Redbooks Redpaper

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Performance Management Services for AIX in a Partitioned Environment

This IBM Redpaper verifies the use of Performance Management Services for AIX (hereafter referred to as PM/AIX) in a partitioned environment. The partitioned environment is an environment that allows you to run multiple operating system instances (AIX 5L Version 5.1 and Version 5.2 and Linux[1] are supported) in partitions on the single partitioning-capable IBM @server pSeries server at a time. Currently, the pSeries server models listed in Table 1 are partitioning-capable.

Table 1 Partitioning-capable pSeries server models

Official product name	Short product name	M/T-MDL
IBM @server pSeries 690 Model 681	pSeries 690	7040-681
IBM @server pSeries 670 Model 671	pSeries 670	7040-671
IBM @server pSeries 655 Model 655	pSeries 655 Model 651	7039-651
IBM @server pSeries 650 Model 6M2	pSeries 650 Model 6M2	7038-6M2
IBM @server pSeries 630 Model 6C4	pSeries 630 Model 6C4	7028-6C4
IBM @server pSeries 630 Model 6E4	pSeries 630 Model 6E4	7028-6E4

The Redpaper also explains the following topics in order to facilitate the smooth implementation of PM/AIX in a partitioned environment:

- "PM/AIX overview" on page 3
- "Install and configure Service Agent" on page 5
- "Install and configure PM/AIX" on page 17
- "Use of performance management Web site" on page 21
- "How to manually send performance data to IBM" on page 26

[1] Many of the features described in this document are operating system dependant and may not be available on Linux. For more information, please check:
http://www.ibm.com/servers/eserver/pseries/linux/whitepapers/linux_pseries.html

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Testing configuration

We have configured and verified PM/AIX in the following configuration:

- A pSeries 690 with 16 processors and 64 GB of memory.
- An IBM Hardware Management Console for pSeries (hereafter referred to as HMC) is connected to the pSeries 690.
- The pSeries 690 is configured to run eight partitions, as shown in Table 2.
- All the partitions are assigned with the following adapters in addition to ones shown in Table 2:
  - 2 x Ethernet/LAN Encryption 10/100 Base T (FC 4962)
  - 1 x internal Ultra3 SCSI controller
- All the partitions are installed with AIX 5L Version 5.1.[2]
- All the partitions can communicate with each other via TCP/IP over the Ethernet network.

Table 2 Partition configuration

Partition name	Number of processor	Assigned memory size in GB	Additional adapters installed
lpar01	4	12	
lpar02	2	4	► 1 x Dual-Channel Ultra3 SCSI (FC 6203)
lpar03	2	4	
lpar04	1	1	► 1 x Dual-Channel Ultra3 SCSI (FC 6203) ► 1 x 8-Port Asynchronous EIA-232E PCI (FC 2943)
lpar05	1	1	
lpar06	2	4	► 1 x Dual-Channel Ultra3 SCSI (FC 6203)
lpar07	2	4	
lpar08	2	8	► 1 x Dual-Channel Ultra3 SCSI (FC 6203)

The lpar04 partition is equipped with the IBM 7852-400 modem, which is connected to the tty1 device. The tty1 device is configured on the first serial port of the 8-Port Asynchronous EIA-232E PCI (FC 2943), which is assigned to lpar04.

Therefore, the lpar04 partition[3] will be configured as the Service Agent gateway server. The other partitions, lpar01, lpar02, …, lpar08 are installed with the Service Agent client module, and performance related data created by PM/AIX will be transferred by the Service Agent client process from those partitions to lpar04, as shown in Figure 1 on page 3.

Note: It is possible and popular to configure the Service Agent gateway server on a separate pSeries server instead of using a partition. For further information about this configuration, please refer to *Electronic Service Agent for pSeries and RS/6000 User's Guide*, SC38-7105.

[2] AIX 5L Version 5.1 with 5100-01 maintenance level plus APAR IY22854 or later is required in a partitioned environment on the pSeries 690.

[3] Partitions, servers, and machines are used interchangeably throughout this Redpaper in terms of the hierarchical relationship of Service Agent.

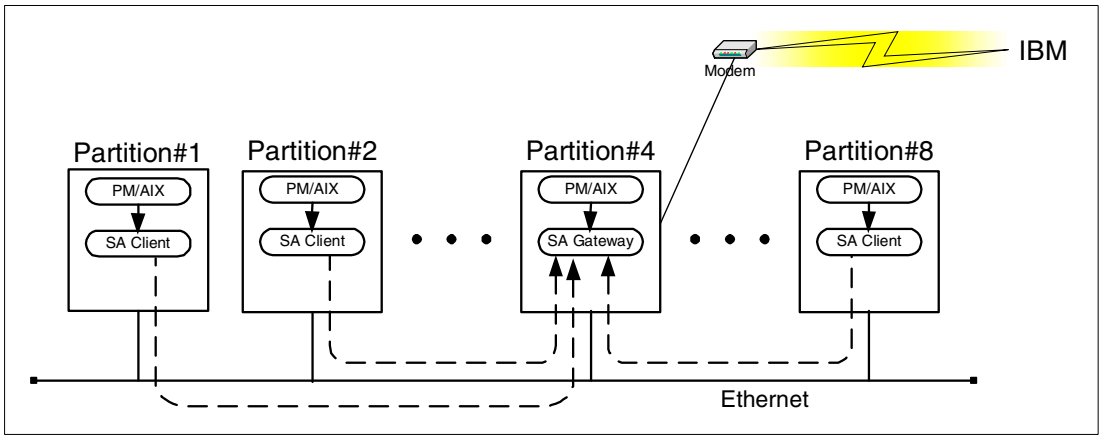

Figure 1 Service Agent relationships between partitions

PM/AIX overview

PM/AIX is a service offering from IBM Global Services designed to help the customers with the performance management of their systems by having performance data collected and sent to IBM for analysis. The customer is able to view the resulting reports from the Internet. These reports are presented in an easy to understand format, for example, using a tabular format or graph or using the “red-yellow-green” indicators.

PM/AIX tasks can be classified into:

1. Data collection

   Performance and capacity data are collected from each monitored client via the Server Resource Manager (hereafter referred to as SRM) client collection code. SRM is a tool used by IBM Global Services Delivery Center to assist with the gathering of data on system performance and capacity. Although IBM provides SRM client code for several platforms, we only refer to the SRM code on AIX in this Redpaper. When you install PM/AIX, the SRM code for AIX will be installed also.

   The collected data is stored in /var/adm/perfmgr/daily/*host_name* directory with the format of “collection_type.yyyy.mm.dd.DDD”. For example, netstat.2002.09.23.Mon represents the file for network statistics data on Monday, 23 Sep 2002.

   There are five types of data collection, as listed in Table 3.

Table 3 Data collection types

Type	Frequency	Description
envstat	Once a day	System identification, system configuration, and system availability information.
stats	Every minute	Virtual memory and CPU statistics.
netstat	Every minute	Network statistics for each interface.
iostat	Every 15 minutes	Input/output statistics for all disk drives, including CD-ROM devices.
dustat	Once a day	A summary of disk usage of physical volumes and space usage on file systems.

Thus, there will be five files a day for each machine. The files will be retained in the directory for seven days.[4]

The files from the previous day are the ones that will be automatically sent to IBM. They are copied and renamed as *collection_type.send* first. Then, they are picked up and sent to IBM by Service Agent.

- PM/AIX gathers basic information on the performance and capacity of your system at the operating system level. No information at the process, user, or application level is collected.
- This data collection is performed with minimal impact to the system performance - typically, just around 1% of the overall system load.
- The data collected allows IBM to provide an overview of performance and capacity that is sufficient for day-to-day operation and planning. It may not be adequate to identify and troubleshoot problems when extremely granular detail may be required.

2. Data transmission

   The data transmission part is done by Service Agent.

   Service Agent is an application on AIX that monitors for hardware errors. It then reports the detected errors, assuming that they meet certain criteria for criticality, to IBM for services without the need for customer intervention.

   Communication back to IBM is done by a dialup modem across the Global Network.

   All data to and from the remote machine to/from IBM securely transfers using the IP Security (IPSec or also known as Virtual Private Network). This protects both IBM and our Service Agent clients from any probable malicious attacks.

   By default, Service Agent transmits performance data from all PM/AIX client systems in your environment during the same period - at a random time between midnight and 05:00 a.m. within the time zone of the Service Agent gateway machine.

   You can modify the transmission time as you like. In the event that some problem occurs that caused the transmission to fail or you would like to re-submit data, there is an option to manually force the data transmission.

3. Data analysis

   After the collected data is successfully transmitted to IBM, it is first checked to confirm the entitlement for service. If the system is registered and entitled for service, its data is analyzed automatically by the systems at IBM.

   If a system is not registered and entitled for service, the data is not processed. Be sure to register all entitled systems under your account.

4. Data presentation

   After the data has been processed, the reports can be viewed by any Web browser that supports JavaScript, cookies, and 128-bit SSL encryption) from the following URL:

   `http://perf.services.ibm.com/pmweb/`

   This approach enables you to securely view the reports from anywhere in the world. There is no need for any additional software or plug-ins. You also have the option to allow the other users to view your data as you see it.

[4] You can change the retained period by modifying the “RETAIN=7” parameter in the /var/adm/perfmgr/bin/clean.account script.

PM/AIX implementation

Because PM/AIX makes use of Service Agent, you have to successfully have Service Agent up and running before implementing PM/AIX in a partitioned environment. Thus, in this Redpaper, we describe in detail how to implement Service Agent and verify it. If you already have Service Agent up and running, you can skip the section about “Install and configure Service Agent” on page 5 and proceed to “Install and configure PM/AIX” on page 17.

