility |
| IDA_SESSION_TOGGLECON | Connect/Discon | Toggle session connection |
| IDA_SESSION_CONFIGURE | Configure | Configure session |
| IDA_SESSION_CONNECT | Connect | Connect session |
| IDA_SESSION_DISCONNECT | Disconnect | Disconnect session |
| IDA_SESSION_NEXT_LIVE | Next Live Session | Switch to next live session |
| IDA_SESSION_PASSWORD | Password | Session password dialog |
| IDA_SESSION_PREV | Prev Session | Switch to previous session |
| IDA_SESSION_NEXT | Next Session | Switch to next session |
| IDA_SESSION_DISCON_ALL | Disconnect All | Disconnect all sessions |

| Symbolic Name | Friendly Name | Description |
|-------------------------|----------------------|---------------------------|
| IDA_SESSION_S1 | Session 1 | Switch to session 1 |
| IDA_SESSION_S2 | Session 2 | Switch to session 2 |
| IDA_SESSION_S3 | Session 3 | Switch to session 3 |
| IDA_SESSION_S4 | Session 4 | Switch to session 4 |
| | | |
| IDA_TOOLBAND_HIDE | Hide ToolBar | Hide full Toolbar |
| IDA_TOOLBAND_TOGGLEHIDE | Toggle ToolBar | Toggle Toolbar visibility |
| IDA_KEYBAR_HIDE | Hide KeyBar | Hide KeyBar |
| IDA_KEYBAR_TOGGLEHIDE | KeyBar Toggle | Toggle KeyBar visibility |
| IDA_KEYBAR_LEFT | Prev KeyBar | Switch to previous KeyBar |
| IDA_KEYBAR_RIGHT | Next KeyBar | Switch to next KeyBar |
| | | |
| IDA_KEYBAR_SEPARATOR | --Separator-- | Separator for KeyBar |
| IDA_KEYBAR_NONE | (Empty) | No action placeholder |
| IDA_HSCROLL_HIDE | HScroll Hide | |
| IDA_HSCROLL_VISIBLE | HScroll Show | |
| IDA_HSCROLL_TOGGLEHIDE | HScroll Toggle | |
| IDA_HSCROLL_PLUSON | HScroll Right One | |
| IDA_HSCROLL_MINUSONE | HScroll Left One | |
| IDA_HSCROLL_PLUSHALF | HScroll Right Page | |
| IDA_HSCROLL_MINUSHALF | HScroll Left Page | |
| IDA_HSCROLL_PLUSEND | HScroll Right End | |
| IDA_HSCROLL_MINUSEND | HScroll Left End | |
| | | |
| IDA_VSCROLL_HIDE | VScroll Hide | |
| IDA_VSCROLL_VISIBLE | VScroll Show | |
| IDA_VSCROLL_TOGGLEHIDE | VScroll Toggle | |
| IDA_VSCROLL_PLUSONE | VScroll Up One | |
| IDA_VSCROLL_MINUSONE | VScroll Down One | |
| IDA_VSCROLL_PLUSHALF | VScroll Up Page | |
| IDA_VSCROLL_MINUSHALF | VScroll Down Page | |
| IDA_VSCROLL_PLUSEND | VScroll Up End | |
| IDA_VSCROLL_MINUSEND | VScroll Down End | |
| | | |
| IDA_FONT_PLUS | Font Inc | Increase font size |
| IDA_FONT_MINUS | Font Dec | Decrease font size |
| IDA_TOGGLE_FONT_BOLD | Font Bold | |
| IDA_SMARTPAD_OPEN | SmartPad Show | |
| IDA_SMARTPAD_CLOSE | SmartPad Hide | |
| | | |
| IDA_SMARTPAD_TOGGLEHIDE | SmartPad Toggle | |
| IDA_SLEEP_10 | Sleep 10msec | |
| IDA_SLEEP_50 | Sleep 50msec | |
| IDA_SLEEP_200 | Sleep 200msec | |
| IDA_SLEEP_1000 | Sleep 1sec | |
| IDA_SLEEP_5000 | Sleep 5sec | |
| IDA_SLEEP_20000 | Sleep 20sec | |
| IDA_SLEEP_100000 | Sleep 100sec | |
| | | |
| IDA_SCAN_TRIGGER | Scan Trigger | Soft trigger scanner |
