

PC*MILER® |AS/400

MULTIPLE VERSION SWITCH

USER'S GUIDE



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PC*MILER®-AS/400

Important Changes for Version 17, Please Read

For Version 17, PC*MILER now offers two basic route types, **Practical** and **Shortest**, that may be combined with one or more of the other three route types that PC*MILER users are familiar with (**Toll Discouraged** and **National Network** or **53' Trailer Routing**). Users of the PC*MILER interactive program who want to obtain Toll Discouraged, National Network, or 53' Trailer routing will additionally have to specify either the Practical or Shortest Route type. (Previous to Version 17, all Toll Discouraged, National Network, or 53' Trailer routes were based on the Practical route type.)

This new functionality gives you the option to run 12 different route types:

- Practical
- Shortest
- Practical/Toll Discouraged
- Shortest/Toll Discouraged
- Practical//National Network
- Shortest /National Network
- Practical /53 Foot Trailer
- Shortest /53 Foot Trailer
- Practical/Toll Discouraged/National Network
- Shortest/Toll Discouraged/National Network
- Practical/Toll Discouraged/53' Trailer
- Shortest/Toll Discouraged/53' Trailer

Note that National Network and 53' Trailer Routing cannot be combined, they are mutually exclusive.

Third Party or In-house Transportation Software Must Be Modified to Utilize PC*MILER Version 17

If you are using PC*MILER with other transportation software, that software will have to be modified to utilize the new functionality. Without modifications to your third party or in-house software, you will have only the following routing types available:

- Shortest
- Practical
- Practical/Toll Discouraged
- Practical//National Network
- Practical/53' Trailer

See Chapter 7, *Using PC*MILER With Other Transportation Software*, for more information.

Note for Users Upgrading from PC*MILER|Streets

If you are upgrading from PC*MILER|Streets, note that the Light/Heavy vehicle option has been renamed to 'Override Restrictions'. The parameter codes have changed from L (Light) to Y (Override Restrictions) and H (Heavy) to N (Obey Restrictions). Use of L and H is still supported.

1.0 Introduction

Congratulations! By purchasing a PC*MILER product, you have made a cost-effective investment in high quality software that is simple to learn and easy to use. PC*MILER for the AS/400 uses simple-to-follow menus and requires minimal keystrokes to generate routing and mileage information. Shortest, Practical, National Network, Toll-Discouraged, and 53' Trailer routes can be calculated in a matter of seconds and can include up to 30 stops.

PC*MILER for the AS/400 includes all the standard features found in the PC version, including the Hub Distance Generator, Spelling Helper, route resequencing, and user-defined time and cost estimates. You are referred to the main PC*MILER *User's Guide* for a more thorough discussion of these features. With PC*MILER-AS/400, you can quickly and easily generate point-to-point miles, driving instructions, and mileage summaries broken down by toll roads and freeways. A route map of a trip can be viewed and printed from a PC with PC*MILER|Mapping™ installed. In-house software can be customized to draw the ETA status of a truck's current location during a trip.

PC*MILER for the AS/400 utilizes a unique distributed processing solution. This solution maximizes the efficiency of your AS/400 by "farming out" repetitive mileage calculations to a PC. With PC*MILER-AS/400, you can benefit from having a seamless mileage interface with your management system. Interfaces have been developed for Innovative Computing Corporation, Qualcomm, McCormick & Associates, and others.

Use PC*MILER for the AS/400 to audit driver logs and supplement your fuel tax reports. Increase driver productivity by using PC*MILER's driving instructions, ETA's with graphical truck display and trip sequencing. In addition, your purchase of PC*MILER-AS/400 will eliminate the high costs of leasing mileage systems or paying exorbitant transaction fees.

2.0 Hardware and Software Requirements

Because PC*MILER-AS/400 employs a Client server solution, the following hardware and software is required. The AS/400 server uses SNA APPC data queues to communicate.

For PC*MILER-AS/400:

- A PC with a Pentium processor (300 MHz clock speed or higher) and 128 MB of RAM. The hard disk should have 200 MB of space available, running Windows NT, 2000, or XP-Pro.. For best performance, use a Pentium PC 400 MHz or higher, or use two PCs.

For PC*MILER|Streets-AS/400

- A PC with a Pentium processor (300 MHz clock speed or higher) and 128 MB of RAM. The hard disk should have 2 gigabytes of space available, running Windows NT, 2000, or XP-Pro. High performance disk drives are recommended. For best performance, use a Pentium PC 500 MHz or higher, or use two PCs.

PC to AS/400 Connectivity Options (Not Provided by ALK)

- Netsoft's NS/Router 3.0 or higher. NS/Router 3.0 comes bundled in Client Access V3R2.
- Client Access Express V4R4MO. (*Recommended*)

⇒ **NOTE:** *Netmanage is now only supporting their NS Router on a limited basis, you are strongly encouraged to use Client Access Express as your PC-to-AS/400 connectivity tool.*

2.1 PC*MILER Graphics

PC*MILER map graphics are not supported in PC*MILER|AS/400 Multiple Version Switch.

3.0 Installation

PC*MILER for the AS/400 works by connecting a 32-bit Windows PC to your AS/400. The PC provides mileage lookups to the AS/400 via data queues. Generally, there is one common input or request queue that all users write to, with each user having their own output queue. The PC listens to the input queue for mileage request packets. Within each mileage request packet is the name of the user's output queue. The PC does a destructive read of the request packet, processes the request, and writes to the specified user's output queue.

Multiple PC*MILER versions are made available via a bundling of one or more instances of PC*MILER|TCP/IP Connect (pcmsocx.exe). AS/400 users communicate only with the PC mileage server (as400.exe). The PC mileage server handles the communication with the various instances of PC*MILER|TCP/IP Connect. These instances can be run on a single PC or a group of PC's.

PC*MILER for the AS/400 was developed using the data queue facilities of Netmanage's NS Router and IBM's Client Access Express. You must have one of these two connectivity products installed and properly configured on the mileage server PC. ALK Technologies recommends you use Client Access Express.

If you want to use NS Router, it is bundled in many releases of Client Access, or it can be purchased directly from Netmanage at **www.netmanage.com** or 408-973-7171. The NS Router is no longer being produced as a separate package, but is being sold under Netmanage's Legacy Program. Netmanage provides limited support for their Legacy products. The NS Router is bundled in several Netmanage packages. For your PC*MILER for the AS/400 installation, you need only the NS Router. The NS Router must be configured to use the Anynet or Twinax protocols. Connecting via Anynet requires the creation of an Anynet Controller on the AS/400.

If you are using NS Router, you need the NS Router 3.0 or higher for PC*MILER AS/400 Version 17. Client Access 3.2 has the 3.0 Router bundled with it. **Do not patch your router without talking to ALK first. The PC*MILER for the AS/400 system was developed on a non-patched Router, and installing any patch may cause unpredictable behavior.**

3.1 Installation Overview

You should have received two CD's with your purchase of PC*MILER-AS/400:

- The PC*MILER Product Line CD which includes the complete PC*MILER application and the PC*MILER-AS/400 Mileage Server (PC*MILER|Connect-AS/400).
- The second CD contains the 400 side ALKMVS Library.

⇒ **NOTE: Required PC to AS/400 Connectivity Software is not provided by ALK.** You need either IBM's Client Access Express or the NS Router, from either IBM's Client Access Bundle or Netmanage.

3.2 AS/400 Side Installation

First install the resident AS/400 software on your AS/400. Sign on to QSECOFR or an account with equivalent authorities. Place the CD in the optical drive and follow the instructions below.

⇒ **NOTE For Upgrades:**

ALK increased the length of the Highway Segment (HS – Turn By Turn Driving Instructions) by 25 characters. Failure to upgrade your current ALKMVS Library will cause the program to crash if HS requests are used.

1. Create a library with the CRTLIB command. Type **CRTLIB ALKMVS**.
2. Add the library to the current library list. Type **ADDLIB ALKMVS**.

For Innovative Computing Corporation installations, you will also need your ICC WORK and FILE libraries in your current library list. For Version R6, type **ADDLIB I93FILE** or **ITSR6FILE** and then **ADDLIB I93WORK** or **ITSR6WORK**. The ICC Version 7 libraries are **IESR7WORK** and **IESR7FILE**. (Call ICC if you don't know which version you are running.)

⇒ **NOTE For Updates Only:** Type config from the AS/400 command line and print screen your current mileage settings. These settings will be overwritten during the library restore. After the restore of the library, re-enter these settings by running the ALKMVS/CONFIG command. **Make sure there are no users working in PC*MILER or PC*MILER|Streets.**

3. Command for restoring from CD:

```
rstlib savlib(ALKMVS) dev(opt01) vol(ALKMVS)
Label(ALKMVS)
mbropt(*all) alwobjdif(*all) rstlib(ALKMVS)
```

where **opt01** is your CD-ROM drive.

Make sure all objects were restored. You can ignore security warning messages. It is okay if MIDQUE does not restore because this file is created later on.

⇒ **NOTE:** The ALKMVS Library CD was created using Kisco Information Systems' BlueCD, which allows you to create AS/400 readable SAVLIBs on a PC CD writer. A small percentage of users may have difficulty restoring the ALKMVS Library with the above command. If you experience problems:

Type **RSTLIB**, then:

- a. Specify the library ALKMVS and the appropriate optical device
 - b. Press <F10> for more options
 - c. Specify ***ALL** on database member options
 - d. Specify ***ALL** on allow object differences.
4. The system administrator should make the library ALKMVS available to users at sign-on time. There are two ways to insert ALKMVS into the library list:
- a. The WRKSYSVAL command can be used by typing **WRKSYSVAL**, and then searching for the QUSRLIBL entry. Insert ALKMVS.
 - b. If your users are using a job description in their user profiles, then use the CHGJOB command (type **CHGJOB**) and insert ALKMVS.

For Innovative Computing installations, a command is available to help insert a library into the library list. ALKMVS should be the first library in the library list. (**NOTE: Run this command from a typical ICC user account or profile, not QSECOFR**). Enter the following:

```
ADDLIB ILPGMR *LAST
CHGLIBL
(insert) ALKMVS
```

5. To grant object authority to library ALKMVS, enter the following:

GRTOBJAUT (press <F4>)

object = ***ALL**

library = **ALKMVS**

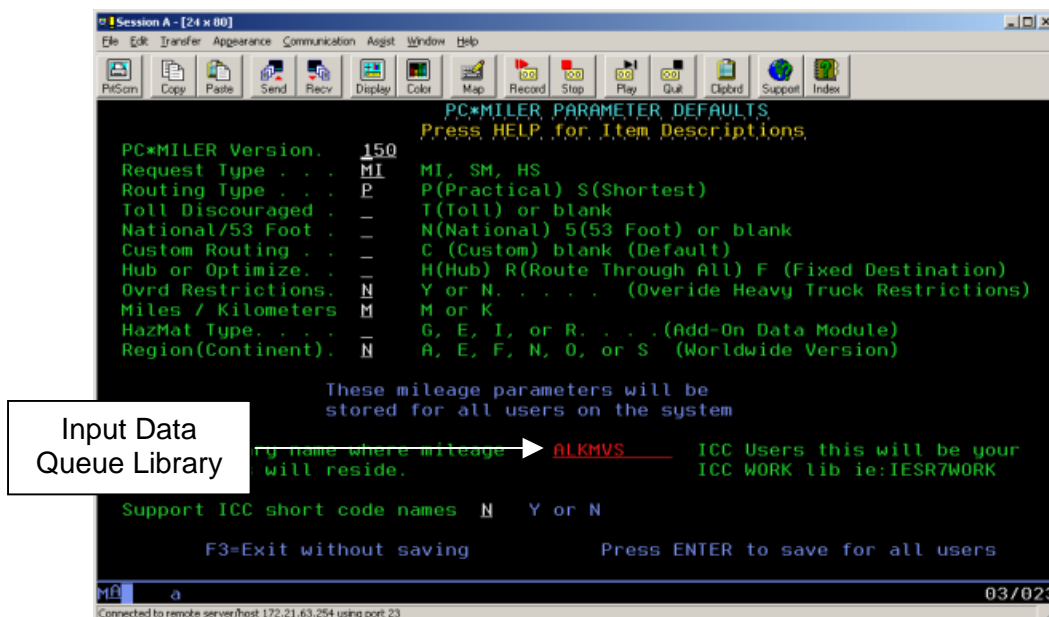
objtype = ***ALL**

users = ***public**

authority = ***ALL**

⇒ **NOTE: For ICC Users only (Be sure to do this!)** Type 'config' from the AS/400 command line after the restore of the library, then change the library for the location of mileage data queues from ALKMVS to your ICC Work library and change the ICC Support Short Code names flag from 'N' to 'Y'. Depending on the version of your ICC software, your library will be I93WORK, ITSR6WORK, or IESR7WORK. Check with ICC for this name.

⇒ **NOTE Also:** The AS/400 side and the PC Side must match which Library the Mileage Request or Input data queue resides in. You will be prompted during the PC Side Installation for your data queue location or there is an option to change it under the PC|Connect-AS/400 Control Menu.



3.3 PC Side Installation

The PC Side of the PC*MILER|AS/400 Multiple Version Switch installation is a multi-faceted process. The installation varies depending on the number of versions of PC*MILER and PC*MILER|Streets involved and the number of mileage server PCs that will be used.

Generally installations can be performed in less than half an hour if you strictly follow the instructions. Failure to follow instructions can result in hours of trouble-shooting with the possibility of multiple reboots.

The installation and operation of the product is made easier if you use of one quality desktop PC dedicated to running only PC*MILER|AS/400 Multiple Version Switch. Configuration time is minimized and the product can be launched automatically.

For multiple PC installations, the increase in network traffic is minimal for mileage requests: less than 0.3KB per request and generally no larger than 35KB for turn-by-turn Driving Directions. Performance between versions is not equal. ALK's highway networks have become more detailed over time, which has slowed down processing a bit. Version 17 is the slowest, followed by 16.x. Versions 14 & 15 are roughly equal. Depending on lookup volume, you may be able to combine versions 14 and 15 on one PC and dedicate one PC each to versions 16 and 17. Another thing to consider is that when starting the product, as described below, you will have to launch an instance of PC*MILER|TCP/IP Connect on every PC.

PC Side

Essentially the PC side of the PC*MILER|AS/400 Multiple Version Switch installation can be broken down into two parts:

PC*MILER|AS/400 Multiple Version Switch (as400.exe) which reads mileage requests from a request data queue on the AS/400, and at least one instance of PC*MILER|TCP/IP Connect (pcmssock.exe) which provides the mileage and routing information for as400.exe to return to a response data queue on the AS/400.

Each instance of PC*MILER|TCP/IP Connect needs its own copy of the PC*MILER desktop application. This installation provides the highway network database and a mechanism for editing custom routing features.

PC*MILER|TCP/IP Connect is itself built on another PC*MILER product called PC*MILER|Connect – ALK's mileage and routing dynamic link library (dll).

