User's Guide

PC*MILER® AS400 28

Technology Beyond Miles

alk
A TRIMBLE COMPANY

ALL RIGHTS RESERVED

457 North Harrison Street, Princeton, NJ 08540

Table of Contents

PC*MILER® Product Line
END-USER LICENSE AGREEMENT

1. Grant of License: Subject to the terms, conditions, use limitations and payment of fees as set forth herein, ALK Technologies, Inc. ("ALK") grants the end-user ("you") a license to install and use the PC*MILER solution(s) (including traffic data subscriptions) you have purchased ("PC*MILER") on a single personal computer. The PC*MILER software, data and documentation are provided for your personal, internal use only and not for resale. They are protected by copyright held by ALK and its licensors and are subject to the following terms and conditions which are agreed to by you, on the one hand, and ALK and its licensors (including their licensors and suppliers) on the other hand.

2. Title: You acknowledge that the PC*MILER computer programs, data, concepts, graphics, documentation, manuals and other material by, developed by or licensed to ALK, including but not limited to program output (together, "program materials"), are the exclusive property of ALK or its licensors. You do not secure title to any PC*MILER program materials by virtue of this license.

3. Copies: You may make one (1) copy of the PC*MILER program materials, provided you retain such copy in your possession and use it solely for backup purposes. You agree to reproduce the copyright and other proprietary rights notices of ALK and its licensors on such a copy. Otherwise, you agree not to copy, reverse engineer, interrogate or decode any PC*MILER program materials or attempt to defeat protection provided by ALK for preventing unauthorized copying or use of PC*MILER or to derive any source code or algorithms therefrom. You acknowledge that unauthorized use or reproduction of copies of any program materials or unauthorized transfer of any copy of the program materials is a serious crime and is grounds for suit for damages, injunctive relief and attorneys' fees.

4. Limitations on Transfer: This license is granted to you by ALK. You may not directly or indirectly lease, sublicense, sell or otherwise transfer PC*MILER or any PC*MILER program materials to third parties, or offer information services to third parties utilizing the PC*MILER program materials without ALK's prior written consent. To comply with this limitation, you must uninstall PC*MILER from your computer prior to selling or transferring that computer to a third party.

5. Limitations on Network Access: You may not allow end-users or software applications on other computers or devices to directly or indirectly access this copy of PC*MILER via any type of computer or communications network (including but not limited to local area networks, wide area networks, intranets, extranets, the internet, virtual private networks, Wi-Fi, Bluetooth, and cellular and satellite communications systems), using middleware (including but not

limited to Citrix MetaFrame and Microsoft Terminal Server) or otherwise (including but not limited to access through PC*MILER connectivity products), or install or use PC*MILER on a network file server, without first notifying ALK, executing a written supplemental license agreement, and paying the license fee that corresponds to the number and types of uses to which access is to be allowed.

6. Limitations on Data Extraction: You may extract data (including but not limited to program output such as distances, maps, and driving directions) from PC*MILER and use it in other applications on the same computer on which PC*MILER is legally licensed and installed. You may not transfer data extracted from PC*MILER onto any other computer or device unless you have licensed PC*MILER for that computer or device.

7. Limitations on Mobile Communications: Without limiting the generality of the foregoing, you may not transmit PC*MILER street-level driving directions through mobile communications systems such as Qualcomm, satellite, or cellular services or to mobile devices such as computers, handhelds, pagers, or telephones without first executing a written supplemental license agreement with ALK and paying the license fee that corresponds to the number and types of devices and systems to and through which transmission is to be permitted.

8. Limitations on Disclosure: You may disclose PC*MILER distances to trading partners for specific origin-destination moves for which you provide transportation services and use PC*MILER distances as a basis for payment. You may not make any other disclosure of PC*MILER programs and materials, including but not limited to program output, to anyone outside the legal entity that paid for and holds this license, without prior written permission of ALK. You acknowledge that the PC*MILER programs and materials by, developed by or licensed to ALK are very valuable to ALK and its licensors, and their use or disclosure to third parties except as permitted by this license or by a written supplemental license agreement with ALK is strictly prohibited.

9. Security: You agree to take reasonable and prudent steps to safeguard the security of the PC*MILER program materials and to notify ALK immediately if you become aware of the theft or unauthorized possession, use, transfer or sale of the PC*MILER program materials licensed to you by ALK.

10. Acceptance: You are deemed to have accepted the PC*MILER program materials upon receipt.

11. Warranties: ALK represents and warrants that:

    A. For ninety (90) days from date of purchase, PC*MILER, when delivered and properly installed, will function substantially according to its specifications on a computer purchased independently by you.

B. For ninety (90) days from date of purchase, the software media on which ALK provides PC*MILER to you will function substantially free of errors and defects. ALK will replace defective media during the warranty period at no charge to you unless the defect is the result of accident, abuse, or misapplication of the product.

C. THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITING THE GENERALITY OF THE FOREGOING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. THE PC*MILER PROGRAM, DATA AND DOCUMENTATION IS SOLD "AS IS". IN NO EVENT SHALL ALK OR ITS LICENSORS BE LIABLE FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS, BUT NOT LIMITED TO, LOSS IN CONNECTION WITH OR ARISING OUT OF THE EXISTENCE OF THE FURNISHING, FUNCTIONING OR USE OF ANY ITEM OF SOFTWARE, DATA OR SERVICES PROVIDED FOR IN THIS AGREEMENT. IN THE EVENT THAT A COURT OF PROPER JURISDICTION DETERMINES THAT THE DAMAGE LIMITATIONS SET FORTH ABOVE ARE ILLEGAL OR UNENFORCEABLE THEN, IN NO EVENT SHALL DAMAGES EXCEED THE CONTRACT PRICE. THIS WARRANTY SHALL NOT ACCRUE TO THE BENEFIT OF THIRD PARTIES OR ASSIGNEES.

12. Disclaimer: The data may contain inaccurate, incomplete or untimely information due to the passage of time, changing circumstances, sources used and the nature of collecting comprehensive geographic data, any of which may lead to incorrect results. PC*MILER's suggested routings and traffic data are provided without a warranty of any kind. The user assumes full responsibility for any delay, expense, loss or damage that may occur as a result of their use. The user shall have no recourse against Canada, whether by way of any suit or action, for any loss, liability, damage or cost that may occur at any time, by reason of possession or use of Natural Resources Canada data.

13. Termination: This Agreement will terminate immediately upon any of the following events:

A. If you seek an order for relief under the bankruptcy laws of the United States or similar laws of any other jurisdiction, or a composition with or assignment for the benefit of creditors, or dissolution or liquidation, or if proceedings under any bankruptcy or insolvency law are commenced against you and are not discharged within thirty (30) calendar days.

B. If you materially breach any terms, conditions, use limitations, payment obligations, or any other terms of this Agreement.

C. Upon expiration of any written supplemental license agreement between you and ALK of which this license is a part.

14. Obligations on Termination: Termination or expiration of this Agreement shall not be construed to release you from any obligations that existed prior to the date of such termination or expiration.

15. Hold Harmless and Indemnity: To the maximum extent permitted by applicable law, you agree to hold harmless and indemnify ALK and its subsidiaries, affiliates, officers, agents, licensors, co-branders or other partners, and employees from and against any third party claim (other than a third party claim for Intellectual Property Rights) arising from or in any way related to your use of PC*MILER, including any liability or expense arising from all claims, losses, damages (actual and/or consequential), suits, judgments, litigation costs and attorneys' fees, of every kind and nature. ALK shall use good faith efforts to provide you with written notice of such claim, suit or action.

16. Disclosure for products containing Historical or Real-time Traffic data: traffic data, including historical traffic data, is licensed as a subscription service which must be renewed annually for continued use. ALK and its licensor(s) will use commercially reasonable efforts to make traffic data available at least 99.5% of the time each calendar month, excluding minor performance or technical issues as well as downtime attributable to necessary maintenance, and Force Majeure.

17. Limitations on Export: You hereby expressly agree not to export PC*MILER, in whole or in part, or any data derived therefrom, in violation of any export laws or regulations of the United States.

18. Miscellaneous: This Agreement shall be construed and applied in accordance with the laws of the State of New Jersey. The Courts of the State of New Jersey shall be the exclusive forum for all actions or interpretation pertaining to this Agreement. Any amendments or addenda to this Agreement shall be in writing executed by all parties hereto. This is the entire Agreement between the parties and supersedes any prior or contemporaneous agreements or understandings. Should any provision of this Agreement be found to be illegal or unenforceable, then only so much of this Agreement as shall be illegal or unenforceable shall be stricken and the balance of this Agreement shall remain in full force and effect.

PC*MILER-AS400 Version Notes – Please Read

There were no functional changes made in the ALKWIN or ALKTLL libraries for Version 28. If you currently have Borders Open/Closed and Use Ferry Distance Yes/No flags when you run the alkwin/pcmiler or alktll/pcmtll commands, your ALKWIN or ALKTLL libraries are functionally up to date. The libraries that you received with the V. 28 release have two sample data structures (MISEND2 and TLSEND2) that include field mappings for the Borders Open/Closed and Use Ferry Distance flags. Updating your library is not required.

NOTE: The following features are not supported in the AS400 product line: Fuel Optimization, Vehicle Profiles, Estimated Greenhouse Gas Emissions, RouteSync, Entry/Exit Toll Plaza Names in Reports, and Real-time/Historical Traffic Data. Province/Estado Abbreviation Option to set "NL" preference is supported in Version 25-28 only.

Important Changes for Upgrades from Versions Older than Version 17:

Combination Route Types (Version 17 and higher)

In Version 17 and higher PC*MILER now offers two basic route types, **Practical** and **Shortest**, that may be combined with one or more of the other three route options 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'/102" Trailer routes were based on the Practical route type.)

This 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 Dijscouraged/53 Foot Trailer
- Shortest/Toll Discouraged/53 Foot Trailer

Note that National Network and 53'/102" 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 and Higher

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

- Shortest
- Practical
- Practical/Toll Discouraged
- Practical//National Network
- Practical/53 Foot Trailer
- Borders Open/Closed
- Include Ferry Distance in Distance Calculations

Format Change for Entry of Mexican Place Names, Version 18 and higher.

PC*MILER now has full Mexican Estado information. Previously all Mexican cities were referenced with 'MX' as the Estado code and the Estado was returned in the US county field. For example:

Before Version 18: Mexico City, MX, Distrito Federal
Correct Format for Version 18 and higher: Mexico City, DF

Estados Codes:

AG Aguascalientes
BJ Baja California
BS Baja California Sur
CP Campeche
CH Chiapas
CI Chihuahua
CU Coahuila de Zaragoza
CL Colima
DF Distrito Federal
DG Durango
GJ Guanajuato

GR Guerrero
HG Hidalgo
JA Jalisco
EM Mexico (Estado)
MH Michoacan de Ocampo
MR Morelos
NA Nayarit
New for 25=> NX* or NL Nuevo Leon (PC Side Configuration Option – Tools menu)
OA Oaxaca
PU Puebla
QA Queretaro Arteaga
QR Quintana Roo
SL San Luis Potosi
SI Sinaloa
SO Sonora
TA Tabasco
TM Tamaulipas
TL Tlaxcala
VZ Veracruz
YC Yucatan
ZT Zacatecas

***** "NX" is used for Nuevo Leon because "NL" is already used in the database for the Canadian province of Newfoundland and Labrador. The option to configure NL for routing to Nuevo Leon is supported in Version 25-28 only.

Changes for Version 20 and Higher

Version 20 and higher offers the ability to change the **Borders Open/Closed** and **Use Ferry Distance** settings on a trip-by-trip basis. For the optional HazMat Routing package, two routing types were added: **Caustic** and **Flammable**.

These options are available to users of the Interactive PC*MILER program. Third party or in-house software packages will need to be modified to take advantage of this functionality.

See Chapter 6, *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. The Override Restrictions option is available to both PC*MILER Highway and PC*MILER|Streets Users.

Changes for Version 21

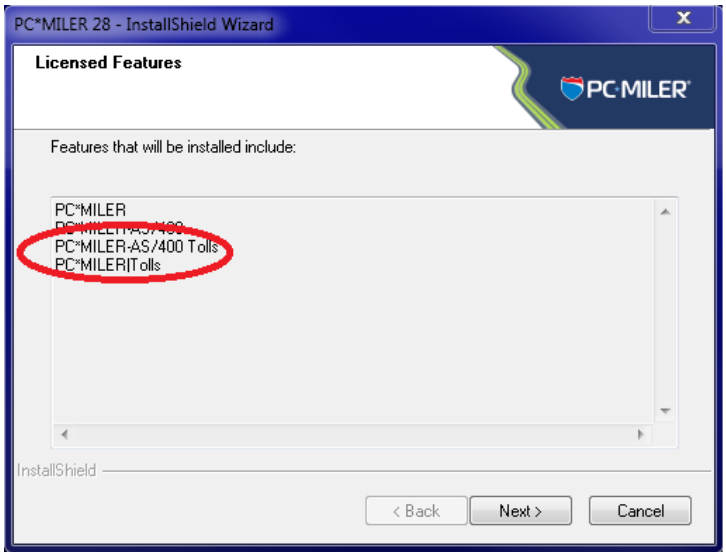
ALK has merged the ALK|FleetSuite Tolls product into the standard PC*MILER and PC*MILER|Streets product lines. Now known as "PC*MILER|Tolls" and "PC*MILER|Streets-Tolls", each one is installed as an add-on data module and they are no longer stand-alone products.

The PC*MILER|Tolls component is circled in the screenshot below as it appears during the PC Side Installation.

The Tolls component will not work with existing ALKWIN libraries. You must use the **ALKTLL** library.

PC*MILER|Tolls will not work with existing third party or in-house software packages. These third party packages must be updated to use the larger data packet layouts that are used when the optional Tolls component is installed. See Chapter 7, *Using PC*MILER|Tolls with other Transportation Software*.

If you have purchased PC*MILER|Tolls, you can install the standard PC*MILER and PC*MILER|Streets package by de-selecting the Tolls component during the PC Side installation. Tolls users will be receiving both the ALKTLL and ALKWIN Library CDs.



NOTE for ICC Users: As of May 5th, 2007, ICC has not added support for PC*MILER|Tolls. If you have purchased PC*MILER|Tolls, you must de-select the Tolls component during installation if you intend to install PC*MILER or PC*MILER|Streets for use with your ICC software. For more information, see *Appendix H.*

REMINDER: The following features are not supported in the AS400 product line: Fuel Optimization, Vehicle Profiles, Estimated Greenhouse Gas Emissions, RouteSync, Entry/Exit Toll Plaza Names in Reports, and Real-time/Historical Traffic Data. Province/Estado Abbreviation Option to set "NL" preference is supported in Version 25-28 only.

Changes for Version 25

The province/estados code 'NL' is now configurable on the PC Side to default to either Nuevo Leon or New Foundland and Labrador. Select Tools menu > Province/Estado Abbreviations > and choose either **Use NL for Newfoundland & Labrador** or **Use NL for Nuevo Leon**.

Mexican Postal Codes are now available. You can configure your PC server to ignore Mexican Postal Codes entirely, default to using the Mexican postal code when the U.S. and Mexico share a postal code, or default to using the U.S. for shared postal codes (see section 4.3).

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 AS400 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 AS400 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-AS400, 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 AS400 utilizes a unique distributed processing solution. This solution maximizes the efficiency of your AS400 by "farming out" repetitive mileage calculations to a PC. With PC*MILER-AS400, you can benefit from having a seamless mileage interface with your management system. Interfaces have been developed for Innovative Computing Corporation, Qualcomm, and others.

Use PC*MILER for the AS400 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-AS400 will eliminate the high costs of leasing mileage systems or paying exorbitant transaction fees.

2.0 Hardware and Software Requirements

Because PC*MILER-AS400 employs a Client server solution, the following hardware and software is required. The AS400 server uses SNA APPC data queues to communicate.

2.1 System Requirements

2.1.1 Platforms

- PC/LAN Windows® XP, Server 2008 and Windows 7* and 8, 32-bit support only
- AS400 (PC*MILER-AS400 supports the OS/400, i5/OS and IBM i operating system versions 4.2 (V4R2) and higher on IBM AS400, System i and Power Systems hardware.)
- CICS/MVS
- UNIX (AIX, HP-UX, SCO, Sun-Solaris) and Linux
- Citrix Metaframe and Windows Terminal Services
- TCP/IP functionality for use with other platforms.

* Support for Windows 7 32-bit was added in Version 25. Your license must be installed and activated using an Administrator Account. On some PCs you may have to check the "Run as Administrator" icon property for the PC*MILER desktop and Distance Server programs to run (right click the shortcut, choose 'Properties' then the 'Compatiblity' tab and then check the 'Run as Administrator' box.

NOTE: Windows 95, 98 First/Second Edition, ME, 2000, 2003, Vista and NT are not supported.

ALSO NOTE: Please check for platform updates regularly.

2.1.2 Microsoft Windows Update Requirements

The following service pack updates are required for Windows users. You can access these updates by regularly using the Windows Update feature or by going directly to Microsoft's website. These requirements are the minimum level of maintenance needed to run PC*MILER.

- Windows XP Service Pack 2

2.1.3 Windows Requirements

Environment:

- PC with a minimum 700 MHz processor (1-2 GHz processor recommended)
- Screen resolution 800 X 600

PC*MILER:

- PC*MILER – 2.5 GB hard disk space for full install, including all Add-Ons listed below and all Connectivity products
- PC*MILER|Tolls – Add 50 MB hard disk space
- PC*MILER|HazMat – Add 50 MB hard disk space
- PC*MILER|Streets (U.S. Data) – Add 1.1 GB hard disk space
- PC*MILER|Streets (Canadian Data) – Add 60 MB hard disk space

Add-on Data Modules:

- Canadian Postal Codes – Add 50 MB hard disk space
- Standard Point Location Codes (SPLC) – Add 2 MB hard disk space

PC to AS400 Connectivity Options (Not Provided by ALK)

- Client Access Express V4R4MO or higher.

NOTE: Netmanage is no longer supporting their NS Router, you are strongly encouraged to use Client Access Express as your PC-to-AS400 connectivity tool. Use of the NS Router is still an installation option but its use is not supported by ALK.

2.1.4 Other Requirements

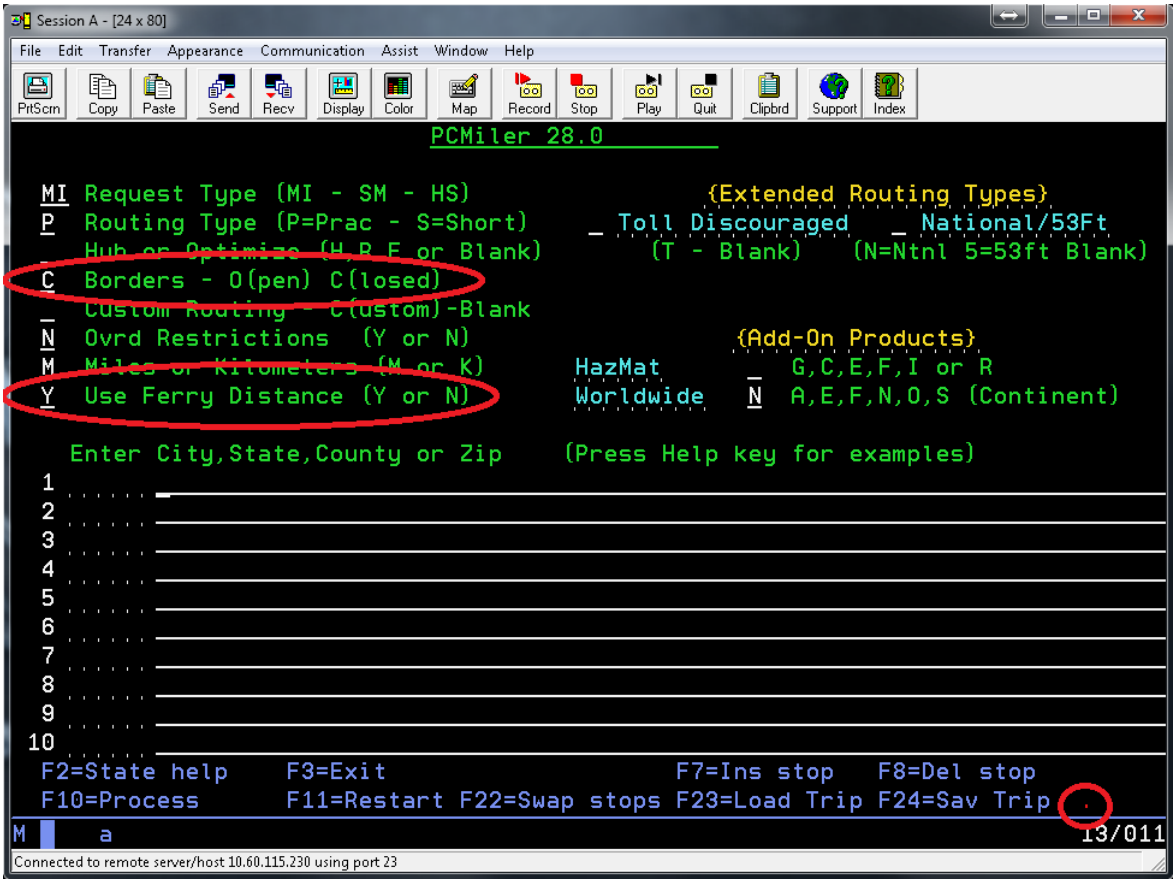
- Internet access for license activation.

2.2 Requirements for PC*MILER Graphics

The map graphics displayed by the PC mileage server are a significant drain on PC response time. It is recommended that graphics not be used unless the mileage server PC is a high quality Pentium (2-gigahertz or higher). Using the graphics on sub-gigahertz PC's is not recommended.

3.0 Installation

NOTE for Upgrading Users: There have been no changes to the ALKWIN or ALKTLL libraries since the Version 20 release. There is no need to upgrade your ALK library if you are currently running the Version 20 library. You can check to see if you are running the latest library by running alkwin/pcmiler or alktll/pcmtll commands and looking for the existence of Borders Open/Closed and Use Ferry Distance Options, and a single red • (period or dot) in the lower right hand corner of the screen at line 24, position 75.



NOTE for Upgrades with PC*MILER|Tolls: You cannot use any existing ALKWIN library if you install PC*MILER|Tolls. You must use the ALKTLL library.

PC*MILER for the AS400 works by connecting a 32-bit Windows PC to your AS400. The PC provides mileage lookups to the AS400 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.

PC*MILER for the AS400 was developed using the data queue facilities of IBM's Client Access Express. You must have this connectivity product installed and properly configured on the mileage server PC.

NOTE: ALK is no longer supporting the use of the NS Router. It remains an installation option and may work on some systems.

If you are using NS Router, you need the NS Router 3.0 or higher for PC*MILER-AS400 Version 20 or higher. Client Access 3.2 has the 3.0 Router bundled with it.

Netmanage is no longer selling or supporting 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 AS400.

Do not patch your router. The PC*MILER for the AS400 system was developed on a non-patched Router, and installing any patch may cause unpredictable behavior.

3.1 Installation Overview

You should have received one DVD and one CD with your purchase of PC*MILER-AS400, or one DVD and two CD's if PC*MILER|Tolls was purchased:

- The PC*MILER Product Line DVD which includes the complete PC*MILER application and the AS400 Mileage Server.
- The CD contains the 400 side ALKWIN Library.
- PC*MILER|Tolls users receive a second CD with the AS400-side ALKTLL Library.
- NOTE: ALKWIN is for use with PC*MILER and PC*MILER|Streets without the PC*MILER|Tolls add-on installed. ALKTLL is used for any installation that includes the Tolls component. PC*MILER|Tolls users will also receive the ALKWIN Library, which is only to be used when the PC*MILER|Tolls add-on is not to be installed.

NOTE: Required PC to AS400 Connectivity Software is not provided by ALK. You need IBM's Client Access Express.

3.2 AS400 Side Installation

First install the resident AS400 software on your AS400. Sign on to QSECOFR or an account with equivalent authorities. Place the CD in the optical drive and follow the instructions below.

NOTES For Upgrades: If you are upgrading your ALKWIN or ALKTLL Library from an earlier version, it is recommended that you **rename** your current ALKWIN [or ALKTLL] Library or clear your current library with the CLRLIB command.

Before clearing your current library, type 'config' or 'tllfig' from the AS400 command line and write down your current default settings. These settings will be overwritten during the library restore. After the restore of the library, re-enter these settings by running the ALKWIN/CONFIG command.

For Version 16 and Higher: ALK increased the length of the Highway Segment (HS – Turn-by-Turn Driving Instructions) by 25 characters. Failure to upgrade your current ALKWIN Library from pre-Version 16 will cause the program to crash if HS requests are used.

1. Create a library with the CRTLIB command. Type **CRTLIB ALKWIN** [or **ALKTLL**].

2. Add the library to the current library list. Type **ADDLIBLE ALKWIN** [or **ALKTLL**].
   *(Statements in the following paragraph do not apply for installations that include PC*MILER|Tolls.)*
   For Innovative Computing Corporation installations, you will also need your ICC WORK and FILE libraries in your current library list. For Version R6, type **ADDLIBLE I93FILE** or **ITSR6FILE** and then **ADDLIBLE I93WORK** or **ITSR6WORK**. The ICC Version 7 libraries are **IESR7WORK** and **IESR7FILE**. (Call ICC if you don't know which version you are running.)

3. Command for restoring from CD:

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

   or

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

   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 ALKWIN [or ALKTLL] Library CD was created using Kisco Information Systems' BlueCD, which allows you to create AS400 readable SAVLIBs on a PC CD writer. A small percentage of users may have difficulty restoring the ALKWIN [or ALKTLL] Library with the above command. If you experience problems.

Type **RSTLIB**, then:

a. Specify the library ALKWIN [or ALKTLL] 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 ALKWIN or ALKTLL available to users at sign-on time. There are two ways to insert ALKWIN [or ALKTLL] into the library list:

a. The WRKSYSVAL command can be used by typing **WRKSYSVAL**, and then searching for the QUSRLIBL entry. Insert ALKWIN [or ALKTLL].

b. If your users are using a job description in their user profiles, then use the CHGJOBD command (type **CHGJOBD**) and insert ALKWIN or ALKTLL.