Purchase PM/AIX service

Before you are entitled to service, the PM/AIX service[5] needs to be purchased through an IBM solutions provider, such as an IBM Business Partner of directly from IBM. This offering is worldwide, but the availability may vary from countries to countries. For detailed information about the offering, please visit the following URL:

http://perf.services.ibm.com/pmweb/

Click **pSeries** and **How to Buy**.

Note: Once the service has been purchased, you must complete the “Performance management registration” process, which will allow your data to be processed by IBM. You can install and configure Service Agent and PM/AIX, but no data will be processed until the “Performance management registration” process has been completed.

Install and configure Service Agent

Service Agent is an application on AIX that monitors the machine for hardware errors. It must be installed and configured before you can install the PM/AIX client code.

The hardware error reporting service of Service Agent is offered as a part of the IBM Warranty or IBM Maintenance Agreement (MA) package for no additional charge. However, there is no cost associated with installing and using the agent, so customers outside of warranty or without MA can also obtain and install Service Agent at no cost.

Service Agent overview

Service Agent is an attempt to provide a proactive, predictive problem analysis and notification by capturing diagnostic results or error log entries and sending the information to the IBM support center so that it can be analyzed and action can be taken beforehand. This not only helps reduce exposure to outages and unnecessary system downtime, but also minimizes the resources and efforts required to run and maintain the systems.

Service Agent is also used by the following two services:

- Inventory Scout: To send VPD (vital product data) information to IBM or download firmware or microcode from IBM.
- PM/AIX: To send performance data to IBM for analysis.

Service Agent *Gateway Server* is the first machine on which you installed Service Agent code. This is the machine that contains the Service Agent configuration database and has the modem connection to IBM. If you have only one machine in your system, that machine is the gateway server.

[5] The official offering name is “IBM Operational Support Services, IBM @server pSeries performance management”, with a component ID number of 6942-72.

If you have many machines, each of them can be a gateway server. However, if you have *n* gateway servers, you are required to have *n* modems to connect to IBM. Additionally, you have to manage *n* gateway servers since each gateway server has to be managed separately.

A more practical configuration is to have one gateway server and *n-1* Service Agent *clients*. The configuration requires only one modem and you can manage all of them from that gateway server.

IBM Service Agent Server or *IBM SAS* is located at an IBM site. It is the server to which the data sent from your machines is stored, analyzed, and acted on by IBM.

Note: You must define and register the machines you wish to monitor with Service Agent to enable error detection. If you do not define and register the machines, Service Agent will not capture information.

Verify prerequisites

- Log in as the root user to the partition in order to install Service Agent.
- Ensure there is adequate disk space available on the /usr, /var, /tmp, and /home file systems, as shown in Table 4.

Table 4 Required disk spaces in order to install Service Agent

File system name	On the gateway server	On the monitored system
/usr	15 MB	15 MB
/var	10 MB	5 MB
/tmp	15 MB	6 MB
/home	5 KB	5 KB

- Verify the required filesets are installed.
  - Java runtime environment package[6]

```
root@lpar04:/ # lslpp -L 'Java*'
  Fileset                      Level  State  Type  Description (Uninstaller)
  ----------------------------------------------------------------------------
  Java130.rte.bin           1.3.0.14    C     F    Java Runtime Environment
                                                   Executables
  Java130.rte.lib           1.3.0.14    C     F    Java Runtime Environment
                                                   Libraries
```

  - Diagnostics filesets

```
root@lpar04:/ # lslpp -L 'bos.diag.*'
  Fileset                      Level  State  Type  Description (Uninstaller)
  ----------------------------------------------------------------------------
  bos.diag.com              5.1.0.25    C     F    Common Hardware Diagnostics
  bos.diag.rte              5.1.0.25    C     F    Hardware Diagnostics
  bos.diag.util             5.1.0.25    C     F    Hardware Diagnostics Utilities
```

[6] Versions of 1.1.6 to 1.3.1 are supported, depending on the AIX version.

– bos.net.ppp

```
root@lpar04:/ # lslpp -L 'bos.net.ppp*'
  Fileset                      Level  State  Type  Description (Uninstaller)
  ----------------------------------------------------------------------------
  bos.net.ppp               5.1.0.15  C     F    Async Point to Point Protocol
```

- The gateway server has available serial port to connect to the modem. When adding a tty, you can take all default options:

```
root@lpar04:/ # lsdev -Cc tty
tty0 Available             Asynchronous Terminal
tty1 Available 3p-08-01-00 Asynchronous Terminal
```

  Typically, the tty0 device in partitions is a Virtual Terminal device to be connected from the HMC, therefore, you cannot use this device as the serial port to connect to the modem. In this example, the tty1 device is configured on the first port (port 0) on the 8-Port Asynchronous EIA-232E PCI (FC 2943) assigned to lpar04 and connected to the modem.

- A modem (with at least 9600 bps) and a phone line are connected and operational.

  Only outbound calls to IBM SAS is allowed. For security purposes, all inbound calls and auto answering capability are disabled.

- The gateway server has to communicate with all partitions to be monitored using the **rsh** or **ftp** commands.

- PPP (Point-to-point Protocol) is configured on the gateway server.

  a. Verify that PPP is configured:

```
# smitty ppp
    Link Control Configuration
        Change / Show a Link Configuration
```

  If a configuration panel is displayed, go to step: Start PPP:; otherwise, you will see the following error message:

```
/etc/ppp/mkppp: /etc/ppp/lcp_config does not exist.
                Please create Link Configuration.
```

  then you need to configure a PPP link.

  b. Configure a PPP link.

```
# smitty ppp
    Link Control Configuration
        Add a Link Configuration
```

  A Link Configuration appears, fill in the first nine parameters, as shown Example 1.

Example 1 PPP link configuration

```
                                LINK Configuration

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[TOP]                                                   [Entry Fields]
  PPP subsystem name                                   [PPP]
  max server connections                               [0]
  max client connections                               [1]
  max demand connections                               [0]
  max ip interfaces                                    [1]
  max async hdlc attachments                           [545]
  mru                                                  [1500]
  async character map                                  [454]
  transmit async character map                         [343]
```

```
  negotiate MRU                                    yes                  +
  negotiate magic number                           yes                  +
  negotiate async map                              yes                  +
  negotiate protocol compression                   yes                  +
  negotiate address control compression            yes                  +
  force authentication                             no                   +
  chap interval                                    []                    #
  Enable PPP compression                           no                   +
  max attachments for multilink                    []                    #
     MRRU                                          []                    #
     PPP subsystem telephone number                []                    #
  Enable PPP SNMP subagent                         no                   +

F1=Help             F2=Refresh          F3=Cancel           F4=List
Esc+5=Reset         Esc+6=Command       Esc+7=Edit          Esc+8=Image
Esc+9=Shell         Esc+0=Exit          Enter=Do
```

c. Start PPP:

```
# smitty ppp
    Start PPP
```

Example 2 Start PPP

```
                                   Start PPP

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                     [Entry Fields]
* START PPP now, on system restart or both           both                 +

F1=Help             F2=Refresh          F3=Cancel           F4=List
Esc+5=Reset         Esc+6=Command       Esc+7=Edit          Esc+8=Image
Esc+9=Shell         Esc+0=Exit          Enter=Do
```

d. Verify that PPP has started:

```
# ps -ef | grep ppp | grep -v grep
    root 385212 188626   0 11:19:21      -  0:00 /usr/sbin/pppcontrold
    root 422104 385212   0 11:19:24      -  0:00 pppauthd 1 0 0
```

- Prepare the following information for all partitions to be monitored:
  - Host name

    Issue the **hostname** command on the partitions. In our configuration, the host names for partitions are shown in the “partition name” column in Table 2 on page 2.
  - Machine type and model

    See Table 1 on page 1. In our configuration, the machine type is 7040 and the model is 681.
  - Serial number

    See the label physically placed on the machine. In our configuration, the serial number is 02168A.
  - Processor ID

    Issue the **uname -m** command. In our configuration, the processor ID is 0021768A4C00 on all the partitions.

You need this information when you add the monitored partitions after installing and configuring the gateway server in step “Install and configure Service Agent on other partitions” on page 15.

Obtain the latest code for Service Agent

The latest Service Agent code can be obtained from the following URL:

ftp://ftp.software.ibm.com/aix/service_agent_code/svcagent.installp

Install Service Agent on the Service Agent gateway server

Assuming that you have placed the installation image file as /tmp/svcagent.installp, you can install Service Agent by issuing the following command:

```
# installp -acXd /tmp/svcagent.installp svcagent
```

After completing of the fileset installation, issue the following command whether or not the installation is completed successfully:

```
# lslpp -L svcagent
  Fileset                      Level  State  Type  Description (Uninstaller)
  ----------------------------------------------------------------------------
  svcagent                   2.3.1.0    C     F    IBM Electronic Service Agent For RS6000
```

If the State does not show C (Committed), then you need to diagnose the installation problem. Please refer to *Electronic Service Agent for pSeries and RS/6000 User’s Guide*, SC38-7105.

Configure Service Agent on the gateway server using PC client

Service Agent provides two types of user interfaces: *basic* and *advanced*. The basic user interface (TTY panel interface) is designed to allow a first time user to configure the Service Agent system with as little input as possible by utilizing predefined defaults for a simple network environment, while the advanced user interface (graphical user interface) is used for advanced functions and customization of the system as well as configuration for complex systems and multi-level networks.

Note: The initial password for both interfaces is *password*. We recommend that you change this password after the installation is completed.

Although it is advised to use the advanced user interface to configure the multi-level network Service Agent configuration shown in Figure 1 on page 3, partitions are usually not equipped with graphics adapters. Therefore, you must select either of the following methods to configure Service Agent on partitions:

- Use remote display with the X server process running
- Use the Service Agent PC client[7]

In this Redpaper, we cover the latter method only. If you wish to use the former method, please refer to *Electronic Service Agent for pSeries and RS/6000 User’s Guide*, SC38-7105.