| | | |
| IDA_MACRO_OPEN | Macro Show | Show Macro Tool |
| IDA_MACRO_CLOSE | Macro Hide | Hide Macro Tool |
| IDA_MACRO_TOGGLEHIDE | Macro Toggle | Toggle Macro Tool hiding |
| IDA_MACRO_RECORD | Macro Record | Start Macro record |
| IDA_MACRO_STOP | Macro Stop | Stop Macro record |
| IDA_MACRO_PLAY | Macro Play | Replay Macro |
| | | |
| IDA_PRINT_SCREEN | Print Screen | Print current screen |
| | | |
| IDA_OIA_HIDE | OIA Hide | Hide IBM OIA bar |

| Symbolic Name | Friendly Name | Description |
|-----------------------------------|----------------------|---------------------------|
| IDA_OIA_VISIBLE | OIA Show | Show IBM OIA bar |
| IDA_OIA_TOGGLEHIDE | OIA Toggle | Toggle OIA bar visibility |
| General IBM and VT Actions | | |
| IDA_PF1 | F1 | (Not VT PF1) |
| IDA_PF2 | F2 | (Not VT PF2) |
| IDA_PF3 | F3 | (Not VT PF3) |
| IDA_PF4 | F4 | (Not VT PF4) |
| ... | | |
| IDA_PF24 | F24 | |
| IDA_HOME | Home | |
| IDA_DOWN | Down | |
| IDA_UP | Up | |
| IDA_LEFT | Left | |
| IDA_RIGHT | Right | |
| IDA_ENTER | Enter | |
| IBM Actions | | |
| IDA_IBM_HOME | IBM Home | |
| IDA_DELETE | Delete | |
| IDA_INSERT_ON | Insert On | |
| IDA_INSERT_OFF | Insert Off | |
| IDA_INSERT_TOGGLE | Insert Toggle | |
| IDA_ATTN | Attn | |
| IDA_CLEAR | Clear | |
| IDA_CURSOR_SELECT | Cursor Select | |
| IDA_DUP | DUP | |
| IDA_ERASE_EOF | Erase EOF | |
| IDA_ERASE_INPUT | Erase Input | |
| IDA_FIELD_MARK | Field Mark | |
| IDA_NEWLINE | Newline | |
| IDA_PA1 | PA1 | |
| IDA_PA2 | PA2 | |
| IDA_PA3 | PA3 | |
| IDA_RESET | Reset | |
| IDA_SYSREQ | Sys Request | |
| 5250 Specific Actions | | |
| IDA_FIELD_EXIT | Field Exit | |
| IDA_FIELD_PLUS | Field + | |
| IDA_FIELD_MINUS | Field - | |
| IDA_FIELD_ADVANCE | Field Advance | |
| IDA_FIELD_BACKSPACE | Field Backspace | |
| IDA_FIELD_SUB | Field SUB | |
| IDA_HELP | IBM Help | |
| IDA_ROLL_DOWN | Roll Down | |
| IDA_ROLL_UP | Roll Up | |
| IDA_ROLL_LEFT | Roll Left | |
| IDA_ROLL_RIGHT | Roll Right | |
| IDA_BACKSPACE | Backspace | |
| IDA_PRINT | IBM Print | |
| VT Actions | | |
| IDA_ANSWERBACK | Answerback | |
| IDA_FIND | Find | |
| IDA_INSERT_HERE | Insert Here | |
| IDA_NEXT | Next | |
| IDA_PREVIOUS | Previous | |

| Symbolic Name | Friendly Name | Description |
|----------------------------|-----------------------|--------------------------|
| IDA_REMOVE | Remove | |
| IDA_SELECT | Select | |
| IDA_VT_PF1 | VT PF1 | Numpad PF1 key |
| IDA_VT_PF2 | VT PF2 | Numpad PF2 key |
| IDA_VT_PF3 | VT PF3 | Numpad PF3 key |
| IDA_VT_PF4 | VT PF4 | Numpad PF4 key |
| IDA_VT_COMMA | Numpad Comma | |
| IDA_NUMPAD_0 | Numpad 0 | |
| IDA_NUMPAD_1 | Numpad 1 | |
| IDA_NUMPAD_2 | Numpad 2 | |
| IDA_NUMPAD_3 | Numpad 3 | |
| IDA_NUMPAD_4 | Numpad 4 | |
| IDA_NUMPAD_5 | Numpad 5 | |
| IDA_NUMPAD_6 | Numpad 6 | |