For Innovative Computing installations, a command is available to help insert a library into the library list. ALKWIN 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:

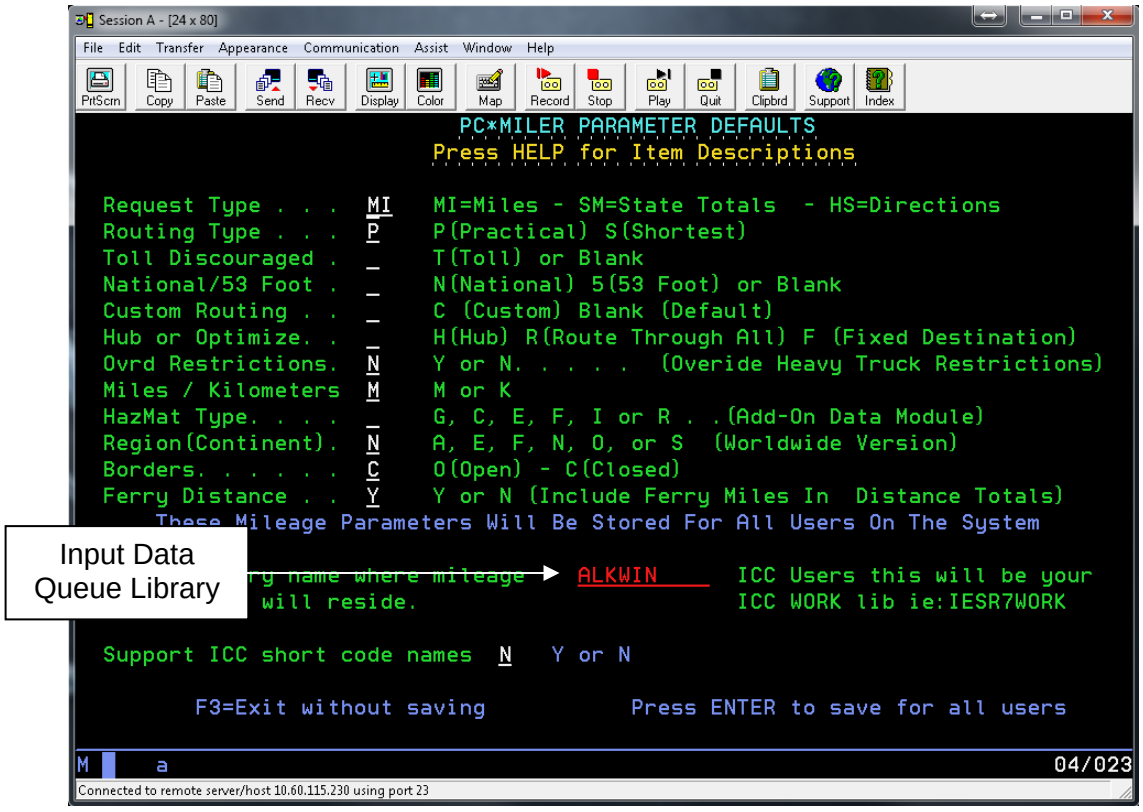
ADDLIBLE ILPGMR *LAST
CHGLIBLS
(insert) **ALKWIN [**or **ALKTLL**]

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

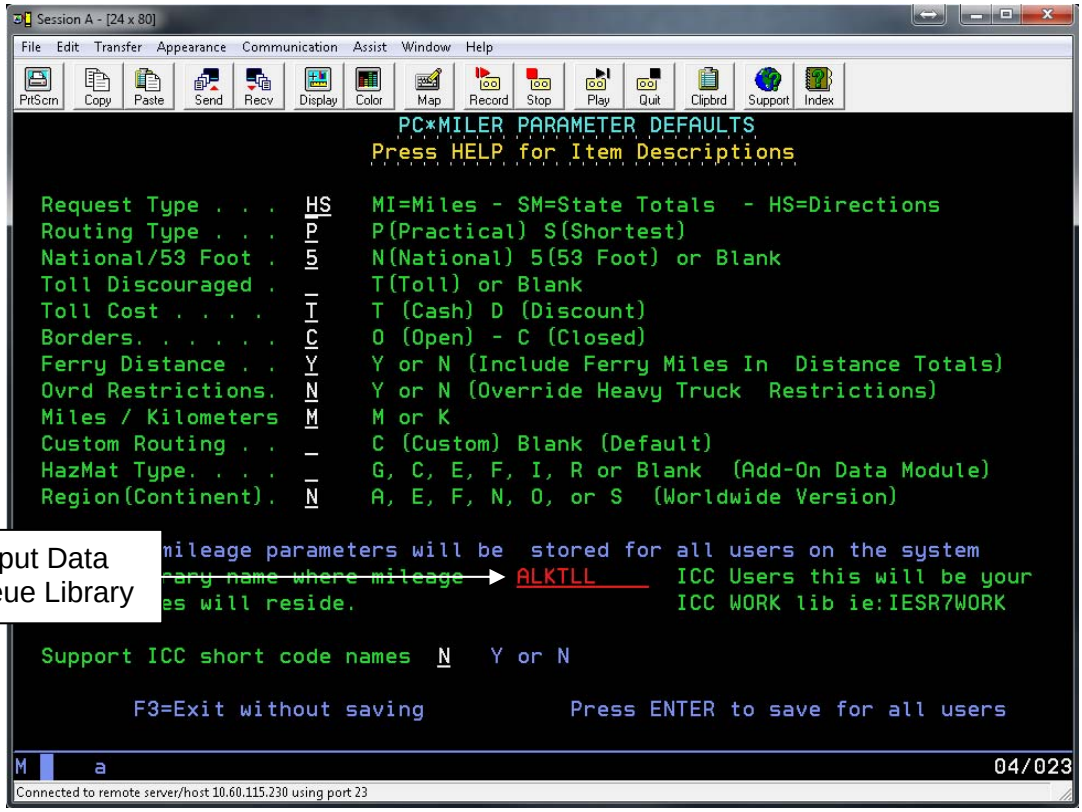
GRTOBJAUT (press **<F4>**)
object = ***ALL**
library = **ALKWIN [**or **ALKTLL**]
objtype = ***ALL**
users = ***public**
authority = ***ALL**

NOTE: For ICC Users only (Be sure to do this!) Type config from the AS400 command line after the restore of the library and change the library for the location of mileage data queues from ALKWIN 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. For ICC R8 and multiple company installations use ALKWIN. Do not configure an installation that includes the PC*MILER|Tolls component to point at an ALKWIN or ICC library.

NOTE Also: The AS400 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*MILER-AS400 Control Menu which is an option in the File drop down menu.



For Tolls:



Input Data Queue Library

3.3 PC Side Installation

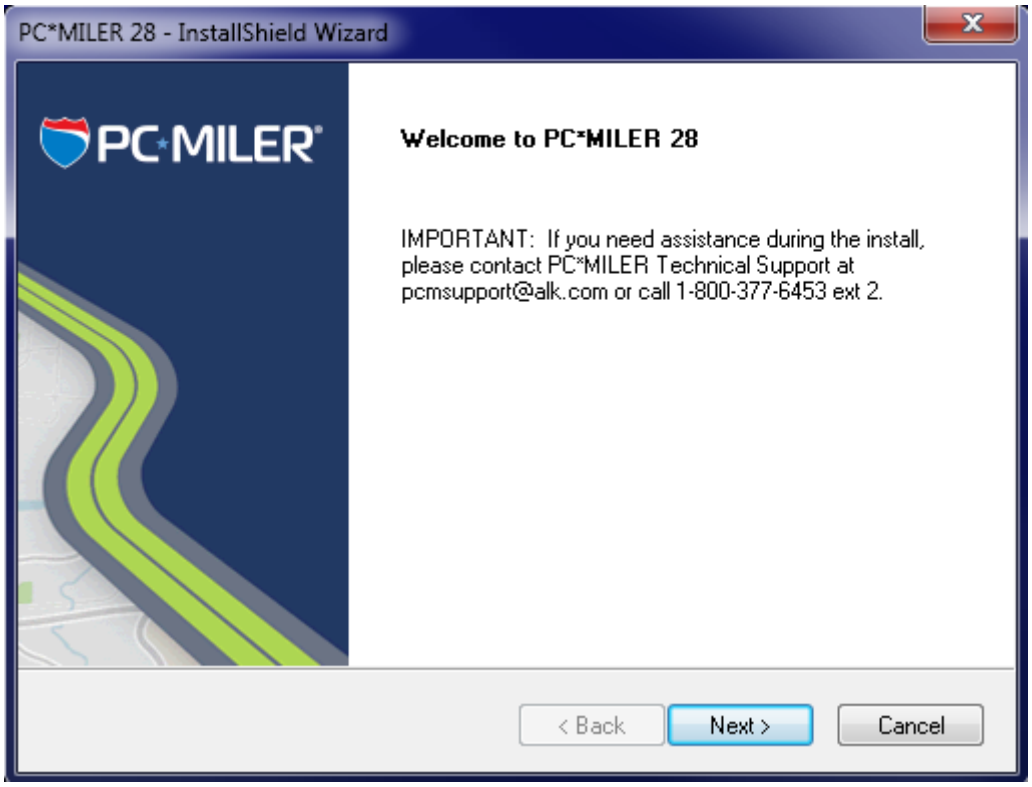
STEP 1:

Make sure that Client Access Express is installed and working on the PC (see *Appendix D: Configuring Client Access Express for Use with PC*MILER-AS400*).

STEP 2:

Insert the Product Line **INSTALL DVD** into your DVD drive, or click the link that was sent to you via email from ALK Technologies.

If the autorun feature fails to work when you insert the DVD, click your system **Start** menu, select **Run**, then type **D:\setup** and click **OK** (substitute the letter that represents your DVD drive if it is not "D").



When you are prompted, enter the **Product Key Code** that was e-mailed to you at the time of purchase. Your product code will be in this format:

XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

When entering the Product Key Code, dashes are not required – dashes, spaces, or no spaces are all acceptable.

If you do not have your Product Key Code, call ALK Technologies at **800-377-6453 ext. 2** from **9:00am to 5:00pm** EST Monday through Friday. The Product Key Code unlocks the products you purchased – either PC*MILER or PC*MILER|Streets and the AS400 Mileage Server (PC*MILER-AS400). **Both these components should appear in the Licensed Features screen** (shown on the next page) that displays after you enter your Product Key Code and click **Next**.

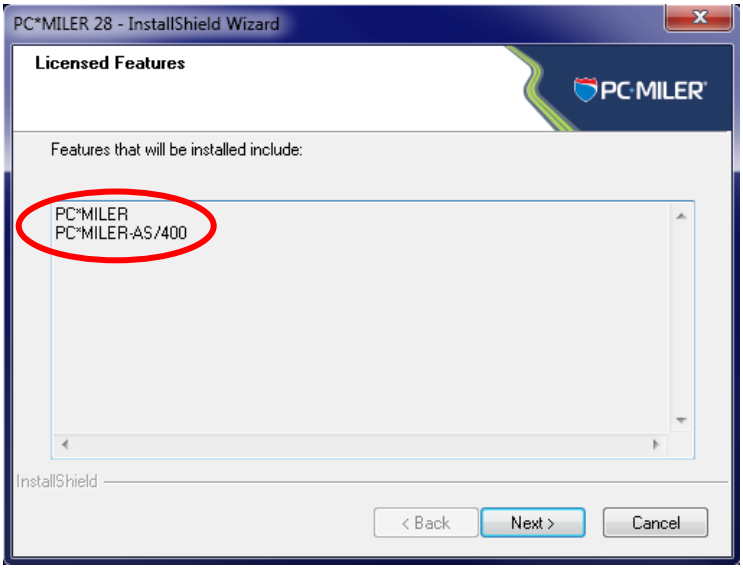
NOTE for users upgrading from an installation of ALK|FleetSuite Tolls: For the AS400 you will need the PC*MILER|Tolls component as shown on the next page.

NOTE: If you are using PC*MILER-AS400 with any third party or custom in-house software package, you CANNOT install the PC*MILER|Tolls component as circled above without modifying that software. To use the

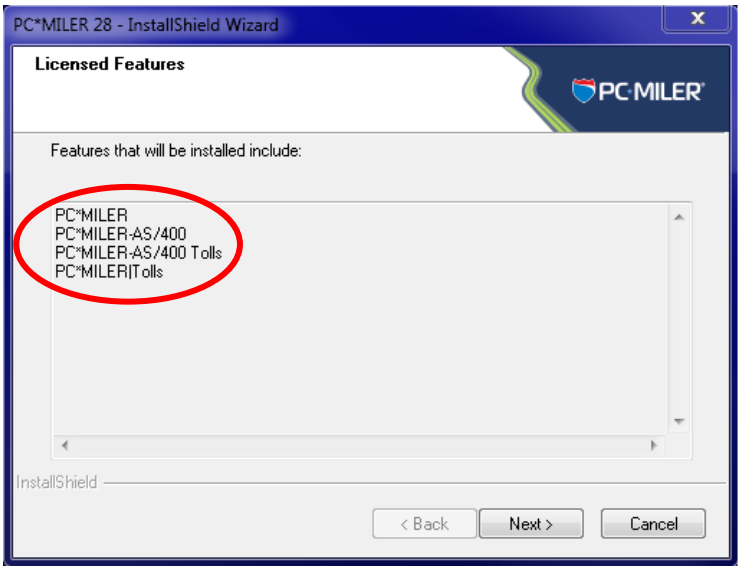
enlarged Tolls Cost data structures, see *Chapter 7* and *Appendix H* for more information.

NOTE: As of 5/7/07, Innovative Computing Corporation (ICC) has not released a version of their software that works with the PC*MILER|Tolls component. ICC users should not install PC*MILER|Tolls if they intend to use this installation in conjunction with their ICC software.

"Licensed Features" Screen for PC*MILER:



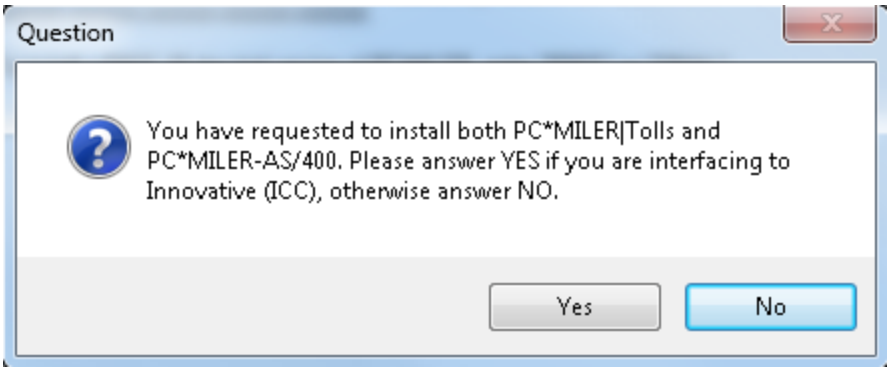
"Licensed Features" Screen for PC*MILER|Streets:



Click **Next** and in the next screen select a folder to install to, or use the default folder (**PCMILER28**). Click **Next** again when ready.

During the installation you will be prompted to enter the name of the library for data queues. The default values are **ALKWIN** (without PC*MILER|Tolls) and **ALKTLL** (with PC*MILER|Tolls). **NOTE:** ICC users need to coordinate with Innovative to enter the proper ICC Work Library for their release of the ICC software. Upgrading ICC users can read the correct library by running the alkwin/config command from an AS400 command line.

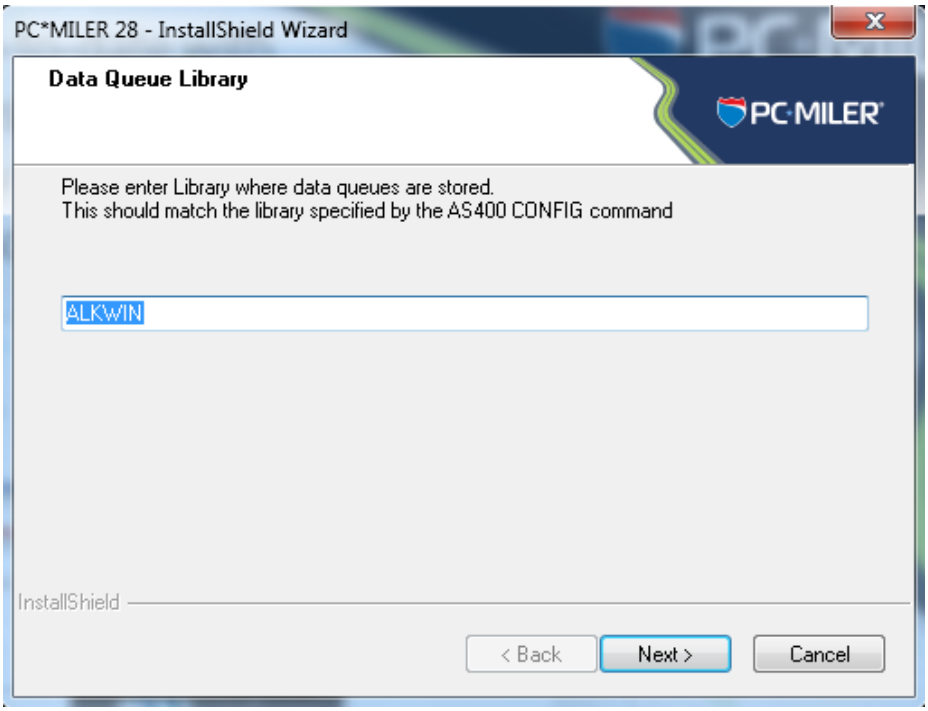
If you purchased the PC*MILER|Tolls component you will get the following prompt:



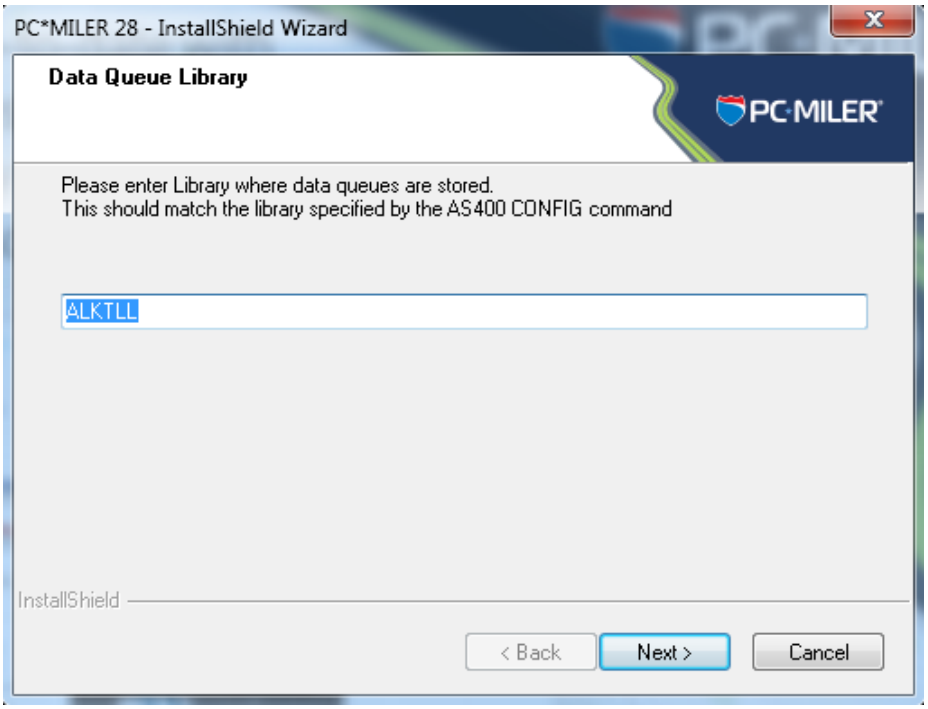
Answering '**Yes**' will turn off the Tolls component and install an ICC-compatible version of the PC Mileage Server.

Answering '**No**' will install the PC*MILER|Tolls version of the PC Mileage Server. (ICC users and users of third-party or custom in-house transportation software should click 'Yes' and refer to *Appendix H* and Chapter 7 for instructions about using PC*MILER|Tolls with their software.)

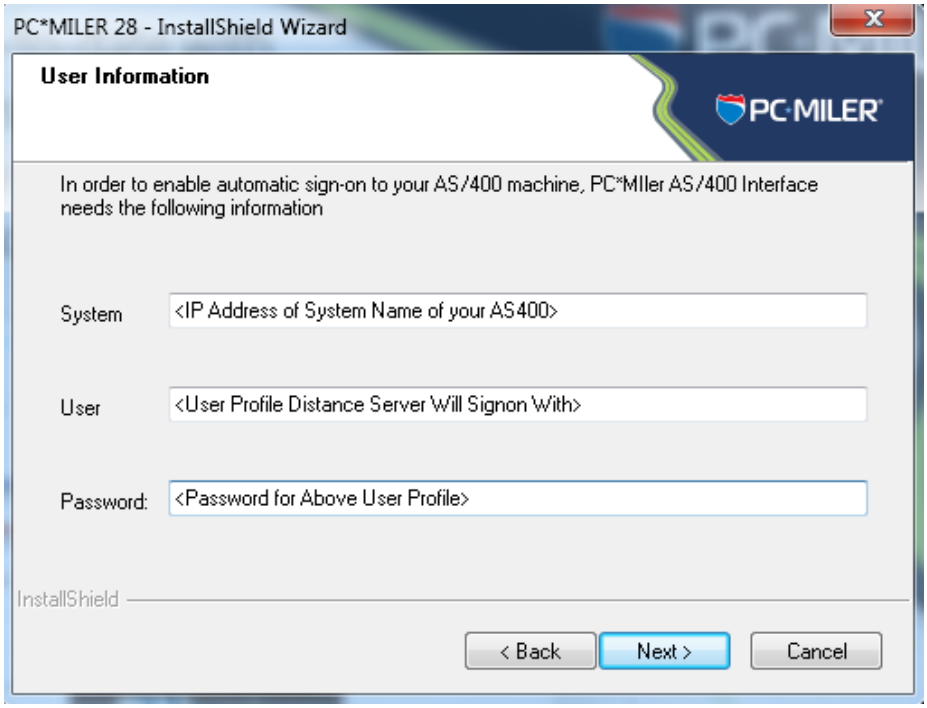
Library for Data Queue Locations:



Library for Data Queue Locations with PC*MILER|Tolls:



When entering your system and sign-on information, if possible use the **IP address** rather than the System Name of your AS400. **Be careful that the password for the User Profile that you specify is set not to expire.** Your User Profile must have the authority to create and delete data queues in the library that you specified in the previous dialog.

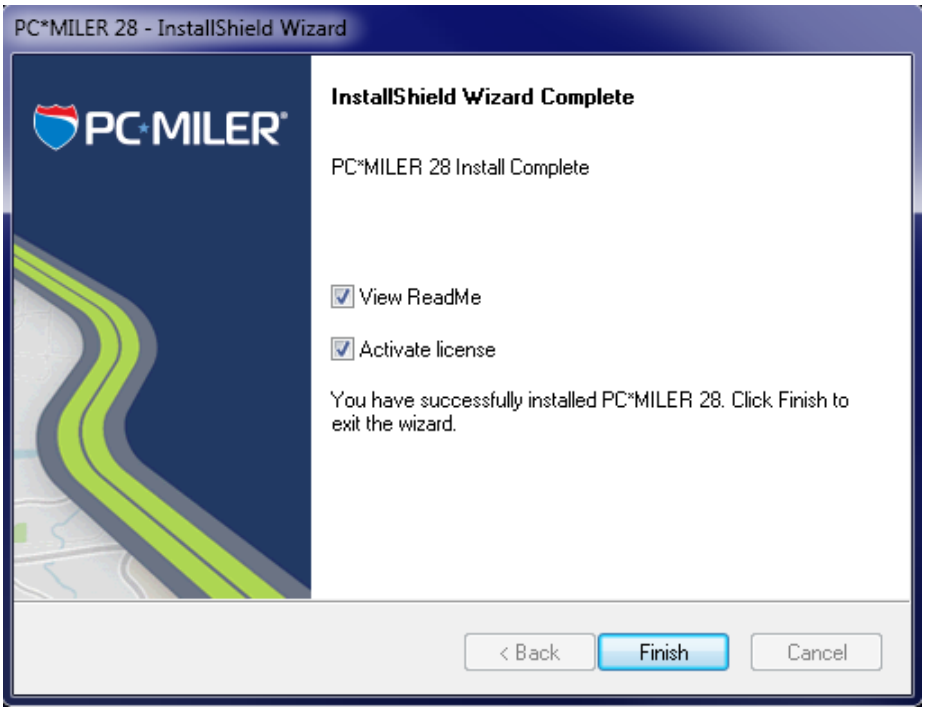


STEP 3:

You must activate your installation within 15 days of installing. If your PC has internet access this is an automated process. If your PC does not have internet access, you will have to contact ALK to receive your activation code.

Both types of activation are described on the following pages. **Note:** There is no AS400 side licensing.

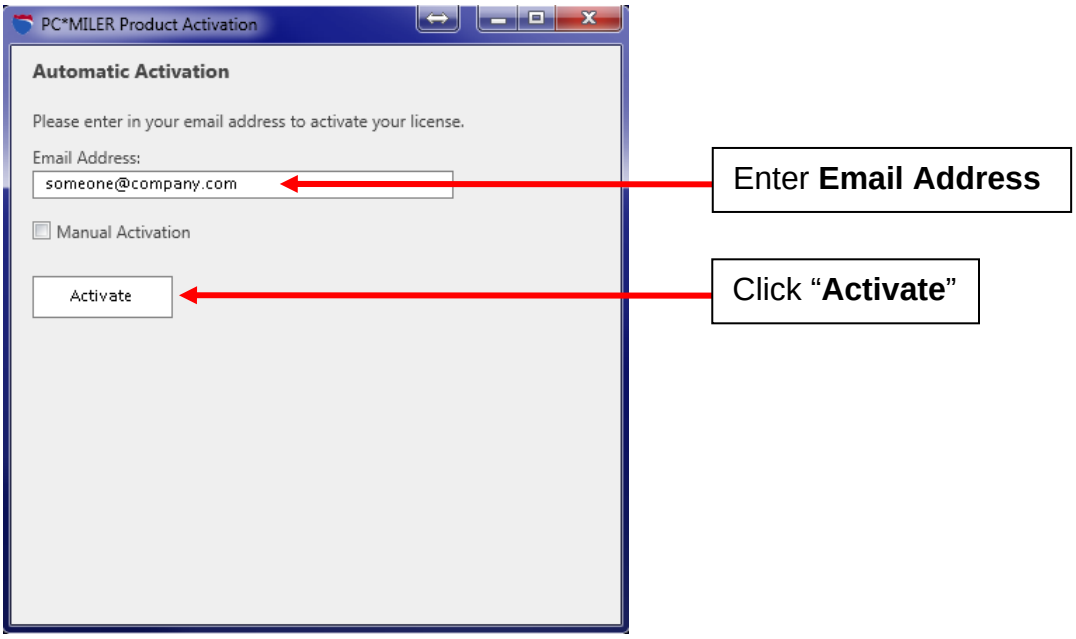
To activate immediately, leave **Activate license** checked and click **Finish** to open the ALK License Manager. (To activate at a later time, uncheck the **Activate license** check box. Each time you open PC*MILER for the next 15 days, the ALK License Manager will pop up, giving you another chance to activate the software. Or you can select *Programs > PCMILER 28 > License Status* in the Windows **Start** menu.)

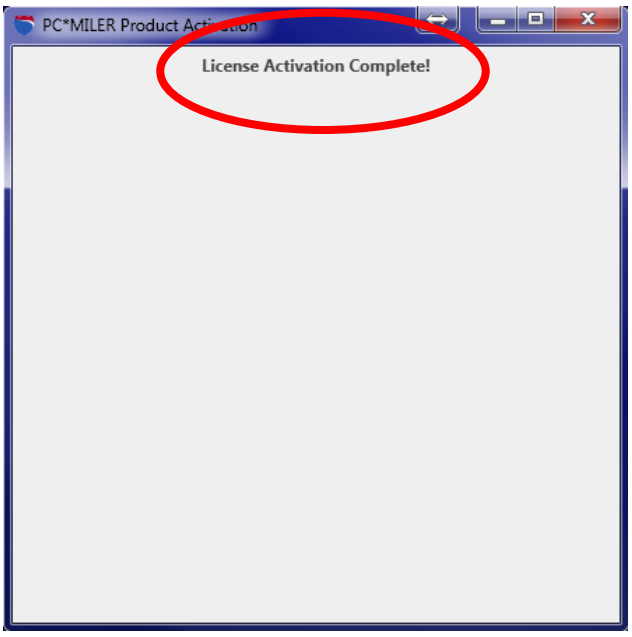


NOTE: The 15-day grace period for activation is only available for the first installation of Version 28 on your PC. If you are reinstalling for any reason you will have to activate the installation before it can be used.