PC*MILER|Connect is a version specific product; for example, Connect Version 15.x will not work with Version 16 PC*MILER. The normal installation of PC*MILER|Connect involves installation of our mileage and routing dlls to a computer's \Winnt folder. For PC*MILER|AS/400 Multiple Version Switch these dlls are installed to the working directory for pcmsock.exe underneath the top level of that version's PC*MILER for Windows installation.

Note: If you are installing PC*MILER|AS/400 Multiple Version Switch on a PC that previously was used to produce PC*MILER mileages, you will first have to manually remove PC*MILER|Connect dlls from the computer's \Winnt folder. See the chart of file names by version below.

Installation Overview

Install a copy of PC*MILER for Windows for each version you will be accessing. Versions 14.0, 15.1, 16.1 and 17 are bundled on the PC*MILER|AS/400 Multiple Version Switch PC Side CD. Install only compatible add-ons from the list below.

You can install the data add-ons listed below if you have licensed them. If you licensed any of these add-on products, you will have to contact ALK at **609-683-0220 x301** to obtain a product key code to unlock them. If you aren't installing any add-ons, you won't need a product key code.

PC*MILER|AS/400 Multiple Version Switch Compatible Add-ons:

- Standard Position Location Codes (SPLCs)
- Canadian Postal Codes
- PC*MILER|HazMat
- PC*MILER|Streets

Do not install:

- PC*MILER|Connect aka PC*MILER Server
- PC*MILER|TCP/IP Connect
- PC*MILER|AS/400 Connect (PC*MILER Black Box or PC*MILER for the AS/400 interface)
- PC*MILER|Mapping
- PC*MILER|SpreadSheets

Note: Pre-Version 16 SPLC's and CanPosts were mutually exclusive, you could install one or the other. In Version 16 and higher, both can be installed together.

For installing PC*MILER|Streets Versions 16.x or 17.x you will need the Street Level Data CD, which is not automatically provided with the PC*MILER|AS/400 Multiple Version Switch shipment. If the product was previously licensed you will have a Street Level Data CD with that shipment.

For new purchases of PC*MILER|Streets to be used with PC*MILER|AS/400 Multiple Version Switch, you will receive a second set of disks which will contain the Street Level Data CD.

You can reuse product key codes from previous installations if you have them. Do not install any add-ons but the ones listed above as being compatible (SPLC's, CanPosts, Hazmat routing, and Street Level routing).

For Version 17, do not attempt to license the installation when you are prompted at the end of the installation.

Once the various PC*MILER|TCP/IP installations are complete, install PC*MILER|AS/400 Multiple Version Switch (ALKMVS).

Step-by-Step Installation Instructions

- 1) Install PC*MILER for Windows and any of the following licensed data add-ons:
 - SPLCs
 - CanPosts
 - PC*MILER|HazMat
 - PC*MILER|Streets

You will need product key codes to unlock these add-ons, please contact ALK at **609-683-0220 x301**.

The currently supported Versions of PC*MILER are:

V14.x
V15.x
V16.x
V17.x

- 2) For PC's previously used for PC*MILER products, check the \Winnt folder for old dll's and INI files (see file list in Step 4.6 below).

- 3) Install the correct version of PC*MILER|TCP/IP Connect for each version of PC*MILER that you will be using. **Pay strict attention to which version you are installing.**
- 4) Install PC*MILER|AS/400 Multiple Version Switch (ALKMVS) by following the steps below.

Step 1:

Make sure the Netsoft Router or Client Access Express is installed and working on the PC (see *Appendix B: Configuring an N/S Router for Use with PC*MILER AS/400* or *Appendix D: Configuring Client Access Express for Use with PC*MILER AS/400*).

⇒ **NOTE For NS Router Users:** PC*MILER for the AS/400 is built on a specific Netmanage Data Queue DLL. This DLL, **E32DQW.DLL** dated 12/18/98, is only on the PC*MILER CD. If you install any Netmanage software after installing the PC*MILER for the AS/400 interface software, you run the risk of getting the wrong version of this critical file, and unpredictable behavior may result.

Step 2:

Insert the PC*MILER|AS/400 Multiple Version Switch Windows Install Disk.

On the CD are the following folders:

MVSInst
V14
V151
V161
V17

You can install any version you are licensed for. If you are installing the PC*MILER|Streets add-on you will need a Street Level Data CD (not automatically shipped with PC*MILER|AS/400 Multiple Version Switch).

You can install all four versions of PC*MILER on one PC, or you can install each version on its own PC (the PC's must be networked).

Step 2.1

For Version 14:

- Run <cdrom>\v14\setup.exe
- If you are installing just PC*MILER 14.0 you will not need a product key code.
- If you are installing an approved PC*MILER/AS/400 Multiple Version Switch data add-on, you will need a product key code.
- Without a product key code, check only the PCMILER 14.0 box and then use Pcd1400001 for the serial number.

The default install location is C:\Pmw140. If you change this, you will need to make adjustments later in the installation. Remember your installation location. You do not need to reboot the PC as directed.

Step 2.2

For Version 15.1:

- Run <cdrom>\v151\setup.exe
- If you are installing just PC*MILER 15.0 you will not need a product key code.
- If you are installing an approved PC*MILER/AS/400 Multiple Version Switch data add-on, you will need a product key code.
- Without a product key code, check only the PCMILER 15.0 box .

The default install location is C:\Pmw150. If you change this, you will need to make adjustments later in the installation. Remember your installation location. You do not need to reboot the PC as directed.

Step 2.3

Version 16.1:

- Run <cdrom>\v161\setup.exe
- If you are installing just PC*MILER 16.1 you will not need a product key code.
- If you are installing an approved PC*MILER/AS/400 Multiple Version Switch data add-on, you will need a product key code.
- Without a product key code, enter 'Trial' in the Registration Number dialog.

Do not choose PC*MILER/Streets unless you have previously licensed it from ALK and have the Street Level Data CD.

The default install location is C:\Program Files\Alk Technologies\Pmw160. If you change this, you will need to make adjustments later in the installation. Remember your installation location.

Step 2.4

Version 17.0:

- Run <cdrom>\v17\setup.exe
- If you are installing just PC*MILER 17.0 you will not need a product key code.
- If you are installing an approved PC*MILER/AS/400 Multiple Version Switch data add-on, you will need a product key code from ALK.
- Without a product code, enter 'Trial' in the Registration Number dialog.

Do not choose PC*MILER|Streets unless you have previously licensed it from ALK and have the Street Level Data CD.

The default install location is C:\Program Files\Alk Technologies\Pmw170. If you change this, you will need to make adjustments later in the installation. Remember your installation location.

Do not choose to **Activate the License** as prompted at the end of the installation.

STEP 3:

Install PC*MILER/AS/400 Multiple Version Switch:

On the PC*MILER/AS/400 Multiple Version Switch Windows **Install Disk** is a folder called **MVSInst**. Within the folder are the following self-extracting zip files:

alkmvs.exe → Contains PC*MILER/AS/400 Multiple Version Switch Install
For16App.exe → V16.1 Mileage and Routing Support Files
For17App.exe → V17.0 Mileage and Routing Support Files
v14tcpip.exe → V14 PC*MILER|Tcpip Connect
v15tcpip.exe → V15 PC*MILER|Tcpip Connect
v16tcpip.exe → V16 PC*MILER|Tcpip Connect
v17tcpip.exe → V17 PC*MILER|Tcpip Connect

Step 3.1

Run alkmvs.exe, it is set to unzip to C:\ALKMVS.
You can redirect the path in the Unzip window if necessary.

Step 3.2

Unzip the correct version of the TCP/IP file for your version. The self-extracting zip files are set to unzip to the default locations. If you installed your PC*MILER to non-default locations, you will have to redirect the extractions in the winzip windows. If you redirect the extractions, be sure to include a folder called 'Tcpi' below the top level of your PC*MILER installation.

Step 3.3

For Versions 16.1 and 17.0 extract the correct support files.

For16App.exe and for17App.exe.

If you installed your PC*MILER to non-default locations you will have to redirect the extractions in the winzip windows. These files must be extracted to the App subfolder of your PC*MILER V16.1 or V17.0 installation.

Step 4: Configuring PC*MILER|AS/400 Multiple Version Switch

Step 4.1: Edit \AlkMvs\Srv32.ini

You will need to complete the following with the IP Address or System Name of your AS/400 and the User Profile and Password that the PC will be using for the AS/400 signon.

; IP Address or System Name of AS/400
system=

;User Profile
user=

;Password
pass=

Save your changes and exit srv32.ini.

Step 4.2: Edit \AlkMvs\pcmmv.ini to set default PC*MILER Version

Set the default version of PC*MILER under the Default Key. The default version is necessary for starting PC*MILER|AS/400 Multiple Version

Switch. Mileages will only be returned if the PC*MILER Version trip parameter is valid. The default name must match one of the key names.

Be careful of editing the Key Names like [PCMiler 150], these values have to match those set in **srv32.ini** under [multiversion].

Step 4.3: Edit \AlkMvs\Pcmmv.ini to point to your various instances of PC*MILER|TC/PIP Connect.

If you are going to run each instance of PC*MILER|TCP/IP Connect on a single PC, you can skip this step.

Pcmmv.ini is used to locate the various instances of PC*MILER|TCP/IP Connect. By default Pcmmv.ini is pointing to local copies via the loop back address. If you are using multiple PCs you will have to change the loop back (127.0.0.1) to the IP address or the computer name of the remote PC. If you are having trouble connecting on a computer name, you will have to map that computer's name to its IP address in C:\winnt\system32\drivers\etc\hosts.

If your system has a conflict with the default port number, you will have to change the port number in pcmmv.ini and in the batch file that is used to start up PC*MILER|TCP/IP Connect.
(See Step 4.4).

Step 4.4.

The various instances of PC*MILER|TC/PIP Connect need to be started before starting the PC*MILER|AS/400 Multiple Version Switch executable. The best way to do this is via a batch file. A working copy of one is installed in C:\AlkMvs called StartMvs.bat.

StartMvs.bat is setup for running all four versions of PC*MILER on the same PC. If you do not have a particular version, you will have to remove it from StartMvs.bat.

Note: Each version of pcmsoc.exe has been renamed with its version number appended so that the versions are distinguishable in the Windows Task Manager.

Note: The second parameter passed to pcmsoc1x.exe is the Port Number, if you change these values you must change the values in \alkmvs\pcmmv.ini.

Note: In StartMvs.bat you will find the commands to start AS400.exe commented out. To have PC*MILER/AS/400 Multiple Version Switch started automatically, simply uncomment the CD and the Start lines.

Once you have StartMvs.bat configured properly, you can create a short cut for it in your Startup folder.

Step 4.5: Icons

There is an icon for PC*MILER/AS/400 Multiple Version Switch installed in \alkmvs. You can copy it to other locations.

Note for NetSoft Users:

If you are forced to use the NetSoft Router instead of Client Access Express, you will have to change the icon properties. Change the third parameter from '2' to '3' so that the target will be:

c:\alkmvs\as400.exe<space>3<space>2<space>1.

Step 4.6: Removing DLL's from \Winnt

If you are using PC's that previously were used for PC*MILER products, check the \Winnt folder on each one for old dll's and INI files. The files listed below for each version of PC*MILER/Connect (formerly PC*MILER/Server) **must not be in the \Winnt folder.**

<u>Version</u>	<u>Files that can not be in \Winnt Folder.</u>
14.x	pcmdsrv.dll pcmfav.dll pcmgcode.dll pcmgnet.dll pcmnet.dll pcmreng.dll pcmsrv32.dll pcmtcp.dll pcmextra.dll pcmserve.ini
15.x	pcmdsrv.dll pcmfav.dll pcmgcode.dll pcmgnet.dll pcmnet.dll pcmreng.dll pcmsrv32.dll pcmtcp.dll

	pcmxtra.dll pcmservice.ini
16.x	pcmsrv32.dll pcmtcp.dll pcmservice.ini
17.x	pcmsrv32.dll pcmtcp.dll pcmservice.ini

4.0 Starting an Instance of PC*MILER|TCP/IP Connect

PC*MILER|TCP/IP Connect can be started from a command or from a batch file. Within the PC*MILER|AS/400 Multiple Version Switch installation, each copy of PC*MILER|TCP/IP Connect (pcmssock.exe) has been renamed to reflect the PC*MILER version it is returning mileage and routing information for. The format is pcmssockxx.exe where xx is the PC*MILER version. This enables identification of a particular version within the Windows Task Manager.

Pcmssock.exe takes two parameters, the PC*MILER package, and the port number.

The PC*MILER package is **PC_MILER**. You should use Ports in the 8000 range, with the last two digits corresponding to the version of PC*MILER that is being used.

For example:

Pcmssock14.exe<space>**PC_MILER**<space>**8014**

would be the command to start Version 14 PC*MILER|TCP/IP Connect.

Note: There has to be agreement between the Port number that an instance of PC*MILER|TCP/IP Connect is listening to and that version's entry in ..\AlkMvs\Pcmmv.ini.

It is best to use a batch file to start the various services. See Step 4.4 of the installation instructions.

Within the batch file you must change directories to the installation directory of PC*MILER|TCP/IP Connect before launching the start command.

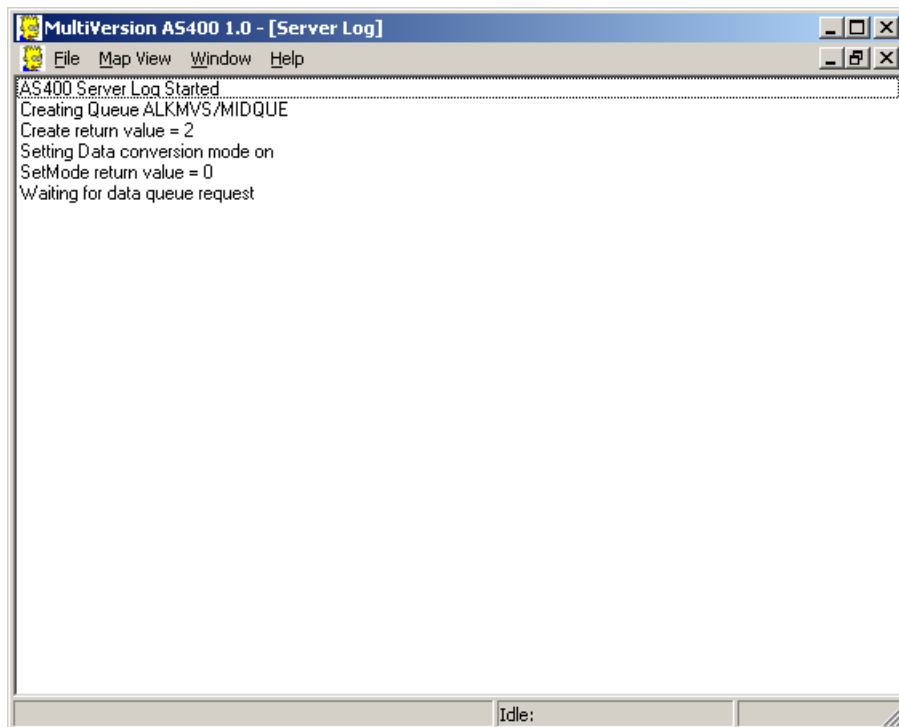
Note: If you are using a multiple PC setup, you will need to have a batch file on each PC.

