

User's Guide

For UNIX (AIX, Solaris, HP-UX and LINUX)



PC★MILER[®]

PCMServe™ 28



Technology Beyond Miles



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1.0 PCMServe Overview

PCMServe is a legacy server type application which permits the integration of PC*MILER with other types of software, including dispatching and fuel tax packages that require mileage data as part of their operation. ALK Technologies now offers PC*MILER®|Connect, a mileage and routing shared library which offers PC*MILER distances and driving instructions to programmers without the difficulty of managing named pipes.

Once PCMServe is launched, it processes all requests using first in, first out priority. When an input file is created, the PCMServe processing routine activates and creates any output files requested. These files or reports can be read, interpreted, and used by the host program to satisfy its internal mileage requirements.

NOTE: With PCMServe, it is possible to create an extensive mileage database. Under the provisions of your license agreement, any such database must remain on the same computer platform on which PC*MILER is installed. The transfer or porting of data to another computer platform or to a third party is strictly prohibited without the written consent of ALK Technologies, Inc.

1.1 How Does PCMServe Work?

PCMServe "talks" with a client program through named pipes. Once PCMServe is launched, it continuously searches the input pipe (as specified in PCMSERVE.INI) for the request (the default input pipe is `/tmp/pcmfifo`). As soon as it finds the request, it processes it and writes the output reports into the output pipe. The output pipe is specified within the request by the `CLIENT_KEY` value. Each client can have its own unique output pipe.

A common method is to use the process id as the `CLIENT_KEY` value. The server will create the output pipe if it does not exist by using the `CLIENT_KEY` value (which is specified as part of the input request) and appending this value to the word **fifo** so that, for instance, a request file that includes `CLIENT_KEY:1234` would create an output pipe of `/tmp/fifo1234`. This output can then be processed by the client program.

NOTE: The output pipe must be opened for reading before PCMServe can write to it. Because of this requirement it is recommended that the calling application create the output pipe to better control the timing of the opening of the output pipe. Failure to open the output pipe on time will result in the loss of requests and decreased performance as PCMServe waits for the 'Time Out' period to expire. PCMServe produces five different types of responses, including a state mileage file and a detailed route report.

PCMServe runs on a number of UNIX platforms, including AIX, Solaris, HP-UX and LINUX. Since UNIX is a multi-tasking environment, there is no need for a dedicated workstation to run PCMServe on a UNIX platform.

1.2 Recent Enhancements

Several enhancements and major new features have recently been added to PCMServe:

Latitude/Longitude Values Now Accepted: A stop name can now be specified as a latitude/longitude value. The lat/long value is specified in Degrees Minutes Seconds Direction (for example, 0402055N, 0743934W for Princeton, NJ). Also, by specifying the **LOCATION:** token users have the ability to control whether or not the lat/long is placed onto the closest road or at its exact location. The valid parameters are `ON_ROAD` or `OFF_ROAD` (for example, **LOCATION:ON_ROAD**). This information can be specified either as a part of each request or as a part of the initialization file. The default is `ON_ROAD`.

Loaded vs. Empty Mileages: Every destination can now be designated as arrived loaded or arrived empty. In order to set the loaded and empty information, a **-L** or **-E** needs to be specified at the end of the stop name (for example, PRINCETON, NJ -E could be a destination). The state report and the total mileage report have two additional columns that contain loaded and empty miles traveled. The default is set to loaded.

Log File: A log file can now be created to monitor the server's activity. This can be done by specifying the **-l** flag as a command line argument when the server is started. We **strongly** recommend that this option **not** always be turned on since it slows down the processing speed of the server and can take a significant amount of disk space over time. The default option is for no log file. This feature is very useful during the development cycle and in helping solve technical support issues.

PCMServe 17 and higher also include:

- PCMServe can now route to custom places created within the PC*MILER interactive program.

NOTE: PCMServe must be stopped and restarted to have access to new custom places that have been created.

- Speed limits for various road types that affect PCMServe's time estimates can now be edited *by individual state* from within the PC*MILER interactive program.

NOTE: PCMServe must be stopped and restarted to have access to new custom options that have been set.

- Canadian postal codes and Standard Position Location Codes (SPLC) may be entered as stops (available as separate add-on modules from ALK Technologies).
- Hazardous material routing is now available as a separate add-on module from ALK Technologies. HazMat users please see the note at the end of this section.
- County names are now included with every U.S. city.
- Routing is now available in Bermuda (BD), Greenland (GL), Hawaii (HI), and Puerto Rico (PR).
- Ferry miles have been added to the .TOT Report.