Automatic License Activation:

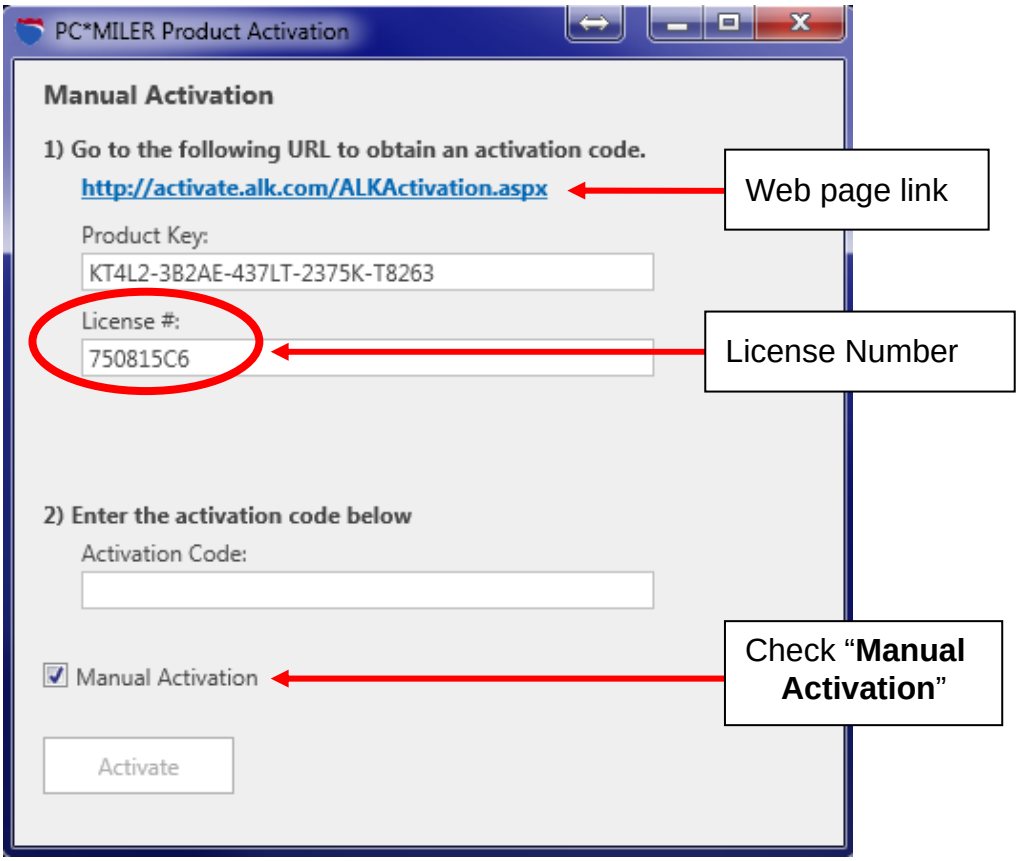
Click **Activate** in the License Manager. The rest of the process is completely automated if you have internet access on your PC. You will see the message "License Activation Complete!" when the activation is finished. Close the Product Activation window, then click the Windows **Start** menu > *Programs* > *PCMILER 28* > *License Status* and make sure that "Licensed" appears under **Status** in the PC*MILER License Tool window. If so, PC*MILER is now permanently licensed.





Manual Activation:

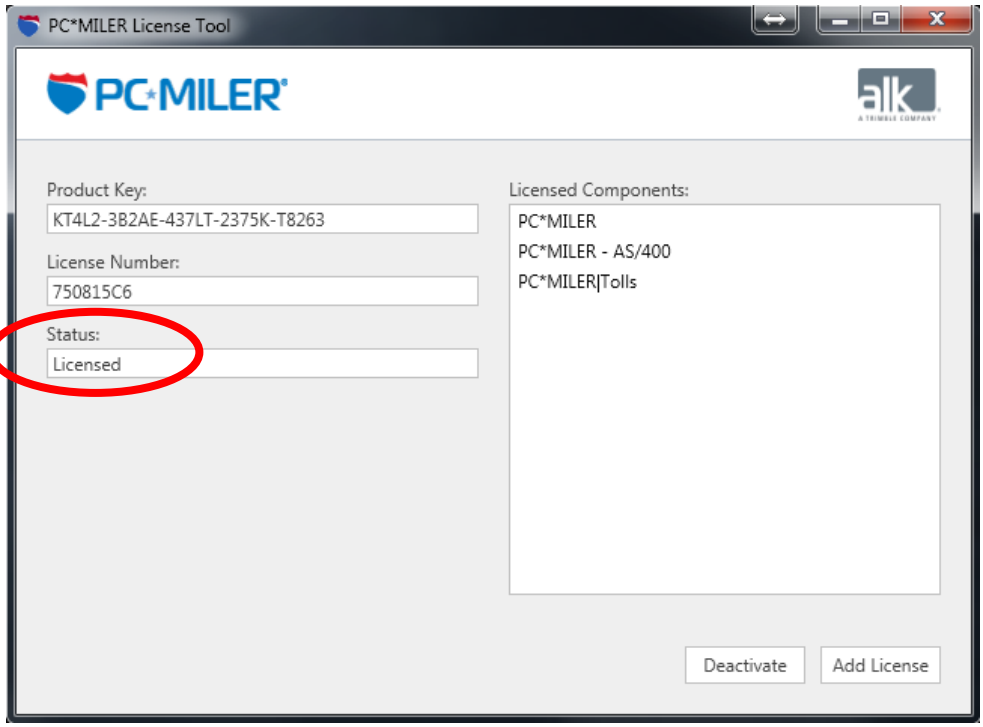
If the Automatic Activation process fails due to firewall security settings or for any other reason, try activating manually. Check the **Manual Activation** box. In the Manual Activation screen that appears, click the http://activate.alk.com link to open a webpage that will provide you with an activation code 24/7. You may need to add http://activate.alk.com or https://activate.alk.com as a trusted site to get the activation webpage to open. Enter the Activation Code, then click **Activate**. **Note:** You can get access to this screen after the initial installation by clicking the Windows **Start** menu > *Programs* > *PCMILER 28* > *License Status* and then clicking the Activate button.



Manual Activation on a PC Without Internet Access:

Call ALK's Technical Support during business hours (see section 10.0) and give your technical support representative the license number from the Manual Activation screen or the License Tool window. You'll receive an activation code, which you can then enter in the Manual Activation screen. Click **Activate** to complete the process.

When the activation process is complete, a "License Activation Complete!" message will appear in the Product Activation window. Click the Windows **Start** menu, then *Programs > PCMILER 28 > License Status* and make sure that "Licensed" appears under **Status** in the PC*MILER License Tool window. If so, PC*MILER is now permanently licensed. If not, call Technical Support (see section 10.0).



3.4 Creation of Desktop Icons

During the installation of the PC*MILER for the AS400 interface software on the PC, an icon to start the mileage server is placed in the startup folder. If you want to have a desktop icon, you can do a right mouse click Copy, and then a right mouse click Paste Shortcut onto the desktop.

To do this after the initial installation, right mouse click the **Start** menu; choose **Open All Users** (or **Open** on some systems); double-click the **Programs** folder; double-click the **Startup** icon; then use the right mouse button to Copy and Paste Shortcut on the desktop.

If you create a desktop icon any other way, the command line or target has to read as shown below. **INCORRECT ICON PROPERTIES can cause the mileage server not to start or to return incorrectly formatted mileage!**

For PC*MILER:

C:\ALK Technologies\pcmiler28\as400\SRV32.exe
<space>**1**<space>**2**<space>**1 for NS Router Connections**

C:\ALK Technologies\pcmiler28\as400\SRV32.exe
<space>**1**<space>**2**<space>**2 for Client Access Express Connections**

For PC*MILER|Streets:

C:\ALK Technologies\pcmiler28\as400\SRV32.exe <space>**2**<space>**2**
<space>**1 for NS Router Connections**

C:\ALK Technologies\pcmiler28\as400\ SRV32.exe
<space>**2**<space>**2** <space>**2 for Client Access Express Connections**

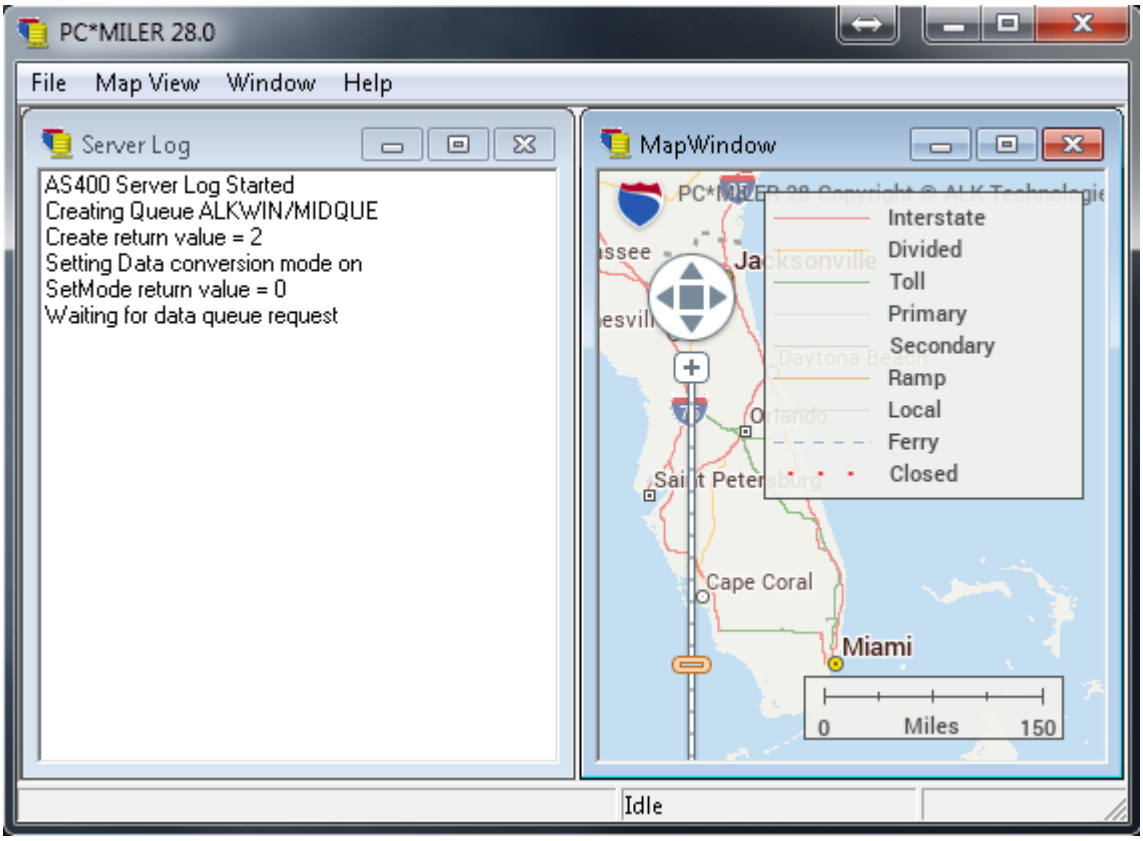
NOTE: Shortcuts are unchanged with PC*MILER|Tolls installed.

4.0 Starting and Stopping the Mileage Server

4.1 Starting the Mileage Server

The software you installed on your dedicated PC will cause the interface to start automatically when the PC is turned on. You can launch the Mileage Server without restarting the PC by clicking: Start > Programs > PCMILER 28 > AS400 Interface.

When the mileage server (**SRV32.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 Client Access Express connection.

NOTE: Both the PC and the AS400 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 *AS400 Control*, then *Change Library/Queue*. The change is made on the AS400 by running the **alkwin/config** or **alktll/tllfig** 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 > Log to File* and highlight *Append, Overwrite* or *Verbose* (see below). This will create the file **c:\ALK Technologies\pcmiler28\as400\as400.log**. It is recommended to only use logging for diagnostic purposes, otherwise the log files tend to grow large.

- **Append** will add to the existing as400.log file after restarts.
- **Overwrite** will delete the existing as400.log file after restarts.
- **Verbose** logging includes information from the data queue communications. Verbose logging Appends after restarts.

4.2 Stopping the Interface

From the PC*MILER-AS400 window, choose **Exit** from the **File** menu.

NOTE: If you are closing your router, remember to disconnect the AS400 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 AS400 before closing the router. Failure to do so may result in having to reboot the PC before you can reconnect to the AS400. It is not necessary to manually disconnect a Client Access Express connection.

4.3 Configuring the Use of Mexican Postal Codes

Version 28 of PC*MILER includes over 25,000 Mexican postal codes in the database that provide comprehensive coverage of Mexico. Mexico and the United States use the same five-digit numbering scheme for their postal codes. The two countries share a large number of common codes and care must be taken so that users do not accidentally match a Postal or ZIP code to the wrong country. By default, all Mexican postal codes are ignored.

To turn on access to Mexican postal codes, click the **File** dropdown menu, choose **AS400 Control** and then **Default Zip Codes** and highlight your choice.

Choose between:

Use default US Zip Code: This is the default setting. All Mexican postal codes will be ignored.

Use default Mexican Zip Code: Turns on the use of Mexican postal codes. If a user specifies only a five-digit Postal or ZIP code as a stop, the trip will be routed to Mexico in cases where there are duplicate codes between the US and Mexico.

Use default US and Mexican Zip Code: The default U.S. ZIP code or Mexican postal code will be returned. If there are U.S. and Mexican codes with the same number, the default U.S. ZIP code will be returned. If there is only a Mexican postal code for that number, the default Mexican code will be returned.

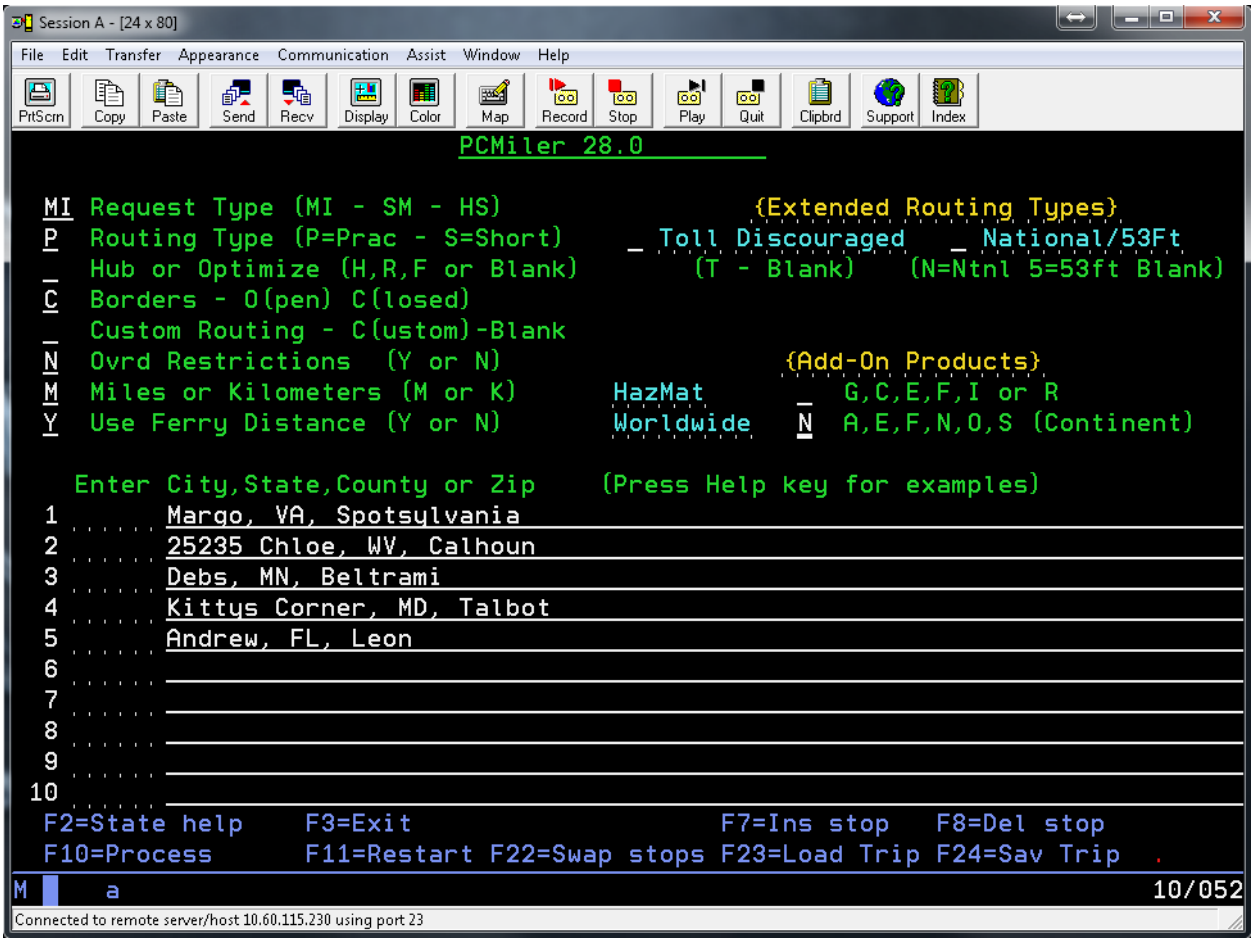
The default for this setting can be changed in the PCMSERVE.INI file (see *Appendix F)*. If they are not already there, these lines can be added to the [OPTIONS] section. The possible setting combinations are:

- UseUSPostCodes=False and UseMexPostCodes=False – Defaults to the U.S. ZIP with no routing to Mexican postal codes
- UseUSPostCodes=True and UseMexPostCodes=False – Same as above
- UseUSPostCodes=True and UseMexPostCodes=True – Defaults to the U.S. ZIP, must pass an Estados code to get Mexican location (e.g. "50510,EM")
- UseUSPostCodes=False and UseMexPostCodes=True – Only Mexican postal codes are available, in the U.S. only city-state pairs will get U.S. location (e.g. "Chico, CA")

5.0 Using PC*MILER for the AS400

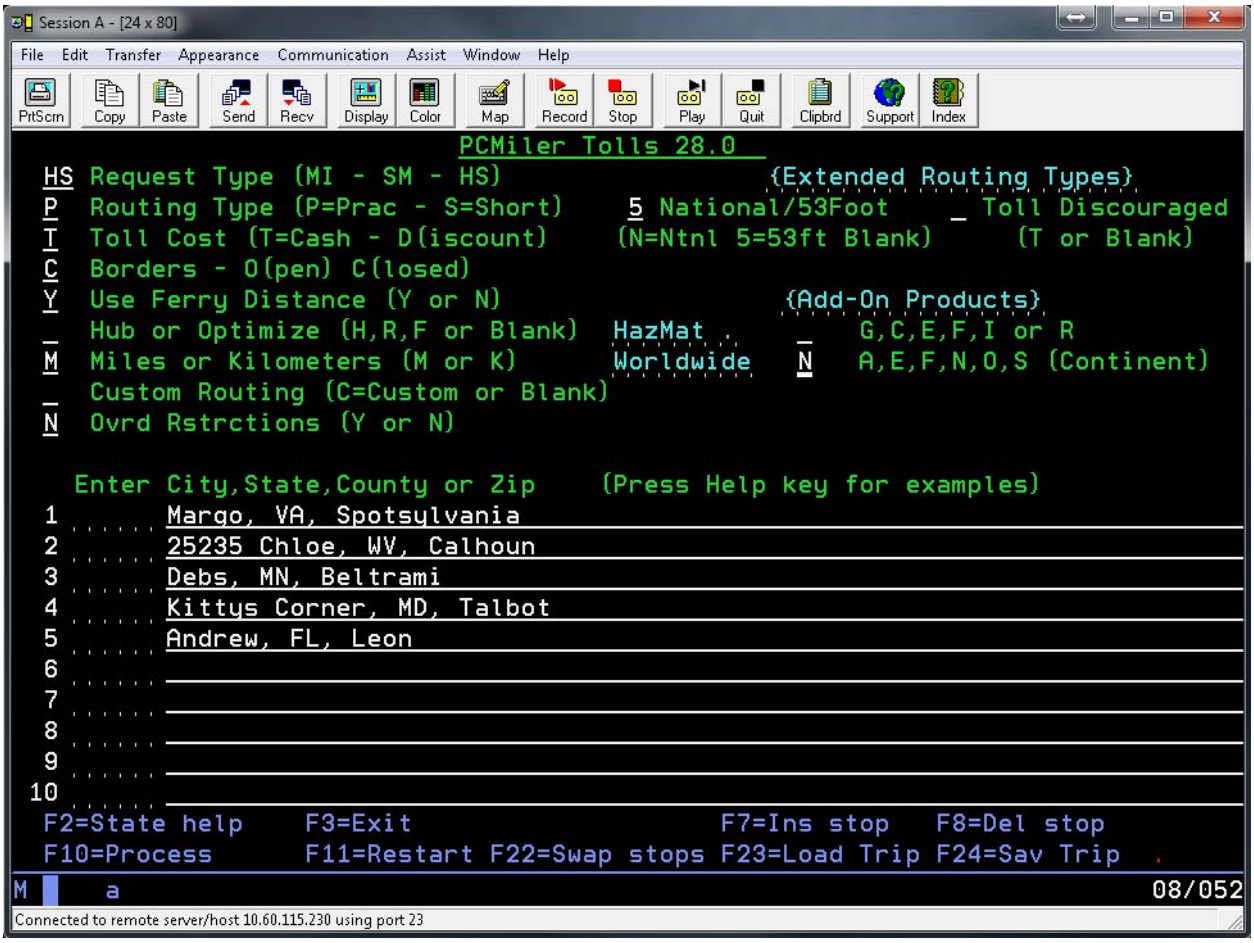
To use PC*MILER for the AS400, issue the command **PCMILER** (or **PCMTLL** for PC*MILER|Tolls) from the command line.

PCMILER Main Screen:



NOTE: The PCMILER or **PCMTLL** command contacts the mileage server to read the data that the mileage server is using. If the 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.

PCMTLL Main Screen:



Control settings at the top of the main entry screen include the following:

Request Type: "MI", the default entry, will generate only point-to-point mileage look-ups. "SM" will 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 generate detailed driving instructions, in addition to the state mileage summary and point-to-point mileage look-up.

Graphics requests: Graphics requests are still available, but reference to this functionality was removed from the main screen to on-line help to reduce screen clutter. "DR" will only draw route graphics. "DT" will draw positions as blue trucks. "DA" will draw positions as alert trucks in red. "CT" will clear all trucks. "CA" will clear all graphics. "CR" will clear all routes. "PR" will print the current route. "PA" will print all graphics on the map.

Routing Type: Either Practical or Shortest routing can now be combined with other available PC*MILER routing options (Toll Discouraged, National Network, or 53' Trailer or Twins). 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 6, *Using PC*MILER With Other Transportation Software* for details on using this functionality with other software packages.

Tolls Cost: *(Only with PC*MILER|Tolls installed)* "T" will generate the Cash cost of all tolls incurred on a trip. "D" will give the Discounted toll cost. See Appendix J, *Setting Toll Discount Program Membership*, for instructions on configuring your discount memberships. Depending on the request type used, you will get total toll costs for the entire trip, a state-by-state breakdown of toll costs, or the toll cost per leg of the trip.

NOTE: PC*MILER|Tolls calculates tolls for an 80,000 pound, 5-axle vehicle. Reported toll amounts are accurate and up-to-date, but not always exact due to two factors: first, several – though not many – toll roads have rates that are based on weight (for example, the Detroit-Windsor Tunnel charges $.03 per 100 lbs. gross weight in both directions); and second, some toll charges (in various states) are time-of-day driven. In the latter case, tolls will always be calculated using the highest rate.

Toll Discouraged: "T" will 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. Note that not all toll roads will be avoided; tolls are avoided where possible while still maintaining a reasonable and practical route.

National/53 Foot: "N" will generate miles calculated using the National Network, which is designed for larger trucks. "5" will generate miles suitable for 53'/102" trailer routing. National Network or 53 Foot Trailer or Twins will be generated using either the "Practical" or "Shortest" routing type. You can also combine National Network and 53 Foot Trailer or Twins routing with the Toll Discouraged option. For example you can generate a "Practical/Toll Discouraged/National Network" route. See Chapter 6, *Using PC*MILER With Other Transportation Software* for details on using this 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 standard PC*MILER routing. "H" is used to generate hub distances. "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*.

Borders: "O" will open the borders and routes will cross International Borders to obtain the most efficient trip. "C" will close the borders and routes will only cross international borders if the trip has a stop in that country.

Ovrd (Override) Restrictions: 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.)

NOTE: 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 generate distances in miles. "K" will generate distances in kilometers.

Use Ferry Distance: If set to "Y", distance traveled on ferries will be included in all distance totals. If set to "N" ferry distances are not included in totals. Note: Routes will still include ferry travel but this travel is not included in distance totals.

HazMat (Hazardous Material Type): *(only with the PC*MILER|HazMat add-on data module installed)* Types of hazardous material routing that can be generated are: "G" for General, "C" for Corrosive, "E" for explosive, "F" for Flammable, "I" for Inhalant, and "R" for Radioactive.

Region (Continent): Regions in which mileage 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-AS400. You may enter up to 30 stop-offs.

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").

5.1 Function Keys

At the bottom of the screen, the function keys used with PC*MILER for the AS400 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 AS400 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.

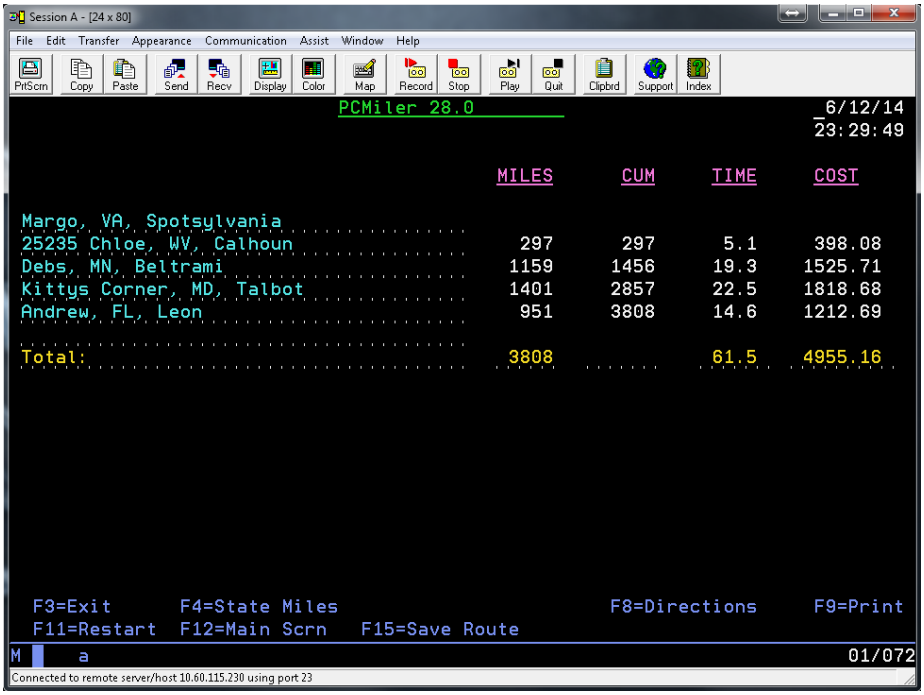
F23 **Load a saved trip**. In the screen that comes up, typing "**X**" (with the cursor on a trip identifier in the pick list) will load that trip; typing "**D**" will delete the trip.