5.0 Starting and Stopping the Mileage Server

At least one instance of PC*MILER|TCP/IP Connect must be running before you can start PC*MILER|AS/400 Multiple Version Switch (as400.exe). AS400.exe while running maintains a list of available PC*MILER versions. It will find a newly started instance of PC*MILER|TCP/IP Connect and will remove a version which has stopped responding.

If you edit StartMvs.bat and create a shortcut for it in your startup folder as described in installation Step 4.4, the software you installed on your dedicated PC will cause the interface to start automatically when the PC is turned on. If Client Access Express or Netsoft Router is running on the PC, then click on the PC*MILER AS/400 icon or reboot the PC. Client Access Express or the NetSoft Router must automatically sign on with a user ID and password, if unattended startups of the mileage server PC are desired. (To automate the sign-on process by supplying a user ID and password, see *Appendix D* for Client Access Express or *Appendix B* for the N/S Router.)

When the mileage server (**as400.exe**) starts, it displays the connection status in the mileage server's log window. You can bring up this window by clicking on the mileage server's **Window** menu and choosing *Display Server Log*.



The Name of Mileage Request or Input data queue, and the library in which the queue resides, are logged. The number underneath the data queue name and library is the connection status return code. Good returns are:

0 Connection Good Created Data Queue

2 Connection Good Found Data Queue

Return codes of 1 or 3 are generic error codes that indicate problems with your NS Router or Client Access Express connections.

⇒ **NOTE:** Both the PC and the AS/400 must agree on the location of the Input or Request data queue. To change the location on the PC, click on the mileage server's **File** menu. Choose *AS/400 Control*, then *Change Library/Queue*. The change is made on the AS/400 by running the **ALKMVS/config** command and filling out the library field.

The server log only notes incoming requests. If you need to see the mileage server's outputs, turn on the Log to File feature by selecting the mileage server's **File** menu and choosing *AS400 Control > Highlight Log to File*. This will create a file called **c:\ALKMVS\as400.log**. It is recommended to only use logging for diagnostic purposes, otherwise the log files tend to grow large.

Stopping the Interface

To close PC*MILER|TCP/IP Connect, click *Exit* in the **File** menu. From the PC*MILER|AS/400 Multiple Version Switch window, choose **Exit** from the **File** menu.

⇒ **NOTE:** If you are closing your router, remember to disconnect the **AS/400 beforehand**. Please be patient, the PC*MILER mileage server can take a minute or two to exit. Be sure to disconnect the Netsoft Router from the AS/400 before closing the router. Failure to do so may result in having to reboot the PC before you can reconnect to the AS/400. It is not necessary to manually disconnect a Client Access Express connection.

6.0 Using PC*MILER for the AS/400

To use PC*MILER for the AS/400, issue the command **PCMVS** from the command line. The following screen will appear:

```

Session A - [24 x 80]
File Edit Transfer Appearance Communication Assist Window Help
PrintScreen Copy Paste Send Recv Display Color Map Record Stop Play Quit Clipboard Support Index

MultiVersion AS400 1
8/20/03
09:38:18

PC*Miler Version . 170 170 160 150 140
Request Type . . MI MI SM HS
Routing Type . . P P (Practical) S (Shortest)
Toll Discouraged . - T - Blank
National/53Foot. . - N (National) - 5=53foot - Blank
Custom Routing . . - C (Custom) - Blank
Hub or Optimize . - H,R,F {Add-On Products}
Ovrd Restrictions N Y or N HazMat, G,E,I,or R
Miles or Kilometers M M or K Worldwide, N A,E,F,N,O,S (Continent)

Enter City,State,County or Zip (Press Help key for examples)
1 Margo, SK
2 Chloe, LA, Calcasieu
3 Debs, MN, Beltrami
4 Andrew, AB
5
6
7
8
9
10

F2=State help F3=Exit F7=Ins stop F8=Del stop
F10=Process F11=Restart F22=Swap stops F23=Load Trip F24=Sav Trip

MA a 17/011
Connected to remote server/host 172.21.63.254 using port 23

```

⇒ **NOTE:** The **PCMVS** command contacts the mileage server to read the data that the mileage server is using. If the **PCMVS** command doesn't respond or the PC*MILER screen comes up with "PC DOWN" in the screen title, there is a problem with the connection to the mileage server PC.

At the top of the main entry screen are several control settings. These include:

PC*MILER Version: Available Versions are returned from the mileage server PC. This will be a list of three digit numbers like **140<space>150<space>160<space>170**. This list is updated only at PCMVS Startup. If no versions are available, the word "Trouble" or some nonsensical word will be listed.

Note: The requirements for commas between the city name and the jurisdiction code vary with the requested PC*MILER Version. For Version 14.x and 15.x a comma is required, e.g. **Princeton,NJ**. For Versions 16.x and 17.x you can use a comma or a space, e.g. **Princeton, NJ** or **Princeton<space>NJ**.

Request Type: "MI", the default entry, will cause PC*MILER (or PC*MILER|Streets) to generate only point-to-point mileage look-ups. "SM" will cause PC*MILER to generate a summary of miles traveled through each state, broken down by toll roads and free roads, in addition to the point-to-point mileage. "HS" will cause PC*MILER to generate detailed driving instructions, in addition to the state mileage summary and point-to-point mileage look-up.

Graphics requests: Are not supported in PC*MILER|AS/400 Multiple Version Switch.

Routing Type: Varies with the Version Requested.

For Versions 14.x & 15.x the options are:

P (Practical) S (Shortest) N (National Network) T (Toll Discouraged)

For Version 16.x:

P (Practical) S (Shortest) N (National Network) T (Toll Discouraged)

5 (Fifty-three Foot Trailer)

For Version 17.x:

Either Practical or Shortest routing can now be combined with other available PC*MILER routing options (Toll Discouraged, National Network, or 53' Trailer). You must specify either P (Practical) or S (Shortest) for all routes. (Refer to the main PC*MILER *User's Guide* for more detailed descriptions of these routing options.) See Chapter 7, *Using PC*MILER With Other Transportation Software* for details on using this new functionality with other software packages.

Route options are described below:

- **Toll Discouraged:** Version 17 Only "T" will cause PC*MILER to generate miles which avoid long stretches of toll roads. You will receive either a Practical Toll Discouraged Route, or a Shortest Toll Discouraged Route depending on how you have your "Routing Type" set.

- **National/53 Foot:** Version 17 Only “N” will cause PC*MILER to generate miles calculated using the National Network, which is designed for larger trucks. “5” will generate miles suitable for 53’ trailer routing. National Network or 53 Foot Trailer will be generated using either the “Practical” or “Shortest” routing type. You can also combine National Network and 53 Foot Trailer routing with the Toll Discouraged option. For example you can generate a “Practical/Toll Discouraged/National Network” route. See Chapter 7, *Using PC*MILER With Other Transportation Software* for details on using this new functionality with other software packages.

- **Custom Routing:** “C” will use custom routing preferences (avoids and favors) set in PC*MILER or PC*MILER|Streets. When this position is blank, routing preferences will be disabled.

- **Hub or Optimize:** A blank space is the default entry and is used for the standard PC*MILER operation. “H” is used to initiate the hub distance generator. “R” is used to initiate route sequencing with the origin fixed and the remaining stops reordered. “F” is used to initiate route sequencing with both the origin and destination fixed and the remaining stops reordered. These options are described in more detail in the main PC*MILER *User's Guide*.

- **Ovrd (Override) Restrictions:**

(Version 17.x and 16.x with optional Street Level Add-on Only) In addition to the five basic PC*MILER route types, a Heavy and Light Vehicle routing option is now offered. When Ovrd Restrictions is set to “Y”, the **Light Vehicle** option is activated. With Light Vehicle routing active, truck-prohibited roads will always be avoided, but truck-restricted roads are considered for a route. (PC*MILER normally gives preference to Interstates, major highways, and major thru-roads where possible.)

With Ovrd Restrictions set to “N”, **Heavy Vehicle** routing is in effect, so both **truck-prohibited and truck-restricted roads will always be avoided**. In addition, Heavy Vehicle routing takes nationwide **13’ 6” height restrictions** into account. A heavy vehicle is one weighing at least **80,000 pounds**; a light vehicle weighs less than **80,000 pounds**.

- **Miles/Kilometers:** “M” will cause PC*MILER to generate distances in miles. “K” will cause PC*MILER to generate distances in kilometers.

- **HazMat (Hazardous Material Type):** (optional add-on data module) Types of hazardous material routing that can be generated are: “G” for General, “E” for explosive, “I” for Inhalant, and “R” for Radioactive

- **Region (Continent):** Regions in which mileages can be generated are: "A" for Asia; "E" for Europe; "F" for Africa; "N" for North America; "O" for Oceania; or "S" for South America. (Regions outside North America require PC*MILER|Worldwide.

FOR AN ON-SCREEN DISPLAY OF THESE DEFINITIONS, press the Help key on your keyboard. For Terminal Emulation sessions on PC's, this is typically the **Scroll Lock key or Right Mouse Click > Help**.

In the middle of the screen are the stop entry fields. Enter the city names and state abbreviations for the stop-off locations desired, their ZIP codes, or their latitude/longitude positions. Both the Spelling Helper and ZIP Code Helper described in the main PC*MILER *User's Guide* are available for use with PC*MILER-AS/400. You may enter up to 30 stop-offs.

- ⇒ **NOTE:** PC*MILER-AS/400 only supports **Degree-Minute-Second** lat/long format; e.g. **0333716N,1142709W**.
- ⇒ **NOTE For PC*MILER|Streets Users:** An address should directly follow the city/state or ZIP code entry, separated by a semicolon (e.g. "Princeton, NJ; 1000 Herrontown Road").

You can also purchase separate add-on data modules for Canadian postal codes or SPLC codes. A **Canadian postal code** is entered in the same manner as a ZIP code, but in the following format: **L#L<space> #L#**. (e.g. "K7L 4E7"). A **SPLC** is a six- or nine-digit number, preceded by the letters 'SPLC' (e.g. "SPLC908601").

At the bottom of the screen, the function keys used with PC*MILER for the AS/400 are described. These include:

- F2 State help.** Displays a list of all state and province abbreviations.
- F3 Exit.** Exits the program and returns to the main AS/400 screen.
- F7 Ins stop.** Allows you to insert a new stop-off where the cursor is positioned.
- F8 Del stop.** Allows you to delete a stop-off where the cursor is positioned.
- F10 Process request.** Sends the request to PC*MILER on the dedicated PC.
- F11 Restart.** Clears the screen, and lets you start making data entries on the screen again.

- F12 Main Screen.** Returns to the main stop entry screen from the mileage report screens.
- F22 Reverse.** Reverses the order of stops entered.
- F23 Load a saved trip.** In the screen that comes up, typing “X” (with the cursor on a trip identifier in the pick list) will load that trip; typing “D” will delete the trip.
- F24 Save a trip.** Enter a trip identifier of up to 10 characters in the entry field that appears.
- Help** Pressing the key labeled “Help” on your keyboard will bring up detailed instructions for using various features of PC*MILER for the AS/400. If you are using an emulator, the Help key on your keyboard will usually be the **Scroll Lock** key or **Right Mouse Click** > Help.

Once you have entered stops on the main screen and initiated a mileage inquiry by pressing <F10>, the following screen will appear:

MultiVersion AS400 1 8/20/03
09:45:32

	MILES	CUM	TIME	COST
Margo, SK				
Chloe, LA, Calcasieu	1894	1894	31.0	2575.90
Debs, MN, Beltrami	1410	3304	25.3	1918.04
Andrew, AB	1044	4348	18.1	1419.92
Total:	4348		74.4	5913.86

F3=Exit F9=Print
F11=Restart F12=Main Scrn

MA a 01/072
Connected to remote server/host 172.21.63.254 using port 23

This report contains leg and cumulative miles for each segment of your trip. The time and cost estimates are based on the values contained in the copy of PC*MILER (or PC*MILER|Streets) installed on your dedicated

PC. (Refer to the main PC*MILER *User's Guide* for instructions on how to alter these values.) <F3> will exit the program. <F9> will print the screen. <F11> will return you to the previous screen and will clear it. <F12> will return you to the previous screen, without clearing it.

7.0 Using PC*MILER/AS/400 Multiple Version Switch With Other Transportation Software

PC*MILER/AS/400 Multiple Version Switch is a modified version of PC*MILER/AS/400-Connect. PC*MILER/AS/400 Multiple Version Switch has an additional trip parameter available that enables the user to specify or "Switch" between various versions of PC*MILER. Currently PC*MILER versions 14.x, 15.x, 16.x, and 17.x are supported.

PC*MILER/AS/400 Multiple Version Switch is licensed in addition to any PC*MILER versions a company has purchased. All supported versions may not be available. You will have to make use of the "MV" request to verify what versions are available. Passing Blanks will result in the return of an error. There is no support for a default version.

Notes for All Users:

- Changes to route types and jurisdiction codes are not unified (see chart below).
- Use of Comma between city and jurisdiction code not unified (see chart below).
- All HS (highway segment) turn by turn driving instructions are uniform at the Version 16.x level.
- Override Route Restrictions option not uniformly available(see chart below).
- Versions 16.x and 17.x have more detailed highway networks and therefore have slower response times. You may have to adjust your wait times accordingly.

Notes For Existing PC*MILER/AS/400 Connect Users:

- A set of 10 new trip parameters has been inserted into all of the request and response packets.
- Output Data Queues sizes were lengthened from 1024 to 1034.
- Data Area "Comalk" was modified to store a default PC*MILER version.
- "Old mode" or short city names (22 characters) are not supported.
- Graphics (maps) are not supported.

⇒ **NOTE:** For Version 17, the routing type options have changed for National Network, Toll Discouraged, and 53' Trailer routing. These three 'special'

routing options now can be generated in combination with the 'Practical' or 'Shortest' options. Additionally, National Network and 53' Trailer routing can be combined with the Toll Discouraged options. The only way to take advantage of this new functionality is to pass in the new code in position 1 of the Request Options.

Previously the five available codes were:

P = Practical

S = Shortest

N = National Network

T = Toll Discouraged

5 = 53 Foot Trailer

New Codes:

P = Practical

S = Shortest

B = Toll Discouraged/Practical

C = National Network/Practical

D = 53 Foot Trailer/Practical

E = Toll Discouraged/National Network/Practical

F = Toll Discouraged/53 Foot Trailer/Practical

G = Toll Discouraged/Shortest

H = National Network/Shortest

I = 53 Foot Trailer/Shortest

J = Toll Discouraged/National Network/Shortest

K = Toll Discouraged/53 Foot Trailer/Shortest

Use of the old codes is still supported, no changes are required. Old codes for National Network (N), Toll Discouraged (T), and 53 Foot Trailer (5) will be generated using the Practical network. Changing this default to the Shortest network is not possible.