[7] The Service Agent PC client is supported on Windows 95, Windows 98, WIndows NT 4.0 with Service Pack 3.0 or later, Windows 2000, and Windows XP. The Java runtime environment of Versions 1.1.6 or later must be installed.

Do the following to install and configure Service Agent PC client on the partition:

```
# cd /usr/svcagent/install/bin
# ./installnt
```

This command will create a tar archive file, instui.tar, in the /tmp directory, as shown in the following example:

```
# ls -l /tmp/*.tar
-rw-r--r--   1 root     system      5591040 Nov 04 16:17 /tmp/instui.tar
```

Transfer the tar archive file to your Windows based PC and unarchive it on the root directory on any drive partitions (we are assuming that you have unarchived it on the C drive in this example). In the C:\svcagentui directory, you will see the following batch command files:

startbasic_java.bat	Starts the basic user interface
startadvanced_java.bat	Starts the advanced user interface
startadvanced_java2.bat	Starts the advanced user interface (to be used with Java2)

Invoke the appropriate batch command file, depending on the user interface and the Java runtime environment version on your PC.

In our configuration, we have invoked startadvanced_java2.bat; the login panel shown in Figure 2 is presented. Type `password` and then click **OK**.

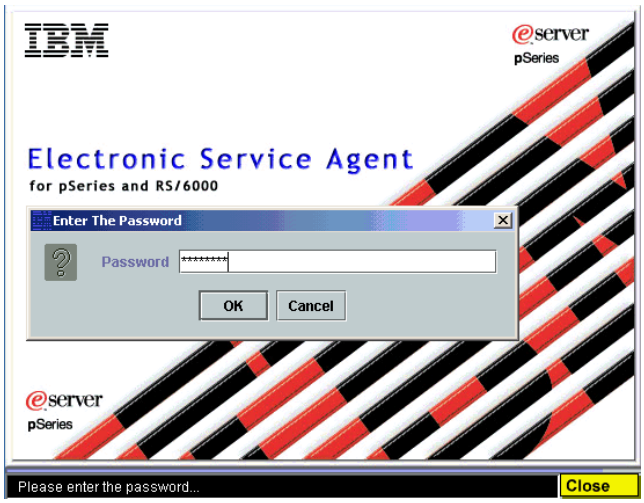

Figure 2 Login prompt for Service Agent

If the login panel is not presented, you should check whether or not a suitable Java runtime environment is correctly installed on your PC, as shown in Figure 3 on page 11. If the **`java -version`** command does not return appropriate version information, you might need to add the directory of Java runtime environment to the PATH environment variable.

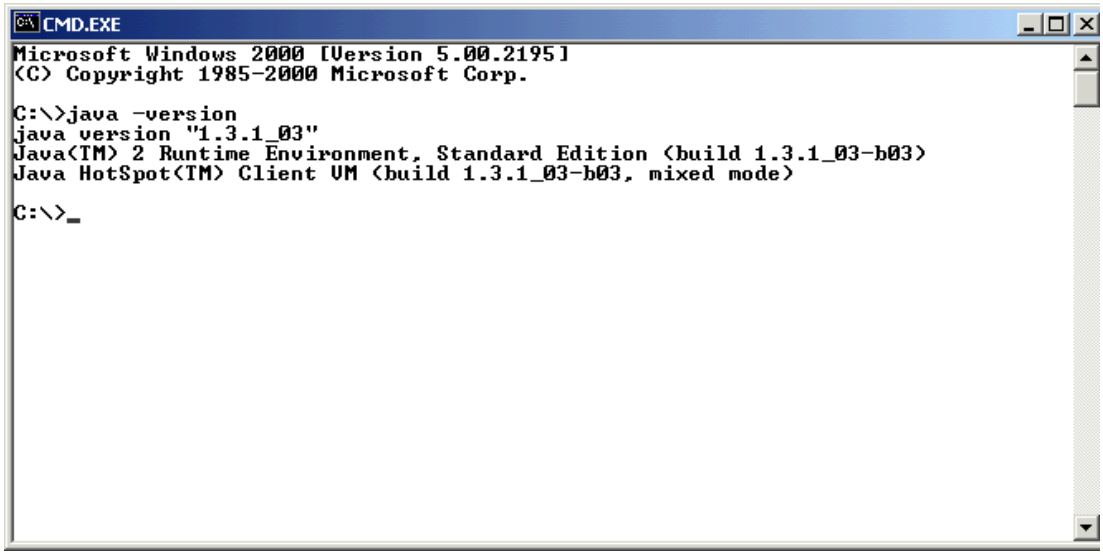

Figure 3 Java runtime version on Windows-based PC

Once the password is verified, you will be prompted to enter required data upon the first connection to the Service Agent gateway server, as shown in Figure 4. The machine type, model, and serial number must be matched with the information in “Prepare the following information for all partitions to be monitored:” on page 8. Click **Continue**.

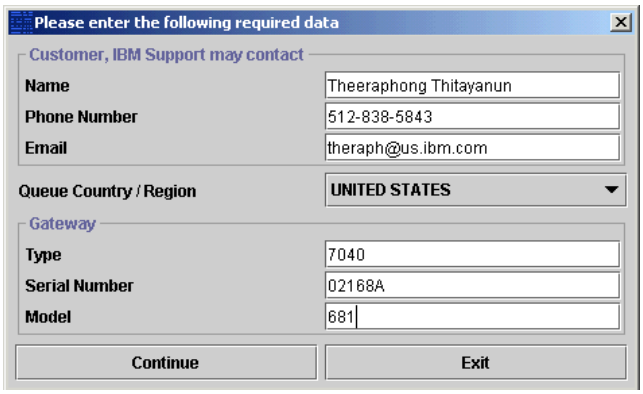

Figure 4 Initial setup data for Service Agent[8]

Select **Queue Country/Region** (as appropriate) in the network configuration panel shown in Figure 5 on page 12. Provide other information as much as possible (parameters preceding by ! are required). Click **OK**.

[8] This configuration panel will be presented only once upon the first connection to the Service Agent gateway server using the advanced user interface.

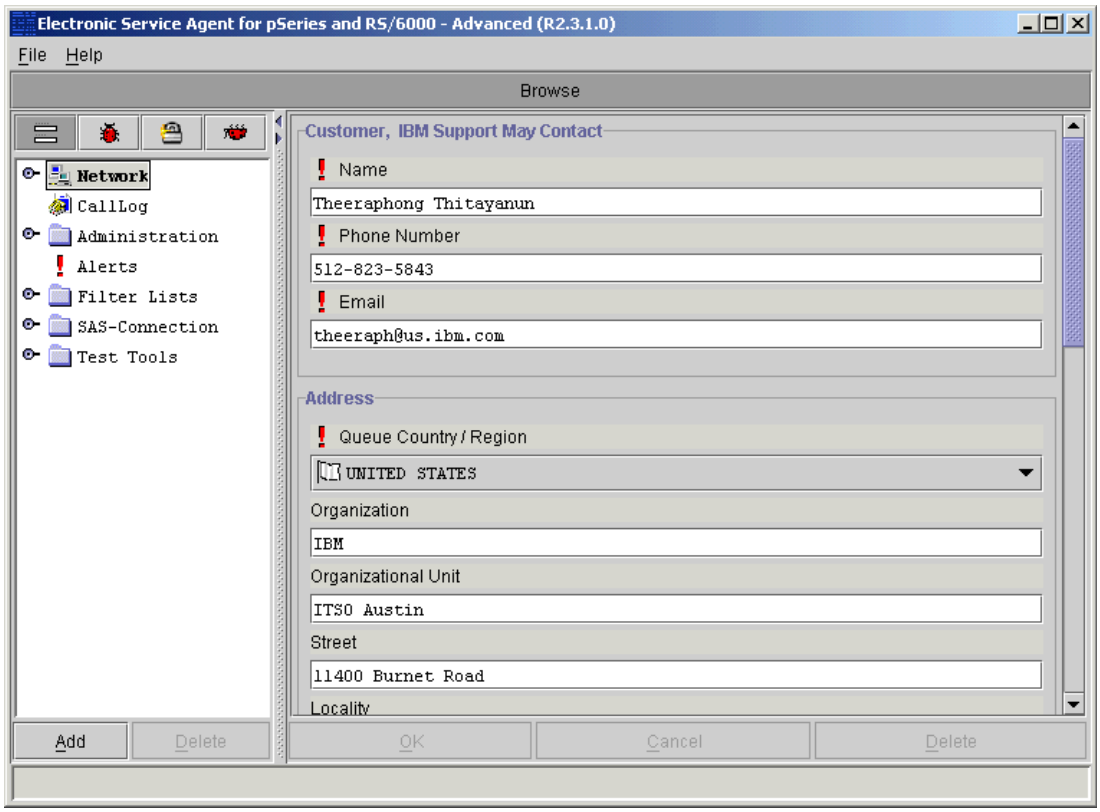

Figure 5 Advanced Service Agent configuration - Network properties

Collapse the Network icon by clicking it and then select the gateway server (in this example, lpar04.itsc.austin.ibm.com). The node info for the gateway server should be presented as shown in Figure 6 on page 13. Verify the Name, IP address, machine Type, Model, and Serial Number of the gateway server.