F24 **Save a trip**. Enter a trip identifier of up to 10 characters in the entry field that appears.

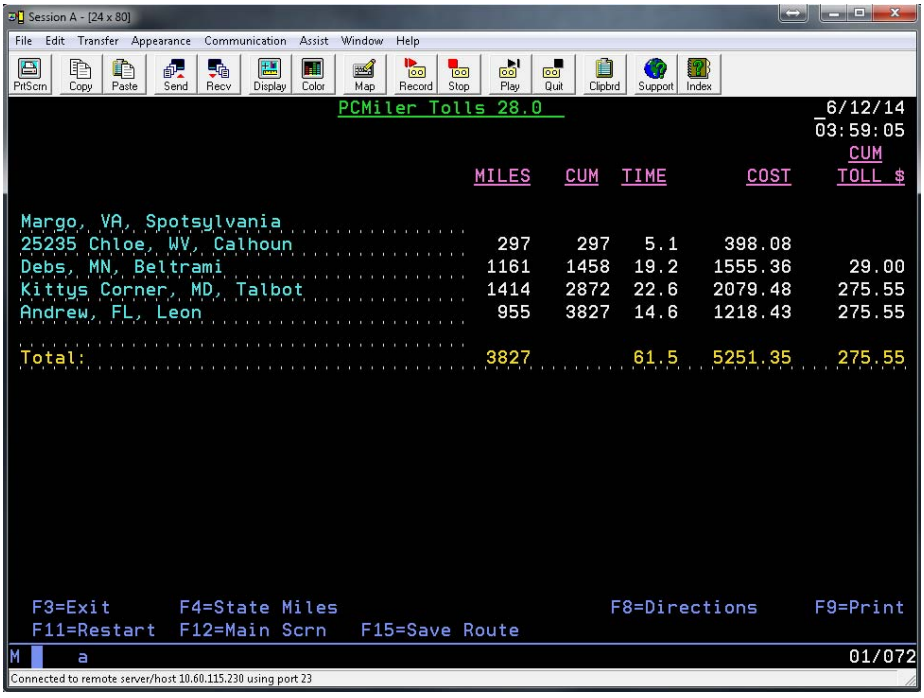
Help Pressing the key labeled "**Help**" on your keyboard will bring up detailed instructions for using various features of PC*MILER for the AS400. If you are using an emulator, the Help key on your keyboard will usually be the **Scroll Lock** key or **Right Mouse Click > Help**.

5.2 Basic Mileage, Cost and Time Report

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



With PC*MILER|Tolls Installed:



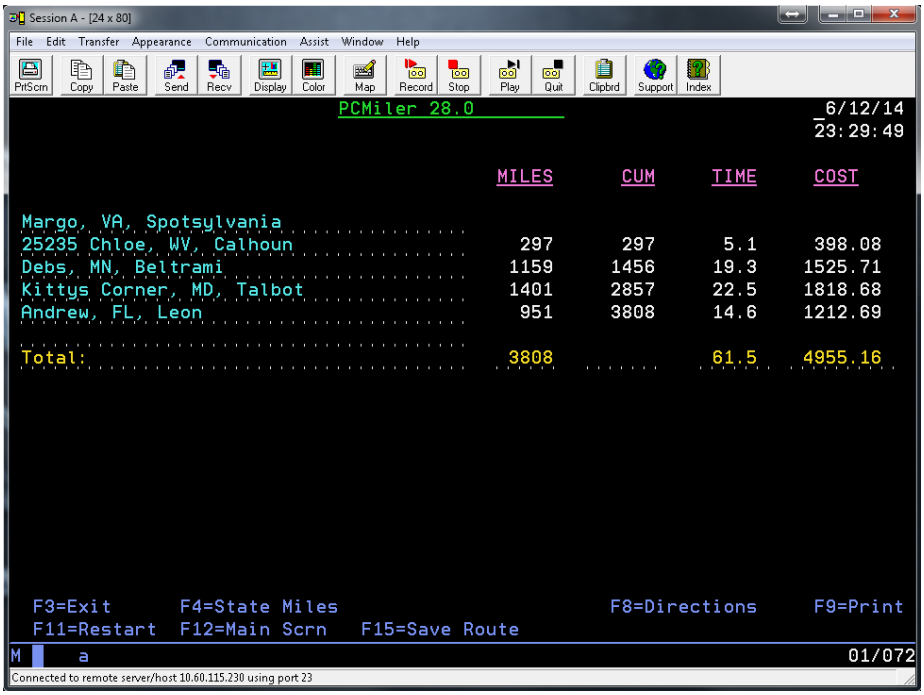
This basic PC*MILER mileage report contains leg and cumulative miles for each segment of your trip. The time and cost estimates are based on the values set in the copy of PC*MILER (or PC*MILER|Streets) installed on your dedicated PC. (Refer to the main PC*MILER *User's Guide* for instructions on how to alter these values.)

NOTE: The leg costs and total cost in the "**COST**" column **include** toll costs if PC*MILER|Tolls is installed.

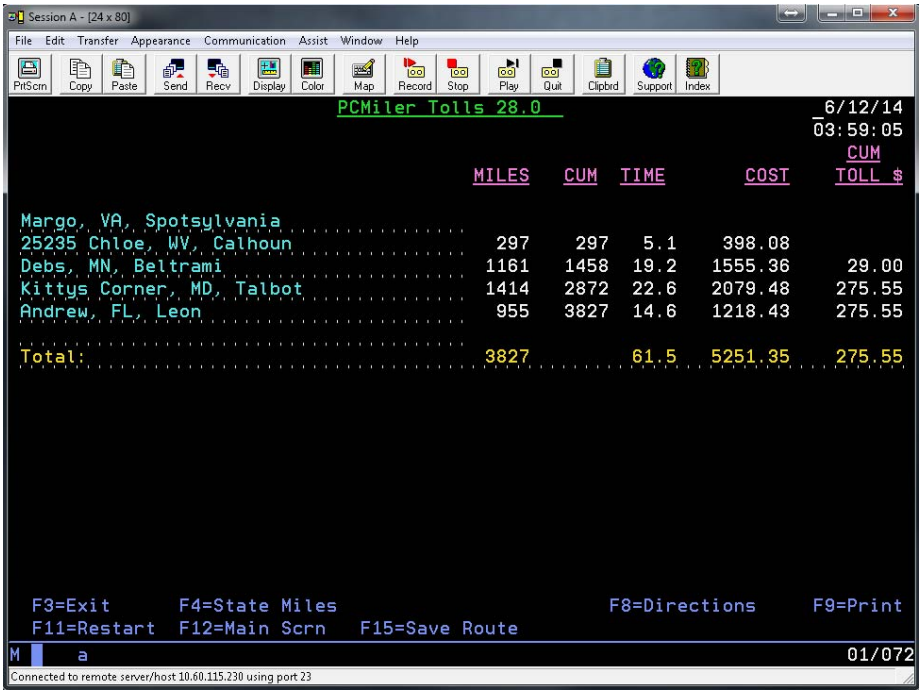
<F3> will exit the program. **<F9>** will print the screen. **<F11>** will return you to the previous screen and will clear it. **<F12>** will return you to the previous screen, without clearing it.

5.3 State Mileage Report

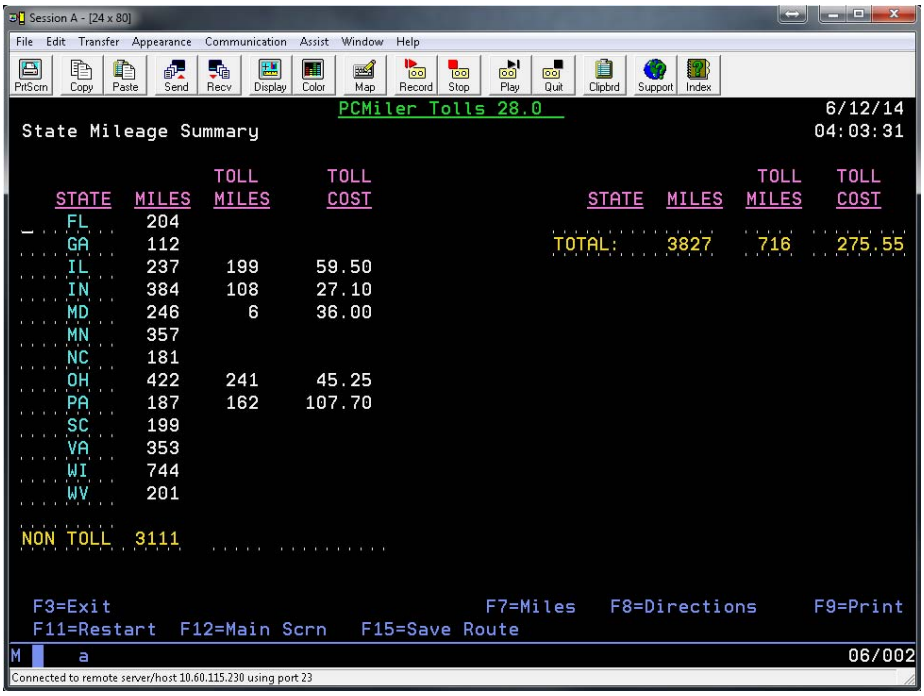
After you enter stops on the main screen and initiate a state mileage request (**SM**) by pressing **<F10>**, the basic mileage screen will appear:



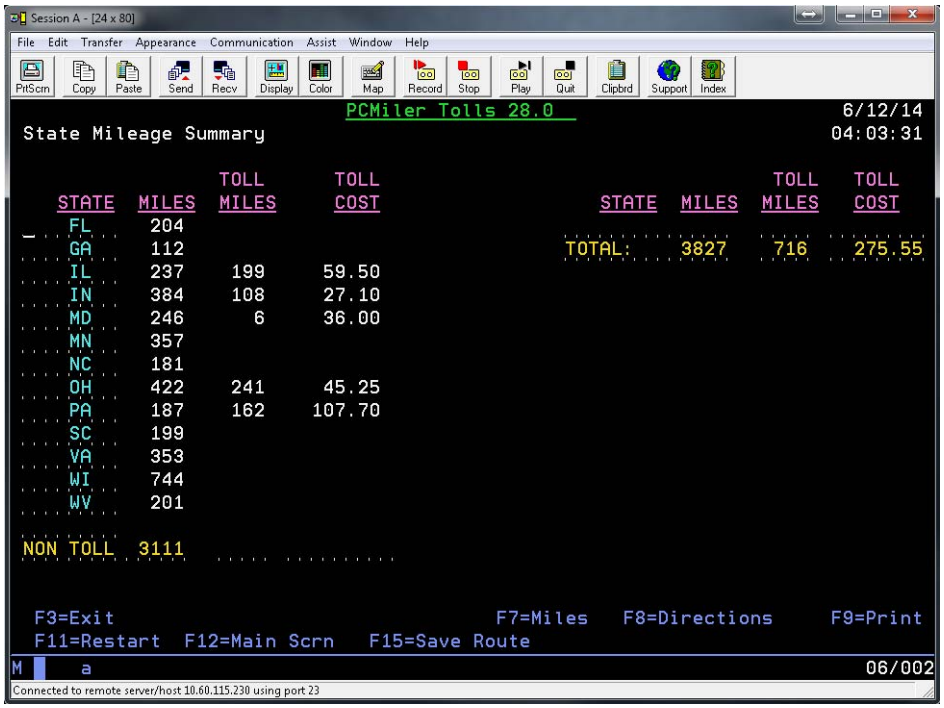
With PC*MILER|Tolls Installed (costs in the "**COST**" column **include** tolls):



Pressing **<F4>** displays Jurisdiction-by-Jurisdiction distance breakdowns:

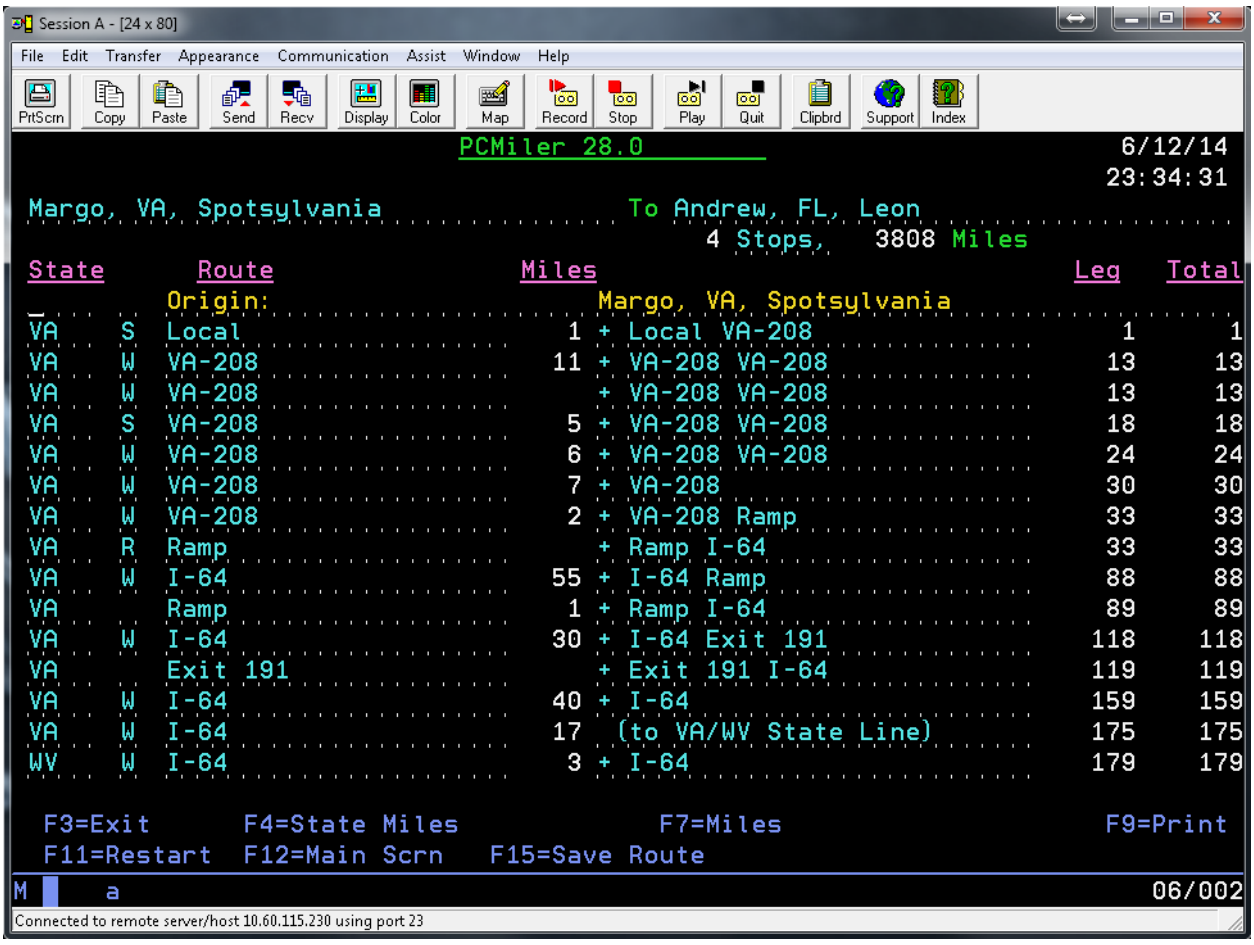


With PC*MILER|Tolls Installed:

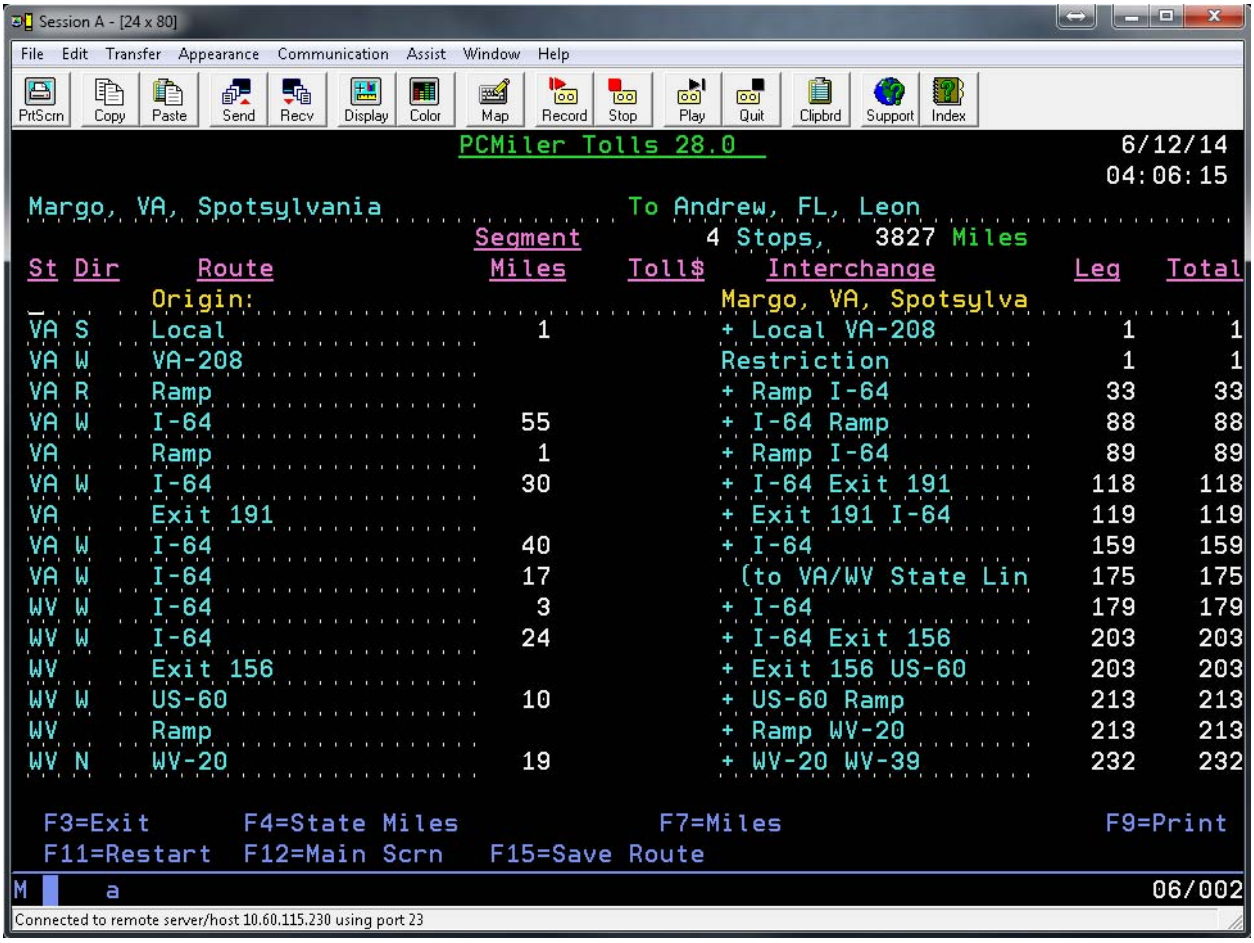


5.4 Detailed Driving Directions Report

After entering stops on the main screen and pressing **<F10>** to initiate a Detailed Driving Directions (**HS**) request, press **<F8>** in the mileage report screen to generate the driving directions. When processing is complete, the screen shown below will appear. Note that driving directions take significantly longer to process than miles or state miles because more information is requested and returned.



A Detailed Driving Directions report **with PC*MILER|Tolls installed** is shown below. This sample report includes toll costs for each leg of the trip.



6.0 Using PC*MILER with other Transportation Software

NOTE for Version 21 and Higher: The following features are not supported in the AS400 product line: Fuel Optimization, Vehicle Profiles, Estimated Greenhouse Gas Emissions, RouteSync, Entry/Exit Toll Plaza Names in Reports, and Real-time/Historical Traffic Data. Province/Estado Abbreviation Option to set "NL" preference is supported in Version 25-28 only.

Added to Version 20 and higher: Borders Open/Closed and **Use Ferry Distance** options. The first two characters of the four-character "Request Sequence" have been remapped to hold the Borders and Ferry Flags.

Historically the Request Sequence values have been ignored by the PC Distance Server. Unlike other trip options, Border and Ferry settings are not echoed back in the responses from the PC.

For the optional **PC*MILER|HazMat** hazardous material routing package, two routing types have been added: **Caustic** and **Flammable**.

NOTE: PC*MILER 18 and higher now has full Mexican Estado information. Previously, all Mexican cities were referenced with 'MX' as the Estado code and the Estado was returned in the US county field. For example:

Older versions format: Mexico City, MX, Distrito Federal
Correct format for Version 18: Mexico City, DF

Estados Codes:

AG	Aguascalientes
BJ	Baja California
BS	Baja California Sur
CP	Campeche
CH	Chiapas
CI	Chihuahua
CU	Coahuila de Zaragoza
CL	Colima
DF	Distrito Federal
DG	Durango
GJ	Guanajuato
GR	Guerrero
HG	Hidalgo
JA	Jalisco

EM	Mexico (Estado)
MH	Michoacan de Ocampo
MR	Morelos
NA	Nayarit
New for 25=> NX* or NL	Nuevo Leon (PC Side Configuration Option – Tools menu)
OA	Oaxaca
PU	Puebla
QA	Queretaro Arteaga
QR	Quintana Roo
SL	San Luis Potosi
SI	Sinaloa
SO	Sonora
TA	Tabasco
TM	Tamaulipas
TL	Tlaxcala
VZ	Veracruz
YC	Yucatan
ZT	Zacatecas

***** "NX" is used for Nuevo Leon because "NL" is already used in the database for the Canadian province of Newfoundland and Labrador. The option to configure NL for routing to Nuevo Leon is supported in Version 25-28 only.

ALSO NOTE: For Version 17 and higher the routing type options have changed for National Network, Toll Discouraged, and 53'/102" Trailer routing. These three routing options now can be generated in combination with the 'Practical' or 'Shortest' options. Additionally, National Network or 53' Trailer routing can be combined with the Toll Discouraged option. The only way to take advantage of this 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 and higher, 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 6.2.4.1 for full details.

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 higher you have the option of using a comma or a space between the city and state or province abbreviation.***

6.1 Technical Overview

The PC*MILER-AS400 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 AS400. Small CL programs are used for the creation and removal of temporary data queues (output or response queues). 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 Client Access Express. The interactive software on the AS400 allows multiple users to look up point-to-point mileage and routes for up to thirty stop-off points. The Windows server application creates a data queue on the AS400 at startup called MIDQUE. The server application waits for mileage requests and processes them when received. While the server application is waiting for work to do, the PC can be used for other tasks such as PC*MILER graphics or RUMBA terminal emulation.

AS400 Programs

Files	*Description*
MIINQ	Main AS400 inquiry program that sends request to MIDQUE data queue
CITALK	RPG program that verifies city ZIP spelling
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
GETMIL	Sample RPG Program performs point-to-point mileage lookups
GETMILC	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
MIINQC	CL program that creates output data queue and starts MIINQ rpg
QUEUE	CL program that writes to the MIDQUE request data queue
MISEND	External data structure for sending mileage requests
MIRESP	External data structure for receiving mileage output
DRAW	External data structure for sending graphics requests to PC
MISEND2	External data structure with field mappings for Borders and Use Ferry Distance
TLSEND2	External data structure with field mappings for Borders and Use Ferry Distance

The program MIINQ 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 subroutine PLOT can be used to send graphics requests for ETA truck display of graphics. For example, a truck or vehicle ID's Lat/Long, ZIP, or city name position can be sent to the PC using PLOT and the "DT" request. Then a "DR" request with the truck's origin and destination can be sent so that a graphical ETA can be determined. The data structures of these subroutines are described below.

The PC Mileage Server can respond to a total of thirteen types of mileage and graphic requests:

Mileage:
VN = Version of PC*MILER Highway Data being used by the server
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
LL = Returns the lat/long coordinates for a city or address (PC*MILER|Streets only)

Graphics:
DR = Draw Route for up to 30 Stops
DT = Draw up to 30 truck bitmaps or "push pins" on the map
CT = Clear Truck bitmap from a specified location
CR = Clear a drawn route line
CA = Clear all routes and trucks
PR = Print route
PA = Print all

The PC Mileage Server responds with the following types of returns:
VR – Version of PC*MILER or PC*MILER|Streets running on the PC
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
VA returns a PL
MI returns a CP
SM returns a CP and an SR.
HS returns a CP, an SR and an HR
LL returns an LR

6.2 Request and Response Field Parameters

The following sections specify the field parameters for the request types defined in section 6.1 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 mileage could be very inaccurate.

When a street address is not supplied, do not send a semicolon:

Example: Send **08540** as opposed to "08540;" – a semicolon will cause the server to look up a blank address (unnecessary).
Three examples of correct input:
Trenton, NJ;21 Olden Avenue
New York, NY;118 Broadway
20001

6.2.1 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.

For Cities with multiple ZIP codes, the first city in the returned list is the central city or default ZIP for that city, with the remaining ZIP codes returned in numeric order.

When generating potential matches for an address, PC*MILER|Streets does a "Grid Based" search. This means that the search area may extend beyond the city limits of the requested city for potential matches. You may receive back potential matches in a surrounding town. Pick lists are sorted in confidence order, with the "best" potential match returned first.

For example:
Requesting a pick list by setting REQ-CIT equal to Princeton,NJ;Linden* would return the following list:

08540 Princeton, NJ, Mercer; 1 Linden Lane
08540 Princeton, NJ, Mercer; 49 Linden Lane
08540 Princeton, NJ, Mercer; 80 Linden Lane
08540 Princeton, NJ, Mercer; 100 Linden Lane
08534 Pennington, NJ, Mercer; Linden & Woodmer
08534 Pennington, NJ, Mercer; Linden & Woodmer
08822 Flemington, NJ, Mercer; 1 Linden Court
08822 Flemington, NJ, Mercer; 1 Linden Court
08536 Plainsboro, NJ, Mercer; 2 Linden Lane
08536 Plainsboro, NJ, Mercer; 3 Linden Lane
08536 Plainsboro, NJ, Mercer; 4 Linden Lane

NOTE: Grid Based searches are only done with address level lookups (PC*MILER|Streets only).