1.3 Technical Notes for Version 28 (**PLEASE READ**)

IMPORTANT: PCMServe has undergone major revisions. ALK has made every effort to maintain backward compatibility with previous versions. However, PCMServe Versions 15 - 28 are significantly different from previous releases. **DO NOT** remove your previous version of PC*MILER/PCMServe until you have verified the functioning of your application that depends on PCMServe for distances and routing.

NOTE: Some software packages store distances from previously run trips. Contact your program vendor to verify that you are actually testing your new Version 28 PCMServe. You can also verify that you are getting new lookups from your Version 28 PCMServe by sending a unique trip that your company would never have made before or by examining the PCMServe log file (see *Recent Enhancements* above).

IMPORTANT: The provinces of Quebec and Newfoundland and Labrador have changed their jurisdiction codes from “PQ” to “QC” and “NF” to “NL” respectively. If you use the old incorrect code (PQ or NL) and you do not use a comma between the city and the jurisdiction code, you may be routed to a city with the same name located in another state or province if a matching city name exists in the PC*MILER North American database.

Starting with Version 18, the Mexican place names format was changed to include the Estado code (formerly Mexican names were entered using just “MX” for the state abbreviation).

PCMServe and Latitude/Longitude Points

The algorithm that PCMServe uses to calculate the distance between latitude/longitude points has changed. Previous versions of PCMServe (v. 14 and earlier) used the distance from each lat/long to the nearest node in its calculations (a node is where two PC*MILER highway segments join together). For nearby

points, PCMServe now returns the air distance directly between the two points, which is a more accurate measurement of the actual distance traveled.

Significant Changes to PC*MILER Stop Names

For users upgrading from previous versions of PCMServe: **a comma between the city name and state abbreviation is now optional**, but if you do not use a comma there is a mandatory space between the city and state abbreviation. For PC*MILER Version 14 or earlier it was assumed that the last two characters of a city name were the state code, but that is no longer true.

Length of city names: The length of city names in the PC*MILER database increased from 22 to 95 in Version 15. Also, city name returns now include ZIP code, Canadian Postal Code (if it exists), then city name, state/province abbreviation, and county name.

Reports Are Different Than in Previous Versions of PCMServe

For users upgrading from previous versions (14 or earlier) of PCMServe, reports have undergone revision due to changes in the underlying data. Efforts were made to maintain backward compatibility, but some differences were unavoidable. Provided that reports were parsed using Tabs as delimiters and not parsed as fixed length strings, the differences should be minor with the exception of the .RTR report (turn by turn driving instructions). Unlike previous versions, the new .RTR report cannot be directly displayed on a screen without parsing.

Changes By Report

.MIL Report:

The .MIL report returns ZIP codes plus city/state abbreviations. This report has now increased from 22 to 25 characters, and the U.S. county is returned if space permits. Stop names over 25 characters in length are truncated at 25 characters, so state information may not be returned.

For example:

Aluminum CO of America Plant, PA, Dauphin is truncated to:
Aluminum CO of America Pl

.OUT Report:

This report returns stops in the format in which they were passed. Version 28 returns a comma between the city name and state abbreviation; **the input file must contain a comma or space between the city name and state abbreviation**. Returned stop names are decreased from 22 to 20 characters. Stops passed that are over 20 characters in length are truncated to 20 characters, so state information may be lost.

For example:

Aluminum CO of America Plant, PA would be returned as:

Aluminum CO of Ameri

.STA Report:

This report has had ferry miles added. The columns in the order returned are now Total Miles, Toll Mile, Non-Toll Miles, Ferry Miles, Loaded Miles, and Empty Miles.

Like the .OUT report, the .STA report returns stops in the format in which they were passed. In Version 28, the comma between city and state will be returned (commas in the input file are optional but if you do not use the optional comma you must use a space to separate the city and state), and stops larger than 20 characters will be truncated. State information may be lost. For example:

Aluminum CO of America Plant, PA would be returned as:

Aluminum CO of Ameri

.RTR Report:

This report has undergone some major enhancements. It is no longer designed to be directly displayed on a screen without parsing. See the description of this report in section 2.3.

.TOT Report:

This report now includes ferry miles. The columns in the order returned are now Total Miles, Toll Mile, Non-Toll Miles, Ferry Miles, Loaded Miles, and Empty Miles.

Important Note for Hazmat Users

When the optional PC*MILER®|HazMat™ add-on module is installed and the default routing type is set to one of the four Hazmat routing types in PC*MILER interactive, PCMServe will return HazMat distances and routes for the continental United States.