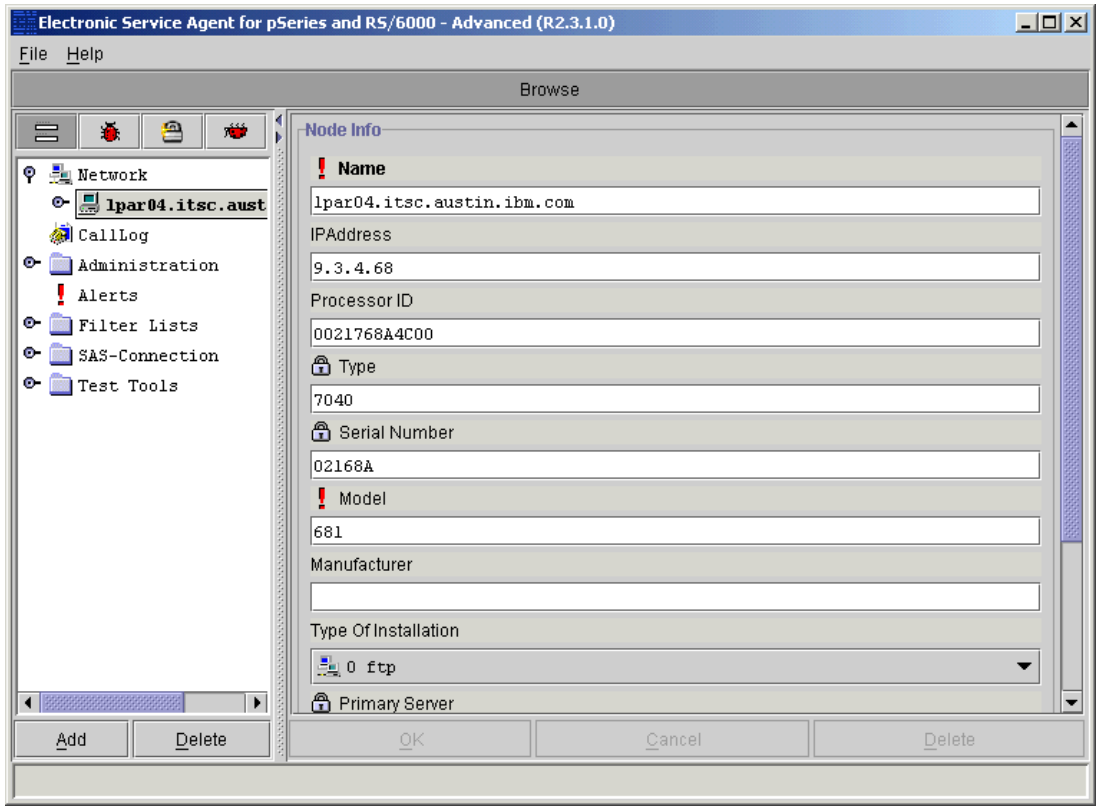

Figure 6 Advanced Service Agent Configuration - Gateway server properties

Collapse the gateway server icon by clicking it, and then select the **Dialer** icon. The dialer panel should be presented, as shown in Figure 7 on page 14.

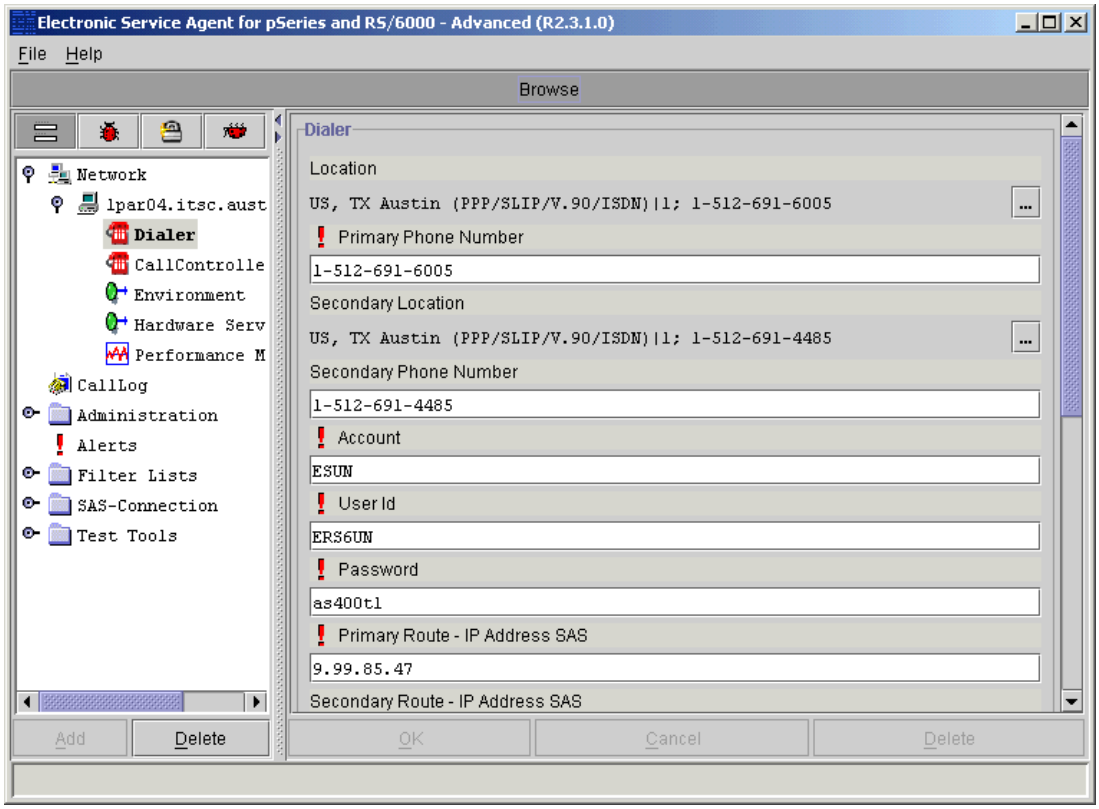

Figure 7 Advanced Service Agent configuration - Dialer properties

From the Location field, select the country and the city that is closest to your location. This is the place where the modem calls to. When you select the Location field, many fields are automatically filled out for you, including the primary phone number. Modify it as needed, for example, modify 1-512-961-6005 to 9-691-6005 in order to add the dial out number 9 to the local call number 691-6005. You can select the Secondary Location field in order to specify the Secondary Phone Number, which will be used when the attempts to call the primary phone number fails three times.

Also, select appropriate values in the following fields:

TTY# The corresponding /dev/tty# that the modem is connected to.

Modem The appropriate modem type. Once you have selected the modem type, the Reset String and Init String for that type of modem will be filled out automatically.

Baud Rate Select the appropriate baud rate, depending on the selected modem type.

Dial Type Select **Tone** or **Pulse**, depending on the phone line.

Note: Selecting a baud rate greater than what the modem supports could cause the dial-out process to fail. If the **Verify The Baud Rate Before Dialing** is checked, Service Agent starts with the baud rate you provided and attempts to find the proper baud rate setting automatically. For example, it your specified baud rate is 33600 and **Verify The Baud Rate Before Dialing** is checked, Service Agent will try to connect with baud rate of 33600. If this fails, it will try 28800, 19200, 14400,... until it finds the proper baud rate setting.

Click **OK** to save the data.

Collapse the Administration icon by clicking it, then select **Registration** → **lpar04.itsc.austin.ibm.com** → **Register**. The registration panel should be presented, as shown in Figure 8.

Figure 8 Service Agent registration

Click **Yes**. Verify that your call to register the gateway server was successful by selecting the **CallLog** screen.

Install and configure Service Agent on other partitions

To install and configure Service Agent on other partitions, you have to add them to the Service Agent gateway server using the advanced user interface (select **Network** → **Add** → **Child** → **Machine**), as shown in Figure 9.

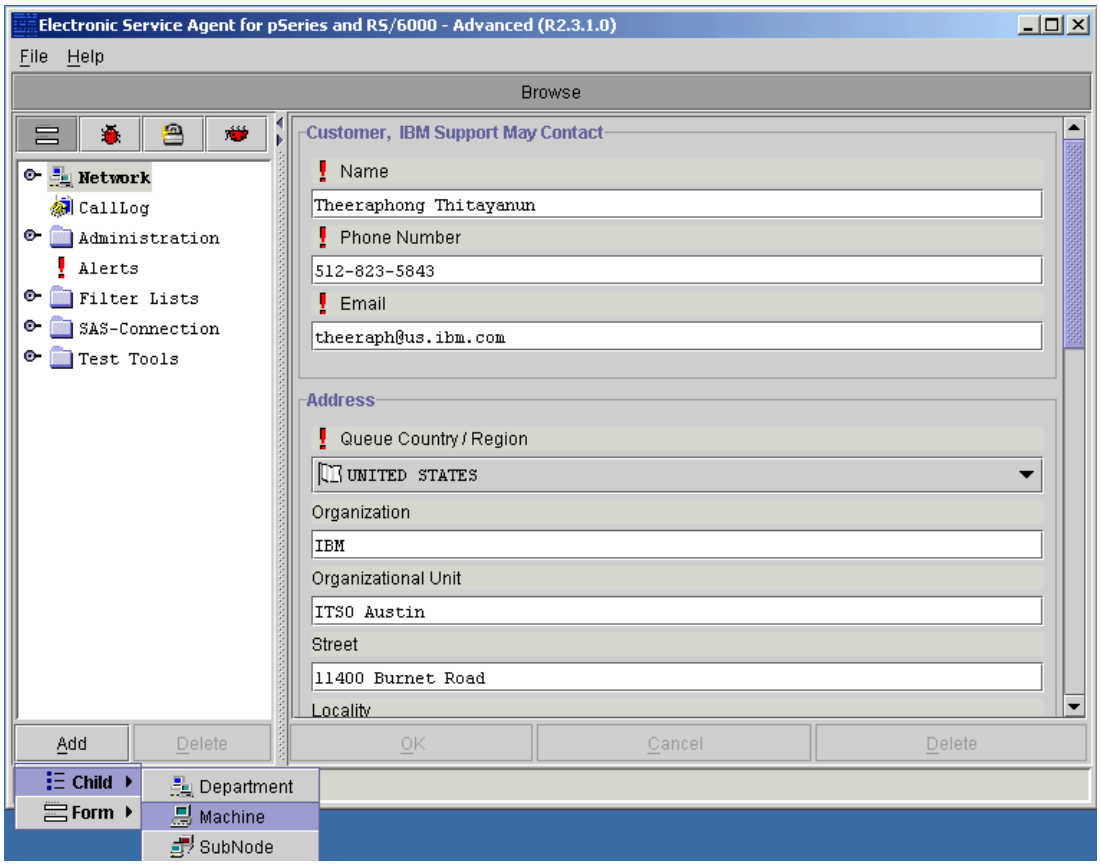

Figure 9 Advanced Service Agent configuration - Add a machine

The Node Info panel will be presented, as shown in Figure 10.