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 non-valid 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 **Extended Format**
REQ-TYPE	2	VA	Validate Stop or Address
REQ-REF	10		Output Queue Name (ALK uses "Q" plus job number)
Filler 6	6		
REGION **(Worldwide Only)**	1		Pos 19) A=Asia E=Europe, F=Africa N=North America O=Oceania S=South America
Filler 1	1		
Force Pick List	1	P	Pos 21) P or Blank P=Force Pick List, or use wildcard * after a partial city or address
Filler 7	7		
REQ-CIT	70		Pos 29) 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 PC*MILER|Streets 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<space> #L# (add-on data module) For Standard Position Location Codes SPLC plus the number (add-on data module)
Filler-CIT	630		blank

Validation Response:

Var Name	Len	Value	Description **Extended Format**
REQ-TYPE	2	PL	Stop pick list
REQ-REF	10		Output Queue Name
Filler-3	3		3 blanks
RESP-MORE	1		Pos 16) M = more data to follow
Filler 2	2		2 blanks
REGION	1		Pos 19) Echoed from Request
Match	1		Pos 20)
		L	List of Cities
		Y	Exact match
		N	No match
Force Pick List			Pos 21) Echoed from Request P or Blank
Filler-1	1		1 blanks

RESP-Seq	4		Pos 23-26) Sequence for multiple responses
RESP-ERR	2		Pos 27-28 Error Code
		E2	Place not found
RESP-CIT	980		Array of 14 places 70 bytes each left justified or Error message if there is a problem
Filler	15		

6.2.2 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**	**Extended Format**
REQ-TYPE	2	MI	Miles request	
REQ-REF	10		Output Queue Name (ALK uses 'Q' + the job number)	
Trip Options Positions 13-22			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)
REGION (Worldwide Only)	1		Pos 7)	A=Asia E=Europe, F=Africa N=North America

			O=Oceania S=South America
Custom Routing	1	Pos 8)	C=Custom, blank=default
Override Restrictions	1	Pos 9)	Y=Override Restrictions, L=Light N=Obey Restrictions or H=Heavy
Hazmat (Data Add-on)	1	Pos 10)	G=General Restriction C=Corrosive E=Explosive Restriction F=Flammable I =Inhalant Restriction R = Radioactive Restriction
REQ-BRDR	1	Pos 11)	O=Borders Open C= Closed
REQ-FERRY	1	Pos 12)	Y=Include Ferry Distance N=Do Not Include Ferry Distance
REQ-SEQ	2	Sequence for multiple responses (Not read by PC)	
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 L#L<space> #L# Standard Position Location Code use SPLC+number	

2. (Response) The following are field parameters for <u>output</u> 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** **<u>Extended Format</u>**	
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
			Pos 5) Reserved by DR request
	1		Pos 6) E=Extended Format
REGION	1		Pos 7) A=Asia, E=Europe, F=Africa, N=North America, O=Oceania, S=South America
Custom Routing	1		Pos 8) C=Custom, blank=default
Override Restrictions	1		Pos 9) Y=Override Restrictions, L=Light, N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10) G=General Restriction C= Corrosive E=Explosive Restriction F=Flammable I =Inhalant Restriction R=Radioactive Restriction
RESP-SEQ	4		Sequence for multiple responses (Note: Border & Ferry settings not echoed in CP response.)
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
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 pcmiler 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
FILL133	133		
O256			Blank

6.2.3 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)
REGION (Worldwide Only)	1		Pos 7)	A=Asia E=Europe, F=Africa N=North America O=Oceania S=South America
Custom Routing	1		Pos 8)	C=Custom, blank=default
Override Restrictions	1		Pos 9)	Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10)	G=General Restriction C=Corrosive E=Explosive Restriction F=Flammable I=Inhalant Restriction R=Radioactive Restriction
REQ-BRDR	1		Pos11)	O=Borders Open C= Closed
REQ-FERRY	1		Pos12)	Y=Include Ferry Distance N=Do Not Include Ferry Distance
REQ-SEQ	2		Sequence for multiple responses (Not read by PC)	
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 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 6.2.4).

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			
PARAMS	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)
REGION	1		Pos 7) A=Asia, E=Europe, F=Africa, N=North America, O=Oceania, S=South America
Custom Routing	1		Pos 8) C=Custom, blank=default
Override Restrictions	1		Pos 9) Y=Override Restrictions, L=Light, N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10) G=General Restriction C=Corrosive E=Explosive Restriction F=Flammable I =Inhalant Restriction R=Radioactive Restriction
SEQNUM	4		Sequence for multiple responses (Note: Border & Ferry settings not echoed in CP response.)
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
STATEMIL	220		10 elements each element will consist of: 2 for state code 5 for total miles 4 for toll miles
FILLER	8		

6.2.4 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	Extended Format
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)
REGION	1		Pos 7)	A=Asia, E=Europe, F=Africa, N=North America, O=Oceania, S=South America
Custom Routing	1		Pos 8)	C=Custom, blank=default
Override Restrictions	1		Pos 9)	Y=Override Restrictions, L=Light N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10)	G=General Restriction C=Corrosive E=Explosive Restriction F=Flammable I=Inhalant Restriction R=Radioactive Restriction
REQ-BRDR	1		Pos11)	O=Borders Open C= Closed
REQ-FERRY	1		Pos12)	Y=Include Ferry Distance N=Do Not Include Ferry Distance
REQ-SEQ	2		Sequence for multiple responses (Not read by PC)	
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
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 formal 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)
REGION	1		Pos 7) A=Asia, E=Europe, F=Africa, N=North America, O=Oceania, S=South America
Custom Routing	1		Pos 8) C=Custom, blank=default
Override Restrictions	1		Pos 9) Y=Override Restrictions, L =Light, N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10) G=General Restriction C=Corrosive E=Explosive Restriction F=Flammable I=Inhalant Restriction R=Radioactive Restriction
SEQNUM	4		Sequence for multiple responses Note: Border & Ferry settings not echoed in CP response.
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
ROUTEINFO			2 indicates end of route data for stop
			2 state code
			1 toll indicator
	3 sets		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

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

6.2.5 Upgrade Notice

For Version 16 and higher, 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 below.

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

6.2.6 City/Address to Lat/Long Coordinates (LL) Request and Response

1. (Request) Following are parameters for latitude/longitude coordinates for a given city, postal code, or address (PC*MILER|Streets only). Lat/longs are returned in degree, minute second format.

For example:
0394346N,0861610W

Var Name	Len	Value	Description	Extended Format
REQ-TYPE	2	LL	Lat/Long	
REFNUM	10		Output Queue Name (ALK uses 'Q' + the job number)	
FILL-10	10		Blank Fill	
REQ-SEQ	4		Sequence (Always 0001 for LL Requests)	
REQ-ERR	2		Error Code	
REQ-CIT	70		38 byte maximum city name 1 byte comma or space 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 formal L#L #L#

2. (Response) Following are parameters for a latitude longitude coordinate response. Lat/longs are returned in degree, minute second format.

For example:
0394346N,0861610W

Var Name	Len	Value	Description	Extended Format
REQ-TYPE	2	LR	Lat/Long	
REFNUM	10		Output Queue Name (ALK uses 'Q' + the job number)	
FILL-10	10		Blank Fill	
RESP-SEQ	4		Sequence (Always 0001 for LL Requests)	
RESP-ERR	2		Error Code (E2=No Match Found)	
RESP-LL	17		Lat/Long Coordinate in Degree, Minutes, Seconds Format	
Fill-211	211		Blank Fill	

6.3 Graphics Only Requests

Following are field parameters for graphics. The purpose of the graphics request is to allow the host application to draw graphics on the dedicated PC or Windows work station. The application does not have to wait for a response from the PC such as the mileage request. The DR request uses the MISEND external data structure.

Var Name	Len	Value	Description	Extended Format
REQ-TYPE	2	DR	Draw route	
REQ-REF	10		Not used	
REQ-OPTION	10		Not used	
REQ-MORE	1		Pos 4) M = more data to follow	
NO-DRAW	1		pos 5) + means don't draw map yet	
REQ-FMT	1		Pos 6) E = Extended Format	
			Pos 7-9) Not used	
			Pos 10) G=General Restriction C=Corrosive E=Explosive Restriction	

			F=Flammable I=Inhalant Restriction R=Radioactive Restriction
REQ-BRDR	1	Pos11)	O=Borders Open C= Closed
REQ-FERRY	1	Pos12)	Y=Include Ferry Distance N=Do Not Include Ferry Distance
REQ-SEQ	2		Sequence for multiple responses (Not read by PC)
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 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 formal L#L #L#

The following requests use the DRAW external data structure.

Var Name	Len	Value	Description
DRRQTP	2	DT	Draw green trucks
LOCAT1	18		LOCATION of truck (ZIP, city, or Lat/Long)
LABLE1	119		TRUCK INFO for pop up box. A solid bar can be used to format the window. For example: Truck10|loadedl|ETA 2/10/96 10 AM|HazMat
LOCAT2	18		LOCATION of truck 2 (ZIP, city, or Lat/Long)
LABLE2	119		TRUCK INFO for pop up box
LOCAT3	18		LOCATION of truck 3 (ZIP, city, or Lat/Long)
LABLE3	119		TRUCK INFO for pop up box
LOCAT4	18		LOCATION of truck 4 (ZIP, city, or Lat/Long)
LABLE4	119		TRUCK INFO for pop up box
LOCAT5	18		LOCATION of truck 5 (ZIP, city, or Lat/Long)
LABLE5	118		TRUCK INFO for pop up box
MORE		+	Use + Char for more trucks to follow. Trucks will draw when blank

Var Name	Len	Value	Description
DRRQTP	2	DA	Draw red Alert trucks
LOCAT1	18		LOCATION of truck (ZIP, city, or Lat/Long)
LABLE1	119		TRUCK INFO for pop up box. A solid bar can be used to format the window. For example: Truck10|loadedl|ETA 2/10/96 10 AM|HazMat
LOCAT2	18		LOCATION of truck 2 (ZIP, city, or Lat/Long)
LABLE2	119		TRUCK INFO for pop up box
LOCAT3	18		LOCATION of truck 3 (ZIP, city, or Lat/Long)

LABLE3	119		TRUCK INFO for pop up box
LOCAT4	18		LOCATION of truck 4 (ZIP, city, or Lat/Long)
LABLE4	119		TRUCK INFO for pop up box
LOCAT5	18		LOCATION of truck 5 (ZIP, city, or Lat/Long)
LABLE5	119		TRUCK INFO for pop up box
DRRQTP	2	CT	Clear all trucks red and blue Remaining fields not used
DRRQTP	2	CR	Clear all routes Remaining fields not used
DRRQTP	2	CA	Clear all graphics

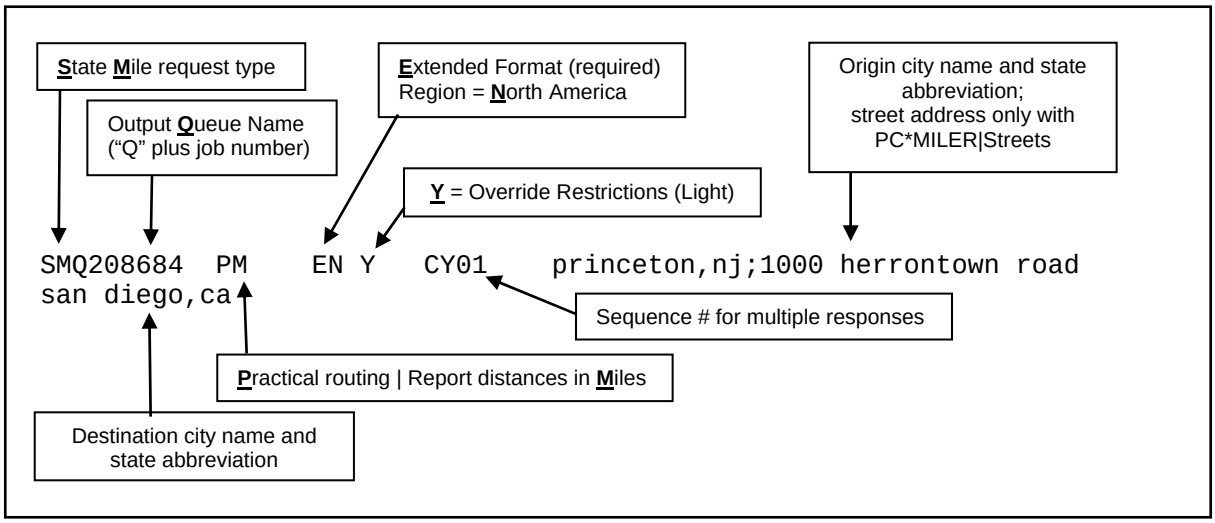
Var Name	**Len**	**Value**	**Description**
REQ-TYPE	2	PR	Draw and **Print** current route
Map Title	20		Assign a title to the Map or defaults to the name of Map
REQ-MORE			Pos 4) M = more data to follow Pos 5-10) Not used
REQ-SEQ	4		Sequence for multiple responses
REQ-ERR	2		Not used
REQ-CIT	220		Array of 10 cities 22 bytes each Specify city name or 5-digit ZIP Specify ZIP first if ZIP and city is specified 16 positions for ZIP code and/or city name 2 positions for the state abbreviation Lat/long format should be 1234567N,1234567W
FILL8	7		Filler with blanks
B256	1		Not used

Var Name	**Len**	**Value**	**Description**
REQ-TYPE	2	PA	Print all graphics that were previously drawn with DR, DT, DA, or MI requests
Map Title	20		Assign a title to the Map or defaults to the name of Map
FILLER			Filler with blanks

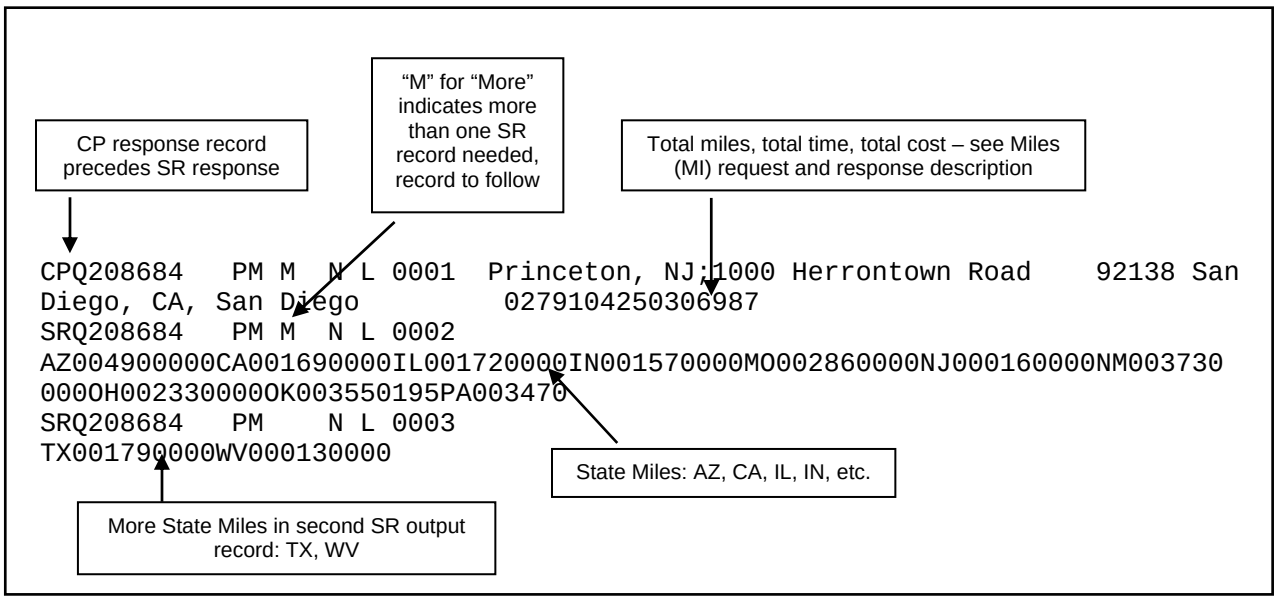
6.4 Sample Request and Response Records

Sample records are shown below.

Sample State Miles (SM) request record:



Sample State Miles (SR) response record:



7.0 Using PC*MILER|Tolls with Other Transportation Software

Notes For Existing PC*MILER-AS400 Users:

- A set of 10 new trip parameters has been inserted into all of the request and response packets.
- All return types (CP, SR, HR) were expanded to hold Toll Cost information. CP was expanded by seven characters, SR by 77, and HR by 63.

For PC*MILER|Tolls, the ROUTEINFO portion of the HS return was increased by seven characters and the number of ROUTEINFO sets per response packet was increased from three to nine to improve performance. For users who are upgrading from Version 15 or less, see **NOTE** below for previous changes.

- Output Data Queue sizes were lengthened from 1024 to 1048.
- Data Area "TLLALK" (renamed from COMALK) was modified to store a default setting for toll cost requests.
- "Old mode" or short city names (22 characters) are not supported.

NOTE for Version 22-28: The following features are not supported in the AS400 product line: Fuel Optimization, Vehicle Profiles, Estimated Greenhouse Gas Emissions, RouteSync, Entry/Exit Toll Plaza Names in Reports, and Real-time/Historical Traffic Data. Province/Estado Abbreviation Option to set "NL" preference is supported in Version 25-28 only.

Added for Version 20 and higher: Borders Open/Closed and **Use Ferry Distance** options. The first two characters of the four-character "Request Sequence" have been re-mapped to hold the Borders and Ferry Flags.

Historically the Request Sequence values have been ignored by the PC Distance Server. Unlike other trip options, Border and Ferry settings are not echoed back in the responses from the PC.

For the optional **PC*MILER|HazMat** hazardous material routing package, two routing types have been added: **Caustic** and **Flammable**.

NOTE: PC*MILER 18 and higher now has full Mexican Estado information. Previously, all Mexican cities were referenced with 'MX' as the Estado code and the Estado was returned in the US county field. For example:

Older versions format: Mexico City, MX, Distrito Federal
Correct format for Version 18: Mexico City, DF

REMINDER: The Province/Estado Abbreviation Option to set the "NL" preference is supported only in Version 25-28.

Estados Codes:

AG Aguascalientes
BJ Baja California
BS Baja California Sur
CP Campeche
CH Chiapas
CI Chihuahua
CU Coahuila de Zaragoza
CL Colima
DF Distrito Federal
DG Durango
GJ Guanajuato
GR Guerrero
HG Hidalgo
JA Jalisco
EM Mexico (Estado)
MH Michoacan de Ocampo
MR Morelos
NA Nayarit
New for 25=> NX* or NL Nuevo Leon (PC Side Configuration Option – Tools menu)
OA Oaxaca
PU Puebla
QA Queretaro Arteaga
QR Quintana Roo
SL San Luis Potosi
SI Sinaloa
SO Sonora
TA Tabasco
TM Tamaulipas
TL Tlaxcala
VZ Veracruz
YC Yucatan
ZT Zacatecas

"NX" is used for Nuevo Leon because "NL" is already used in the database for the Canadian province of Newfoundland and Labrador. The option to configure NL for routing to Nuevo Leon is supported in Version 25-28 only.

NOTE: For Version 17 and higher the routing type options have changed for National Network, Toll Discouraged, and 53'/102" Trailer routing. These three routing options now can be generated in combination with the 'Practical' or 'Shortest' options. Additionally, National Network or 53' Trailer routing can be combined with the Toll Discouraged option. 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 and higher, 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.

REMINDER: ***For Version 16 and higher you have the option of using a comma or a space between the city and state or province abbreviation.***

7.1 Technical Overview

The PC*MILER for the AS400 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 AS400. Small CL programs are used for the creation and removal of temporary data queues (output or response queues). 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 Client Access Express. The interactive software on the AS400 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 AS400 at startup called MIDQUE. The server application waits for mileage requests and processes them when received. While the server application is waiting for work to do, the PC can be used for other tasks such as PC*MILER graphics or terminal emulation.

AS400 Programs *(see Appendix I for information on renamed objects)*

Files	***Description***
TOLLINQ	Main AS400 inquiry program that sends request to MIDQUE data queue
TOLLINQC	CL program that creates output queue and starts TOLLINQ rpg.
CITTLL	RPG program that verifies city ZIP spelling
CRTQ	CL program that creates an output data queue based on the job number
DELQ	CL program that deletes the queue created by CRTQ

GTTLAT	Sample RPG Program that converts City, Jurisdiction pairs or zip codes to Lat/longs
GTTLATC	CL program that creates output queue and starts GETLAT RPG
GTTMIL	Sample RPG Program that performs point-to-point mileage lookups
GTTMILC	CL program that creates output queue and starts GETMIL RPG
GTQNAMTL	RPG Program that determines library and data queue name for sending requests
VTLADR	RPG Program that validates ZIP codes, place names, and street addresses; also provides pick lists of ZIPs codes, names and addresses when partial name, ZIP or address is passed in RPG parameters.
MIDQUE	Data queue that contains input mileage lookup records
QUEUE	CL program that writes to the MIDQUE request data queue
TLSEND	External data structure for sending mileage requests
TLRESP	External data structure for receiving mileage output
TLDRW	External data structure for sending graphics requests to PC
TLSEND2	External data structure with field mappings for Borders and Use Ferry Distance

The program **TOLLINQ** 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 subroutine PLOT can be used to send graphics requests for ETA truck display of graphics.

For example, a truck or vehicle ID's Lat/Long, ZIP, or city name position can be sent to the PC using PLOT and the "DT" request. Then a "DR" request with the truck's origin and destination can be sent so that a graphical ETA can be determined. The data structures of these subroutines are described below.

The PC Mileage Server can respond to a total of thirteen types of mileage and graphic requests:

Mileage:

VN = Version of PC*MILER being used by the server
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
LL = Returns the lat/long coordinates for a city or address (PC*MILER|Streets only)

Graphics:

DR = Draw Route for up to 30 Stops
DT = Draw up to 30 truck bitmaps or "push pins" on the map

CT = Clear Truck bitmap from a specified location
CR = Clear a drawn route line
CA = Clear all routes and trucks
PR = Print route
PA = Print all

The PC Mileage Server responds with the following types of returns:
VR – Version of PC*MILER running on the PC
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
VA returns a PL
MI returns a CP
SM returns a CP and an SR.
HS returns a CP, an SR and an HR
LL returns an LR

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 semicolon:

Example: Send **08540** as opposed to "08540;" – a semicolon will cause the server to look up a blank address (unnecessary).

Three examples of correct input:
Trenton, NJ;21 Olden Avenue
New York, NY;118 Broadway
20001

7.2.1 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.

For cities with multiple ZIP codes, the first city in the returned list is the central city or default ZIP for that city, with the remaining ZIP codes returned in numeric order.

When generating potential matches for an address, PC*MILER|Streets does a "Grid Based" search. This means that the search area may extend beyond the city limits of the requested city for potential matches. You may receive back potential matches in a surrounding town. Pick lists are sorted in confidence order, with the "best" potential match returned first.

For example:
Requesting a pick list by setting REQ-CIT equal to Princeton,NJ;Linden* would return the following list:

08540 Princeton, NJ, Mercer; 1 Linden Lane
08540 Princeton, NJ, Mercer; 49 Linden Lane
08540 Princeton, NJ, Mercer; 80 Linden Lane
08540 Princeton, NJ, Mercer; 100 Linden Lane
08534 Pennington, NJ, Mercer; Linden & Woodmer
08534 Pennington, NJ, Mercer; Linden & Woodmer
08822 Flemington, NJ, Mercer; 1 Linden Court
08822 Flemington, NJ, Mercer; 1 Linden Court
08536 Plainsboro, NJ, Mercer; 2 Linden Lane
08536 Plainsboro, NJ, Mercer; 3 Linden Lane
08536 Plainsboro, NJ, Mercer; 4 Linden Lane

NOTE: Grid Based searches are only done with address level lookups (PC*MILER|Streets only).

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 non-valid 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.

For PC*MILER|Tolls, the VA Request layouts and the PL Response layouts were increased by 10 characters to hold a new set of trip parameters. Output data queues increased from 1024 to 1048.

Validation Request:

Var Name	Len	Value	Description **Extended Format**
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	Pos 21) P or Blank P=Force Pick List, or use wildcard * after a partial city or address
Filler-17	17		Pos 22-38) blanks, previously 7 characters.
REQ-CIT	70		Pos 39) 70 bytes each left justified 38 byte maximum city name 1 byte comma (or optional space) 2 byte state abbrev 1 byte comma (or optional space) 13 byte county name (optional) or for PC*MILER|Streets 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<space>#L# (add-on data module) For Standard Position Location Codes SPLC plus the number (add-on data module)

Validation Response:

Var Name	Len	Value	Description **Extended Format**
REQ-TYPE	2	PL	Stop pick list
REQ-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
Force Pick List			Pos 21) Echoed from Request P or Blank
Filler-1	1		1 blank

RESP-Seq	4		Pos 23-26) Sequence for multiple responses
RESP-ERR	2		Pos 27-28 Error Code
		E2	Place not found
Filler 10	10		Pos 29-38)
RESP-CIT	980		Pos 39-1018) Array of 15 places, 70 bytes each left justified or Error message if there is a problem
Filler-16	16		Pos 1019-1035
Total 1035			

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

For PC*MILER|Tolls, the MI Request layout was increased by 10 to hold a new set of trip parameters. The CP Response layout was increased by these 10 new trip parameters plus 7 characters to hold Tolls Cost data. Output data queues increased from 1024 to 1048.

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 mileage 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** **Extended Format**
REQ-TYPE	2	MI	Miles request
REQ-REF	10		Output Queue Name (ALK uses 'Q' + the job number)
Trip Options Positions	13-22		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)
REGION **(Worldwide Only)**	1	Pos 7) A=Asia E=Europe, F=Africa N=North America O=Oceania S=South America
Custom Routing	1	Pos 8) C=Custom, blank=default
Override Restrictions	1	Pos 9) Y=Override Restrictions, L=Light, N=Obey Restrictions or H=Heavy
Hazmat (Data Add-on)	1	Pos 10) G = General Restriction C=Corrosive E=Explosive Restriction F=Flammable I=Inhalant Restriction R=Radioactive Restriction
REQ-BRDR	1	Pos11) O=Borders Open C= Closed
REQ-FERRY	1	Pos12) Y=Include Ferry Distance N=Do Not Include Ferry Distance
REQ-SEQ	2	Sequence for multiple responses (Not read by PC)
REQ-ERR	2	Error Code
More Trip Options		Pos 29-38)
REQ-MVS	3	Pos 1-3) MVS Version Only*
REQ-TollCost	1	Pos 4) T for Cash D for Discount or Blank
REQ—Fill 6		Pos 5-10) Not used 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 (or optional space) 2 byte state abbrev 1 byte comma (or optional space) 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 L#L<space> #L#
Standard Position Location Code use SPLC+number

* "MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

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
			Pos 5)	Reserved by DR request
	1		Pos 6)	E=Extended Format
REGION	1		Pos 7)	A=Asia,E=Europe,F=Africa,N=North America,O=Oceania,S=South America
Custom Routing	1		Pos 8)	C=Custom, blank=default
Override Restrictions	1		Pos 9)	Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10)	G = General Restriction C=Corrosive

			E = Explosive Restriction F=Flammable I = Inhalant Restriction R = Radioactive Restriction
RESP-SEQ	4		Sequence for multiple responses (Note: Border & Ferry settings not echoed in CP response.)
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
More Options	29 -38		(Echoed Back From Request)
RESP-MVS	3		Pos 1-3) MVS Version Only*
RESP-TollCost	1		Pos 4) Tolls Cost
RESP-FILL	6		Post 5-10) Not Used
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 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 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
RESP-TollCost	7		Tolls Cost for city pair (0007920) = $79.20
FILL127	127		Blanks

Total 267

* "MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

7.2.3 State Miles (SM) Request and Response

For PC*MILER|Tolls, the SM Request layouts were increased by 10 to hold a new set of Trip Parameters. The SR Response Layouts were increased by these 10 new trip parameters plus 70 characters (10 sets of 7) to hold Tolls Cost data. Output Data Queues increased from 1024 to 1048.