The default routing type is displayed in the title bar of your PC*MILER interactive program after you first open it:

```
+-----+
| PC*MILER/HAZMAT - NA, Practical, Open, Radioactive   Version 28.0 |
+-----+
```

When PCMServe is started with a default routing type set to one of the six HazMat routing types (General, Explosives, Caustic, Flammable, Inhalants, and Radioactive), all returns will be for that HazMat routing type until the default value is changed from within the PC*MILER interactive program and PCMServe is stopped and restarted. If this requirement does not suit your needs, you are encouraged to use the mileage and routing shared library PC*MILER|Connect, or to contact ALK Technologies to discuss your needs.

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1.4 System Requirements

PCMServe requires about 1 MB of additional disk storage. The only system requirement is that you must have PC*MILER Version 28 installed in order to install and run PCMServe.

PC*MILER and PCMServe can be licensed for use on:

- HP-UX 11.31 or higher
- IBM-AIX 5.3.8 or higher
- SUN-Solaris 5.8 (Solaris 8)

1.5 Installation

PCMServe is now distributed on the PC*MILER Product Line CD. Please refer to *Adding New PC*MILER Products* in Chapter 2 of the *PC*MILER User's Guide* for installation instructions.

1.6 Technical Support

ALK Technologies offers one year of free technical support to all registered users of PC*MILER products. If you have any questions about PCMServe or problems with the software, contact our staff at the phone number or email address below:

PC*MILER Technical Support Staff
Hours: M-F, 9:00 am-5:00 pm EST
Phone: (609) 683-0220 x2
Email: pcmsupport@alk.com

When calling, ask for PC*MILER Technical Support. **Please be sure to have your PC*MILER serial number, version number, and hardware configuration information (manufacturer, speed, and monitor type) available before your call.** Please include this information in your message if you are contacting us by email.

2.0 PCMServe Specifications

Installation of PCMServe creates a `../pcm280/sample-code` directory where you will find the following C programs:

- `client.c` – Creates and opens response/output pipes
- `pcmclient.c` – Sample interactive program
- `newcli.c` – Sample command line program

Notes to New Users of PCMServe:

If you are developing a new application, it is strongly recommended that you use PC*MILER®|Connect, the mileage and routing shared library, instead of PCMServe.

PCMServe is a legacy application that relies on named pipe technology. For programmers unfamiliar with using named pipes, it can be a challenge to obtain the necessary timing sequence. The main obstacle is that one process, PCMServe, cannot write to a named pipe until another process, your client application, has opened the response pipe for reading. However, the C language has excellent facilities for using named pipes, making the use of PCMServe fairly simple.

If you are working in another language and are having trouble integrating PCMServe, it is recommended that you call PC*MILER's client program from within your application.

If you are not able to incorporate PC*MILER's client program into your application you are encouraged to contact the manufacturer of your development language for help in using named pipes.

Note that PCMServe's logging feature is very helpful during the development process. See section 3.0, *Running PCMServe*.

2.1 PCMServe Initialization (PCMSERVE.INI)

PCMServe uses the file named "pcmservice.ini" as the initialization file. This file contains default values and parameters. Each line of the file contains a token which identifies an option or a parameter, and a value for the option or parameter. In the minimum configuration, "IN_PATH:" and the corresponding pipe name is required in the initialization file. (The pipe is located in the "/tmp" directory automatically and by default the input or request pipe is named "pcmfifo"). We recommend that you set all the options that you use frequently in the initialization file. **IMPORTANT:** If you need to change the settings in the initialization file,

you need to stop PCMServe and then restart it. Once the initialization values are set and PCMServe has been started you are ready to make requests.

Changes to road speeds and custom places are made within the PC*MILER interactive program. When adding new custom places or changing road speeds, PCMServe will have to be stopped and restarted.

2.2 PCMServe Input Specifications

To make a request you must write an ASCII string into the input pipe. This string will consist of a four-digit number (in ASCII format) that represents the number of bytes in the request. (The number of bytes **does not** include this first four digit number.) The first token must begin at the fifth byte and subsequent tokens start on new lines. Tokens may appear in any order except for "**DATA:**", which must be last. The application will process a maximum of 256 bytes on each line.

Each data input line can contain a ZIP code, a city/jurisdiction pair, a lat/long, or optionally a Canadian Postal Code or SPLC. If both the ZIP code and the city/jurisdiction are specified, the application will use whichever comes first. All white space in the request will be ignored. You need only supply settings that are different from the settings in the initialization file. In the minimum configuration, the input file must contain the "**CLIENT_KEY:**" token and the corresponding key and the "**DATA:**" token followed by the stops information.