⇒ **NOTE:** For users upgrading from PC*MILER|Streets, the Light/Heavy vehicle option has been renamed to 'Override Restrictions'. Parameter codes have changed from L (Light) to Y (Override Restrictions) and H (Heavy) to N (Obey Restrictions). Use of L and H is still supported.

⇒ **NOTE:** For Version 16, the HS (Turn-by-Turn Driving Instructions) return packet was changed from previous versions. The fields for Route and Interchange were lengthened and the number of sets of route information was reduced from 4 sets per packet to 3. See section 7.2.4.1 for full details.

⇒ **IMPORTANT REMINDER:** Users of PC*MILER Versions 14 and 15, and PC*MILER|Streets Versions 1, 2000, 3, and 4 must type a comma between the city and the state or province. For Version 16 and 17 the comma between the city and state or province is optional.

Version Specific Routing and City Format Information

<u>Version</u>	<u>Route Types Available</u>	<u>City Entry</u>	<u>Jurisdiction Info</u>
PC*MILER 14.x	P (ractical) S (hortest) T(oll Discouraged) N (ational Network)	Comma required between city and jurisdiction code	Quebec = PQ Newfoundland = NF
PC*MILER 15.x	P (ractical) S (hortest) T(oll Discouraged) N (ational Network)	Comma required between city and jurisdiction code	Quebec = PQ Newfoundland = NF
PC*MILER 16.x	P (ractical) S (hortest) T(oll Discouraged) N (ational Network) 5 (FiftyThree Foot)	Comma or space required between city and jurisdiction code	Quebec = QC Newfoundland = NF
PC*MILER 17.x	P (ractical) S (hortest) N (ational Network)(prac) 5 (FiftyThree Foot)(prac) T(oll Discouraged)(prac) B = Toll Discouraged/Practical C = National Network/Practical D = 53 Foot Trailer/Practical	Comma or space required between city and jurisdiction code.	Quebec = QC Newfoundland = NL

E = Toll Discouraged/National Network/Practical

F = Toll Discouraged/53 Foot Trailer/Practical

G = Toll Discouraged/Shortest

H = National Network/Shortest

I = 53 Foot Trailer/Shortest

J = Toll Discouraged/National Network/Shortest

K = Toll Discouraged/53 Foot Trailer/Shortest

Restriction Overrides by Version

PC*MILER 14.x	Feature not available
PC*MILER 15.x	Feature not available
PC*MILER 16.x	Available with Street Level Add-on Only
PC*MILER 17.x	Available all versions

Codes For PC*MILER Versions

Must be 3 characters:

PC*MILER 14.0 = 140

PC*MILER 14.1 = 141

PC*MILER 15.0 = 150

PC*MILER 15.0 = 151

PC*MILER 16.0 = 160

PC*MILER 16.1 = 161

PC*MILER 17.0 = 170

PC*MILER 17.1 = 171

7.1 Technical Overview

The PC*MILER-AS/400 system uses distributed processing techniques (i.e. the processing is split into two). The user interface or interactive software is written in RPG and runs on the AS/400. The mileage calculation software is written in C++ and runs on a PC in the Windows environment. The RPG programs communicate with the PC mileage calculation software through N/S Router or Client Access Express. The interactive software on the AS/400 allows multiple users to look up point-to-point mileages and routes for up to thirty stop-off points. The Windows server application creates a data queue on the AS/400 at startup called MIDQUE. The server application waits for mileage requests and processes them when received. The server application responds to an output queue specified within the request packet.

AS/400 Programs

Files	Description
MVSIINQ	Main AS/400 inquiry program that sends request to MIDQUE data queue
CITALK	RPG program that verifies city ZIP spelling
CITHLP	RPG program that displays city help screen with pick list
CRTQ	CL program that creates an output data queue based on the job number
DELQ	CL program that deletes the queue created by CRTQ
GETLAT	Sample RPG Program that converts City, Jurisdiction pairs or ZIP codes to Lat/longs
GETLATC	CL program that creates output queue and starts GETLAT RPG
GETMILV	Sample RPG Program performs point-to-point mileage lookups
GETMILVC	CL program that creates output queue and starts GETMIL RPG
GETQNAME	RPG Program that determines library and data queue name for sending requests
VALDR	RPG Program that validates ZIP codes, place names, and street addresses; also provides pick lists of ZIP codes, names and addresses when partial name, ZIP or address is passed in RPG parameters.
MIDQUE	Data queue that contains input mileage lookup records
MVSIINQC	CL program that creates output data queue and starts MIINQ rpg
QUEUE	CL program that writes to the MIDQUE request data queue
NWSEND	External data structure for sending mileage requests
NWRESP	External data structure for receiving mileage output

The program MSVIINQ contains two subroutines that can be used to integrate miles with other transportation software. The subroutine SNDREQ sends mileage requests to PC*MILER and the subroutine RSLT receives mileage results from PC*MILER.

The PC Mileage Server can respond to a total of five types of Mileage Requests:

Mileage:

VN = Version of PC*MILER/AS/400 Multiple Version Switch being used by the server

New→ MV = Versions of PC*MILER Highway Data available.

VA = Validation that a stop (City, ZIP code, etc.) is recognized by PC*MILER or a list of possible matches to a partial city or ZIP code

MI = Total mileage for up to 30 stops

SM = Total mileage for up to 30 stops broken down by state or province

HS = Turn-by-turn driving instructions for up to 30 stops

The PC Mileage Server responds with the following types of returns:

VR – Version of PC*MILER or PC*MILER|Streets running on the PC

New→ NS – Version(s) of PC*MILER running available.

PL – Good/Bad Stop or a 'pick list' of potential matches

CP – Total Miles for a trip

SR – Total Miles for a trip broken down by state or province

HR – Turn-by-turn driving instructions or "highway segments"

VN returns a VR

MV returns a NS

VA returns a PL

MI returns a CP

SM returns a CP and an SR.

HS returns a CP, an SR and an HR

7.2 Request and Response Field Parameters

The following sections specify the field parameters for the request types defined in section 7.1 and the responses to each request type.

IMPORTANT NOTE: When using PC*MILER|Streets, the best matching for address location lookups can be accomplished using the guidelines stated below. These rules apply to batch or interactive integration. **It is recommended that a validation (VA) request always precede each mileage request, especially where street addresses are included,** in order to avoid misleading or incomplete output.

- When you input a street address, use a city and state abbreviation whenever possible.

Example: **Princeton, NJ;1000 Herrontown Road** – The comma between the city and state is optional. The semicolon between the state abbreviation and the street address is required.

- Use a street number.
Example: **Princeton, NJ;1000 Herrontown Road** as opposed to "Princeton, NJ;Herrontown Road". In this example, if Herrontown Road is 50 miles long and no address is included, the returned mileages could be very inaccurate.
- When a street address is not supplied, do not send a semi-colon.
Example: Send **08540** as opposed to "08540;" – a semi-colon will cause the server to look up a blank address which is not necessary.

Three examples of correct input:

Trenton, NJ;21 Olden Avenue
New York, NY;118 Broadway
20001

7.2.1 PC*MILER Versions Available (MV) Request and Response

It is recommended that you maintain a list of available versions via the MV request type. Within the NV return is a space-delimited list of available versions. For instance: **140 150 161 170**

Note: The PC*MILER/AS/400 Multiple Version Switch PC mileage Server is designed such that if the Mileage Server (as400.exe) loses connection to a particular version of PC*MILER, the affected version will be removed from the list.

Version Request:

Var Name	Len	Value	Description
REQ-TYPE	2	MV	PC*MILER Versions Available
REQ-REF	10		Output Queue Name (ALK uses "Q" plus job number)
REQ-PARMS	10		Optional
REQ-SEQUENCE	4		Optional
REQ-ERROR	2		
REQ-MVS	3		Optional
REQ-FILL	237		Blank Fill
Total	268		

Version Response:

Var Name	Len	Value	Description
RESP-TYPE	2	NV	Stop pick list
RESP-REF	10		Output Queue Name
RESP-PARMS	10		Trip Parms
RESP-SEQUENCE	4		Always 0001
RESP-ERR	2		Pos 27-28 Error Code

RESP-MVS	3	Pos 29-31) PC*MILER Version
RESP-FILL	7	Pos 32-38) Not Used
RESP-VERSIONS	228	Array of space delimited, left justified, 3 character Versions.IE:140<space>150<space>161

7.2.2 Stop Validation (VA) Request and Response

The following are field parameters for stop and (for PC*MILER|Streets users) street address validation. A stop can be a city/state pair separated by a comma, a ZIP code, a latitude/longitude point or (with optional add-on modules) a Canadian Postal code or SPLC (Standard Position Location Codes). PC*MILER|Streets users may include street addresses.

Validation requests are important because error reporting in mileage requests is limited to the first two stops of a trip. If your bad stop is lower in the list of stops, you will not be told which is the nonvalid stop, you will get a generic "Can't Run Trip" message. The VA request type can be used to produce lists of potential matches to partial spellings or ZIP codes.

Validation Request:

Var Name	Len	Value	Description	<u>Extended Format</u>
REQ-TYPE	2	VA	Validate Stop or Address	
REQ-REF	10		Output Queue Name (ALK uses "Q" plus job number)	
Filler-8	8			
Force Pick List	1		P=Force Pick List or Blank (Position 20)	
Filler-7	7			
New→ MVS Params	10 (positions 29-31)		3 bytes PC*MILER Version 7 bytes not used	
REQ-CIT	70		70 bytes each left justified 38 byte maximum city name 1 byte comma (optional) 2 byte state abbrev 1 byte comma (optional) 13 byte county name (optional) or for Streets 1 byte semicolon ; followed by street address	
			<u>Examples</u> Warminster,PA,BUCKS Warminster,PA;1174 NASSAU ROAD 18974 Lat/long format should be 1234567N,1234567W 5 digit zips only Canadian Postal Codes use the format L#L<space> #L# (add-on data module) For Standard Position Location Codes SPLC plus the number (add-on data module) blank	
Filler-CIT	630			

Validation Response:

Var Name	Len	Value	Description	<u>Extended Format</u>
RESP-TYPE	2	PL	Stop pick list	
RESP-REF	10		Output Queue Name	
Filler-3	3		3 blanks	
RESP-MORE	1		Pos 16) M = more data to follow	
Filler-3	3			
Match	1		Pos 20)	
		L	List of Cities	
		Y	Exact match	
		N	No match	
Filler-2	2		2 blanks	
RESP-Seq	4		Pos 23-26) Sequence for multiple responses	
RESP-ERR	2		Pos 27-28 Error Code	
		E2	Place not found	
New→ RESP-MVS	3		Pos 29-31 (3 character PC*MILER Version)	
			Pos 32-38) Not Used	
RESP-CIT	980		Array of 14 places 70 bytes each left justified	
			or	
			Error message if there is a problem	
Filler	15			

7.2.3 Point-to-point Miles (MI) Request and Response

1. (Request) The following are field parameters for requesting miles. The purpose of the Mileage request is to allow the host application to retrieve point-to-point miles. This type of request could be used for a quick mile lookup from a host inquire program or for running several stop-off points in a batch environment. The host dispatching software could generate this request when a new trip is established.

Var Name	Len	Value	Description	<u>Extended Format</u>
REQ-TYPE	2	MI	Miles request	
REQ-REF	10		Output Queue Name	
Trip Options	Positions 13-22		(ALK uses 'Q' + the job number)	
			Request Position	
REQ-OPTION	1		Pos 1) S=Shortest	
			P=Practical	
			N=National/Practical	
			T=Toll Discouraged/Practical	
			5=53' Trailer/Practical	
			B=Toll Discouraged/Practical	
			C=National Network/Practical	
			D=53 Foot Trailer/Practical	
			E=Toll Discouraged/National	
			Network/Practical	
			F=Toll Discouraged/53 Foot	
			Trailer/Practical	
			G=Toll Discouraged/Shortest	

			H=National Network/Shortest I=53 Foot Trailer/Shortest J=Toll Discouraged/National Network/Shortest K=Toll Discouraged/53 Foot Trailer/ Shortest
	1	Pos 2)	M or K for miles or kilometers
	1	Pos 3)	R=resequence stops H=hub leg miles F=resequence stops fixed destination blank=otherwise
REQ-MORE	1	Pos 4)	M=more data to follow
	1	Pos 5)	Reserved by DR request
REQ-FMT	1	Pos 6)	E =Extended Format (Required, see Appendix A)
REQ-REGION (Worldwide Only)	1	Pos 7)	A=Asia E=Europe, F=Africa N=NorthAmerica O=Oceania S=South America
REQ-CUSTOM	1	Pos 8)	C=Custom, blank=default
REQ-Ovrd Restrictions	1	Pos 9)	Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
REQ-Hazmat (Data Add-on)	1	Pos 10)	G = General Restriction E = Explosive Restriction I = Inhalant Restriction R = Radioactive Restriction
REQ-SEQ	4		Sequence for multiple responses
REQ-ERR	2		Error Code
New → REQ-MVS	3 (Position 29-31)		Requested PCMILER Version 140=PC*MILER Version 14 141=PC*MILER Version 14.1 150=PC*MILER Version 15.0 151=PCMILER Version 15.1 et cetera Blank Fill
New → REQ-FILL	7		
REQ-CIT	700		Array of 10 places 70 bytes each left justified 3 sets of 700 when using the more flag 38 byte maximum city name 1 byte comma 2 byte state abbrev 1 byte comma (optional) 13 byte county name (optional) or 1 byte semicolon ; followed by street address <u>Examples</u> Warminster,PA,BUCKS Warminster,PA;1174 NASSAU ROAD 18974 Lat/long format should be 1234567N,1234567W 5 digit zips only Canadian Postal Codes use L#L<space> #L# Standard Position Location Code use SPLC+number

2. (Response) The following are field parameters for output miles. The City Pair response returns an output to the host application that contains city names and ZIP codes along with miles, cost and time estimates. The CP response is always returned first for all three request types (MI, SM, and HS).