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)
REGION (Worldwide Only)	1		Pos 7) A=Asia E=Europe, F=Africa N=North America O=Oceania S=South America
Custom Routing	1		Pos 8) C=Custom, blank=default
Override Restrictions	1		Pos 9) Y=Override Restrictions, L=Light, N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10) G = General Restriction C=Corrosive E = Explosive Restriction F=Flammable I = Inhalant Restriction R = Radioactive Restriction
REQ-BRDR	1		Pos11) O=Borders Open C= Closed
REQ-FERRY	1		Pos12) Y=Include Ferry Distance N=Do Not Include Ferry Distance
REQ-SEQ	2		Sequence for multiple responses (Not read by PC)
REQ-ERR	2		Error Code
More Trip Options	10		Pos 29-38)
REQ-MVS	3		Pos 1-3) MVS Version Only*

REQ-TollCost	1	Pos 4) T for Cash D for Discount or Blank
REQ—Fill 6		Pos 5-10) Not used 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#

NOTE: REQ-SEQ is not read for SM requests.
REQ-BRDR and REQ-FERRY values are not echoed back in the PC responses.

* "MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

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			
PARAMS	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)
REGION	1		Pos 7)	A=Asia,E=Europe,F=Africa,N=North America,O=Oceania,S=South America
Custom Routing	1		Pos 8)	C=Custom, blank=default
Override Restrictions	1		Pos 9)	Y=Override Restrictions, L=Light, N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10)	G = General Restriction C=Corrosive E = Explosive Restriction F=Flammable I = Inhalant Restriction R = Radioactive Restriction
SEQNUM	4			Sequence for multiple responses (Note: Border & Ferry settings not echoed in CP response.)
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
More Options 29 -38				(Echoed Back From Request)
RESP-MVS	3			Pos 1-3) MVS Version Only
RESP-TollCost	1			Pos 4) Tolls Cost
RESP-FILL	6			Post 5-10) Not Used
STATEMIL	180			10 elements, each element will consist of:
		10 Sets		2 for state code 5 for total miles 4 for toll miles 7 for Tolls Costs
FILLER	48			Blanks
Total 267				

* "MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

7.2.4 Detailed Route Information (HS) Request and Response

For PC*MILER|Tolls, the HS Request layouts were increased by 10 to hold a new set of Trip Parameters. The HR Response Layouts were changed in two ways: The number of Sets of Route Information was increased from three to nine to improve performance. This route information was increased by 63 to hold Tolls Cost data (7 x 9 sets). Output Data Queues increased from 1024 to 1048.

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	Extended Format
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)
REGION	1		Pos 7)	A=Asia, E=Europe, F=Africa, N=North America, O=Oceania, S=South America

Custom Routing	1	Pos 8) C=Custom, blank=default
Override Restrictions	1	Pos 9) Y=Override Restrictions or L=Light N=Obey Restrictions or H=Heavy
Hazmat	1	Pos 10) G = General Restriction C=Corrosive E = Explosive Restriction F=Flammable I = Inhalant Restriction R = Radioactive Restriction
REQ-BRDR	1	Pos11) O=Borders Open C= Closed (not echoed back)
REQ-FERRY	1	Pos12) Y=Include Ferry Distance N=Do Not Include Ferry Distance (not echoed back)
REQ-SEQ	2	Sequence for multiple responses (Not read by PC)
REQ-ERR	2	Error Code
More Trip Options	10	Positions 29-38)
REQ-MVS	3	Pos 1-3) MVS Version Only*
REQ-TollCost	1	Pos 4) T for Cash D for Discount or Blank
REQ—Fill 6		Pos 5-10) Not used 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 (or space) 2 byte state abbrev 1 byte comma (or space) 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 formal L#L #L#

NOTE: REQ-SEQ is not read for HS requests.
REQ-BRDR and REQ-FERRY values are not echoed back in the PC responses.

* "MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

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 nine 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)
REGION	1		Pos 7) A=Asia,E=Europe,F=Africa,N=North America,O=Oceania,S=South America
Custom Routing	1		Pos 8) C=Custom, blank=default
Override Restrictions	1		Pos 9) Y=Override Restrictions, L=Light, N=Obey Restrictions or H=Heavy
Hazmat	1		Pos 10) G = General Restriction C=Corrosive E = Explosive Restriction F = Flammable I = Inhalant Restriction R = Radioactive Restriction
SEQNUM	4		Sequence for multiple responses
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
	E9	Disconnected Highway Network

More Options 29 -38		(Echoed Back From Request)
RESP-MVS	3	Pos 1-3) MVS Version Only*
RESP-TollCost	1	Pos 4) Tolls Cost
RESP-FILL	6	Post 5-10) Not Used

Number of Sets increased from 3 to 9, 7 characters added to each set to hold Tolls Cost Data

ROUTEINFO		2 indicates end of route data for stop
		2 state code
		1 toll indicator
	NEW→ 9 sets	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
	NEW→	7 for Tolls Cost on specific Leg
Fill-34	34	

Total 1035

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

* "MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

7.2.4.1 Upgrade Notice

For Version 16 and higher 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 below.

Format in previous non-tolls 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

Format in PC*MILER|Tolls versions:

ROUTEINFO

NEW→ 9 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

NEW→ 7 for Tolls Cost on specific Leg

NEW→ Fill-34 34

7.2.5 City/Address to Lat/Long (LL) Request and Response

1. (Request) Following are parameters for latitude/longitude coordinates for a given city, postal code, or address (PC*MILER|Streets only). Lat/longs are returned in degree, minute second format.

For example:
0394346N,0861610W

Var Name	Len	Value	Description	Extended Format
REQ-TYPE	2	LL	Lat/Long	
REFNUM	10		Output Queue Name (ALK uses 'Q' + the job number)	
FILL-10	10		Blank Fill	
REQ-SEQ	4		Sequence (Always 0001 for LL Requests)	
REQ-ERR	2		Error Code	
More Trip Options	10		Positions 29-38)	
REQ-MVS	3		Pos 1-3) MVS Version Only	
REQ-TollCost	1		Pos 4) Not Used LL Request Type	
REQ—Fill 6			Pos 5-10) Not used blank fill	
REQ-CIT	70		38 byte maximum city name 1 byte comma or space 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 formal L#L #L#	

1. (Response) Following are parameters for a latitude longitude coordinate response. Lat/longs are returned in degree, minute second format.

For example:
0394346N,0861610W

Var Name	Len	Value	Description	Extended Format
REQ-TYPE	2	LR	Lat/Long	
REFNUM	10		Output Queue Name (ALK uses 'Q' + the job number)	

FILL-10	10	Blank Fill
RESP-SEQ	4	Sequence (Always 0001 for LL Requests)
RESP-ERR	2	Error Code (E2=No Match Found)
More Options	29 -38	(Echoed Back From Request)
RESP-MVS	3	Pos 1-3) MVS Version Only*
RESP-TollCost	1	Pos 4) Not Used LL Requests
RESP-FILL	6	Post 5-10) Not Used
RESP-LL	17	Lat/Long Coordinate in Degree, Minutes, Seconds Format
Fill-211	211	Blank Fill

* "MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

7.2.6 Graphics Only Requests

Following are field parameters for graphics. The purpose of the graphics request is to allow the host application to draw graphics on the dedicated PC or Windows work station. The application does not have to wait for a response from the PC such as the mileage request. The DR request uses the MISEND external data structure.

Var Name	**Len**	**Value**	**Description** **Extended Format**
REQ-TYPE	2	DR	Draw route
REQ-REF	10		Not used
REQ-OPTION	10		Not used
REQ-MORE	1		Pos 4) M = more data to follow
NO-DRAW	1		pos 5) + means don't draw map yet
REQ-FMT	1		Pos 6) E = Extended Format Pos 7-9) Not used 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
More Trip Options	10		Positions 29-38)
REQ-MVS	3		Pos 1-3) No Graphics Support MVS Version*
REQ-TollCost	1		Pos 4) Not Used DR Request Type
REQ—Fill	6		Pos 5-10) Not used 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 formal L#L #L#

*"MVS" is the PC*MILER Multi Version Switch product, an optional product that allows for connection to multiple versions of PC*MILER.

The following requests use the DRAW external data structure.

Var Name	Len	Value	Description
DRRQTP	2	DT	Draw green trucks
LOCAT1	18		LOCATION of truck (ZIP, city, or Lat/Long)
LABLE1	119		TRUCK INFO for pop up box. A solid bar can be used to format the window. For example: Truck10|loadedl|ETA 2/10/96 10 AM|HazMat
LOCAT2	18		LOCATION of truck 2 (ZIP, city, or Lat/Long)
LABLE2	119		TRUCK INFO for pop up box
LOCAT3	18		LOCATION of truck 3 (ZIP, city, or Lat/Long)
LABLE3	119		TRUCK INFO for pop up box
LOCAT4	18		LOCATION of truck 4 (ZIP, city, or Lat/Long)
LABLE4	119		TRUCK INFO for pop up box
LOCAT5	18		LOCATION of truck 5 (ZIP, city, or Lat/Long)
LABLE5	118		TRUCK INFO for pop up box
MORE		+	Use + Char for more trucks to follow. Trucks will draw when blank

Var Name	Len	Value	Description
DRRQTP	2	DA	Draw red Alert trucks
LOCAT1	18		LOCATION of truck (ZIP, city, or Lat/Long)
LABLE1	119		TRUCK INFO for pop up box. A solid bar can be used to format the window. For example: Truck10|loadedl|ETA 2/10/96 10 AM|HazMat
LOCAT2	18		LOCATION of truck 2 (ZIP, city, or Lat/Long)
LABLE2	119		TRUCK INFO for pop up box
LOCAT3	18		LOCATION of truck 3 (ZIP, city, or Lat/Long)
LABLE3	119		TRUCK INFO for pop up box
LOCAT4	18		LOCATION of truck 4 (ZIP, city, or Lat/Long)
LABLE4	119		TRUCK INFO for pop up box
LOCAT5	18		LOCATION of truck 5 (ZIP, city, or Lat/Long)
LABLE5	119		TRUCK INFO for pop up box
DRRQTP	2	CT	Clear all trucks red and blue Remaining fields not used
DRRQTP	2	CR	Clear all routes Remaining fields not used
DRRQTP	2	CA	Clear all graphics

Var Name	Len	Value	Description
REQ-TYPE	2	PR	Draw and **Print** current route
Map Title	20		Assign a title to the Map or defaults to the name of Map
REQ-MORE			Pos 4) M = more data to follow Pos 5-10) Not used
REQ-SEQ	4		Sequence for multiple responses
REQ-ERR	2		Not used
More Trip Option	10		Positions 29-38)
REQ-MVS	3		Pos 1-3) No Graphics Support MVS Version
REQ-TollCost	1		Pos 4) Not Used PR Request Type
REQ—Fill	6		Pos 5-10) Not used blank fill
REQ-CIT	220		Array of 10 cities 22 bytes each Specify city name or 5-digit ZIP Specify ZIP first if ZIP and city is specified 16 positions for ZIP code and/or city name 2 positions for the state abbreviation Lat/long format should be 1234567N,1234567W
FILL8	7		Filler with blanks
B256	1		Not used
REQ-TYPE	2	PA	Print all graphics that were previously drawn with DR, DT, DA, or MI requests
Map Title	20		Assign a title to the Map or defaults to the name of Map
FILLER			Filler with blanks

7.2.7 Optional: PC Server Version (VN) Request and Response

Used to check the version of PC*MILER software running on the Server PC.

Version Request:

Var Name	Len	Value	Description	Extended Format
REQ-TYPE	2	VN	Version of PC Software Running	
REQ-REF	10		Output Queue Name (ALK uses "Q" plus job number	

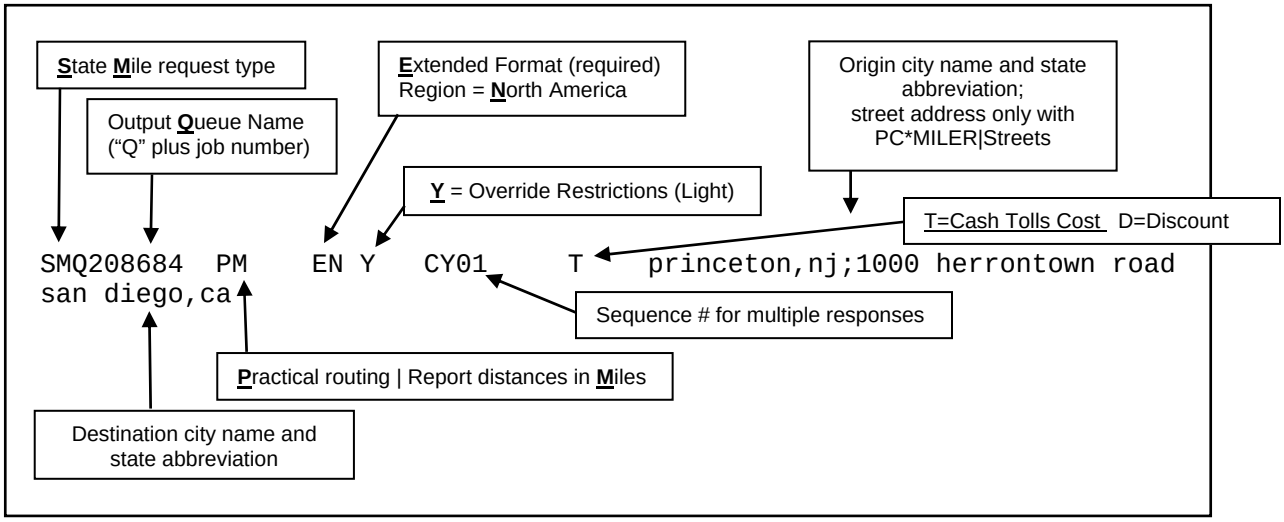
Version Response:

Var Name	Len	Value	Description	Extended Format
RESP-TYPE	2	VR	Stop pick list	
RESP-REF	10		Output Queue Name	
Filler- 26	26		Pos 13) blanks	
RESP-Ver	20		Pos 39) Version/Type PC Software	
Filler-209	209		Pos 59) blanks	
Total = 267				

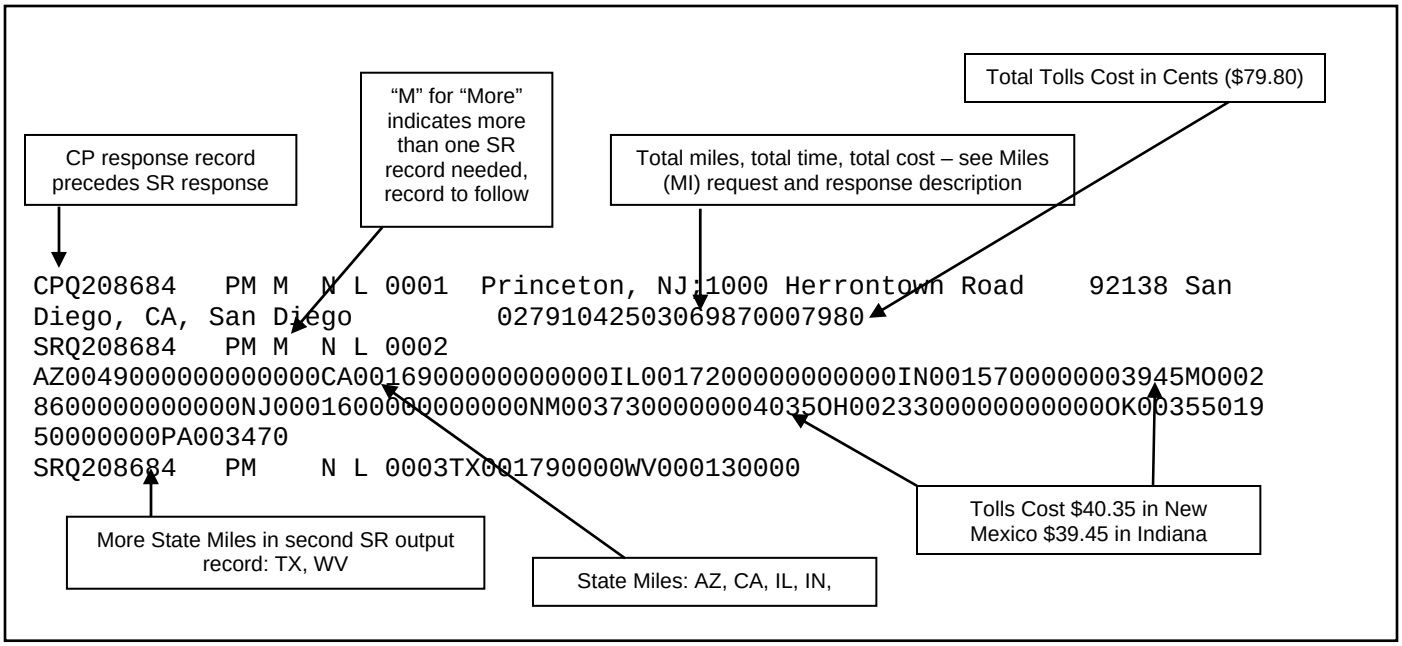
7.2.8 Sample Request and Response Records

Sample records are shown below.

Sample State Miles (SM) request record:



Sample State Miles (SR) response record:



8.0 Using the PC*MILER-AS400 Mileage Server and Map Window

When you first open PC*MILER for AS400, an active map window is displayed if mapping is on:

If mapping is off, the Server Log is displayed when AS400 is opened.

8.1 Menus

All menu commands in PC*MILER for the AS400 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 AS400 Input Queue	When a queue becomes corrupted, creates a new queue and deletes the corrupted one.
Exit	Exit PC*MILER-AS400. When you exit, all active windows are saved as they appear on your screen for the next time PC*MILER-AS400 is opened.
AS400 Control	Configure the Mileage server for different purposes. Choose from the sub-menu: **Change Library/Queue: Location of request/input queue. Default Library is ALKWIN or ALKTLL for PC*MILER|Tolls. Default Data Queue Name is** MIDQUE. Innovative users, use your ICC work library, i.e. ITRS6WORK or IESR7WORK. If you want to display routes/trucks for requests coming from this one PC rather than for all requests, use your AS400 display name instead of MIDQUE. **Mapping on:** Turn mapping on or off. Turning off mapping can speed up batch applications. **Graphics for Mile Requests:** Turn mapping on or off. The routes will not

	be drawn on the map. This will speed up the display. **Log to File:** Turn diagnostics on/off. This is useful for debugging problems. When on, diagnostics are written to a file called as400.log, located in the directory that the software is running from (srv32.exe). Choose between Append, Overwrite, and Close. **Host Polling Timer:** Use faster time slice to poll the AS400 more often for faster interactive response time, or slower time slice for smoother graphic display. **Force Pick List:** Turns AS400 pick lists off/on for duplicate city names. Activates lists for both large cities with multiple ZIP codes and duplicate city names.

The Map View Menu

Use the **Map View** menu to control which routes and trucks are currently displayed. Four differently colored routes can be shown and hidden. An unlimited amount of red and green trucks can be shown or hidden.

Hide Blue route	Hide the blue route.
Hide Red route	Hide the red route.
Hide Green route	Hide the green route.
Hide Yellow route	Hide the yellow route.
Hide all routes	Hide all routes.

Hide all trucks	Hide all truck icons.
Show entire Map	Show all routes and truck icons.
Frame Route	Frames current trip

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.

8.2 Built-in Functionality

Similar to PC*MILER|Mapping, PC*MILER for the AS400 has built-in zooming features, and a menu that can be invoked using the right mouse button which provides much of its functionality.

To zoom into an area, drag a rectangle (hold down the left mouse and drag) or double-click on a point (this will zoom in and place the point at the center of the map).

The following commands can be selected from the right mouse menu:

Zoom In: Zoom in by a factor of two; can be repeated for closer views; increases detail.

Zoom out: Zoom out by a factor of two; can be repeated; decreases detail.

Pan: Pan map north, south, east or west.

Frame: Frame the specified geographic region.

Drag Map: Pan map by clicking and dragging.

Features: Controls drawing of various feature sets.

Redraw: Refresh the current display in the Map Window.

Detail: Without zooming, add to, reduce, or return to the default number of roads, road names and place names drawn on the map. Choose **More**, **Less**, or **Default** from the sub-menu.

Labels: Choose one from the sub-menu:

Pick Cities: enable user to label and deselect locations and road intersections with the mouse

Pick Roads: enable user to label and deselect roads with the mouse

Pick Pins: enable user to click on a pin to display a window listing information about the icon

Clear: delete all labels that have been added manually.

Legends: Show/Hide the **Road Legend**, and/or **Scale of Miles**.
NOTE: The Hazmat Legend is controlled from the Features Menu

Copy: Copy the map to the clipboard for retrieval in other Windows programs.

Print: Print the map that is currently displayed in the Map Window.

9.0 Common Questions and Installation Problems

Question: *PC*MILER works correctly when using the PCMILER command on the AS400, but my Innovative software does not work.*

Answer: Run the CONFIG command on the AS400 (which is described in the manual) and type the Innovative work library name **I93WORK**, **ITSR5W0RK**, or **IESR7WORK** (check with ICC). After this is complete, check the File menu in the AS400 Mileage Server, **choose AS400 Control>Change Library Queue**. Or you can edit the PCMSERVE.INI or PMWSSRV.INI for PC*MILER|Streets, changing the LIBRARY=ALKWIN to LIBRARY=I93WORK and then restart the AS400 Mileage Server. Or re-install the AS400 windows CD and type **I93WORK**. Restart the SERVER.

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 ALKWIN and your Innovative work and file libraries in your library list. Get a 400 command line and do a DSPLIB, make sure you have ALKWIN 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 ADDLIBLE command to add them. Then do a WRKOBJPDM<space>ALKWIN. Do a 12 on QRPGSRC 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 AS400 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 AS400 cities file.

Question: *When I change my queue name to "MIDQUE", my PC can't receive anything from the AS400.*

Answer: Make sure that you exit and restart the PC*MILER interactive software on the AS400. The PC*MILER program on the AS400 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 AS400 since we have added several more users. Can we improve the performance?*

Answer: Yes. You can run multiple copies of the PC*MILER-AS400 program on the same PC if you have enough memory. Or if you have another available PC, you can start up PC*MILER-AS400 on the other PC.

Question: *How can I run PC*MILER-AS400 on more than one PC?*

Answer: Make sure that PC*MILER-AS400 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-AS400 from **9:00am** to **5:00pm EST**, **Monday through Friday**. Call **(609) 683-0220, ext. 2**. Or, e-mail us at **pcmsupport@alk.com** (type "PCM/AS400" in the subject line).

11.0 About ALK® Technologies

ALK® Technologies, Inc., a Trimble® company headquartered in Princeton, NJ, was founded in 1979 as a transportation industry pioneer. ALK harnesses the power of information technology to enhance transportation and mobility, supporting competitive advantage and improved quality of life.

Today, ALK is a global leader in GeoLogistics® Solutions and navigation software. GeoLogistics is our portfolio of specialized enterprise solutions for worldwide routing, mileage and mapping, used by customers in transportation, logistics, manufacturing, mobile workforce management and government. Our commercial trucking applications are relied upon by companies worldwide and our in-vehicle GPS navigation and route guidance solutions are among the most award-winning solutions in the world.

We pride ourselves on being a market leader in transportation and travel technology. ALK's leadership in applying that technology to solve important problems continues as strongly today as when we began over 30 years ago. Now part of Trimble's international Transportation and Logistics division, we remain committed to providing our customers with solutions that work for them to lower costs, improve service and safety and minimize harm to the environment.

For detailed product information, visit us at
www.alk.com or www.pcmiler.com.

Appendix A: Backward Compatibility

ALK Technologies does support backward compatibility with previous versions of PC*MILER and PC*MILER for the AS400. 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.

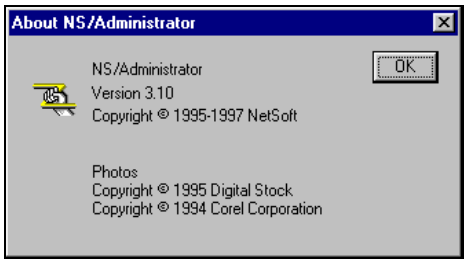
If you would like more information about backward-compatible formats, please contact the ALK technical support staff (see Chapter 9).

Appendix B: Configuring an N/S Router For Use With PC*MILER-AS400

ALK is no longer supporting the use of the N/S Router. It remains an installation option and may work on some systems.

Unless you have a twinax connection, configure your router using the AnyNet protocol. AnyNet needs to be enabled on the AS400 (see *Appendix D: Configuring AnyNet on the AS400*).

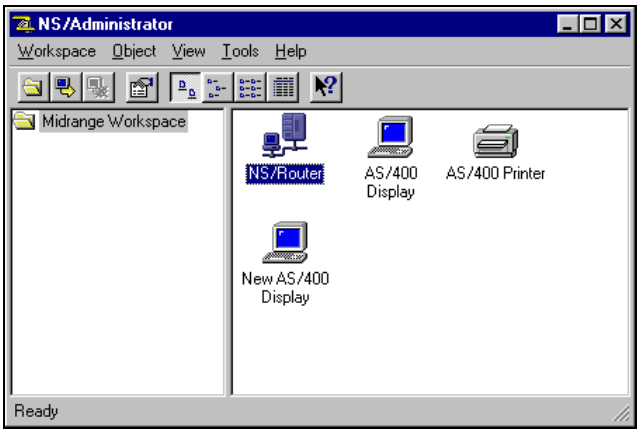
For PC*MILER Version 14 (or higher) and any PC*MILER|Streets version, you must have the N/S Router version 3.0 or higher.



Check by selecting **HELP > About** in the NS/Administrator or the midrange workspace.

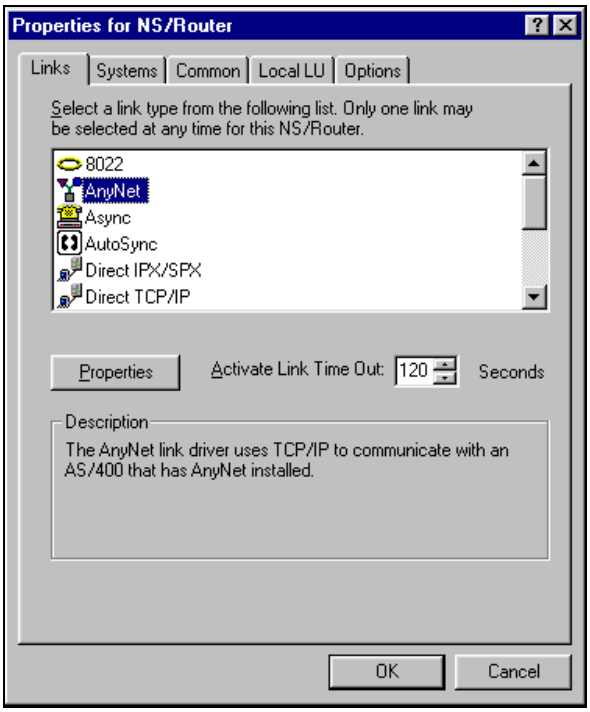
NOTE: If you need to upgrade your NS Router, you must reinstall the PC*MILER-AS400 interface afterwards. The PC*MILER interface is built on a specific Netsoft Data Queue DLL that is available only on the PC*MILER interfaces CD.