2.2.1 Formatting Stop Names in Version 28

For users upgrading from much older versions of PCMServe, there may have been changes to the way PC*MILER stop names are formatted.

INPUT Changes:

- **Commas are optional in city/jurisdiction pairs** – When passing City/Jurisdiction pairs to PCMServe, you may include a comma after the city name, but this is optional. However, you must include a space if not using a comma. For example, both formats shown below will be accepted:

New York, NY or New York NY

- **Mexican city names now include Estado abbreviations** – Mexican city names were previously entered using only the abbreviation "MX". Version 28 requires an Estado abbreviation (e.g. "Puerto Vallarta, JA"). Refer to the appendix section in the *PC*MILER User's Guide* for a list of Mexican estado abbreviations.

- **Length of City Names Has Increased** – For Versions 15 - 28 of PC*MILER, the character length of cities in the PC*MILER database has increased from 22 characters to 95.

OUTPUT Changes:

City name returns now include ZIP code, Canadian Postal Code (if it exists), then city name, state/province abbreviation, and county name.

In previous releases of PC*MILER (v. 14 and earlier), three-digit FIPS county codes were appended to the ends of all duplicate U.S. cities that were not routable by ZIP code. (A duplicate city occurs in the database when a state has two or more towns with the same name that do not have a unique ZIP code, like Springfield, Pennsylvania.) In Version 17 and higher, all U.S. city names now include county information.

Canadian Postal Code Entry (Optional Data Add-on)

When passing Canadian Postal Codes as stops to PCMServe, the format is:

L#L<space>#L#

Where **L**= Letter and **#** = Number

The internal <space> is required.

Standard Position Location Code (Optional Data Add-on)

When passing Standard Position Location (SPLC) Codes as stops to PCMServe, you must start each stop with 'splc' followed by the 6 or 9 digit SPLC. For example, to enter the SPLC for Cleveland, Maine you would enter:

Splc111001000

2.3 PCMServe Output

PCMServe streams its response reports through a specified output/response pipe. The server will create an output pipe if it does not already exist. The output/response pipe must be opened for writing before the server can write its response. The response report begins with an eight-byte number that represents the size of the output report, followed by the output report(s).

The name of the output pipe will be **fifoX** where **X** is the key which was supplied as part of the request, the **CLIENT_KEY:** value. Thus, for example, if the key in the input request was the number **1234**, then the output pipe created will be **fifo1234** if the pipe did not already exist. If an error occurs, the server will return a message that begins with the word "ERROR:" followed by a description.

NOTE: If no output report is specified in the initialization file and/or as part of the request, then all five output reports will be generated. PCMServe can produce five different mileage reports, offering the same variety of mileage information that is available in PC*MILER.

The five available reports are described on the following pages.

2.3.1 .OUT File

This file follows the same format as your input file, with the calculated mileages placed to the right of the destination data. **NOTE:** Stops are truncated to 20 characters, therefore state information may be lost.

The example below shows a sample .OUT file generated from an input file containing data in City <comma> State format:

indian lake,in	buffalo,ny	502.9
buffalo,ny	mission viejo,ca	2553.9
mission viejo,ca	bear,de	2730.2

2.3.2 .STA File

This file contains the same information as that provided by the .OUT file, but for each origin/destination record for which a mileage is calculated, a mileage summary table similar in form to PC*MILER's state mileage summary report is generated. See your PC*MILER *User's Guide* for more information about the state mileage summary report. Output includes total miles, toll miles, non-toll miles, ferry miles, total loaded, and total empty for each state of travel. **NOTE:** Stops are truncated to 20 characters, therefore state information may be lost.

The example below shows a sample .STA file:

bend,or			seattle,wa			334.9
OR	159.4	0.0	159.4	0.0	159.4	0.0
WA	175.5	0.0	175.5	0.0	175.5	0.0
seattle,wa			bremerton,wa			67.6
WA	67.6	0.0	67.6	0.0	67.6	0.0

2.3.3 .MIL File

The .MIL file is similar to the .OUT file. However, if the origin/destination data contained in your input file is in ZIP code form, the .MIL file will perform a

translation and present both ZIP code and City <comma> State /U.S. County data. Similarly, if the data contained in your input file is in City <comma> State form, the .MIL file will return City <comma> State/U.S. County and ZIP code data. The example below shows a sample .MIL file generated from an input file containing data in City <comma> State form:

Buffalo, NY, Erie	Indianapolis, IN, Ma	501.9
Indianapolis, IN, Ma	92690 Mission Viejo,	2086.1
92690 Mission Viejo,	19701 Bear, DE, New	2730.2

The report contains a ZIP code if it exists, followed by a <space>, then City Name <comma> State Abbreviation <comma> and County.