Var Name	Len	Value	Description	Extended Format
RESP-TYPE	2	CP	City pair returned output	
RESP-REF	10		Output Queue Name (ALK uses 'Q' + the job number)	
Request Options 13-22				
RESP-NET	1	Pos 1)	S=Shortest P=Practical N=National/Practical T=Toll Discouraged/Practical 5=53' Trailer/Practical B=Toll Discouraged/Practical C=National Network/Practical D=53 Foot Trailer/Practical E=Toll Discouraged/National Network/Practical F=Toll Discouraged/53 Foot Trailer/Practical G=Toll Discouraged/Shortest H=National Network/Shortest I=53 Foot Trailer/Shortest J=Toll Discouraged/National Network/Shortest K=Toll Discouraged/53 Foot Trailer/ Shortest	
RESP-MIL-TYPE	1	Pos 2)	M or K for miles or kilometers	
RESP-OPTION	1	Pos 3)	R = resequence stops H = hub leg miles F = resequence stops fixed destination blank = otherwise	
RESP-MORE	1	Pos 4)	M = more data to follow	
	1	Pos 5)	Reserved by DR request	
RESP-REGION	1	Pos 6)	E=Extended Format	
	1	Pos 7)	A=Asia,E=Europe,F=Africa,N=North America,O=Oceania,S=South America	
RESP-Custom Routing	1	Pos 8)	C=Custom, blank=default	
RESP-Ovrd Restrictions	1	Pos 9)	Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy	
RESP-Hazmat	1	Pos 10)	G = General Restriction E = Explosive Restriction I = Inhalant Restriction R = Radioactive Restriction	
RESP-SEQ	4		Sequence for multiple responses	
RESP-ERR	2		Error Code	
		E1	First state not found	
		E2	First city not found	
		E3	Second state not found	

		E4	Second city not found
		E5	Unable to resequence
		E6	Unable to calculate route
		E9	Disconnected Highway Network
New→	RESP-MVS	3	PC*MILER Version (Pos 29-31)
New→	RESP-Fill	7	PC*MILER Version (Pos 32-38)
	RESP-CIT1	39	39 bytes All stop information including Zip and\or city\state and\or county and\or Street address or If there is error the pcmler error code
	RESP-CIT2	39	39 bytes All stop information including Zip and\or city\state and\or county and\or Street address
	RESP-MILE	5	Total miles returned or PC*MILER 3-digit error code
	RESP-HOUR	4	Total time in hours (0031) = 3.1 hours
	RESP-COST	7	Total cost for city pair (0052295) = 522.95
	FILL134	134	Blank Fill
	Total 266 Bytes		

7.2.4 State Miles (SM) Request and Response

1. (Request) The following are field parameters for a state miles request. The purpose of this request is to attain the state-by-state mileage information associated with a trip.

Var Name	Len	Value	Description	Extended Format
REQ-TYPE	2	SM	Miles request	
REQ-REF	10		Output Queue Name (ALK uses 'Q' + the job number)	
Request Options 13-22				
REQ-OPTION	1		Pos 1) S=Shortest P=Practical N=National/Practical T=Toll Discouraged/Practical 5=53' Trailer/Practical B=Toll Discouraged/Practical C=National Network/Practical D=53 Foot Trailer/Practical E=Toll Discouraged/National Network/Practical F=Toll Discouraged/53 Foot Trailer/Practical G=Toll Discouraged/Shortest H=National Network/Shortest I=53 Foot Trailer/Shortest	

		J=Toll Discouraged/National Network/Shortest
		K=Toll Discouraged/53 Foot Trailer/ Shortest
	1	Pos 2) M or K for miles or kilometers
	1	Pos 3) R = resequence stops H = hub leg miles F = resequence stops fixed destination blank = otherwise
REQ-MORE	1	Pos 4) M = more data to follow
	1	Pos 5) Reserved by DR request
REQ-FMT	1	Pos 6) E = Extended Format (Required see appendix A)
REQ-REGION (Worldwide Only)	1	Pos 7) A=Asia E=Europe, F=Africa N=NorthAmerica O=Oceania S=South America
REQ-Custom Routing	1	Pos 8) C=Custom, blank=default
REQ-Ovrd Restrictions	1	Pos 9) Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
REQ-Hazmat	1	Pos 10) G = General Restriction E = Explosive Restriction I = Inhalant Restriction R = Radioactive Restriction
REQ-SEQ	4	Sequence for multiple responses
REQ-ERR	2	Error Code
New → REQ-MVS	3	Requested PCMILER Version
	(Position 29-31)	140=PC*MILER Version 14
		141=PC*MILER Version 14.1
		150=PC*MILER Version 15.0
		151=PCMILER Version 15.1 et cetera
New → REQ-FILL	7	Blank Fill
REQ-CIT	700	Array of 10 places 70 bytes each left justified 3 sets of 700 when using the more flag 38 byte maximum city name 1 byte comma 2 byte state abbrev 1 byte comma (optional) 13 byte county name (optional) or 1 byte semicolon ; followed by street address
Examples		
Warminster,PA,BUCKS		
Warminster,PA;1174 NASSAU ROAD		
18974		
Lat/long format should be 1234567N,1234567W		
5 digit zips only		
Canadian Postal Codes use the format L#L #L#		

2. (Response) The following are field parameters for the state miles output. The PC will respond with the miles (or kilometers) for the stops indicated in the "SM" request. There will be 10 state miles returned for each record. If additional records are needed, an "M" in the "MORE" parameters field is used to indicate that there is more data to follow.

⇒ **NOTES:** A "CP" (city pair, point-to-point miles) response is always returned first for all three request types (MI, SM, and HS), and an "SR" (state miles) output record follows the "CP" response to an "HS" (highway system, detailed route information) request (see section 7.2.4).

Response from PC	Len	Value	Description
REQTYPE	2	SR	State miles summary
REFNUM	10		Output Queue Name (ALK uses 'Q' + the job number)
Request Options 13-22			
PARMS	1	Pos 1)	S=Shortest P=Practical N=National/Practical T=Toll Discouraged/Practical 5=53' Trailer/Practical B=Toll Discouraged/Practical C=National Network/Practical D=53 Foot Trailer/Practical E=Toll Discouraged/National Network/Practical F=Toll Discouraged/53 Foot Trailer/Practical G=Toll Discouraged/Shortest H=National Network/Shortest I=53 Foot Trailer/Shortest J=Toll Discouraged/National Network/Shortest K=Toll Discouraged/53 Foot Trailer/ Shortest
	1	Pos 2)	M or K for miles or kilometers
	1	Pos 3)	R = resequence stops H = hub leg miles F = resequence stops fixed destination blank = otherwise
RESP-MORE	1	Pos 4)	M = more data to follow
	1	Pos 5)	Reserved by DR request
RESP-FMT	1	Pos 6)	E = Extended Format (Required see Appendix A)
RESP-REGION	1	Pos 7)	A=Asia,E=Europe,F=Africa,N=North America,O=Oceania,S=South America
RESP-Custom Routing	1	Pos 8)	C=Custom, blank=default
RESP-Ovrd Restrictions	1	Pos 9)	Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
RESP-Hazmat	1	Pos 10)	G = General Restriction E = Explosive Restriction

			I = Inhalant Restriction R = Radioactive Restriction
RESP-SEQNUM	4		Sequence for multiple responses
RESP-ERROR	2		Error Code
		E1	First state not found
		E2	First city not found
		E3	Second state not found
		E4	Second city not found
		E5	Unable to resequence
		E6	Unable to calculate route
		E9	Disconnected Highway Network
New→ RESP-MVS	3		PC*MILER Version (Pos 29-31)
New→ RESP-Fill	7		PC*MILER Version (Pos 32-38)
STATEMIL	220		10 elements each element will consist of: 2 for state code 5 for total miles 4 for toll miles
FILLER	118		

7.2.5 Detailed Route Information (HS) Request and Response

1. (Request) Following are parameters for a route and state miles request. The purpose of this request is to allow the Host to retrieve detailed route information based on the city pair stop-off points.

Var Name	Len	Value	Description	<u>Extended Format</u>
REQ-TYPE	2	HS	Miles request	
REQ-REF	10		Output Queue Name (ALK uses 'Q' + the job number)	
Request Options 13-22				
REQ-OPTION	1	Pos 1)	S=Shortest P=Practical N=National/Practical T=Toll Discouraged/Practical 5=53' Trailer/Practical B=Toll Discouraged/Practical C=National Network/Practical D=53 Foot Trailer/Practical E=Toll Discouraged/National Network/Practical F=Toll Discouraged/53 Foot Trailer/Practical G=Toll Discouraged/Shortest H=National Network/Shortest I=53 Foot Trailer/Shortest J=Toll Discouraged/National Network/Shortest	

		K=Toll Discouraged/53 Foot Trailer/ Shortest
	1	Pos 2) M or K for miles or kilometers
	1	Pos 3) R = resequence stops H = hub leg miles F = resequence stops fixed destination blank = otherwise
REQ-MORE	1	Pos 4) M = more data to follow
	1	Pos 5) Reserved by DR request
REQ-FMT	1	Pos 6) E = Extended Format (Required see appendix A)
REQ-REGION	1	Pos 7) A=Asia,E=Europe,F=Africa,N=North America, O=Oceania,S=South America
REQ-Custom Routing	1	Pos 8) C=Custom, blank=default
REQ-Ovrd Restrictions	1	Pos 9) Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
REQ-Hazmat	1	Pos 10) G = General Restriction E = Explosive Restriction I = Inhalant Restriction R = Radioactive Restriction
REQ-SEQ	4	Sequence for multiple responses
REQ-ERR	2	Error Code
REQ-CIT	700	Array of 10 places 70 bytes each left justified 3 sets of 700 when using the more flag 38 byte maximum city name 1 byte comma 2 byte state abbrev 1 byte comma (optional) 13 byte county name (optional) or 1 byte semicolon ; followed by street address
		<u>Examples</u> Warminster,PA,BUCKS Warminster,PA;1174 NASSAU ROAD 18974 Lat/long format should be 1234567N,1234567W 5 digit zips only Canadian Postal Codes use the format L#L #L#

2. (Response) Following are field parameters for a response to the route and state miles request. The PC response record has all of the required detailed route information. There are four route list records\response records. Therefore, if there are more than four records for the route, additional response records must be returned. Multiple returned records are designated by the "M" in the "MORE" parameter field.

⇒ **REMEMBER:** A "CP" and "SR" output record will always precede the "HR" response record.

Response from PC	Len	Value	Description
REQTYPE	2	HR	Route highway information returned
REFNUM	10		Output Queue Name (ALK uses 'Q' + the job number)
Request Options 13-22			
REQ-OPTION	1	Pos 1)	S=Shortest P=Practical N=National/Practical T=Toll Discouraged/Practical 5=53' Trailer/Practical B=Toll Discouraged/Practical C=National Network/Practical D=53 Foot Trailer/Practical E=Toll Discouraged/National Network/Practical F=Toll Discouraged/53 Foot Trailer/Practical G=Toll Discouraged/Shortest H=National Network/Shortest I=53 Foot Trailer/Shortest J=Toll Discouraged/National Network/Shortest K=Toll Discouraged/53 FootTrailer/ Shortest
	1	Pos 2)	M or K for miles or kilometers
	1	Pos 3)	R = resequence stops H = hub leg miles F = resequence stops fixed destination blank = otherwise
REQ-MORE	1	Pos 4)	M = more data to follow
	1	Pos 5)	Reserved by DR request
REQ-FMT	1	Pos 6)	E = Extended Format (Required see appendix A)
REQ-REGION	1	Pos 7)	A=Asia,E=Europe,F=Africa,N=North America,O=Oceania,S=South America
REQ-Custom Routing	1	Pos 8)	C=Custom, blank=default
REQ-Ovrd Restrictions	1	Pos 9)	Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
REQ-Hazmat	1	Pos 10)	G = General Restriction E = Explosive Restriction I = Inhalant Restriction R = Radioactive Restriction

REQ-SEQNUM	4	Sequence for multiple responses
REQ-ERROR	2	Error code
		E1 First state not found
		E2 First city not found
		E3 Second state not found
		E4 Second city not found
		E5 Unable to resequence
		E9 Disconnected Highway Network
New→ RESP-MVS	3	PC*MILER Version (Pos 29-31)
New→ RESP-Fill	7	PC*MILER Version (Pos 32-38)
RouteInfo	300	3 Sets of 100 Each

ROUTEINFO

3 sets

2 indicates end of route data for stop
 2 state code
 1 toll indicator
 6 directional (North, Turn L, etc)
 35 route number
 4 leg mileage
 38 for intersection city or junction
 6 for cumulative leg miles
 6 for cumulative stop miles

FILLER 2

NOTES: The PC will send CP response records for MI requests.
 The PC will send CP and SR response records for SM requests.
 The PC will send CP, SR, and HR response records for HS requests

7.2.4.1 Upgrade Notice

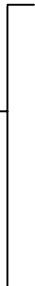
All HR returns regardless of requested PC*MILER Version return the larger V16 + format.

In Version 16 and 17, the ROUTEINFO portion of the HS return was increased by 25 characters and the number of ROUTEINFO Sets per response packet was decreased from four sets to three. Route Number was increased 15 characters from 20 to 35 (Highway , Road or Street Name), and Interchange City or Junction was increased 10 characters from 28 to 38.

The previous format is shown on the next page.