| IDA_NUMPAD_7 | Numpad 7 | |
| IDA_NUMPAD_8 | Numpad 8 | |
| IDA_NUMPAD_9 | Numpad 9 | |
| IDA_VT_ENTER | Numpad Enter | |
| IDA_VT_MINUS | Numpad Minus | |
| IDA_VT_PERIOD | Numpad Period | |
| | | |
| IDA_UDK_F6 | UDK F6 | VT User Defined Key F6 |
| IDA_UDK_F7 | UDK F7 | VT User Defined Key F7 |
| ... | ... | |
| IDA_UDK_F20 | UDK F20 | VT User Defined Key F20 |
| | | |
| IDA_VT_HELP | VT Help | |
| IDA_VT_DO | VT Do | |
| IDA_ADD | Add | |
| IDA_MULTIPLY | Multiply | |
| IDA_DIVIDE | Divide | |
| | | |
| Custom VT Sequences | | |
| IDA_VT_SAP0135 | VT SAP0135 | 0x00 0x35 |
| IDA_VT_CSI_M | VT CSI M | ESC [M |
| IDA_VT_CSI_N | VT CSI N | ESC [N |
| IDA_VT_CSI_O | VT CSI O | |
| IDA_VT_CSI_P | VT CSI P | |
| IDA_VT_CSI_Q | VT CSI Q | |
| IDA_VT_CSI_R | VT CSI R | |
| IDA_VT_CSI_S | VT CSI S | |
| IDA_VT_CSI_T | VT CSI T | |
| | | |
| Windows App Keys | | |
| IDA_APPKEY_K1 | App Key 1 | |
| IDA_APPKEY_K2 | App Key 2 | |
| ... | ... | |
| IDA_APPKEY_K16 | App Key 16 | |
| | | |
| IDA_SCROLL_UPPERLEFT | Scroll Upper Left | |
| IDA_SCROLL_UPPERRIGHT | Scroll Upper Right | |
| IDA_SCROLL_LOWERLEFT | Scroll Lower Left | |
| IDA_SCROLL_LOWERRIGHT | Scroll Lower Right | |
| IDA_SCROLL_CENTER | Scroll Center | |
| IDA_SCROLL_CURSOR_CENTER | Scroll Cursor Center | |
| IDA_SCROLL_CURSOR_VISIBLE | Scroll Cursor Visible | |
| | | |
| IDA_COPYALL | Copy All | Copy screen to clipboard |
| IDA_PASTE | Paste | Past clipboard |
| | | |

| Symbolic Name | Friendly Name | Description |
|------------------------|----------------------|----------------------|
| IDA_USTRING_0 | Text 1 | Send user text 1 |
| IDA_USTRING_1 | Text 2 | Send user text 2 |
| ... | ... | |
| IDA_USTRING_63 | Text 64 | Send user text 64 |
| IDA_SIP_HIDE | SIP Hide | |
| IDA_SIP_SHOW | SIP Show | |
| IDA_SIP_TOGGLEHIDE | SIP Toggle | |
| IDA_SIP_LOCKDOWN | SIP Lockdown | |
| IDA_SIP_UNLOCK | SIP Unlock | |
| IDA_SIP_UP | SIP Up | |
| IDA_SIP_DOWN | SIP Down | |
| IDA_SIP_FORCEDOWN | SIP Forcedown | |
| IDA_IM_KEYBOARD | IM Keyboard | |
| IDA_IM_LOCKED | IM Locked | |
| HTML Actions | | |
| IDA_URL_HOME | URL Home | |
| IDA_URL_BACK | URL Back | |
| IDA_URL | URL | Defines start of URL |
| Special Actions | | |
| IDA_VIBRATE_100 | Vibrate 100ms | |
| IDA_VIBRATE_200 | Vibrate 200ms | |
| IDA_VIBRATE_500 | Vibrate 500ms | |
| IDA_VIBRATE_1000 | Vibrate 1sec | |
| IDA_VIBRATE_2000 | Vibrate 2sec | |
| IDA_VIBRATE_5000 | Vibrate 5sec | |
| IDA_BEEP_OK | Beep | |
| IDA_BEEP_WARN | Beep Warn | |
| IDA_BEEP_LOUD | Beep Loud | |
| IDA_POPUP_IPADDRESS | Show IP Address | |
| IDA_POPUP_MACADDRESS | Show MAC Address | |
| IDA_POPUP_BATTERY | Show Battery | |
| IDA_POPUP_TIME | Show Time | |
| IDA_POPUP_SERIALNUMBER | Show Serial # | |
| IDA_POPUP_DEVICEID | Show Device ID | |
| IDA_POPUP_RFINFO | Show RF info | |