NOTE: County information is frequently truncated. For cities with names over 20 characters, state information will not be returned.

2.3.4 .TOT File

The .TOT file provides a mileage summary table, similar in form to PC*MILER's State Mileage Summary report, that is a *total summary* for all the origin/destination records in the input file. Refer to your PC*MILER *User's Guide* for more information about the State Mileage Summary report. Output includes total, toll, free mileages, ferry miles, and loaded/empty status for each state of travel. Note that the picture of the sample report shown below is split between two pages – the US and Total figures are shown below.

Total Mileages for 3 Records						
	Total	Toll	Free	Ferry	Loaded	Empty
AR	272.6	0.0	272.6	0.0	272.6	0.0
AZ	393.4	0.0	393.4	0.0	393.4	0.0
CA	605.9	0.0	605.9	0.0	605.9	0.0
KY	232.0	0.0	232.0	0.0	232.0	0.0
MD	103.5	0.0	103.5	0.0	103.5	0.0
NM	164.0	0.0	164.0	0.0	164.0	0.0
OH	341.7	53.8	287.9	0.0	341.7	0.0
PA	187.4	161.5	25.8	0.0	187.4	0.0
TN	248.4	0.0	248.4	0.0	248.4	0.0
TX	968.7	0.0	968.7	0.0	968.7	0.0

US	3517.6	215.3	3302.3	0.0	3517.6	0.0

TOT	3517.6	215.3	3302.3	0.0	3517.6	0.0

NOTE: The Record Count is the number of distance calculations that were performed, not the number of stops. A trip from A to B would be one record, while a trip from A to B to C would be two – the distance from A to B and then from B to C.

2.3.5 .RTR File

The .RTR file contains detailed driving instructions. It is not the same detailed route listing that can be generated interactively with PC*MILER, it contains additional information that cannot fit on the standard terminal screen. <TAB> characters separate the columns in this report. It is not intended to be displayed in the unparsed form.

The column order from left to right is: State, Toll, Direction, Road Name, Segment Miles, Segment Time, [empty column], Intersection, Leg Miles, Leg Time, Total Miles, and Total Time.

NOTE: On-duty and Off-duty information cannot be controlled using PCMServe. Access to this functionality is available only from PC*MILER|Connect.

NOTE Also: For some segments, columns are moved to the right to accommodate long road or intersection names.

```
.rtr
Origin: 0401750N,0742131W, NJ                                0:00 (off-duty) 0.00
NJ          N      Main St (Route 527) 0.4 0:00          + Route 527 Gordons Corner Road 0.4 0:00 0.4 0:00
NJ          E      Gordons Corner Road 3.0 0:04          + Gordons Corner Road Route 3 3.4 0:04 3.4 0:04
NJ          N      Tennent Road (Route 3) 0.2 0:00          + Route 3 Ramp 3.5 0:05 3.5 0:05
NJ          N      Ramp 0.1 0:00          + Ramp US-9 3.6 0:05 3.6 0:05
NJ          N      US-9 11.1 0:12          + US-9 Ramp 14.7 0:17 14.7 0:17
NJ          S      Ramp 0.1 0:00          + Ramp US-9 14.9 0:17 14.9 0:17
NJ          N      US-9 3.8 0:04          + US-9 Ramp 18.6 0:22 18.6 0:22
NJ          N      Ramp 2.0 0:06          + Ramp I-95 20.6 0:27 20.6 0:27
NJ          $      N      I-95 (NJ Tpke Car-Truck Lane) 24.6 0:23          + I-95 I-95 45.2 0:50 45.2 0:50
NJ          N      I-95 (New Jersey Tpke) 0.3 0:00          + I-95 Ramp 45.5 0:51 45.5 0:51
NJ          N      Ramp 0.2 0:01          + Ramp I-95 45.8 0:51 45.8 0:51
NJ          N      I-95 1.3 0:01          + I-95 Ramp 47.1 0:52 47.1 0:52
NJ          N      Ramp 0.3 0:01          + Ramp I-95 47.4 0:53 47.4 0:53
NJ          N      I-95 (Express) 4.1 0:04          + I-95 I-95 51.5 0:57 51.5 0:57
NJ          $      N      Geo. Wash. Br. Upper Level (I-95) 0.9 0:01          (to NJ/NY State Line) 52.3 0:58 52.3 0:58
NY          N      I-95 (Cross Bronx Expy) 12.6 0:12          + I-95 I-95 64.9 1:10 64.9 1:10
NY          $      N      I-95 (New England Thruway) 10.4 0:10          (to NY/CT State Line) 75.4 1:19 75.4 1:19
CT          N      I-95 (Gov. John Davis Lodge Tpke) 47.4 0:44          + I-95 Exit 48 122.8 2:03 122.8 2:03
CT          N      Exit 48 0.2 0:00          + Exit 48 I-91 123.0 2:04 123.0 2:04
CT          N      I-91 38.1 0:35          + I-91 Exit 32A 161.1 2:39 161.1 2:39
CT          W      Exit 32A 0.4 0:01          + Exit 32A I-84 161.5 2:40 161.5 2:40
CT          W      I-84 (Yankee Expy) 0.6 0:01          + I-84 Exit 48 162.1 2:41 162.1 2:41
CT          S      Exit 48 0.2 0:00          + Exit 48 Asylum Ave 162.3 2:41 162.3 2:41
CT          E      Asylum Ave 0.2 0:00          + Asylum Ave Ford St 162.5 2:41 162.5 2:41
CT          S      Ford St 0.1 0:00          + Ford St Jewell St 162.5 2:42 162.5 2:42
CT          S      Jewell St 0.0 0:00          + Jewell St Trinity St 162.6 2:42 162.6 2:42
CT          S      Trinity St 0.2 0:00          + Trinity St Local 162.8 2:42 162.8 2:42
CT          E      Local 0.1 0:00          0414547N,0724047W, CT 162.8 2:42 162.8 2:42
Arrive Empty
Dest: 0414547N,0724047W, CT                                0:00 (off-Duty) 0.00 162.8 2:42 162.8 2:42
```