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

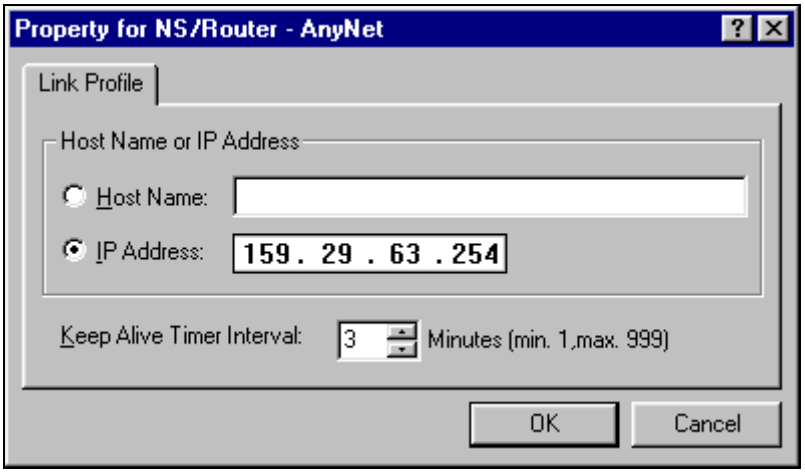


Then do the following:

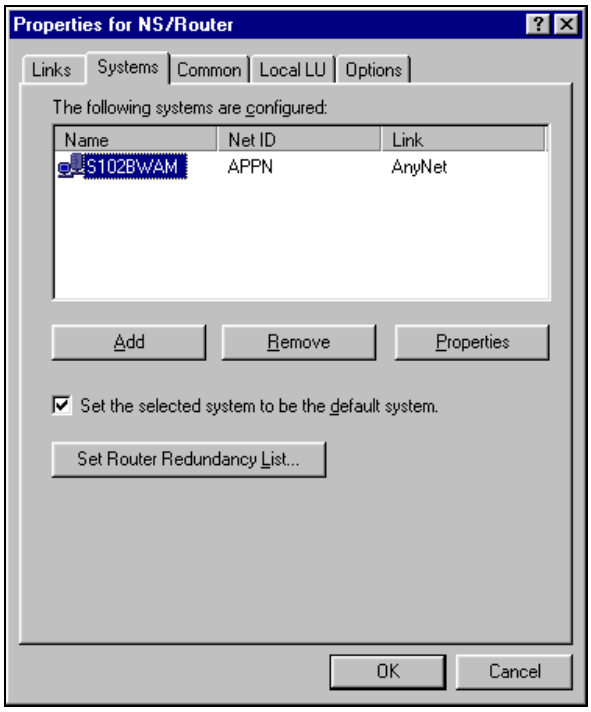
1. In the Links Tab, highlight AnyNet, and then choose Properties.

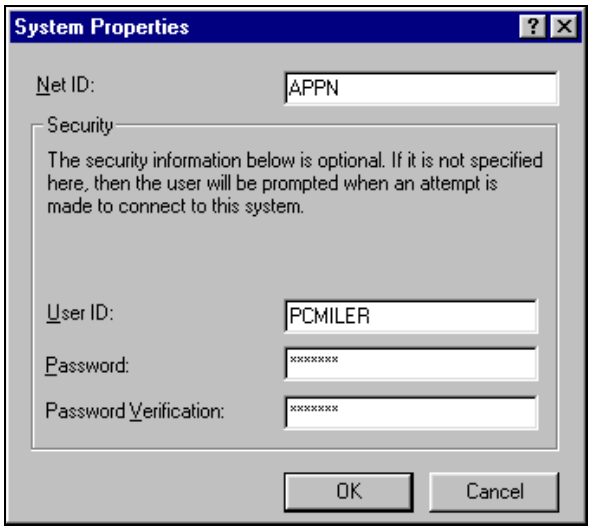


2. In Properties, fill in the AS400's IP address. You can use a system name, but if your host tables are not filled in properly, you will be able to connect to the AS400, but PC*MILER won't be able to create a Data Queue.

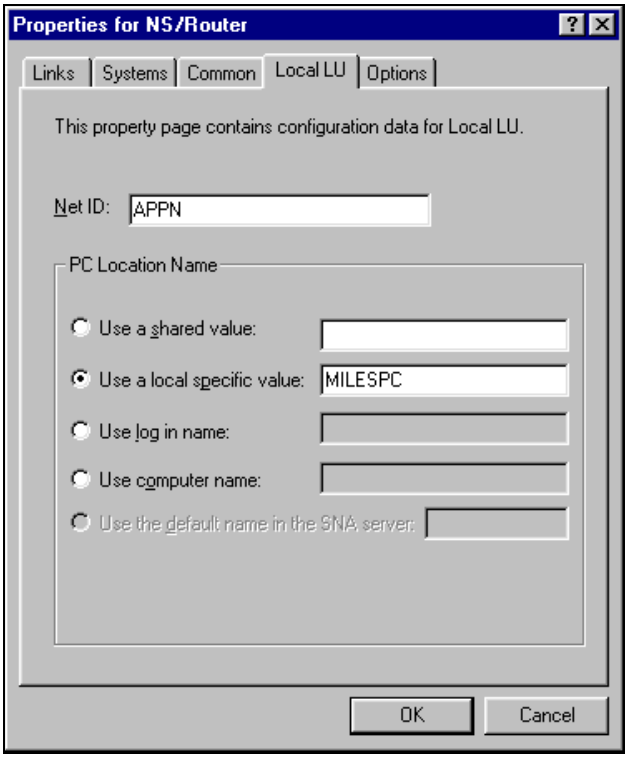


3. The Systems tab adds the AS400's system name. This is where you set the password with which the router signs in. Make sure that the password has not expired, and that the account has object authority to the library where your mileage request Data Queue will reside (usually **alkwin** or an Innovative Work Library).





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



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

Appendix C: Configuring AnyNet On the AS400

The following instructions are provided by NetManage.

1. Type the following command at the AS400 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 AS400 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.***

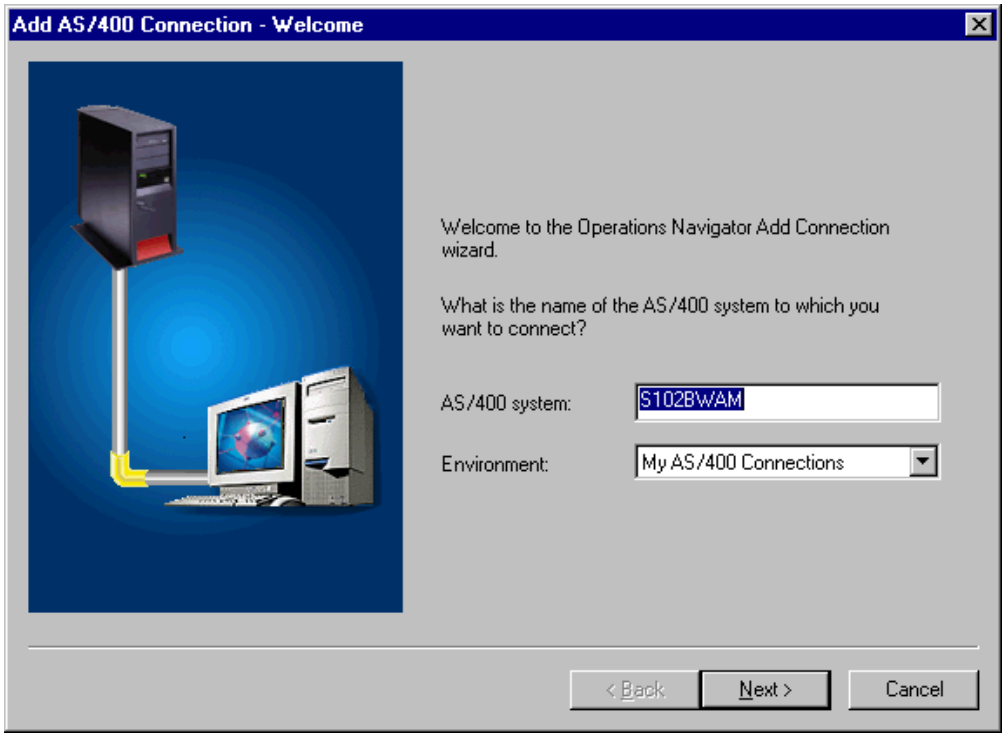
For any further questions, see your AS400 System Administrator's *User's Guide.*

Appendix D: Configuring Client Access Express To Work With PC*MILER-AS400

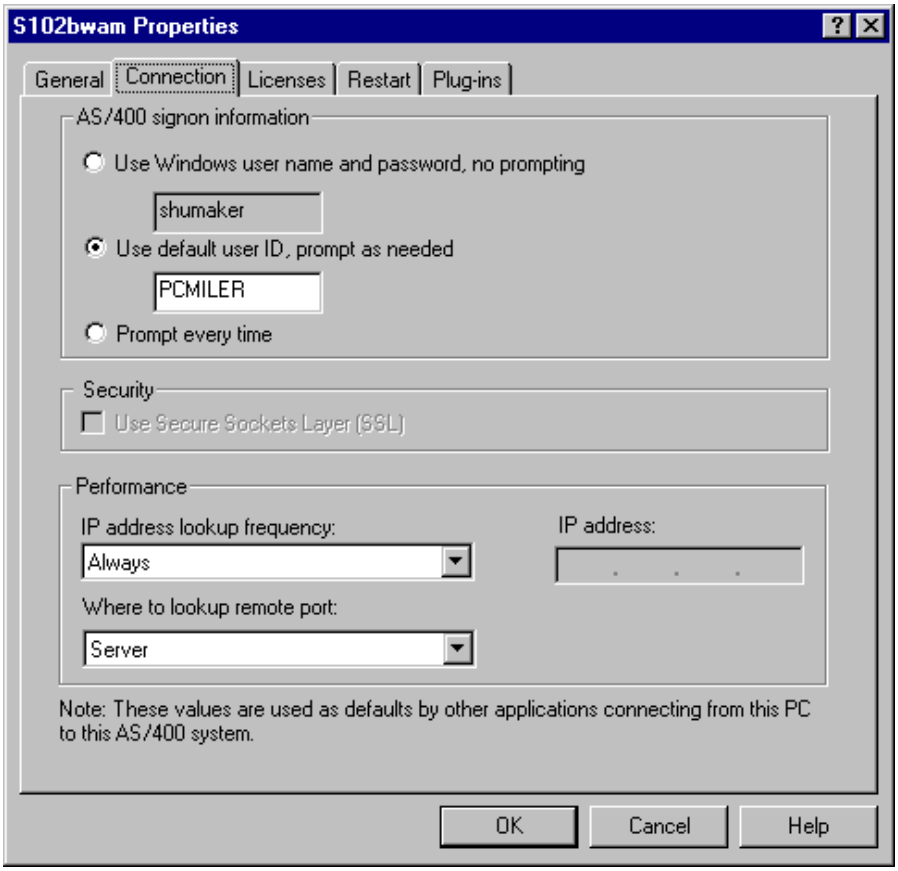
1. Install Client Access Express on your mileage server PC by running the **setup.exe** that is in the Express folder on your Client Access Express CD.

2. Go to the AS400 Operations Navigator. For new installations, a Navigator prompt will ask if you want to add a connection. You will need to know the IP Address of your AS400 and the System Name if you want to configure your connection using the AS400 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 AS400 called **S102BWAM**, you can also use the IP address of your AS400.



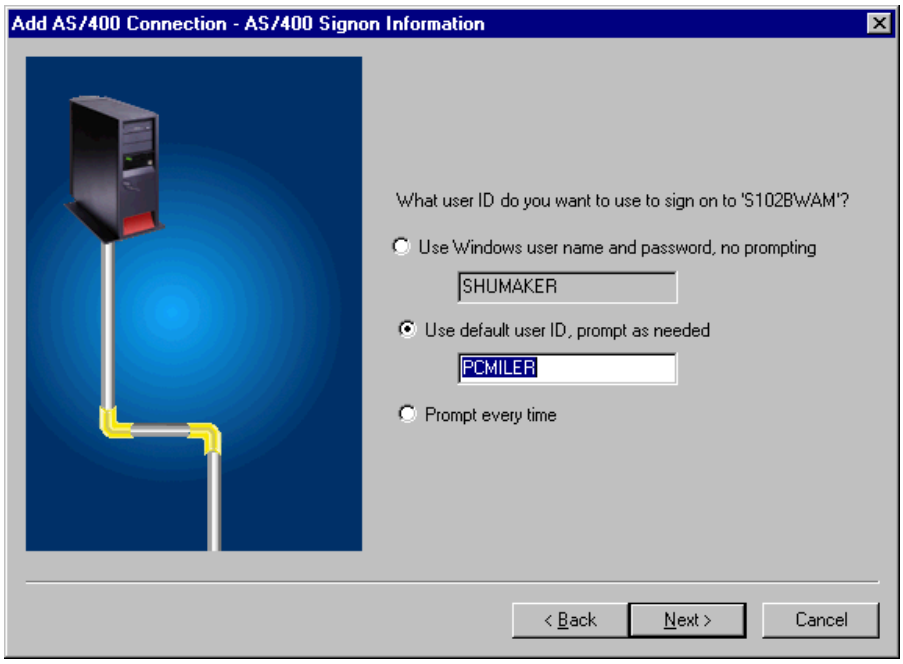
For existing installations of Client Access Express, go into the AS400 Operations Navigator and right mouse click on your AS400 connection. Choose Properties to make changes or Verify to verify a connection.



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 AS400, 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.

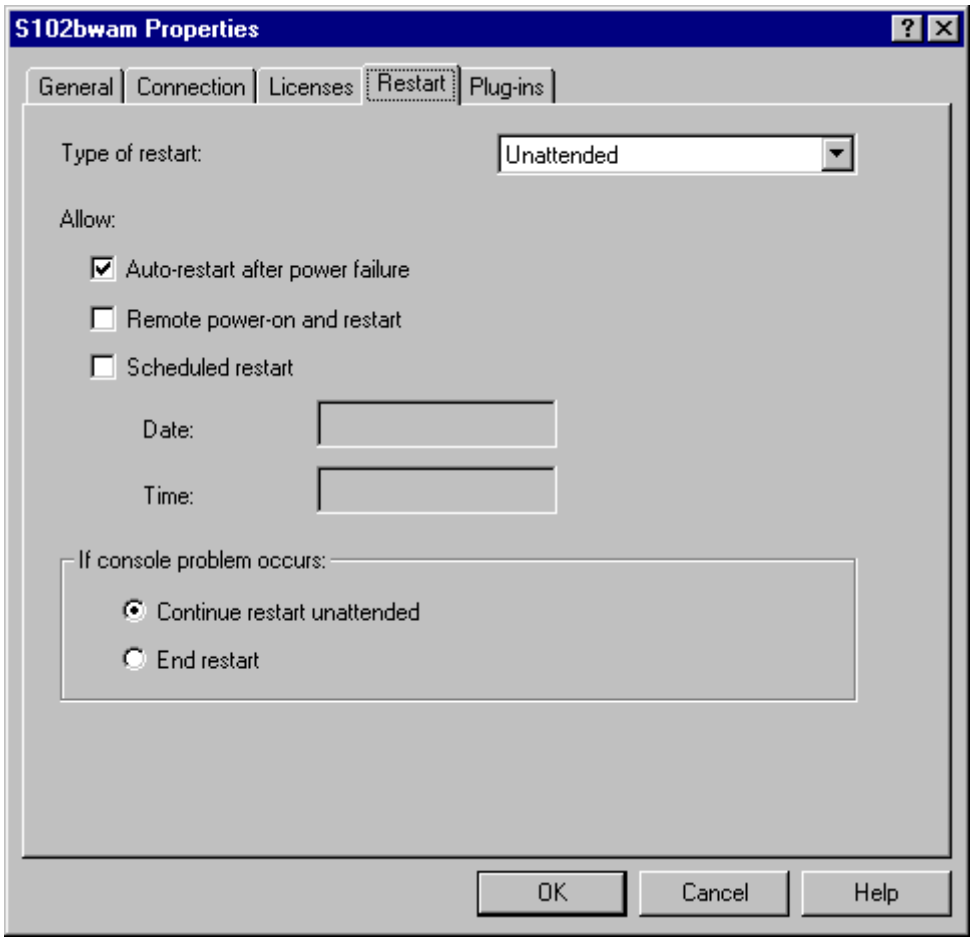


The default user ID is the User Profile that the mileage server PC will be signing on to. This user will need the authority to create and delete data queues in either the ALKWIN Library or your Innovative Work Library.

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.

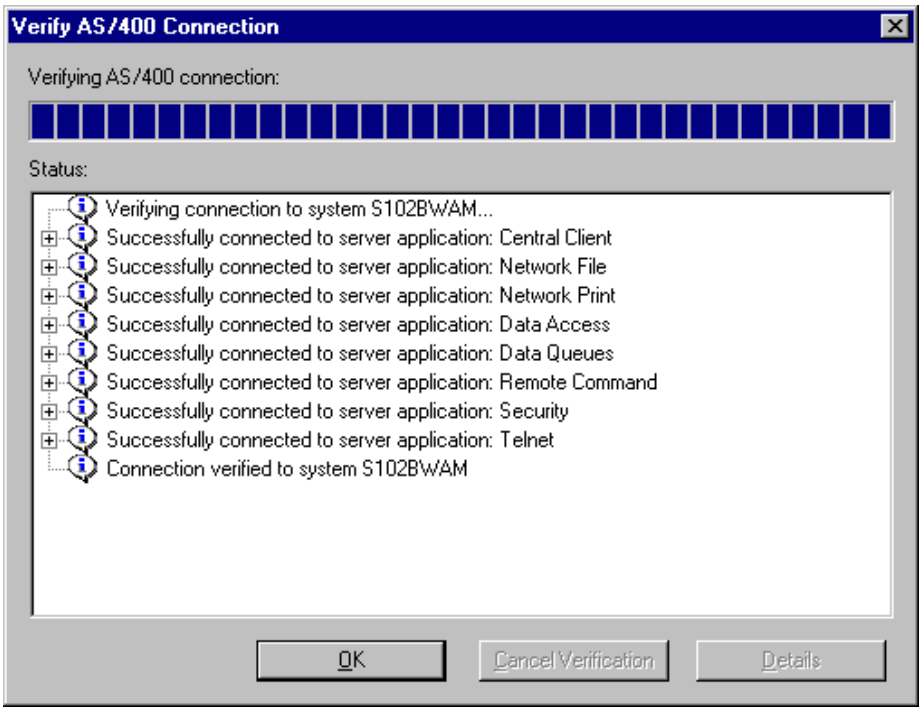
In the event of a power loss, the PC will not connect to the AS400 until someone manually types in the Windows password. To get a PC to restart without prompting for a password, you have to set the Windows Password to nothing. AS400 security does not allow a null password. So if you want the mileage 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 AS400 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 PC Connection/ IPL Issues

The Sleep Feature has been added to correct an issue in which the PC Distance Server (srv32.exe) does not reliably reconnect to the AS400 after an IPL or power down.

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

Included in your ALKWIN Library is a CL program called "queue". For queue to work you must have **alkwin** 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 ALKWIN in your library list):

Call alkwin/queue<space>**('SP10800')**

You will need to test the Sleep Feature. On your mileage server, set up your screen so you can watch the mileage server's Server Log (SRV32.exe).

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, run PC*MILER and run a route from 10001 to 90009 to make sure that it is working. Watch the PC*MILER-AS400 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. Finally, the mileage server should wake up and reconnect with the mileage server.

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.

You can use the Work with Job Schedule Entries (WRKJOBSCDE) command to set up an automatic process.

Be sure to put it to sleep for a long enough period of time. If Bart (srv32.exe) wakes up too early (before the AS400 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.

Appendix F: PCMSERVE.INI Settings

The **pcmserve.ini** file resides on the mileage PC in the **c:\windows** or the **c:\winnt** folder. Values specified in pcmserve.ini will be used unless they are otherwise specified in the mileage request packet. PC*MILER|Streets uses **pmwssrv.ini**, and has a few additional key values included at the bottom of the chart.

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	Practical	Not supported by PC*MILER| AS400. If routing type is not specifed the default route type of Practical will be used.
Units	Miles Kilometers	What unit of measure should distance be shown in.
ChangeDest	TRUE FALSE	When optimizing the route, should the trip's destination be optimized also.
Borders	TRUE FALSE	Should the engine try to keep routes within the United States (F), or can they cross and recross the borders at will (T).
HubMode	TRUE FALSE	Calculate the routes from the origin **to each stop** (T), not through each stop (F).
AlphaOrder	TRUE FALSE	List the states in the State Report in alphabetical order, or in the order driven.
FerryMiles	TRUE FALSE	Use ferry distances in mileage and cost calculations (T), or don't use (F).

`[Options]`

`CustomRoute`	`TRUE` `FALSE`	Should Custom routing be used.

`HazRoute`
*(for PC*MILER Hazmat add-on only)*
	`None`
	`General`
	`Explosive`
	`Inhalant`
	`Radioactive`
	`Corrosive`
	`Flammable`
		The default hazardous routing type: disabled, general material, explosive, inhalant, radioactive, corrosive, or flammable.

`Light Vehicle`	`TRUE` `FALSE`	Set to TRUE (T) for light vehicle routing and restriction overrides; FALSE (F) = heavy vehicle routing and obey restrictions.
`PartialCityMatch`	`TRUE` `FALSE`	Require exact match on city name strings (T) or match on partial city names (F). Primarily used for long city names like "Naval Shipyard Portsmouth N0018, VA, Portsmouth".
`UseUSPostCodes`	`TRUE` FALSE	When set to TRUE, if a 5-digit postal code might be a U.S. or a Mexican code, the U.S. code will be used. See section 4.3 for all `UseUSPostCodes` and `UseMexPostCodes` setting combinations. Default = True
`UseMexPostCodes`	TRUE `FALSE`	When set to TRUE, if a 5-digit postal code might be a U.S. or a Mexican code, the Mexican code will be used. Default = False **NOTE:** If `UseUSPostCodes` and `UseMexPostCodes` are both FALSE, or are not in

		the INI, the default U.S. code will be used. See section 4.3 for a list of all setting combinations.

PC*MILER|Streets-specific Key values for pmwssrv.ini:

`[Options]`

`UseStreets`	TRUE FALSE	Should street-level (T) or highway-only (F) routing be used when stops are city names or ZIP codes.
`MatchRoadNameOnly`	TRUE FALSE	Set to (T) to match address on road name only.

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>**AS400 Control** and choose **Log to file**. The file created is **c:\ALK Technologies\pcmiler28\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

Appendix H: Technical Implications of PC*MILER|Tolls

To accommodate the extra space needed for requesting and receiving Tolls Cost data, the request and response packet layouts were increased in size and the size of the response data queues was increased as detailed below.

Third party or In-house transportation software must be modified to utilize PC*MILER-AS400 with the Tolls Cost component. PC*MILER-AS400 with the PC*MILER|Tolls add-on module cannot replace previous versions of PC*MILER-AS400 without programming changes. See Chapter 7, *Using PC*MILER|Tolls With Other Transportation Software*, for more information.

Notes For Existing PC*MILER-AS400 Users:

- A set of 10 new trip parameters has been inserted into all of the request and response packets.
- All return types (CP, SR, HR) were expanded to hold Tolls Cost information. CP was expanded by 7 characters, SR by 77, and HR by 63.

For PC*MILER|Tolls, the ROUTEINFO portion of the HS return was increased by seven characters and the number of ROUTEINFO sets per response packet was increased from three to nine to improve performance. For users who are upgrading from Version 15 or less, see NOTE below for previous changes.

- Output Data Queues sizes were lengthened from 1024 to 1048.
- Data Area "TLLALK" (renamed from COMALK) was modified to store a default setting for Tolls Cost requests.
- "Old mode" or short city names (22 characters) are not supported.

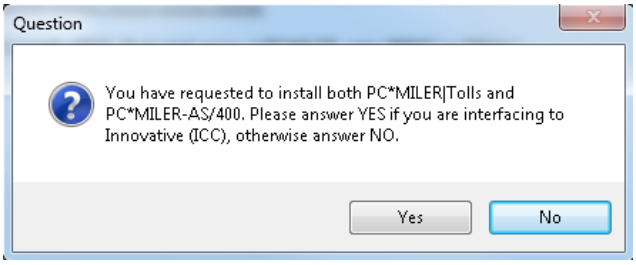
NOTE: In Version 16, the ROUTEINFO portion of the HS return was increased by 25 characters and the number of ROUTEINFO sets per response packet was decreased from four sets to three. Route Number was increased 15 characters from 20 to 35 (Highway, Road or Street Name), and Interchange City or Junction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

The standard PC*MILER-AS400 distance server vs. the PC*MILER|Tolls-compatible version:

The mileage server executable name is "Srv32.exe". There are two distinct builds of this file: 1) the PC*MILER build and 2) the PC*MILER|Tolls build. If you have purchased the PC*MILER|Tolls add-on, both versions will be installed to C:\ ALK Technologies\pcmiler28\AS400.

If the Tolls component is checked during installation, you will have the PC*MILER|Tolls build (Srv32.exe) and also "Srv32_Hwy.exe", which is a renamed copy of the standard PCMILER build.

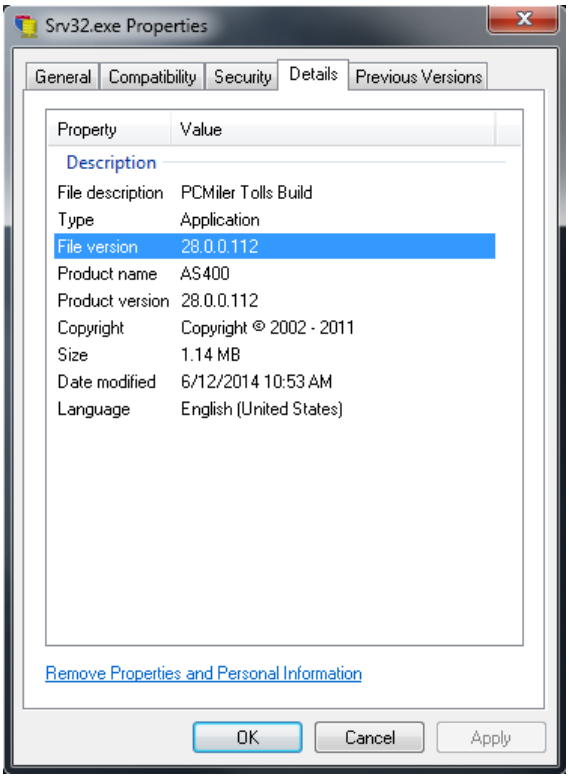
However, a different installation will occur if the Tolls component is unchecked during installation, or if you respond 'Yes' to this dialog:



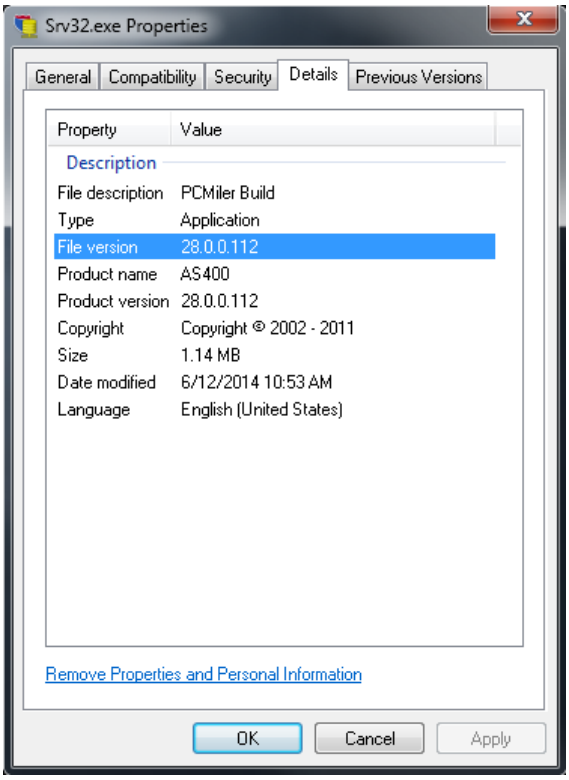
In this case you will get a standard PC*MILER build named "Srv32.exe" along with "Srv32_Tolls.exe", which is a renamed copy of the PC*MILER|Tolls build.