Format in previous versions:**ROUTEINFO**

4 sets

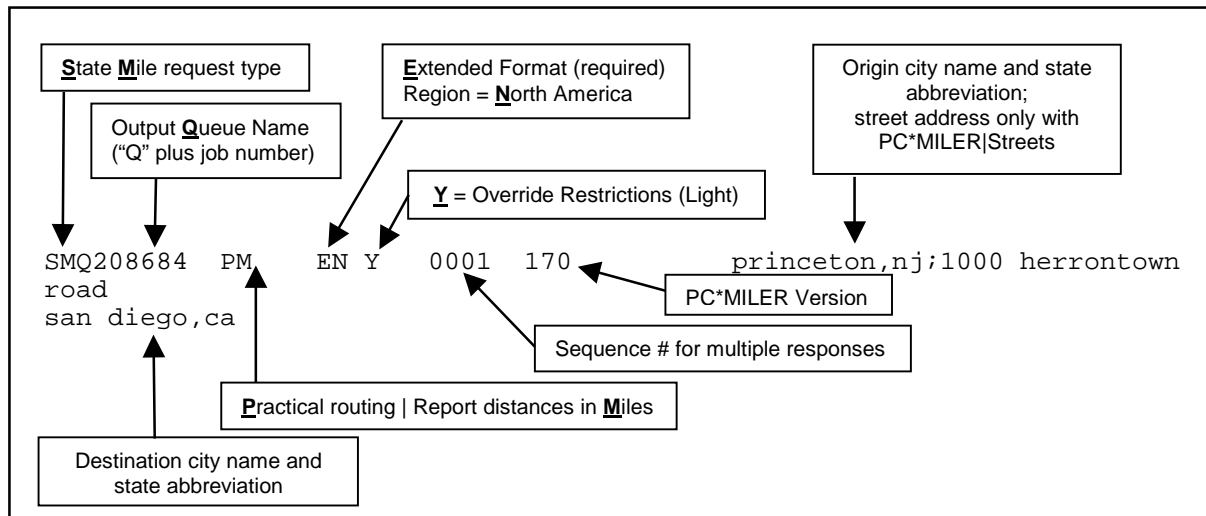


- 2 indicates end of route data for stop
- 2 state code
- 1 toll indicator
- 6 directional (North, Turn L, etc)
- 20 route number
- 4 leg mileage
- 28 for intersection city or junction
- 8 for cumulative leg miles
- 6 for cumulative stop miles

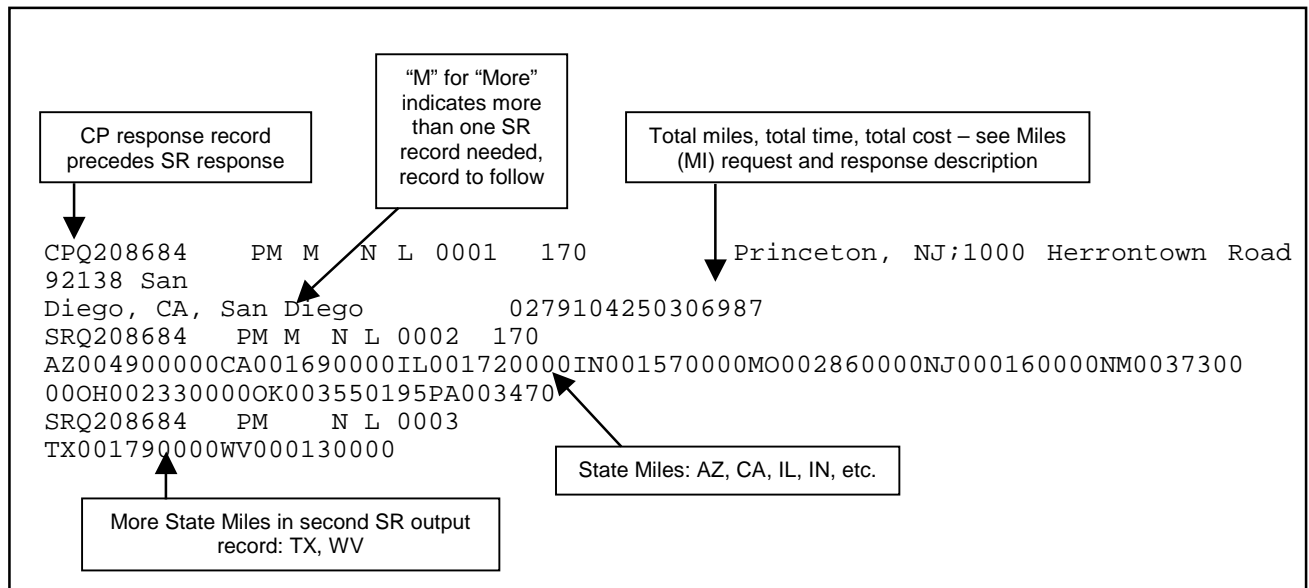
7.2.5 Sample Request and Response Records

Sample records are shown below.

Sample State Miles (SM) request record:



Sample State Miles (SR) response record:



8.0 Using the PC*MILER AS/400 Mileage Server and Map Window

Maps are not available in PC*MILER/AS/400 Multiple Version Switch.

8.1 Menus

All menu commands in PC*MILER for the AS/400 are described on the following pages.

The File Menu

Using the **File** menu, you can open, close, save and duplicate routes; print graphics and reports; and exit the PC*MILER program.

Delete AS/400 Input Queue	When a queue becomes corrupted, creates a new queue and deletes the corrupted one.
Exit	Exit PC*MILER AS/400. When you exit, all active windows are saved as they appear on your screen for the next time PC*MILER AS/400 is opened.
AS/400 Control	<p>Configure the Mileage server for different purposes. Choose from the sub-menu:</p> <p>Change Library/Queue: Location of request/input queue. Default Library is ALKMVS. Default Data Queue Name is MIDQUE. Innovative users use your ICC work library, IE: ITRS6WORK or IESR7WORK. If you want to display routes/trucks for requests coming from this one PC rather than for all requests, use your</p>

	<p>AS/400 display name instead of MIDQUE.</p> <p>Mapping on: Not Available</p> <p>Graphics for Mile Requests: Not Available.</p> <p>Log to File: Turn diagnostics on/off. This is useful for debugging problems. When on, diagnostics are written to a file called <code>as400.log</code>, located in the directory that the software is running from (<code>srv32.exe</code>).</p> <p>Host Polling Timer: Use faster time slice to poll the AS/400 more often for faster interactive response time, or slower time slice for smoother graphic display.</p> <p>Force Pick List: Turns AS/400 pick lists off/on for duplicate city names. Activates lists for both large cities with multiple ZIP codes and duplicate city names.</p>
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The Map View Menu

Not Available in PC*MILER|AS/400 Multiple Version Switch.

The Window Menu

Use the **Window** menu to control and organize the active windows in your display.

Tile Vertical	Active windows will fit your screen, running vertically.
----------------------	----------------------------------------------------------

Tile Horizontal	Active windows will fit your screen, running horizontally.
Display Serve Log	Restore the Serve Log window if minimized.
Display Map	Restore the Display Map window if minimized.

9.0 Common Questions and Installation Problems

Question: *PC*MILER works correctly when using the PCMILER command on the AS/400, but my Innovative software does not work.*

Answer: Run the CONFIG command on the AS/400 (which is described in the manual) and type the Innovative work library name **I93WORK** or **ITSR5W012** (check with ICC). After this is complete, check the File menu in the AS/400 Mileage Server, **choose AS/400 Control>Change Library Queue**. Or you can edit the PCMSERVE.INI or PMWSSRV.INI for Streets, changing the LIBRARY=ALKMVS to LIBRARY=I93WORK and then restart the AS/400 Mileage Server. Or re-install the AS/400 windows CD and type **I93WORK**. Restart the SERVER.

Question: *PC*MILER works correctly when using the PCMILER command but my McCormick software does not use the same routing options such as Practical or Shortest.*

Answer: The McCormick software was enhanced so that it uses the mileage parameters that are set by our CONFIG utility. Some McCormick sites do not have these enhancements. The user should call McCormick about this problem.

Question: *The Interactive PC*MILER screen crashes when I type in an ICC Short City Code.*

Answer: PC*Miler does a lookup in an ICC Cities database when you use Short City Codes, a component program of PC*Miler needs to be compiled with access to your Cities database. The compile will fail unless you have ALKMVS and your Innovative work and file libraries in your library list. Get a 400 command line and do a DSPLIB, make sure you have ALKMVS and your two Innovative Libraries in your list. The Innovative libraries are different from release to release. They can be I93WORK and I93DATA, or ITSR4WORK and ITSR4FILE, or ITSR5WORK and ITSR5FILE, or ITSR6WORK and ITSR6FILE, or IESR7WORK and IESR7FILE. If the necessary libraries are not in your list use the ADDLIB command to add them. Then do a WRKOBJPDM<space>ALKMVS. Do a 12 on QRPGRSRC and then a 14 on CITICC, say yes to replace existing member.

Question: *PC*MILER works correctly but my Innovative Print Missing Tariff miles is not returning miles for a few cities.*

Answer: The city spellings in the Innovative city file are different than in PC*MILER. Use the report from the Print Missing Tariff Miles (which lists the city discrepancies) and type **PCMILER** from the AS/400 command line. Now type the city code in, e.g. **OCOK** (should be Oklahoma City OK) and press **<ENTER>**. PC*MILER will indicate that it is not found. Now use the long spelling of the city, for example **ok* OK**, to determine the PC*MILER spelling. Press **<F16>** to invoke the ICC city update program and correct the spelling for Oklahoma City OK. After all the corrections are made, re-run the ICC Print Missing Tariff Miles utility to update those missing miles.

Question: *Some of the mileage returned from PC*MILER is different from the mileage returned by my other transportation software.*

Answer: The city spelling or ZIP being used by the other software is probably not correct. To verify what place name is being sent to PC*MILER, click on the Pick Pins icon and then on the stop-off point in the mapping window. Now correct your AS/400 cities file.

Question: *When I change my queue name to "MIDQUE", my PC can't receive anything from the AS/400.*

Answer: Make sure that you exit and restart the PC*MILER interactive software on the AS/400. The PC*MILER program on the AS/400 will detect the presence of the new queue and it will send requests to this queue.

Question: *The interactive response time has become slower on the AS/400 since we have added several more users. Can we improve the performance?*

Answer: Yes. You can run multiple copies of the PC*MILER AS/400 program on the same PC if you have enough memory. Or if you have another available PC, you can start up PC*MILER AS/400 on the other PC.

Question: *How can I run PC*MILER AS/400 on more than one PC?*

Answer: Make sure that PC*MILER AS/400 is installed properly on each PC. Additionally, set the queue name to **MIDQUE** so that the multiple PC's are servicing the same queue.

10.0 Technical Support

Technical support is available to registered users of PC*MILER AS/400 from **9:00am to 5:00pm EST, Monday through Friday**. Call **(609) 683-0220, x303**. Or e-mail us at **pcmsupport@alk.com** (type "PCM/AS400" in the subject line).

Appendix A: Backward Compatibility

ALK Technologies does support backward compatibility with previous versions of PC*MILER and PC*MILER for the AS/400. However, it is **not** advisable to develop new applications that use these short city name structures, because you lose access to county information which is necessary for resolving duplicate city name problems. Over time, this backward compatibility becomes increasingly difficult for ALK Technologies to maintain. Future backward compatibility is not guaranteed.

If you would like more information about backward-compatible formats, please contact the ALK technical support staff (see Chapter 10).

Appendix B: Configuring an N/S Router For Use With PC*MILER AS/400

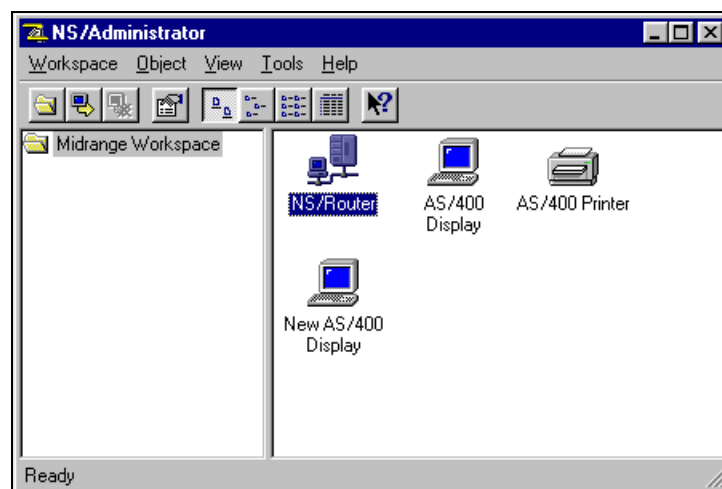
Unless you have a twinax connection, configure your router using the AnyNet protocol. AnyNet needs to be enabled on the AS/400 (see *Appendix D: Configuring AnyNet on the AS/400*).

For PC*MILER Version 14 (or higher) and any PC*MILER|Streets version, you must have the N/S Router version 3.0 or higher.



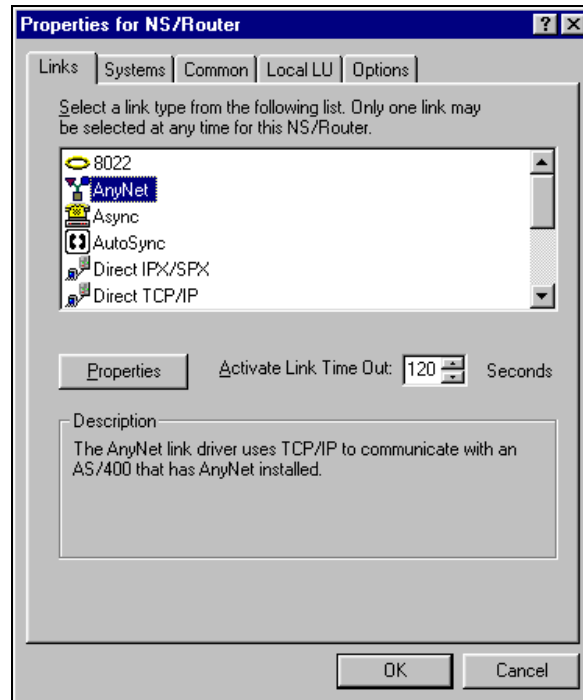
Check by selecting **HELP > About** in the NS/Administrator or the midrange workspace. **NOTE:** If you need to upgrade your NS Router, you must reinstall the PC*MILER AS/400 interface afterwards. The PC*MILER interface is built on a specific Netsoft Data Queue DLL that is available only on the PC*MILER interfaces CD.

To start the configuration, go to the N/S Administrator, right click on the N/S Router, and choose Properties.

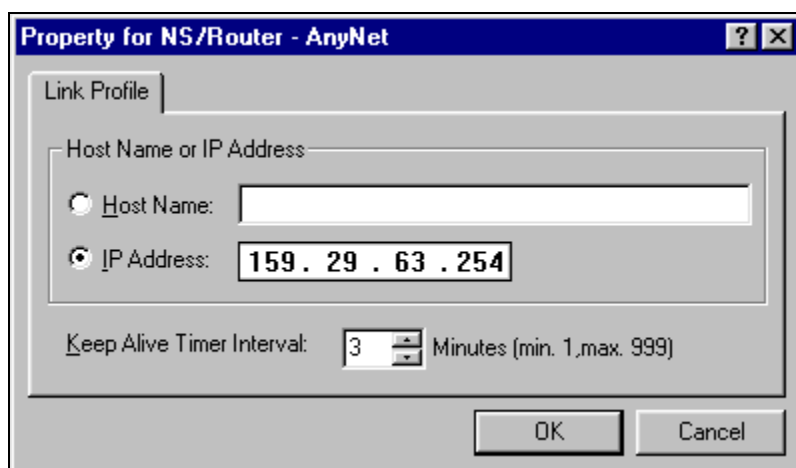


Then do the following:

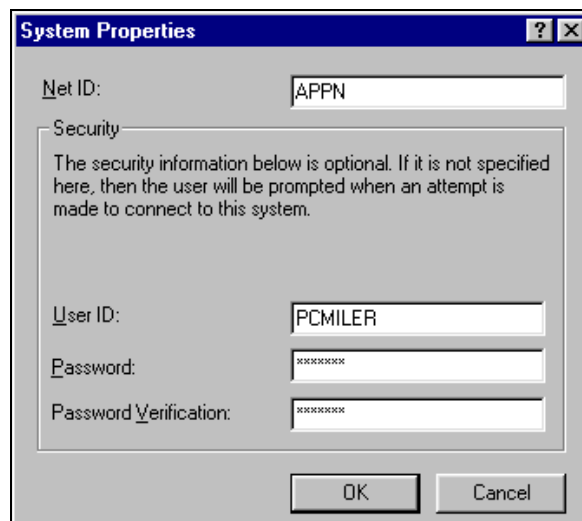
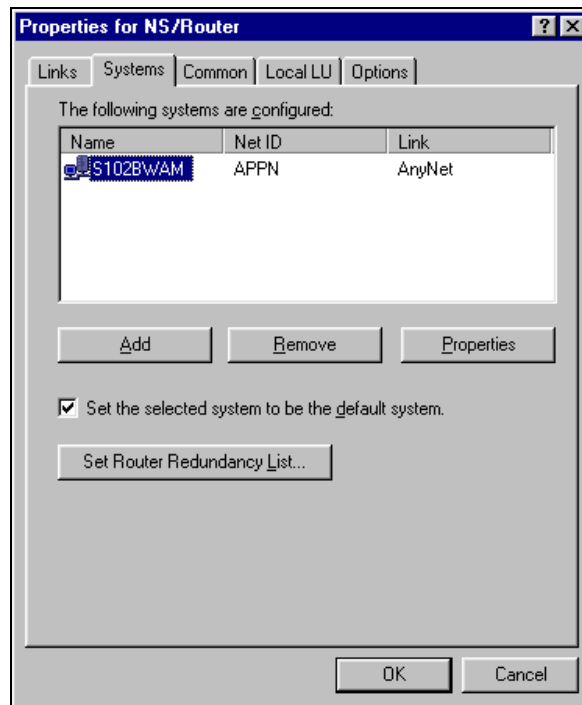
1. In the Links Tab, highlight AnyNet, and then choose Properties.