2.4 PCMServe Examples

Minimum Requirements Example:

Initialization file (count includes an additional character for return after each line):

IN_PATH: PCMFIFO

Input request:

0045CLIENT_KEY:1234

DATA:

DETROIT,MI

BUFFALO,NY

Output response (".MIL" file, 62 represents the number of bytes that follow, 48231 and 14205 are the default ZIP codes for Detroit and Buffalo):

6248231 Detroit, MI, Wayne 14205 Buffalo, NY, Erie 268.3

Output response (".TOT" file, 572 is the byte count of the response):

572 Total Mileages for 1 Records						
	Total	Toll	Free	Ferry	Loaded	Empty
MI	4.4	0.2	4.2	0.0	4.4	0.0
NY	2.5	0.1	2.4	0.0	2.5	0.0

US	6.9	0.3	6.6	0.0	6.9	0.0

ON	253.2	0.0	253.2	0.0	253.2	0.0

CAN	253.2	0.0	253.2	0.0	253.2	0.0

TOT	260.1	0.3	259.8	0.0	260.1	0.0

Average Request Example:

Initialization file:

IN_PATH: PCMFIFO

EXTENSION: COST

Input request:

0079CLIENT_KEY:1234

BORDERS:CLOSED

REPORT:OUT

DATA:

DETROIT MI -L

BUFFALO NY -E

TAMPA FL

NOTE: -L(oaded) and -E(mpty) must be capital letters.

Output response (“.OUT” file, 134 represents the number of bytes in the response):

134	DETROIT	MI	BUFFALO	NY	259.7	360.92
	BUFFALO	NY	TAMPA	FL	1266.5	2121.30

NOTE: Although both the above examples are in uppercase, this is not a necessity except when setting Loaded and Empty legs.

2.5 Quick Reference

The following is a list of options and values. The application is not case sensitive and the colon (:) after the token is required.

TOKENS	VALUES	Found in INI or REQ?	DEFAULT	DESCRIPTION
1) IN_PATH:	----	INI only		input directory
2) CLIENT_KEY:	**	REQ only		output pipe suffix
3) NETWORK:	PRAC	Both	X	practical network
	SHORT	Both		shortest network
	TOLL	Both		toll discouraged
	NATL	Both		national network
(Not available-see note)	53FT***	Both		53 foot routing
4) REPORT:	OUT	Both	X	appended mileage
	STA	Both	X	state summary
	MIL	Both	X	mileage output
	TOT	Both	X	total mileage
	RTR	Both	X	detail route (all 5 returned if none specified)
5) BORDERS:	OPEN	Both	X	allow border jumping
	CLOSED	Both		no border jumping
6) EXTENSION:	COST	Both		cost information
	TIME	Both		time estimate
7) UNITS:	MI	Both	X	miles
	KM	Both		kilometers
8) ORDER:	THRU_ALL	Both		resequence through all
	FIXED_DEST	Both		resequence with fixed destination
	HUB	Both		hub mode
9) LOCATION:	ON-ROAD	Both	X	lat/longs placed on nearest road
	OFF-ROAD	Both		lat/longs placed at exact location
10) DATA:	----	REQ only		start of data block (must be last token)
11) [appended to stop/city]	<space> -L*	REQ only	X	loaded
	<space> -E*	REQ only		empty

* Must be capital.