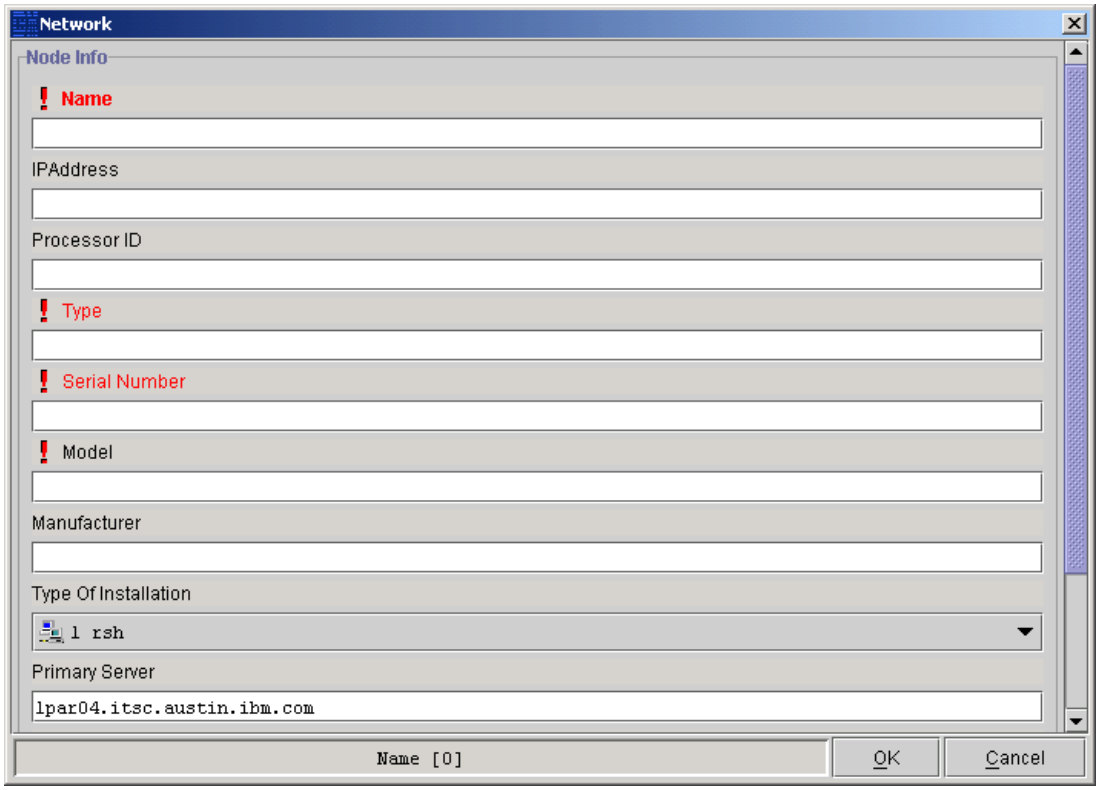

Figure 10 Advanced Service Agent configuration - Node Info

Enter the Name, IP Address, machine Type, Model, and Serial Number of the machine to be added. Select the appropriate value, either **`ftp`** or **`rsh`**, in the **Type Of Installation** field in order to specify the installation method to transfer the Service Agent client module on the target partition from the gateway server.

In our example, we specified the following values in order to add the lpar01 partition:

Name	lpar01.itsc.austin.ibm.com
IP Address[9]	9.3.4.65
Processor ID	0021768A4C00
Type	7040
Serial Number	02168A
Model	681

Click **OK** to add the partition, then the Service Agent client module will be installed via the method you specified.

[9] The IP address is not mandatory if the host name of target machine is correctly resolved to the IP address.

If the error message shown in Figure 11 is presented with the rsh installation method, then you should check whether or not the svcagent user on the gateway server can remotely execute commands on the target partition using the **rsh** command shown in the following example:

```
root@lpar04:/ # su - svcagent
svcagent@lpar04:/ $ whoami
svcagent
svcagent@lpar04:/ $ rsh lpar01.itsc.austin.ibm.com whoami
rshd: 0826-813 Permission is denied.
```

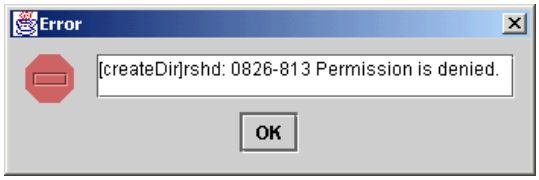

Figure 11 Permission error

Then you must create the /.rhosts file on the target partition, as shown in the following example:

```
root@lpar01:/ # cat > /.rhosts
lpar04.itsc.austin.ibm.com svcagent
Control-D
root@lpar01:/ # chmod 0600 .rhosts
root@lpar01:/ # ls -l .rhosts
-rw-------   1 root     system           32 Nov 07 10:03 .rhosts
root@lpar01:/ # cat /.rhosts
lpar04.itsc.austin.ibm.com svcagent
```

Note: You should remove the /.rhosts file on partitions after the installation completed.

Now the svcagent user on the gateway server can remotely execute commands on the target partition using the **rsh** command, as shown in the following example:

```
svcagent@lpar04:/ $ rsh lpar01.itsc.austin.ibm.com whoami
root
```

After solving the problem, delete the node and recreate the same information in Figure 10 on page 16 and then click **OK**.

Repeat this step to add other partitions as needed. Once finished, you can register those partitions to IBM and verify the result in the CallLog property. Once all partitions have been registered successfully to IBM, proceed to install PM/AIX.

Install and configure PM/AIX

Before continuing with this step, make sure that all partitions that you want to install PM/AIX on have Service Agent installed and have been successfully registered to IBM.

Verify PM/AIX prerequisite

- Log in as the root user to the partition in order to install PM/AIX.
- Ensure there is at least 5 MB of free disk space available on the /usr and /home file systems.

- Verify that AIX Version 4.3.0 or higher is installed:

```
root@lpar01:/ # oslevel
5.1.0.0
```

- Verify that the required filesets are installed:
  - Service Agent (Version 2.2.0.0 or later is required).
  - Java runtime environment (Version 1.1.8 or later is required).
  - The filesets provided by AIX, as shown in Table 5.

Table 5 AIX filesets needed for PM/AIX

Fileset name	Commands used by PM/AIX
bos.acct	**vmstat** and **iostat**
bos.rte.control	**ps**
bos.rte.date	**date**
bos.rte.shell	**awk**
bos.rte.edit	**sed**
bos.rte.lvm	**lsvg** and **lspv**
bos.rte.filesystem	**df**

Obtain the latest code for PM/AIX

The latest PM/AIX code can be obtained from the following URL:

ftp://ftp.software.ibm.com/aix/products/pmaix/pmaix.rte.installp

Install PM/AIX

Assuming that you have placed the installation image file as /tmp/pmaix.rte.installp, you can install PM/AIX by issuing the following command:

```
# installp -acXd /tmp/pmaix.rte.installp pmaix.rte
```

After completing the fileset installation, issue the following command, whether or not the installation is completed successfully:

```
# lslpp -L pmaix.rte
  Fileset                      Level  State  Type  Description (Uninstaller)
  ----------------------------------------------------------------------------
  pmaix.rte                  1.1.0.0    C     F    IBM e(logo)server pSeries
                                                   performance management
                                                   (PM/AIX)
```

If the State does not show C (Committed), then you need to diagnose the installation problem. Please refer to *IBM Operational Support Service @server Performance Management "PM/AIX" Version 1.1 User and Reference Guide 2nd Edition*.

A file system, /var/adm/perfmgr, with a predefined size of at least 12 MB is created when you install PM/AIX. This file system not only contains some code (under the bin directory), but also will store the collected performance data under the daily/<host_name> directory.

After you install PM/AIX on the partition, the Service Agent gateway server will be notified by the Service Agent client code on that partition that PM/AIX is now installed (so that performance data on that partition can be transmitted to IBM), as shown in Figure 12.