You can check to see which build you have by checking the file properties of your srv32.exe:

After installing with the Tolls component checked:



After installing without Tolls (Tolls component unchecked or answered 'Yes' to ICC user flag prompt):



The standard PC*MILER build for use with ALKWIN Library and existing third party applications is not modified to work with PC*MILER|Tolls, whereas the PC*MILER|Tolls build for use with ALKTLL Library and third party applications is written to work with the Tolls Cost component.

To Switch Between Versions After Installation:

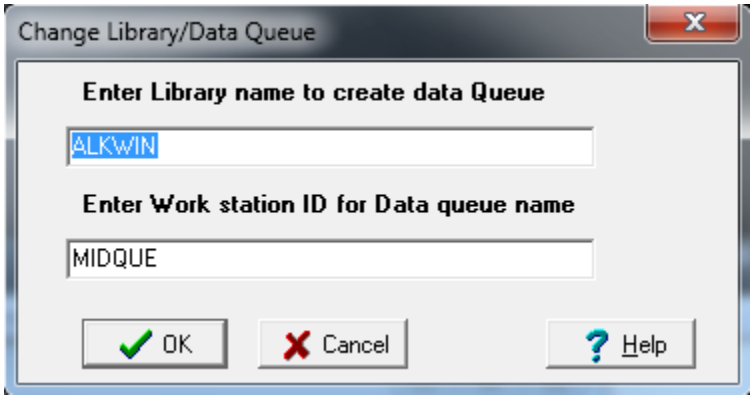
Standard Highway to Tolls:

1. Stop the PC Mileage Server (srv32.exe)
2. Rename C:\ALK Technologies\pcmiler28\AS400\Srv32.exe to "Srv32_Hwy.exe".
3. Make a copy of the Srv32_Tolls.exe, rename this copy that you made to "Srv32.exe".
4. Launch the Mileage Server.
5. After starting the Mileage Server you need to change the Library for data queues as follows:

a. Click the File drop-down menu.

b. Choose "AS400 Control" then "Change Library/Data Queue".

c. Change the ALKWIN to "ALKTLL". (AS400 users will need ALKTLL in their library lists.)



Converting Tolls Cost Component to Standard Highway:

1. Stop the PC Mileage Server (srv32.exe)
2. Rename C:\ALK Technologies\pcmiler28\AS400\Srv32.exe to "Srv32_Tolls.exe".
3. Make a copy of the Srv32_Hwy.exe, rename this copy that you made to "Srv32.exe".
4. Launch the Mileage Server.
5. After starting the Mileage Server you need to change the Library for data queues as follows:

   a. Click the File drop-down menu.

   b. Choose "AS400 Control" then "Change Library/Data Queue".

   c. Change the ALKTLL to "ALKWIN".

Running Both a Standard Highway and Tolls Cost Version:

For PC*MILER:

1. Make a copy c:\windows\pcmserve.ini and rename the copy to "pmwssrv.ini".
2. Make a copy of c:\windows\pcmsrv32.dll and rename the copy to "pmwssrv.dll". Edit c:\windows\pmwssrv.ini in notepad and set the Library=value from "ALKWIN" to "ALKTLL," or from "ALKTLL" to

"ALKWIN". If your existing Library= value is an ICC library, you must change it to another library.

3. Create a shortcut to either Srv32_Hwy.exe or Srv32_Tolls.exe. Set the command line parameters to 2 2 2 or 2 2 1 as below.

   C:\ALK Technologies\pcmiler28\as400\SRV32_hwy.exe
   <space>**1**<space>**2**<space>**2 for Client Access Express Connections**

   C:\ALK Technologies\pcmiler28\as400\SRV32_hwy.exe
   <space>**1**<space>**2**<space>**1 for NS Router Connections**

For PC*MILER|Streets:

1. Edit c:\windows\pcmserve.ini in Notepad and set the Library=value from "ALKWIN" to "ALKTLL", or from "ALKTLL to ALKWIN". If your existing Library= value is an ICC library, you must change it to another library.

2. Create a short cut to either Srv32_Hwy.exe or Srv32_Tolls.exe

   Set the command line parameters to 1 2 2 or 1 2 1 as below.

   C:\ALK Technologies\pcmiler28\as400\ SRV32_HWY.exe
   <space>**2**<space>**2** <space>**2 for Client Access Express Connections**

   C:\ALK Technologies\pcmiler280\as400\SRV32_HWY.exe
   <space>**2**<space>**2** <space>**1 for NS Router Connections**

Appendix I: Renamed Program Objects

PC*MILER-AS400 with the optional Tolls Cost component (PC*MILER|Tolls) is a modified version of the standard PC*MILER-AS400 version. The following objects have been renamed to avoid conflicts with existing PC*MILER products. **NOTE:** Some objects have been renamed twice to adhere to an updated naming policy.

AlKWIN library ⇒ ALKMVS ⇒ ALKMTL
ALKWIN/Miinqc ⇒ ALKMTL/TOLLINQ (RPG Mileage Inquiry Program)
ALKWIN/Miinqc ⇒ ALKMTL/TOLLINQC (CL program that creates a response data queue and then calls ALKMTL/MTLIINQ)
PCMILER Cmd ⇒ PCMTLL Cmd (Calls ALKTLL/ TOLLINQC)

External Data Structures
Used for sending and receiving trip information to/from data queues.
ALKWIN/MISEND ⇒ ALKTLL/NWSEND ⇒ ALKTLL/TLSEND
ALKWIN/MIRESP ⇒ ALKTLL/NWRESP ⇒ ALKTLL/TLRESP
ALKWIN/DRAW ⇒ ALKTLLL/TLDRW
ALKWIN/MISEND2 ⇒ ALKTLL/TLSEND2 added for V22 to include specific field mappings from Borders Open/Closed and Use Ferry Distance flags. These data structures are not used by ALK at this time.

Print File
ALKWIN/MIINQPF ⇒ ALKTLLL/TLINQPF

Stop (City) Validation
ALKWIN/CITALK ⇒ ALKTLL/CITTLL (RPG program that parses user input and calls VTLADR for PC side validation)
ALKWIN/VALADR ⇒ ALKTLL/VTLADR

Saved Routes (Turn by Turn Instructions) and Trips
ALKWIN/ROUTES ⇒ ALKTLL ⇒ RTESTL (Saved Driections)
ALKWIN/STOPS ⇒ ALKTLL/STPTL (Saved Trips)
ALKWIN/LOADST ⇒ ALKTLL/LOADTL (RPG Program Loads Saved Trips)
ALKWIN/SAVEST ⇒ ALKTLL/SAVETL (RPG Program Saves Trip)

Storage of Trip Parameters
ALKWIN/COMALK ⇒ ALKTLL/COMTLL (Data Area for storing startup Trip Parameters)
ALKWIN/Config ⇒ ALKTLL/TLLFIG (Program for setting Trip Parameters)

Display Files
ALKWIN/CONFIGD ⇒ ALKTLL/TLLFIGD
ALKWIN/MINQD ⇒ ALKTLL/TOLLINQD

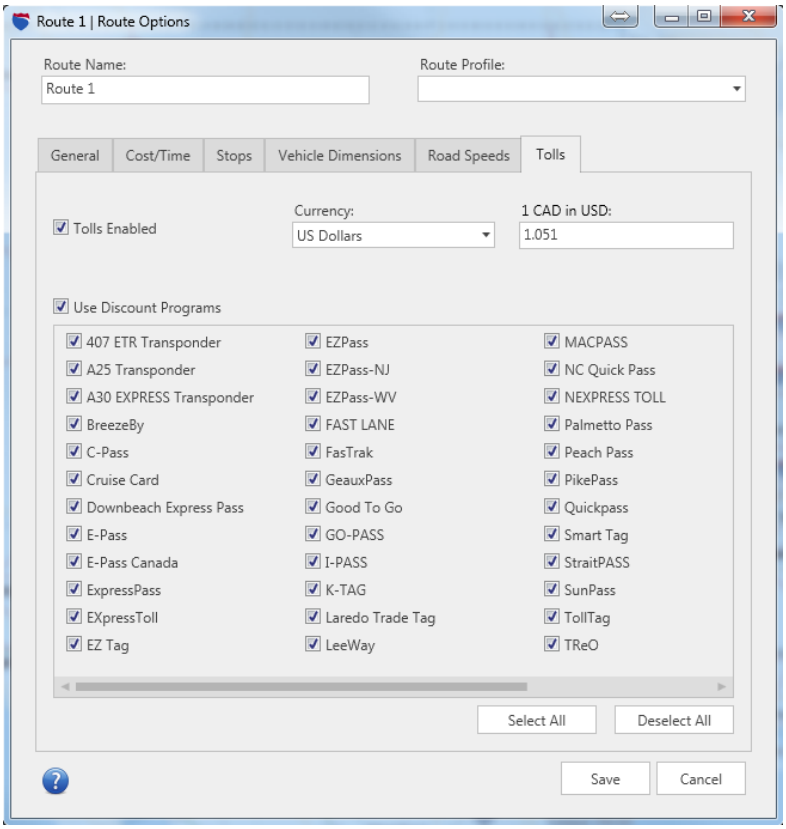
ALKWIN/STOPSD ⇒ ALKTLL/STPTLD
ALKWIN/SAVESTD ⇒ ALKTLL/SAVETLD
ALWIN/VALHLPD ⇒ ALKTLL/VALHTLD

Appendix J: Setting Toll Discount Program Membership

Toll Discount membership is set on your PC Mileage Server. Changes are made within the desktop PC*MILER program (C:\ALK Technologies\ pcmiler28\ App\ pcmwin32.exe).

On your Mileage Server PC:

1. Click Start→ Programs → PCMILER 28→ PCMILER 28 (pcmwin32.exe).
2. Click Route→ Default Route Options.
3. Click the Tolls Tab.
4. Check the appropriate boxes as pictured below.
5. Exit pcmwin32.exe.



After making changes to your Discount settings and exiting PC*MILER, you must shut down and restart your mileage server (srv32.exe ((Bart)):

Click Start→ Programs → PCMILER 28→ AS400 Interface

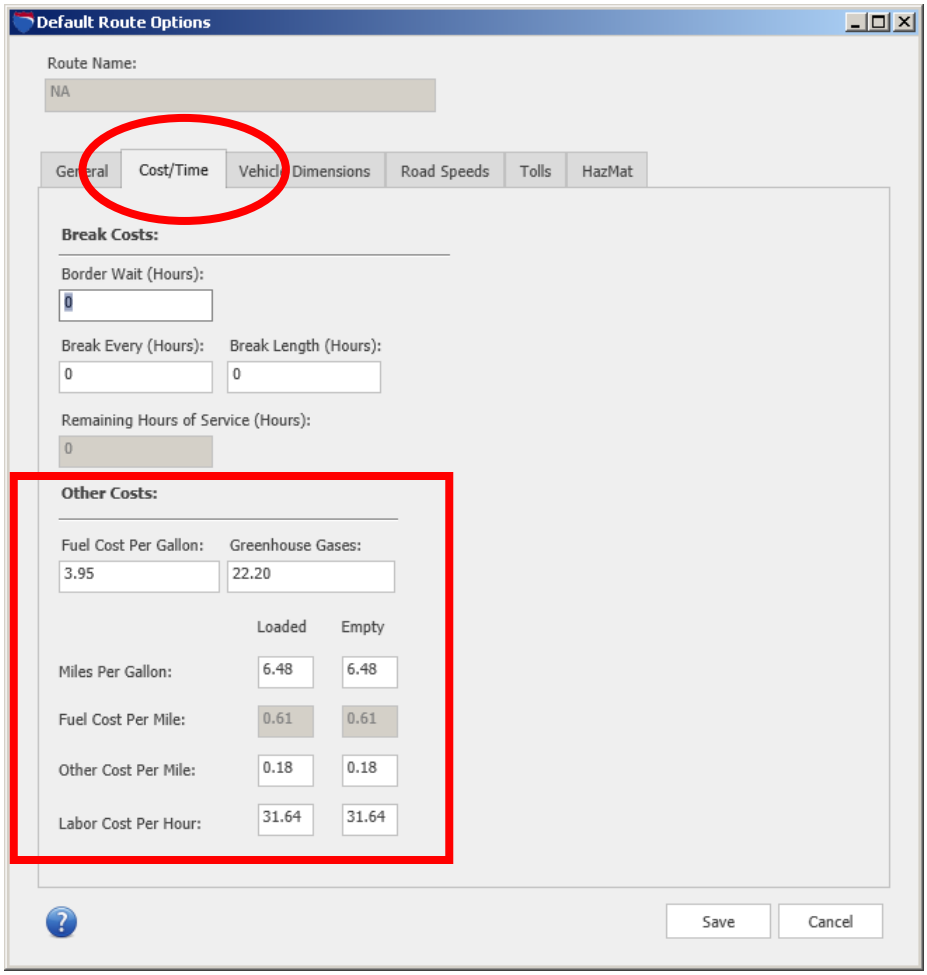
The AS400 Interface (srv32.exe) only reads optional settings at Startup.

Appendix K: Method for Setting the Default Cost Per Mile or Kilometer

For users who interpret the trip cost value as the trip distance in hundredths of miles or kilometers, the method for changing the default cost per mile or kilometer was changed in Version 24. If upgrading from v. 23 or older, follow the steps below.

Before starting the PC Distance Server (srv32.exe), first run the desktop program (pcmwin32.exe) and follow these steps:

1. Click the Routes tab → Defaults to open the Default Route Options dialog, then click the Cost/Time tab.

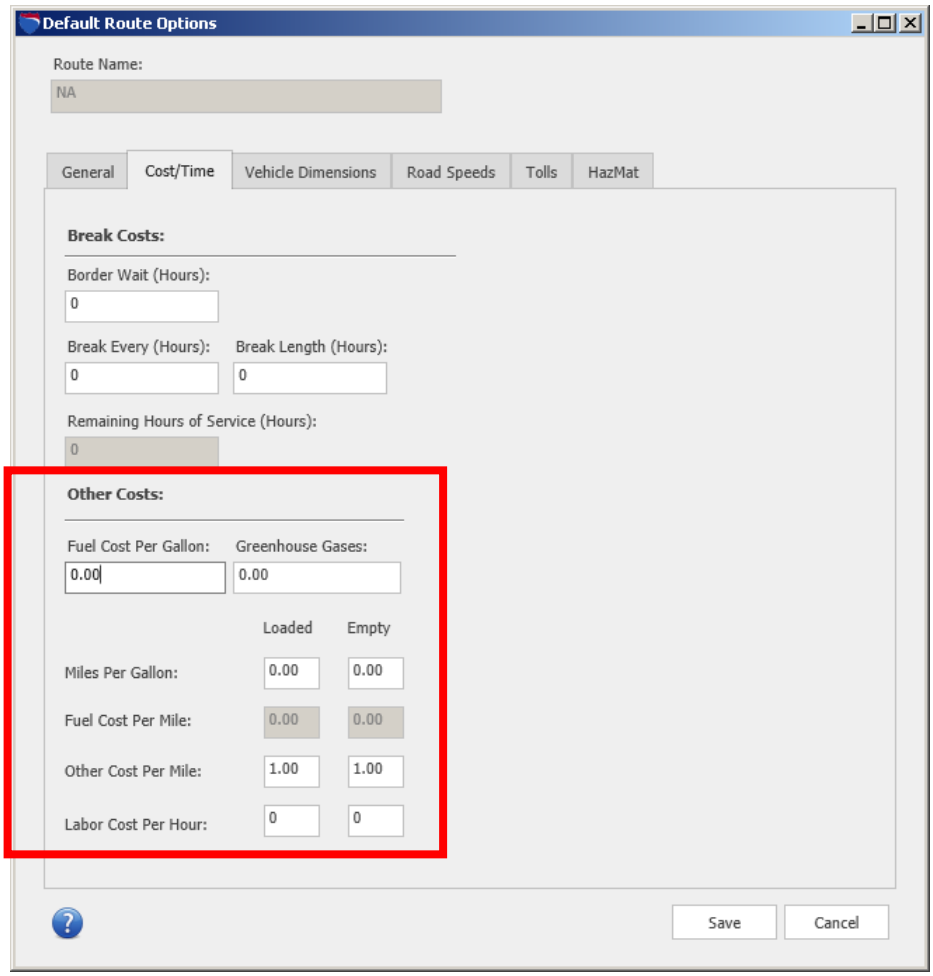


2. In the Cost/Time tab, change the following values to **0**:

   - Fuel Cost Per Gallon
   - MPG Loaded and Empty
   - Greenhouse Gases
   - Labor Cost Per Hour

3. Set Other Cost Per Mile Loaded and Empty to **1**.

4. After you've confirmed your changes, this is how the Default Route Options dialog will appear:



5. Click **Save** to save the edits and close the dialog.

6. Exit the Desktop PC*MILER program, then start your PC Distance Server.

Appendix L: Running PC*MILER and PC*MILER|Tolls Builds of the AS400 Interface on the Same PC

These instructions are intended for use if you are required to run a Tolls build and a Non-Tolls build of the PC AS400 Interface (Srv32.exe, also known as 'Bart') on the same PC. Where noted, this method can also be used if you need to run two AS400 Interfaces connected to two different AS400s.

Background

With the purchase of the optional PC*MILER|Tolls module, you will have two separate builds of the PC AS400 Interface installed (Srv32.exe and Srv32_Tolls.exe or Srv32_Hwy.exe).

You will be making copies of two files used by the AS400 Interface, copying and editing your existing shortcut, and changing the Library= value in the appropriate INI file (Change System=, User=, and Pass= values for dual AS400 configurations).

There are two types of shortcut or command line properties available to start your PC AS400 Interface:

C:\ALK Technologies\pcmiler28\AS400\Srv32.exe 1 2 2

and

C:\ALK Technologies\pcmiler28\AS400\Srv32.exe 2 2 2

With **1 2 2**, srv32.exe will link to C:\windows\pcmsrv32.dll and pcmserve.ini while **2 2 2** will link to c:\windows\pmwssrv.dll and pmwssv.ini.

After installing, you will have one of these configurations as a starting point:

Case 1: PC*MILER Highway Only with PC*MILER Build of Bart - Parameters 1 2 2
Case 2: PC*MILER Highway Only with PC*MILER|Tolls Build of Bart - Parameters 1 2 2
Case 3: PC*MILER|Streets with PC*MILER Build of Bart - Parameters 2 2 2
Case 4: PC*MILER|Streets with PC*MILER|Tolls Build of Bart - Parameters 2 2 2
Case 5: Adding second Bart to service second AS400

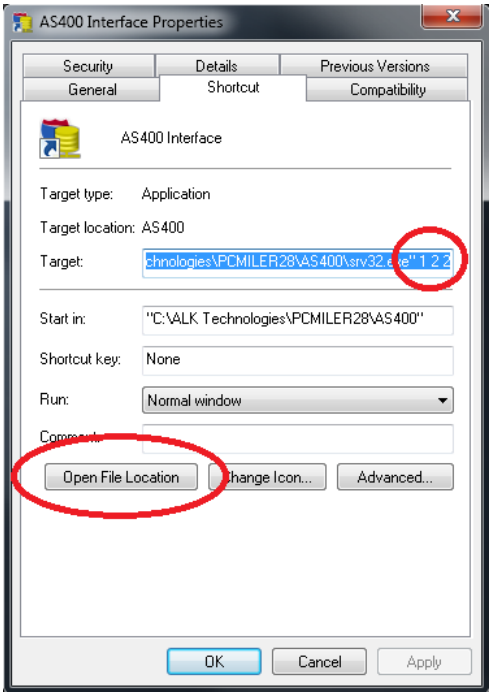
Your Srv32.exe will either be a PC*MILER Build or a PC*MILER|Tolls Build, you must check Srv32.exe's file properties to determine the build that was installed.

See Steps 1 – 3 on the following pages.

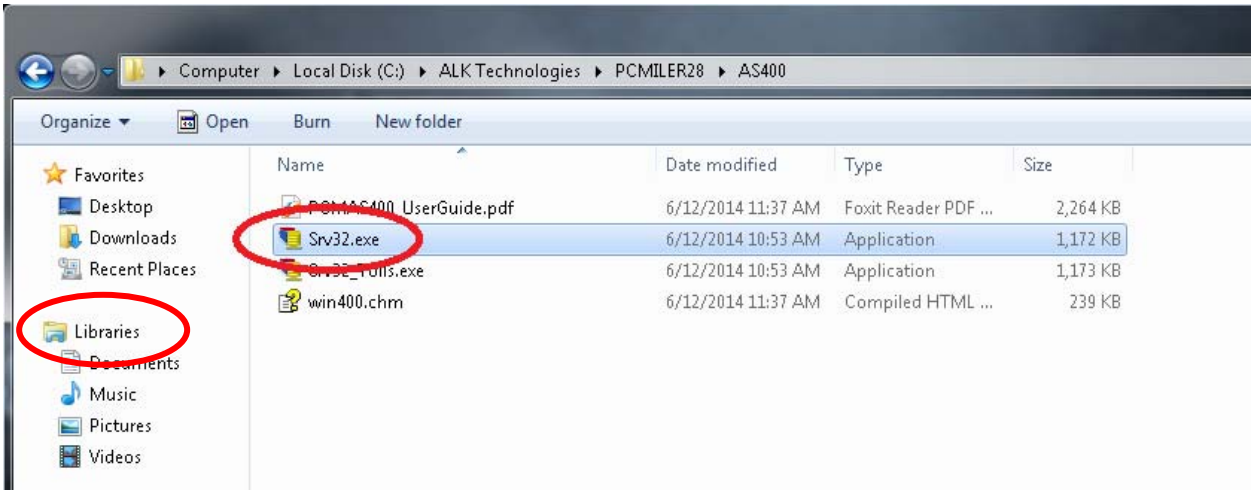
Step 1: What is my configuration?

1. Start=> Programs=> PCMILER 28=> Right Click=> Bart=> Properties.
2. Read the 'Target' Parameters, will be 1 2 2 or 2 2 2.
3. Hit 'Find Target' button, do a right mouse click=> properties on Srv32.exe.
4. Hit 'Version' tab, will be either **PC*MILER Build** or **PC*MILER|Tolls Build**.

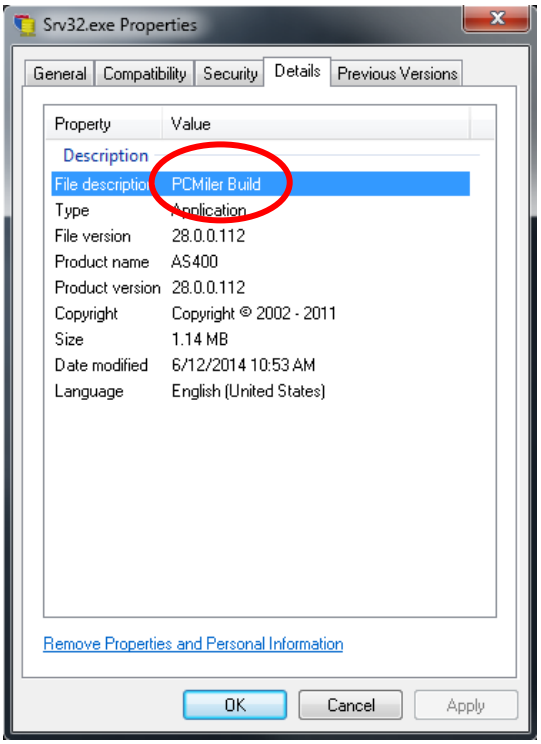
View of Shortcut properties:



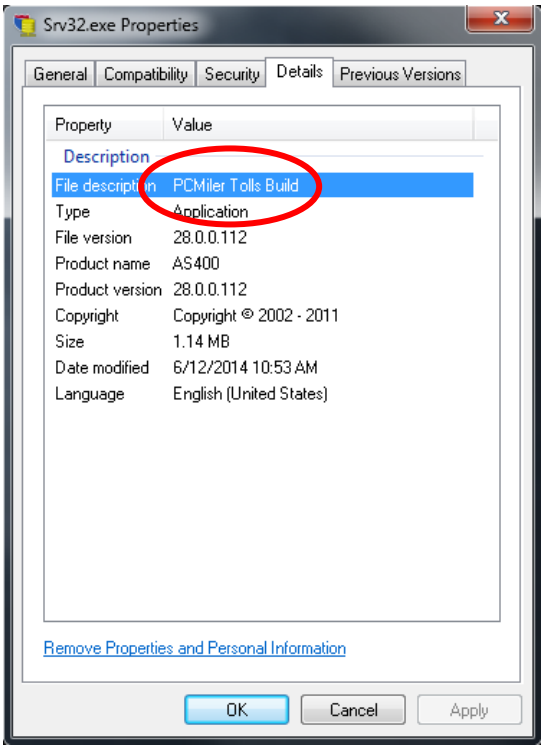
Right-click Srv32.exe and select 'Properties':



After right-clicking properties on Srv32.exe, you will see either **PC*MILER Build**:



or **PC*MILER|Tolls Build**:



Step 2: Copy C:\Windows DLL and INI File

For parameters of **1 2 2** make a copy of c:\windows\pcmserve.ini and rename this copy to pmwssrv.ini. Make a copy of c:\windows\pcmsrv32.dll and rename this copy to pmwssrv.dll.

For parameters of **2 2 2** compare the date and size of c:\windows\pmwssrv.dll to pcmsrv32.dll and compare the contents of pcmserve.ini to pmwssrv.ini. If they do not match, rename pcmsrv32.dll and pcmserve.ini and then make a copy of pmwssrv.dll and rename the copy to pcmsrv32.dll. Make a copy of pmwssrv.ini and rename the copy pcmserve.ini.

Edit your new INI file:
For adding a Tolls or a Non-Tolls Bart you will be changing the Library= value from or to ALKWIN or ALKTLL or your custom library name.

For running a second Bart servicing a second AS400, change the System=, User=, and Pass= values to point to your second AS400, you will have to configure your Client Access Express to see your second AS400. You may have to change the Library= value as well.

Step 3: Create a New Shortcut

1. Right Click Start=> Open All Users or Click Start=> All Programs=> Right Click=> Open All Users.
2. Navigate to Programs=> PCMILER 28
3. Right click=> copy Bart.
4. Right click=> paste Bart
5. Right click=> properties new Shortcut.

For Case 1 (above, in the 'Background' section)**:** PC*MILER Highway Only with PC*MILER Build of Bart, Parameters 1 2 2 – change the end of the target line from 'srv32.exe 1 2 2' to 'srv32_tolls.exe 2 2 2'.

For Case 2: PC*MILER Highway Only with PC*MILER|Tolls Build of Bart, Parameters 1 2 2 – change the end of the target line from 'srv32.exe 1 2 2' to 'srv32_hwy.exe 2 2 2'.

For Case 3: PC*MILER|Streets with PC*MILER Build of Bart, Parameters 2 2 2 – change the end of the target line from 'srv32.exe 2 2 2' to 'srv32_tolls.exe 1 2 2'.

For Case 4: PC*MILER|Streets with PC*MILER|Tolls Build of Bart, Parameters 2 2 2 – change the end of the target line from 'srv32.exe 2 2 2' to 'srv32_hwy.exe 1 2 2'.

For Case 5: Adding second Bart to service second AS400 – change the end of target line from '1 2 2' to '2 2 2' or from '2 2 2' to '1 2 2'.