** Must be numeric and must not equal zero.

*** 53' Trailer Routing not available in PCMServe. For a close approximation, try using National Network routing.

3.0 Running PCMServe

You must be logged in as root to start PCMServe. If it is not started by root, PCMServe is subject to a host of ownership and access permission issues that make for unpredictable performance.

If you like, contact your system administrator to arrange to have PCMServe started automatically when the computer boots.

To start PCMServe, do the following:

1. Log in as ROOT.
2. Change to your `./pcm280` directory.
3. Issue the command below as printed. These commands are case sensitive and assume installation to `/usr/local/pcm280`.

For Sun Solaris:

```
LD_LIBRARY_PATH=/usr/local/pcm280<space>PCM_Data=/usr/local/pcm280/<space>./pcmserve<space>-z <space>-b
```

For IBM – AIX:

```
LIBPATH=/usr/local/pcm280<space>PCM_DATA=/usr/local/pcm280/<space>./pcmserve<space> -z <space>-b
```

For HP – UX:

```
SHLIB_PATH=/usr/local/pcm280<space>PCM_DATA=/usr/local/pcm280/<space>./pcmserve<space> -z <space>-b
```

Options:

- z** Turns off the PCMServe logo screen. PCMServe runs as a process, having the logo screen turned on provides no added functionality.
- b** This option can be used in conjunction with **-z** in order to force PCMServe to run as a daemon from a command line. It will cause PCMServe to fork itself and disconnect from the terminal. Using this option will prevent PCMServe from terminating when the user logs out. We strongly recommend using **-b** over the **nohup** option.
- l** Turns on the log file `./pcm280/pcmerror.log`. We **strongly** recommend that this option **not** always be turned on since it slows down the processing speed of the server and can take up a significant amount of disk space over

time. Logging is extremely useful during the development cycle and in solving technical support issues.

NOTE: You can create a script in **/usr/bin** to reduce the amount of typing needed to start PCMServe. Go to **/usr/bin** and make a copy of your pcmiler script called 'pcmserve'. Edit your new pcmserve script so that the command that is run is **/usr/local/pcm280/pcmserve -z -b** instead of **usr/local/pcm280/pcmiler**.

This script is not automatically created to avoid conflict with your current version of PCMServe.

4.0 PCMServe Output for Latitude/Longitude Points

PCMServe can generate mileage reports from latitude/longitude points. These reports are the same as the ones produced when you input City <comma> State combinations or ZIP codes. Samples are shown below and on the following pages.

4.1 .IN File

This file contains the origin/destination pairs that PCMServe will process (0094 is the character count for the input file minus the 4 character count characters).

```
0094CLIENT_KEY:1234
DATA:
0401750N,0742131W
0414547N,0724047W
0394553N,0860955W
0391014N,0863206W
```

4.2 .OUT File

```
0401750N,0742131W, NJ      0414547N,0724047W, CT      162.6
0414547N,0724047W, CT      0394553N,0860955W, IN      835.3
0394553N,0860955W, IN      0391014N,0863206W, IN      51.0
```

4.3 .STA File

Columns are Total Miles, Toll Miles, Non-Toll Miles, Ferry Miles, Loaded Miles, and Empty Miles. Total miles for each O/D pair are on the far right.

```
4460401750N,0742131W      0414547N,0724047W      162.6
CT  87.2  0.0  87.2  0.0  0.0  87.2
NJ  52.3  25.5  26.8  0.0  0.0  52.3
NY  23.0  10.4  12.6  0.0  0.0  23.0
0414547N,0724047W      0394553N,0860955W      835.3
CT  62.1  0.0  62.1  0.0  0.0  62.1
IN  75.9  0.0  75.9  0.0  0.0  75.9
NY  71.3  0.0  71.3  0.0  0.0  71.3
OH  277.1  0.0  277.1  0.0  0.0  277.1
PA  349.0  0.0  349.0  0.0  0.0  349.0
0394553N,0860955W      0391014N,0863206W      51.0
IN  51.0  0.0  51.0  0.0  0.0  51.0
```

4.4 .MIL File

0401750N,0742131W	0414547N,0724047W	162.8
0414547N,0724047W	0394553N,0860955W	835.3
0394553N,0860955W	0391014N,0863206W	51.0