2. In Properties, fill in the AS/400's IP address. You can use a system name, but if your host tables are not filled in properly, you will be able to connect to the AS/400, but PC*MILER won't be able to create a Data Queue.



3. The Systems tab adds the AS/400's system name. This is where you set the password with which the router signs in. Make sure that the password has not expired, and that the account has object authority to the library where your mileage request Data Queue will reside (usually **ALKMVS** or an Innovative Work Library).



4. In the local LU tab use the second option, **Use a local specific value.**

The screenshot shows a Windows-style dialog box titled "Properties for NS/Router". It has five tabs: "Links", "Systems", "Common", "Local LU", and "Options". The "Local LU" tab is selected. Inside the dialog, there is a text field labeled "Net ID:" with the value "APPN". Below this is a section titled "PC Location Name" which contains five radio button options, each followed by a text field:

- ☐ Use a shared value: [empty text field]
- ☒ Use a local specific value: MILESPC
- ☐ Use log in name: [empty text field]
- ☐ Use computer name: [empty text field]
- ☐ Use the default name in the SNA server: [empty text field]

At the bottom right of the dialog are "OK" and "Cancel" buttons.

These are the only changes you need to make. Leave the other settings on the defaults.

Appendix C: Configuring AnyNet On the AS/400

The following instructions are provided by NetManage.

1. Type the following command at the AS/400 command prompt:

CHGNETA ALWANYNET(*YES)

This value can only be changed when the AnyNet controller is varied off. Vary on the controller to make the change effective. You can check this attribute with the **DSPNETA** command, and page down to the bottom.

2. Type the following command at the AS/400 command prompt:

**CRTCTLAPPC CTLD(controller name) LINKTYPE(*ANYNW)
RMTCPNAME(same as controller name)
RMTNETID(*NETATR)**

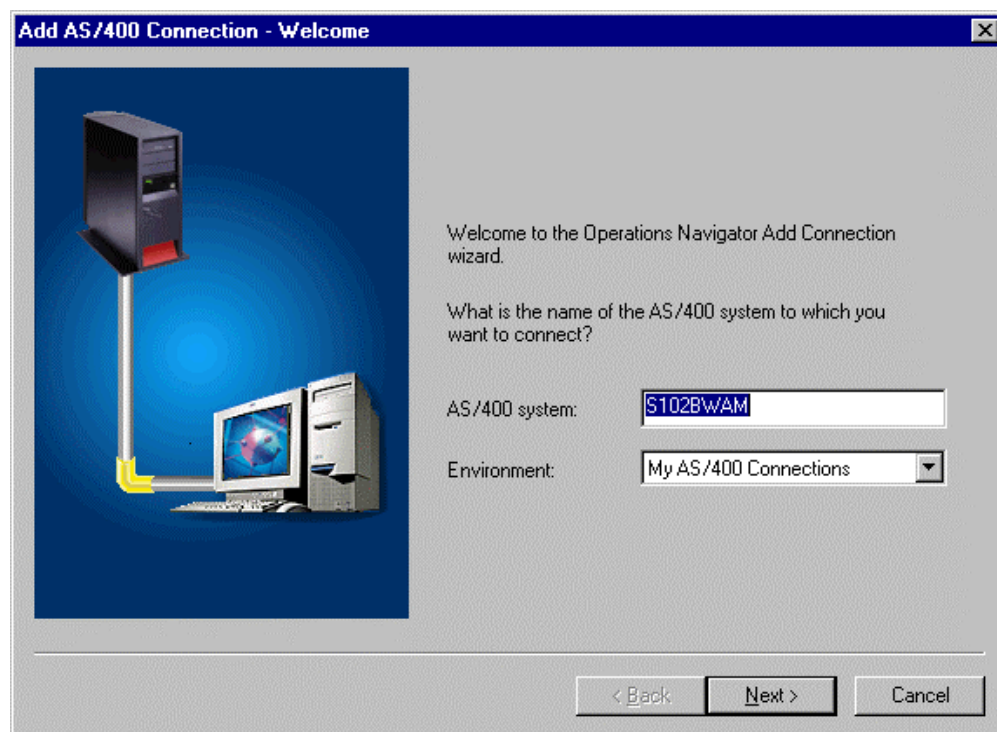
For **(controller name)**, any name can be used. Only create one AnyNet controller per 255 users. ***If multiple AnyNet controllers are created, unpredictable results may occur.***

For any further questions, see your AS/400 System Administrator's *User's Guide*.

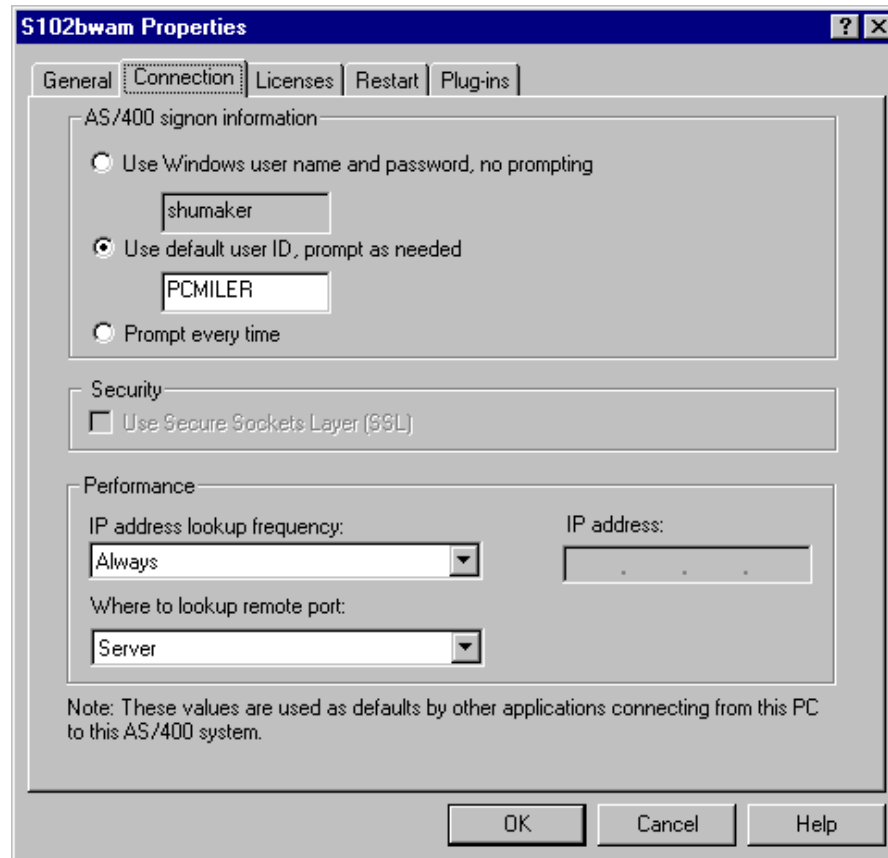
Appendix D: Configuring Client Access Express To Work With PC*MILER AS/400

1. Install Client Access Express on your mileage server PC by running the **setup.exe** that is in the Express folder on your Client Access Express CD.
2. Go to the AS/400 Operations Navigator. For new installations, the Navigator will prompt to ask if you want to add a connection. You will need to know the IP Address of your AS/400 and the System Name if you want to configure your connection using the AS/400 System name. You will have to make a table entry in the PC's Hosts File. For NT or Windows 2000, the file is **C:\winnt\system32\drivers\etc\hosts**. For 95/98, **c:\windows\hosts.sam**.

Here we are adding an AS/400 called **S102BWAM**, you can also use the IP address of your AS/400.



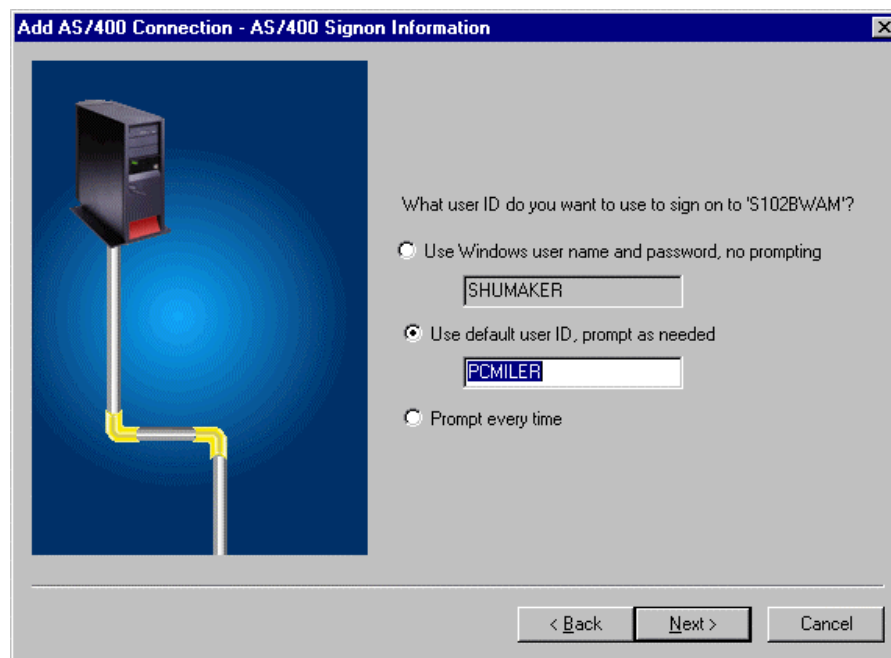
For existing installations of Client Access Express, go into the AS/400 Operations Navigator and right mouse click on your AS/400 connection. Choose Properties to make changes or Verify to verify a connection.



The Connection Properties Window is used for changing existing connections or changing the Restart Settings for new connections.

⇒ **NOTE:** Client Access Express has the ability to change passwords in the user profile. If you are prompted for a new password, you will be making a permanent change in that user profile.

3. **Password Considerations** - There are several areas to consider with a Client Access Express installation. Client Access Express offers three Password options. You can choose to have the PC logged on manually to the AS/400, have Client Access Express use the Windows User Name and Password, or you can specify a user profile and have the password typed in as needed.

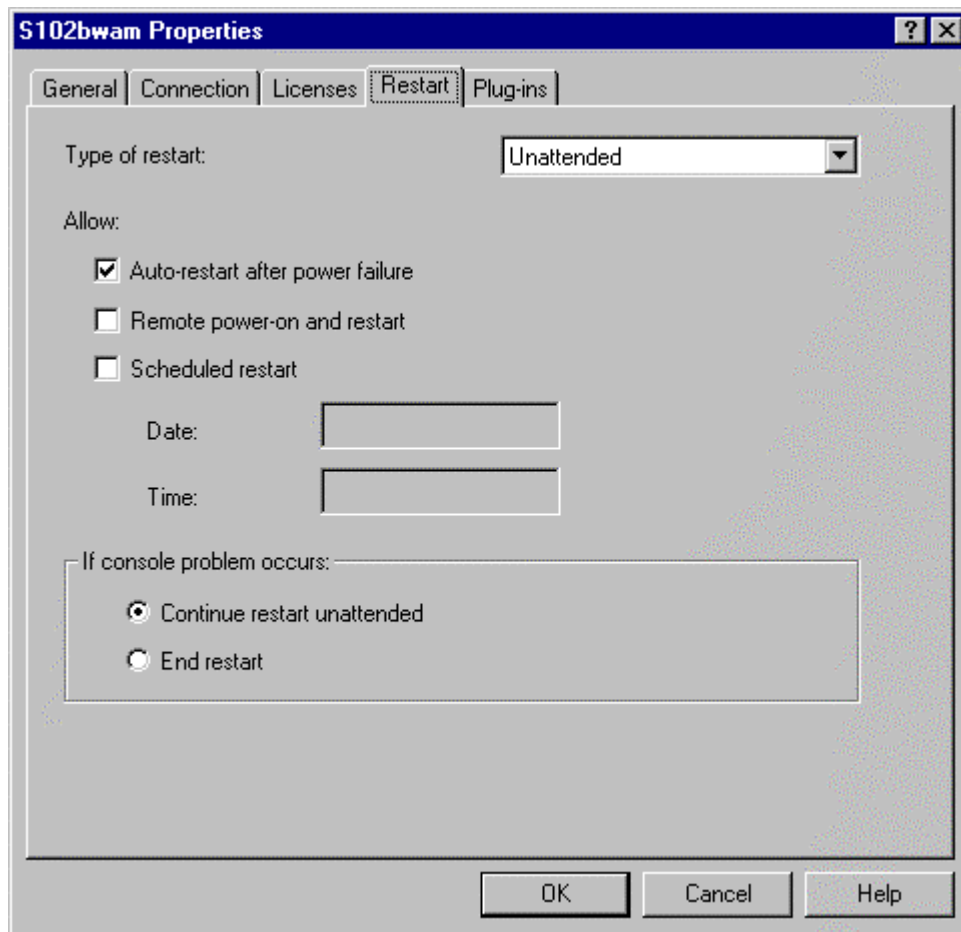


The default user ID is the User Profile that the mileage server PC will be signing on to. This user will need the authority to create and delete data queues in either the ALKMVS Library or your Innovative Work Library.

If you choose to use the Windows User and Password, you have to have the Windows User Name and Password match the user profile and Password that you will be using for your mileage server PC to sign onto the 400 with. The Windows User and password must exactly match those in the user profile you are using.