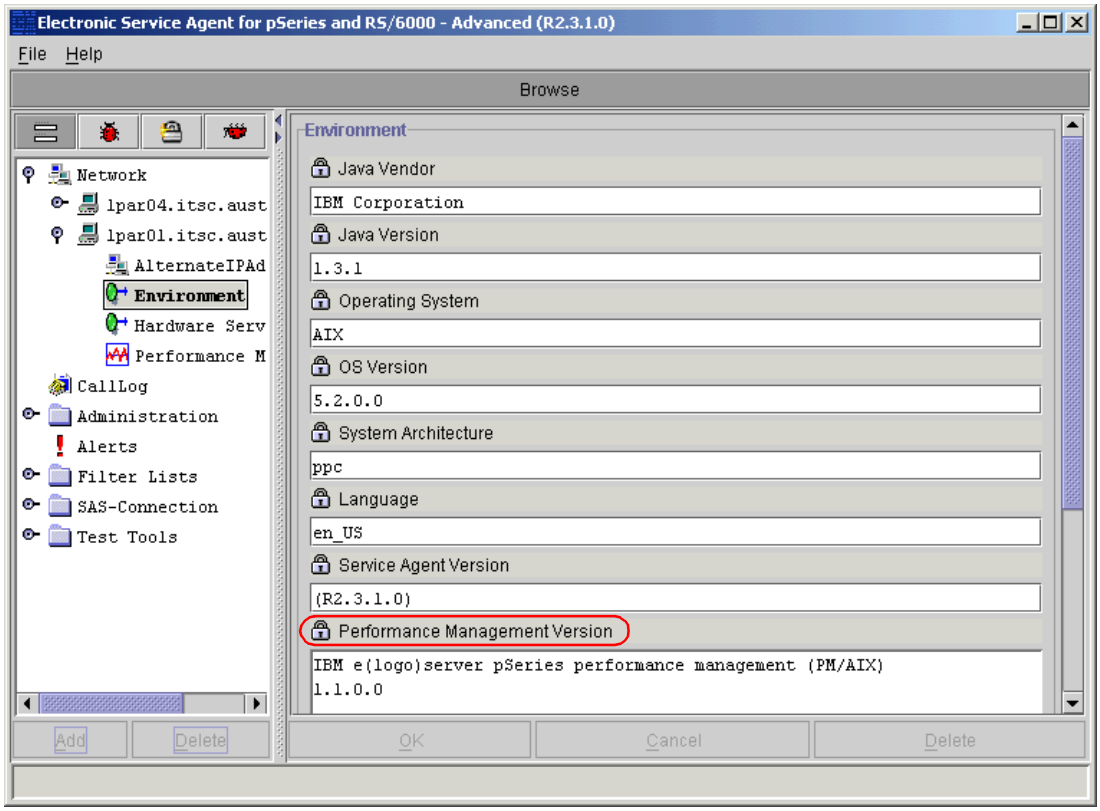

Figure 12 Advanced Service Agent Configuration - Environment property

You can confirm the current PM/AIX configuration by selecting **Network** → **the target partition** → **Performance Management** in the advanced user interface as shown in Figure 13 on page 20.

You can customize the following using this panel:

- Enable/disable performance data collection on a partition
- Change the time the partition transfer the data to the gateway server
- Selectively enable/disable the type of performance data collection
- Change the location of the performance data files

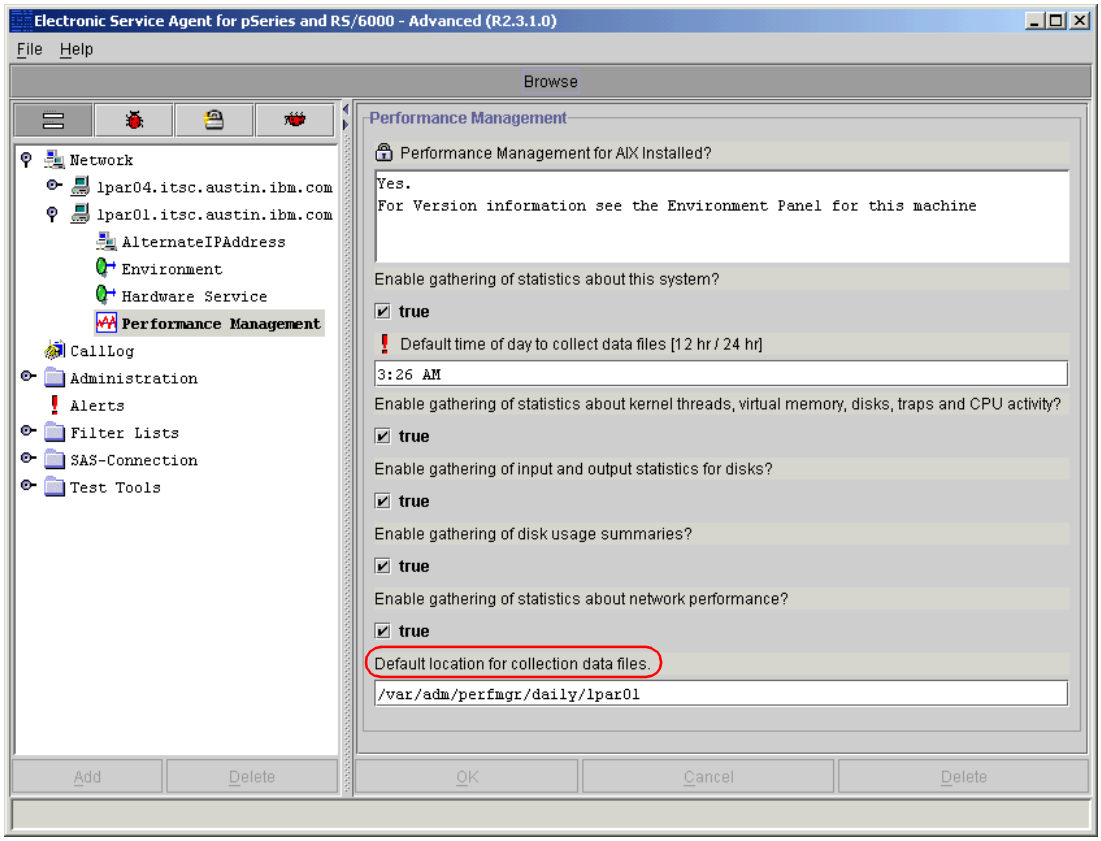

Figure 13 Advanced Service Agent Configuration - PM/AIX configuration settings

For example, the directory shown in the “Default location for collection data files” field is used to store the performance related data on this partition as shown in the following example (see “PM/AIX overview” on page 3 for further information about these files):

```
root@lpar01:/ # ls /var/adm/perfmgr/daily/lpar01
dustat.2002.11.05.Tue    envstat.send             netstat.2002.11.07.Thu
dustat.2002.11.06.Wed    iostat.2002.11.05.Tue    netstat.send
dustat.2002.11.07.Thu    iostat.2002.11.06.Wed    stats.2002.11.05.Tue
dustat.send              iostat.2002.11.07.Thu    stats.2002.11.06.Wed
envstat.2002.11.04.Mon   iostat.send              stats.2002.11.07.Thu
envstat.2002.11.05.Tue   netstat.2002.11.05.Tue   stats.send
envstat.2002.11.06.Wed   netstat.2002.11.06.Wed
```

Complete performance management registration

In order to use SRM, you need to register yourself on the IBM Registration site, as shown in Figure 14 on page 21, found at:

http://www.ibm.com/registration/selfreg

Click **Register for the first time** if you have not registered yet. You will be prompted for a great deal of information, such as your e-mail address and phone number to complete the registration. Once finished, you can log in to the performance management site the next day to view the reports generated for your systems.

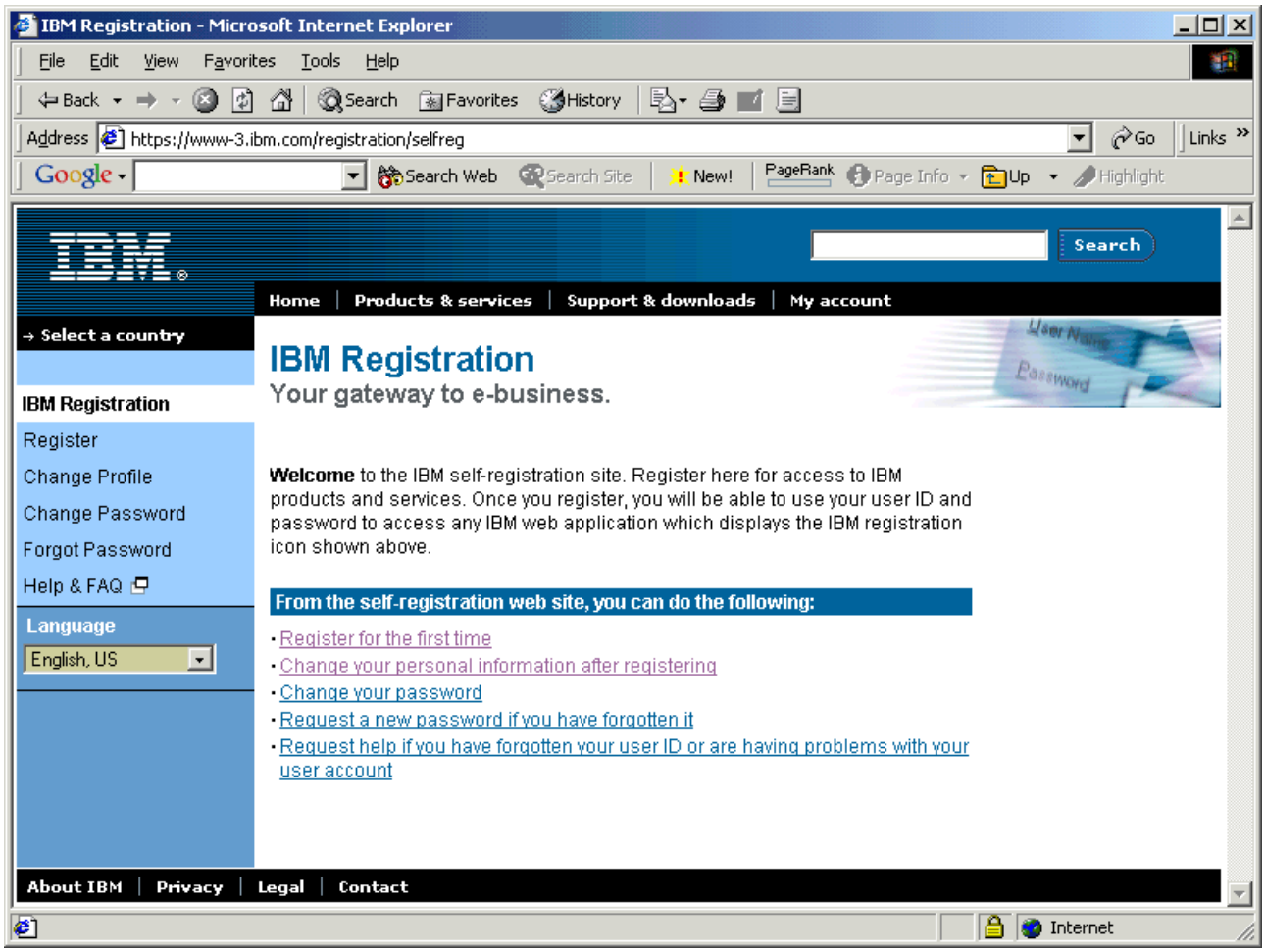

Figure 14 IBM Registration

Use of performance management Web site

Performance data is sent to IBM every night for processing and analysis. Analyzed results can be viewed securely on the Internet from the performance management Web site at:[10]

`http://perf.services.ibm.com/`

Once connected, you will be prompted to enter the IBM Registration ID and password, as shown in Figure 15 on page 22.