4.5 .TOT File

625 Total Mileages for 3 Records						
	Total	Toll	Free	Ferry	Loaded	Empty
CT	149.3	0.0	149.5	0.0	0.0	149.6
IN	126.8	0.0	126.8	0.0	0.0	126.9
NJ	52.3	25.5	26.8	0.0	0.0	52.3
NY	94.3	10.4	83.9	0.0	0.0	94.3
OH	277.1	0.0	277.1	0.0	0.0	277.1
PA	349.0	0.0	349.0	0.0	0.0	349.0

US	1048.9	36.0	1012.9	0.0	0.0	1048.9

TOT	1048.9	36.0	1012.9	0.0	0.0	1048.9

4.6 .RTR File

Also see section 2.3.5 for more details about the .RTR file.

.rtr									
Origin: 0401750N,0742131W, NJ									
					0:00	(off-duty)		0.00	
NJ	N	Main St (Route 527)	0.4	0:00		+ Route 527 Gordons Corner Road	0.4	0:00	0.4 0:00
NJ	E	Gordons Corner Road	3.0	0:04		+ Gordons Corner Road Route 3	3.4	0:04	3.4 0:04
NJ	N	Tennent Road (Route 3)	0.2	0:00		+ Route 3 Ramp	3.5	0:05	3.5 0:05
NJ	N	Ramp	0.1	0:00		+ Ramp US-9	3.6	0:05	3.6 0:05
NJ	N	US-9	11.1	0:12		+ US-9 Ramp	14.7	0:17	14.7 0:17
NJ	S	Ramp	0.1	0:00		+ Ramp US-9	14.9	0:17	14.9 0:17
NJ	N	US-9	3.8	0:04		+ US-9 Ramp	18.6	0:22	18.6 0:22
NJ	N	Ramp	2.0	0:06		+ Ramp I-95	20.6	0:27	20.6 0:27
NJ	\$	I-95 (NJ Tpke Car-Truck Lane)	24.6	0:23		+ I-95 I-95	45.2	0:50	45.2 0:50
NJ	N	I-95 (New Jersey Tpke)	0.3	0:00		+ I-95 Ramp	45.5	0:51	45.5 0:51
NJ	N	Ramp	0.2	0:01		+ Ramp I-95	45.8	0:51	45.8 0:51
NJ	N	I-95	1.3	0:01		+ I-95 Ramp	47.1	0:52	47.1 0:52
NJ	N	Ramp	0.3	0:01		+ Ramp I-95	47.4	0:53	47.4 0:53
NJ	N	I-95 (Express)	4.1	0:04		+ I-95 I-95	51.5	0:57	51.5 0:57
NJ	\$	Geo. wash. Br. Upper Level (I-95)	0.9	0:01	(to	NJ/NY State Line)	52.3	0:58	52.3 0:58
NY	N	I-95 (Cross Bronx Expy)	12.6	0:12		+ I-95 I-95	64.9	1:10	64.9 1:10
NY	\$	I-95 (New England Thruway)	10.4	0:10	(to	NY/CT State Line)	75.4	1:19	75.4 1:19
CT	N	I-95 (Gov. John Davis Lodge Tpke)	47.4	0:44		+ I-95 Exit 48	122.8	2:03	122.8 2:03
CT	N	Exit 48	0.2	0:00		+ Exit 48 I-91	123.0	2:04	123.0 2:04
CT	N	I-91	38.1	0:35		+ I-91 Exit 32A	161.1	2:39	161.1 2:39
CT	W	Exit 32A	0.4	0:01		+ Exit 32A I-84	161.5	2:40	161.5 2:40
CT	W	I-84 (Yankee Expy)	0.6	0:01		+ I-84 Exit 48	162.1	2:41	162.1 2:41
CT	S	Exit 48	0.2	0:00		+ Exit 48 Asylum Ave	162.3	2:41	162.3 2:41
CT	E	Asylum Ave	0.2	0:00		+ Asylum Ave Ford St	162.5	2:41	162.5 2:41
CT	S	Ford St	0.1	0:00		+ Ford St Jewell St	162.5	2:42	162.5 2:42
CT	S	Jewell St	0.0	0:00		+ Jewell St Trinity St	162.6	2:42	162.6 2:42
CT	S	Trinity St	0.2	0:00		+ Trinity St Local	162.8	2:42	162.8 2:42
CT	E	Local	0.1	0:00		0414547N,0724047W, CT	162.8	2:42	162.8 2:42
Arrive Empty									
Dest: 0414547N,0724047W, CT									
					0:00	(off-duty)		0.00	162.8 2:42 162.8 2:42