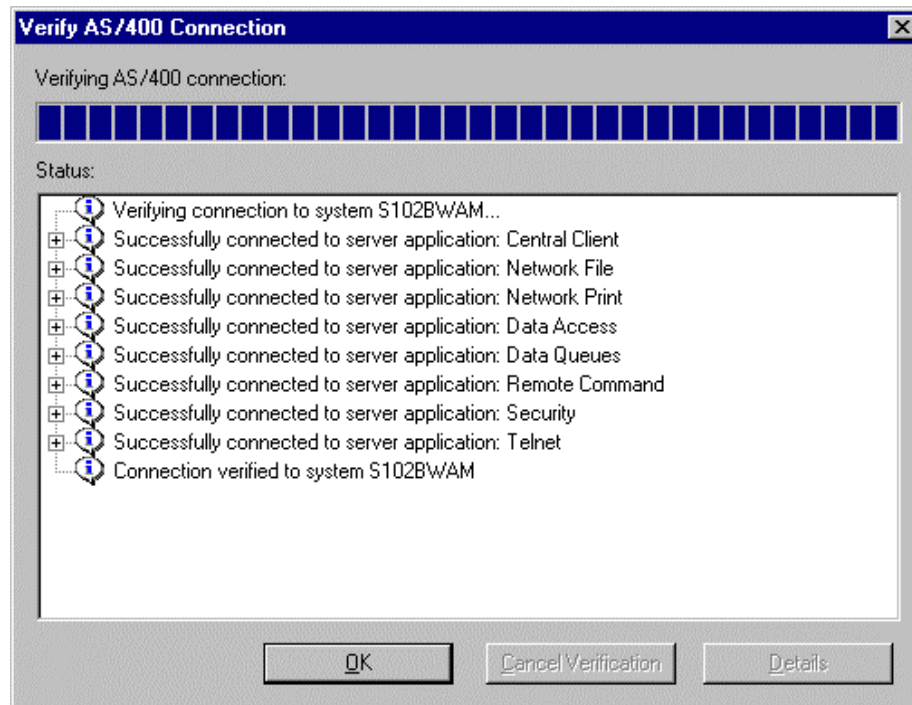
In the event of a power loss, the PC will not connect to the AS/400 until someone manually types in the Windows password. To get a PC to restart without prompting for a password, you have to set the Windows Password to nothing. AS/400 security does not allow a null password. So if you want the mileage server PC to reconnect automatically after a power outage, you cannot use the Windows Password option.

If you want to have an unattended restart, your only option with Client Access Express is to store the User Profile Name and Password in the mileage server's .ini file. At this time, the password is not encrypted, but it is stored as text.



For auto-restart, you will also have to make the above settings in the Connection Properties dialog. (For new connections, right mouse click on your connection in the AS/400 Operation Navigator, and choose properties to get this screen.)

4. **Verify the connection.** If a connection cannot be made, contact IBM for assistance.



Appendix E: The Sleep Feature For NS Router Installations

The Sleep Feature has been added to correct an issue in which the NS Router does not reliably reconnect to the AS/400 after an IPL or power down. There should be no need to use this feature when you are using a Client Access Express connection.

To activate the sleep feature, you need to send a message to the PC mileage server (**SRV32.exe**).

Included in your ALKMVS Library is a CL program called "queue". For queue to work you must have **ALKMVS** in your library list. You may have to compile the queue if you do not have the program – use the command **WRKOBJPDM**, with 12 on QCLSRC and 14 on queue.

The syntax for queue is:

Queue<space>('SP60')

where 60 is the number of seconds that you want the mileage server to sleep for. (**NOTE:** Queue is case sensitive, the SP has to be in caps.)

To put the mileage server to sleep for a 3-hour period before an IPL, you would have to run this command (with ALKMVS in your library list):

Call ALKMVS/queue<space>('SP10800')

The sleep process only works if the only thing using the NS Router is one mileage server. You can't be running Netsoft Green Screens, or more than one mileage server. The sleep feature sends a message to the NS Router to disconnect its conversations with the AS/400. The sleep command can only disconnect its own connections, having other active connections causes the process to fail.

You will need to test the sleep feature. On your mileage server, set up your screen so you can watch both the Router (Midrange Workspace) and the mileage server's Server Log (SRV32.exe).

To get the Midrange Workspace up, double-click the small overlapping white & purple squares icon that resides by the system clock. You can also press and hold down the ALT key and press and release the TAB key until the Midrange Workspace NS/Router Icon is selected, and then release both keys.

To get the AS/400 mileage server screen, you can click on SRV32 on your tool bar. You can also press and hold down the ALT key, and press and release the TAB key until the AS/400 Server – PC*MILER icon is selected, and then release both keys. To bring up the Server Log, click on the Bart's Windows pull-down menu, or press ALT-W and choose Display server Log.

From a green screen on another PC or terminal, run PC*MILER and run a route from 10001 to 90009 to make sure that it is working. Watch the PC*MILER AS/400 Server's server log. You should see those ZIP codes show up in a line that starts out "input=..." This test is to ensure that you are working with the correct mileage server, and that it is working properly.

Now exit the green screen PC*MILER and send a 60-second sleep command:

Call queue<space>('SP60') press <ENTER>.

Watch the server log to see that it catches the sleep message. Also watch in the Midrange Work Space that the number of conversations drops to zero. Finally, the mileage server should wake up and reconnect with the mileage server; the number of conversations in the Midrange Work Space should go up to 2.

Now go back to the green screen PC*MILER and send another mileage request to test that the re-established connection is working properly. If it is working now, you can use this feature before your ipl's or power downs.

Be sure to put it to sleep for a long enough period of time. If Bart wakes up too early (before the AS/400 is back up) it won't be able to connect. Be sure to leave enough time between sending the sleep command and starting the ipl or power down. Bart needs time to disconnect the router before the router senses the AS/400 dropping out or the process fails.

Appendix F: PC*MILER|AS/400 Multiple Version Switch INI Settings

PC*MILER|AS/400 Multiple Version Switch uses multiple INI files.

AS400.exe uses Srv32.INI and Pcmmv.INI.

Each instance of PC*MILER|TCP/IP Connect uses its own Pcmserve.INI

Srv32.INI is used for startup information. Pcmmv.INI is used to store the locations of your various instances of PC*MILER|TCP/IP Connect.

Srv32.INI and Pcmmv.INI have to be kept in synch at all times. Changes to the values under the [MultiVersion] Key in Srv32.INI have to be mirrored in Key names in Pcmmv.INI.

For example, from Srv32.INI:

[MultiVersion]

Product0=PCMiler 140 ←Maps to [PCMiler 140] in Pcmmv.INI

Product1=PCMiler 150 ←Maps to [PCMiler 150] in Pcmmv.INI

Product2=PCMiler 160 ←Maps to [PCMiler 160] in Pcmmv.INI

Product3=PCMiler 170 ←Maps to [PCMiler 170] in Pcmmv.INI

In Pcmmv.INI:

[default]

product=PCMiler 150 ← This must match one of the Products listed above.

The default instance of PC*MILER|TCP/IP Connect is only used if a mileage request Has no version specified (blanks in MVS parameter). An error will be returned for any other

Invalid version request.

SRV32.INI Explained:

[Defaults]

; Default values: valid values are listed after the description

; Leave values blank to use the following internal defaults:

; CalcType=Practical ←Route Type

; Units=Miles ←Distance Units Miles or Kilometers

; ChangeDest=TRUE ←Route Through All on Trip Resequencing

; HubMode=FALSE ← Lock in Hub mode. (Use with Caution)

; AlphaOrder=TRUE ←List States alphabetically versus in drive through order in reports.

; IP Address or System Name of AS/400

system=

;User Profile

user=

;Password
pass=express

library=ALKMVS <Location of request Queue (Midque) and Temporary Response Queues
qname=MIDQUE

PICKLIST=FALSE ← Force Pick list for cities with multiple zip codes and for partial matches

SLEEPTIME=300 ← Used for NS Router Connects during IPL's

FrameTrip=FALSE ←Not used

DIAG=TRUE ← Turn on logging

Borders=FALSE ; ←False Cross International Borders only for International Stops

Timer= ← Time between reads of request queue.

Mapping=FALSE ←Not Supported

ExpMap= ←Not Supported

ExitWin= ←Not Supported

[Options]

CustomRoute= ←Obey Avoids/Favors and Restriction Overrides set in pcmwin32.exe.

[Default]

Region=NA

ProductName=MultiVersion AS400

ProductVersion=1.0

; Must Point to the location of pcmmv.dll

DLLPath=C:\alkmvs

[MultiVersion]

; Values Here Must Match Key Names in PCMMV.INI.....

; Values Must Be Formatted as

; Name<space>###

; Where ### is 040 for Streets 4.0 and as follows

; 140 141 150 151 160 161 170 171 et cetera

Product0=PCMiler 140

Product1=PCMiler 150

Product2=PCMiler 160

Product3=PCMiler 170

Each instance of PC*MILER|TCP/IP connect has it's own **pcmserve.ini** file in that version's ..\Tcpip folder. Values specified in pcmserve.ini will be used unless they are otherwise specified in the mileage request packet (included at the bottom of the chart).

These values will only be used if they are not specified by the calling application.

Valid values for default and option settings in the pcmserve.ini that can be changed by the user are described below.

Key	Valid Values (Defaults)	Description
[Defaults]		
CalcType	<u>Practical</u>	Set In Srv32.Inl
Units	<u>Miles</u> Kilometers	What unit of measure should distance be shown in.
ChangeDest	<u>TRUE</u> FALSE	When optimizing the route, should the trip's destination be optimized also.
Borders	<u>TRUE</u> FALSE	Set in Srv32.Inl Should the engine try to keep routes within the United States (F), or can they cross and recross the borders at will (T).
HubMode	<u>TRUE</u> FALSE	Calculate the routes from the origin to each stop (T), not through each stop (F).
AlphaOrder	<u>TRUE</u> FALSE	List the states in the State Report in alphabetical order, or in the order driven.
FerryMiles	<u>TRUE</u> FALSE	Use ferry distances in mileage and cost calculations (T), or don't use (F).
[Options]		
OnRoad	TRUE <u>FALSE</u>	Show latitude/longitudes on the nearest road segment, or at their true locations.
FavorMajor Roads	TRUE <u>FALSE</u>	Attach latitude/longitudes to larger, more important roads, or to the nearest road segment.

CustomRoute	TRUE <u>FALSE</u>	Should PC*MILER Connect use Custom routing.
HazRoute (for PC*MILER/ Hazmat add- on only)	<u>None</u> General Explosive Inhalant Radioactive	The default hazardous routing type: disabled, general material, explosive material, inhalant material, or radioactive material.

Pcmmv.INI

[PCMiler 140]

address=127.0.0.1 ← Ip Address of Computer Name

port=8014 ← Port Number that specified when PC*MILER|Tcpip Connect was started.

[PCMiler 150]

address=127.0.0.1

port=8015

[PCMiler 160]

address=127.0.0.1

port=8016

[PCMiler 170]

address=127.0.0.1

port=8017

[default] ← Used if Version Parm populated with blanks.

product=PCMiler 150

Appendix G: AS400.LOG Error Codes

To create a log file of all mileage server input and outputs, click on the mileage server's **File** menu>**AS/400 Control** and choose **Log to file**. The file created is **c:\pmw170\as400\as400.log**. **AS400.log** displays requests and responses in the exact format as they are received and sent by the mileage server. It is recommended that logging only be used for diagnostic purposes, as the log files get quite large.

PC*MILER Error Codes:

Error Codes	Value	Message
PCMS_INVALIDPTR	101	Invalid pointer
PCMS_NOINIFILE	102	The INI file was not found
PCMS_LOADINIFILE	103	Could not load the INI file
PCMS_LOADGEOCODE	104	Could not load location database
PCMS_LOADNETWORK	105	Could not load the network database
PCMS_MAXTRIPS	106	Too many open trips (limit of 8)
PCMS_INVALIDTRIP	107	Invalid trip ID
PCMS_INVALIDSERVER	108	Invalid server ID
PCMS_BADROOTDIR	109	Could not find RootDir setting in INI file
PCMS_BADMETANETDIR	110	Invalid PCMNetDir setting
PCMS_NOLICENSE	111	License infraction: too many users, or licenses not found
PCMS_TRIPNOTREADY	112	The trip is not ready to calculate
PCMS_INVALIDPLACE	113	Invalid place name (city, state not found)
PCMS_ROUTINGERROR	114	Calculation failed: portions of trip are invalid
PCMS_OPTERROR	115	Optimization failed: portions of the trip are invalid
PCMS_OPTHUB	116	Cannot optimize a trip in HUB mode
PCMS_OPT2STOPS	117	Not enough stops to optimize the trip
PCMS_OPT3STOPS	118	Not enough stops to optimize without changing destination
PCMS_NOTENOUGHSTOPS	119	Not enough stops to calculate the trip
PCMS_BADNETDIR	120	Bad network directory
PCMS_LOADGRIDNET	121	Error loading gridded network
PCMS_BADOPTIONDIR	122	Bad option directory
PCMS_DISCONNECTEDNET	123	Disconnected network
PCMS_NOTRUCKSTOP	124	Truck inaccessible stop
PCMS_INVALIDREGIONID	125	Invalid region ID

PCMS_CLOSINGERROR	126	Server did not shut down properly
PCMS_NORTENGINE	127	Server could not properly initialize internal routing component
PCMS_NODATASERVER	128	Server could not properly initialize internal routing component

PC*MILER/Streets Error Codes:

Error Codes	Value	Message
PCMS_INVALIDPTR	101	Invalid pointer
PCMS_NOINIFILE	102	The INI file was not found
PCMS_LOADINIFILE	103	Could not load the INI file
PCMS_LOADGEOCODE	104	Could not load location database
PCMS_LOADNETWORK	105	Could not load the network database
PCMS_MAXTRIPS	106	Too many open trips (limit=8)
PCMS_INVALIDTRIP	107	Invalid trip ID
PCMS_INVALIDSERVER	108	Invalid server ID
PCMS_BADROOTDIR	109	Invalid RootDir setting in INI file
PCMS_BADMETANETDIR	110	Invalid MetaNetDir setting in INI file
PCMS_NOLICENSE	111	License infraction: too many users, or licenses not found
PCMS_TRIPNOTREADY	112	The trip is not ready to calculate
PCMS_INVALIDPLACE	113	Invalid place name (city, state not found)
PCMS_ROUTINGERROR	114	Calculation failed: portions of trip are invalid
PCMS_OPTERROR	115	Optimization failed: portions of the trip are invalid
PCMS_OPTHUB	116	Cannot optimize a trip in HUB mode
PCMS_OPT2STOPS	117	Not enough stops to optimize the trip
PCMS_OPT3STOPS	118	Not enough stops to optimize without changing destination
PCMS_NOTENOUGHSTOPS	119	Not enough stops to calculate the trip
PCMS_BADNETDIR	120	Bad network directory
PCMS_LOADGRIDNET	121	Error loading gridded network
PCMS_BADOPTIONDIR	122	Bad option directory
PCMS_DISCONNECTEDNET	123	Disconnected network
PCMS_NOTRUCKSTOP	124	Truck inaccessible stop
PCMS_INVALIDREGIONID	125	Invalid region ID
PCMS_CLOSINGERROR	126	Closing error