[10] Access to the site requires a Web browser supporting JavaScript, cookies, and 128-bit SSL encryption.

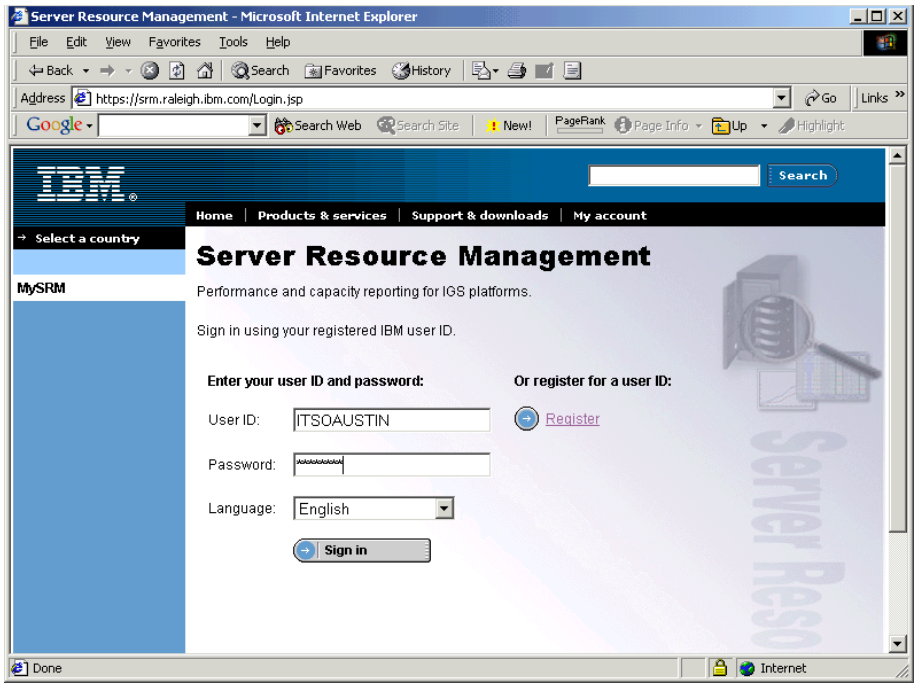

Figure 15 SRM login panel

Once logged in to the Web site, you will see the following selections:

Performance Reports	Displays server resource trends, including processor, memory, and disk usage.
Executive Reports	Display attributes, performance data, and forecasts for all your platforms at once.
Server Find	Searches for a server by entering the host name.
Install Base	Displays the current inventory of installed servers.
Red Action List	Reviews red exception servers and action plans on servers flagged as red over the course of a month.
Saved Queries	Accesses saved report queries that you define.
Preferences	Customizes the settings for your particular job.
Documentation	View the Server Resource Management User's Guide and other detailed documentation.
Sign out	Do not forget to sign out when you leave!

As an example, in order to display performance reports, select **Performance Reports** and select the appropriate values from the pull-down list, as shown in Figure 16, and then click **Submit**.

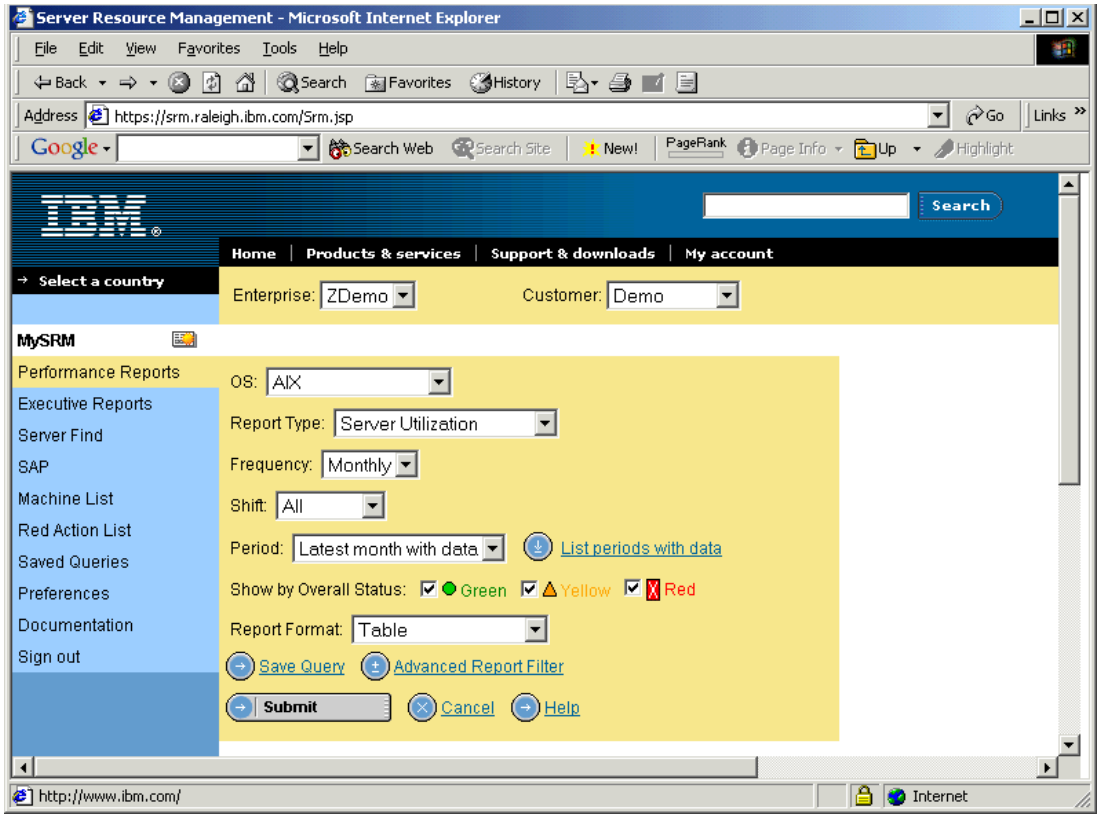

Figure 16 MySRM - Performance Reports

Figure 17 on page 24 displays the performance data of registered machines in a table format. The red-cross mark indicates there is a performance bottleneck on the server while the green circle mark indicates there is no measured performance problem.

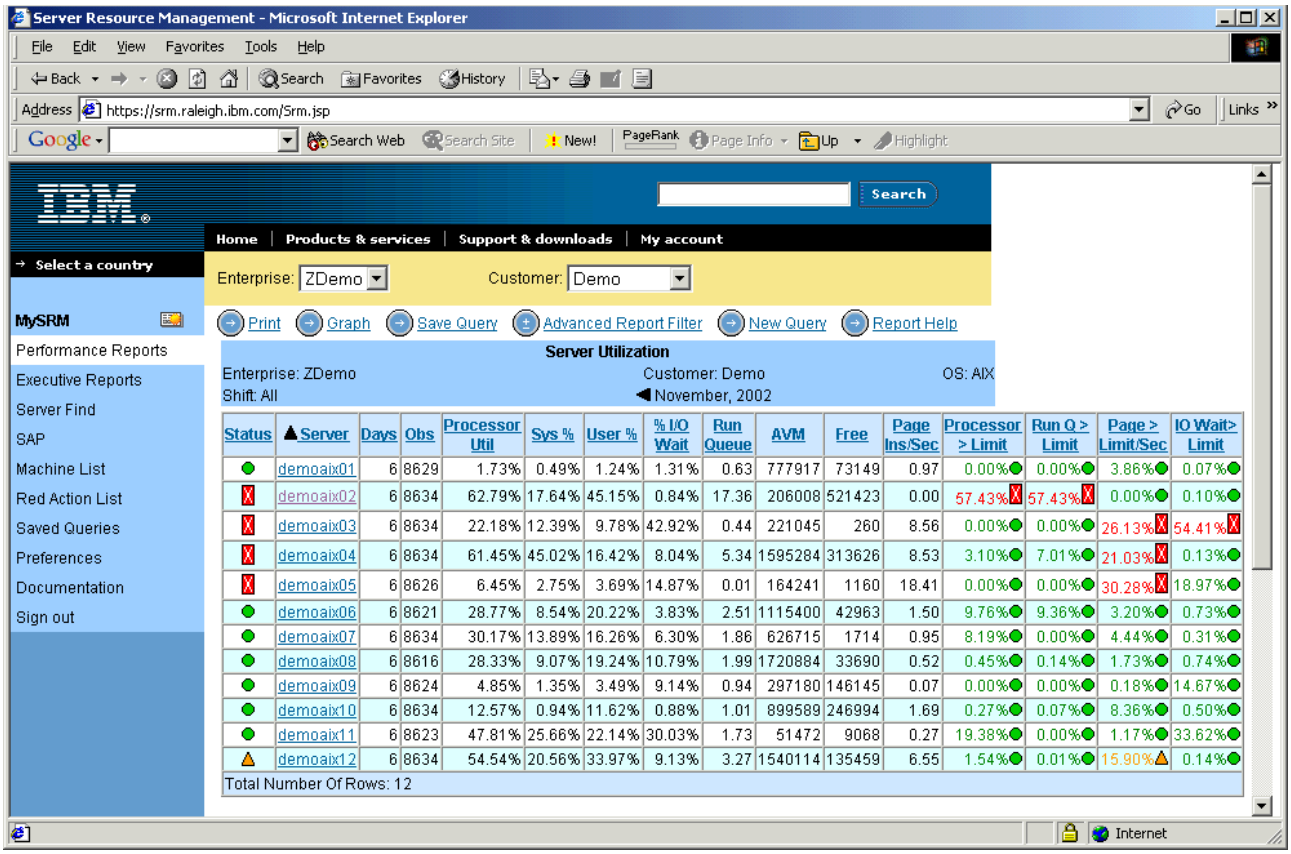

Figure 17 MySRM - Performance Reports for registered machines in a table format

Figure 18 on page 25 displays the server utilization of demoaix02 in a graphical format (we have selected **demoaix02** from Figure 17 and then clicked **Submit**). As indicated with the red-cross mark, the server utilization shows both the “processor utilization” and “RunQ > Limit” exceeded 50 percent in the past on this machine.

Figure 18 MySRM - Performance Reports for the specified machine

For further information about how to use SRM, you can access several documentations after logging in the following site (you need IBM Registration ID and password):

http://perf.services.ibm.com/

Then select **Documentation**, as shown in Figure 19.

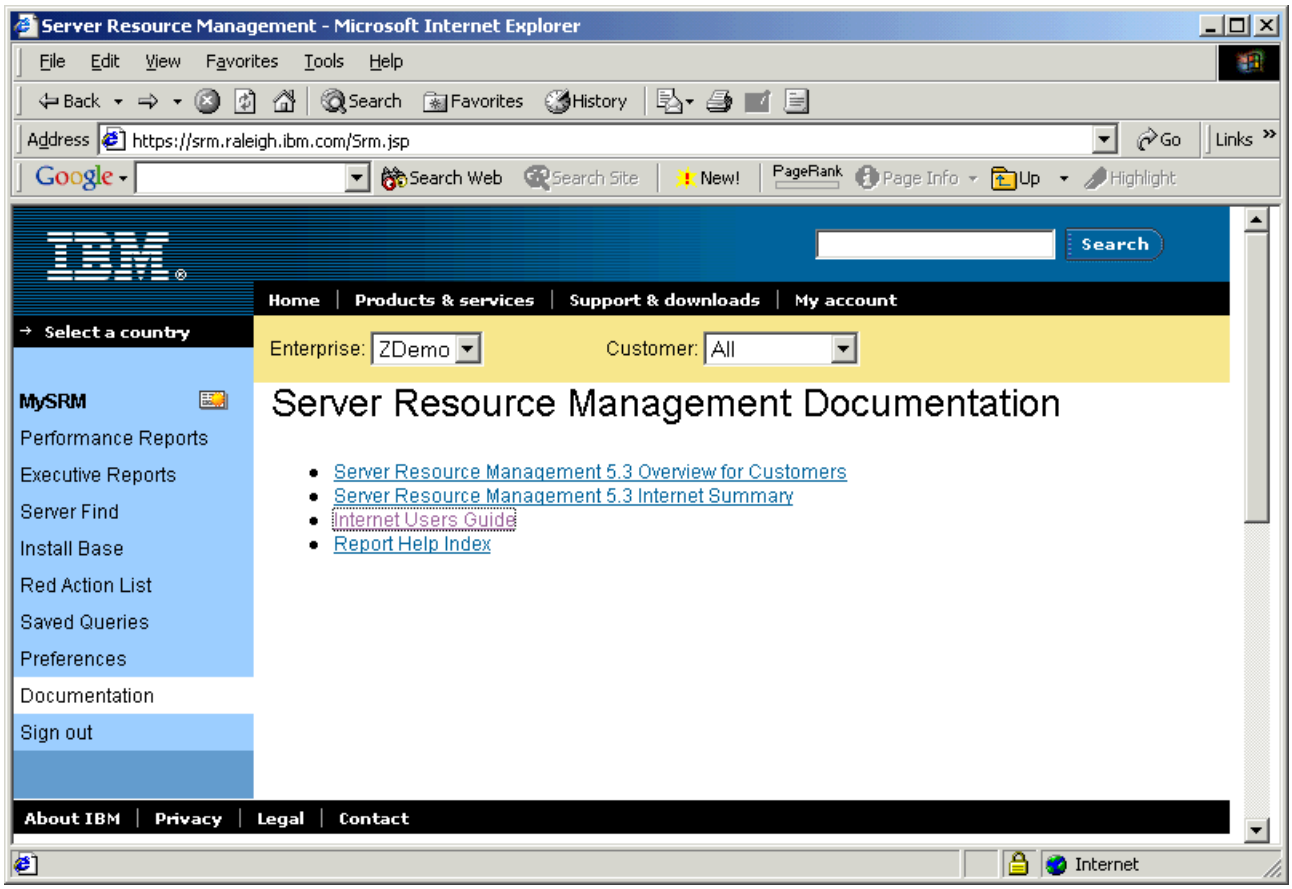

Figure 19 SRM related documentation

Conclusion

We have confirmed that PM/AIX works fine, regardless of whether it is in a partition or a ordinary stand-alone pSeries server. In other words, the configuration steps of PM/AIX is the exactly same between these environments.

How to manually send performance data to IBM

In case you have some problems and need to send the data to IBM again, you can do it by selecting the following in the advanced user interface of Service Agent, as shown in Figure 20 on page 27:

1. Select SAS-Connection.
2. Select Manual Performance Data.
3. Select the machine that you want to send the performance data.

Click **Send Performance Management Data to IBM** or **Performance Management Data to IBM immediately**.

Note: The difference between the two is that the not-immediate option will wait for 15 minutes (Pending Timer default value) before sending the data to IBM. This waiting is done so that we can group many items and send it together instead of calling IBM every time an event happens.

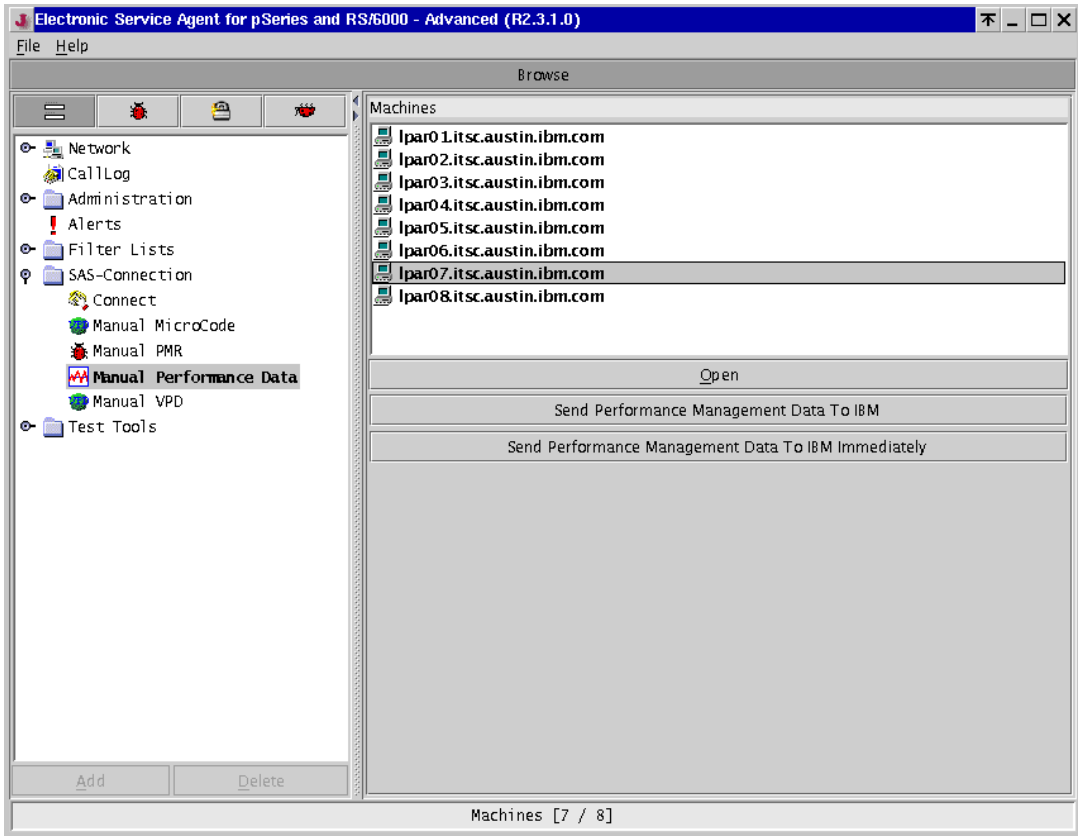

Figure 20 Advanced Service Agent Configuration - Manually send performance data to IBM

Note:

- If the data you sent has already been sent and processed by IBM SAS, the results from the newly sent data replaces the previous results.
- You are not limited to sending the previous-day data. You can send any former data to IBM by copying and renaming them to collection_type.send. This is because there is a header in each data file that identifies the date of that data.

Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this Redpaper.

- *Electronic Service Agent for pSeries and RS/6000 User's Guide*, SC38-7105, found at:

  ftp://ftp.software.ibm.com/aix/service_agent_code/svcUG.pdf

- *IBM Operational Support Service @server Performance Management "PM/AIX" Version 1.1 User and Reference Guide 2nd Edition*, found at:

  ftp://ftp.software.ibm.com/aix/products/pmaix/pmaix.guide.pdf

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