

Bull ESCALA EPC2400 & EPC2450

Power on Demand

Installing and Upgrading Processors

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Installing and Upgrading Processors

Hardware

January 2001

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About This Book

This book provides an overview of the process to install and use a system that has Power on Demand (PoD) processors available. This book also provides instructions to allow enabling of additional processors after the Power on Demand feature is operational.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

Related Publications

Bull ESCALA EPC2400 & EPC2450 Installation Guide 86 A1 10EF

Bull ESCALA EPC2400 & EPC2450 User's Guide 86 A1 18KX

Bull ESCALA EPC2400 & EPC2450 Service Guide 86 A1 19KX

Chapter 1. Introducing Power on Demand

Power on Demand is a flexibility option for your system that allows increased processor capacity when you want it. The feature can be ordered on a new system, or added to an installed system to ensure that you have additional processing power available if you need it. After the hardware is installed, additional processors are available anytime. When changes to the system configuration are made, Field Support is notified of the change by communicating through a modem and a dedicated phone line. You can increase your system's processing capacity in increments of two processors by entering a command on the operating system command line.

System Processors

The Power on Demand feature allows a new system to be ordered with extra capacity that can be enabled by the system administrator. Also, if a system that is already in use requires additional capacity, the system can be upgraded with additional capacity that can be enabled anytime.

A system must be ordered with a minimum of six processors. The following features (MIs) can be ordered with the system, or added as upgrades to allow additional processors to be installed in the system and then enabled later. The processor enabling is done by the system administrator when additional capacity is required. The service representative can also enable processors during hardware upgrade installation. The MIs are as follows:

CPUG057–0000 (EPC2400), CPUG054–0000 (EPC2450)

These Power on Demand MIs cause a processor board with six processors to be installed, but none of the processors are enabled. Up to three of these features can be installed.

CPUG058–0000 (EPC2400), CPUG055–0000 (EPC2450)

These Power on Demand MIs causes a processor board with six processors to be installed, and two of the processors are enabled.

CPUG059–0000 (EPC2400), CPUG056–0000 (EPC2450)

These Power on Demand MIs cause a processor board with six processors to be installed, and four of the processors are enabled.

CPUG042–0000 (EPC2400), CPUG053–0000 (EPC2450)

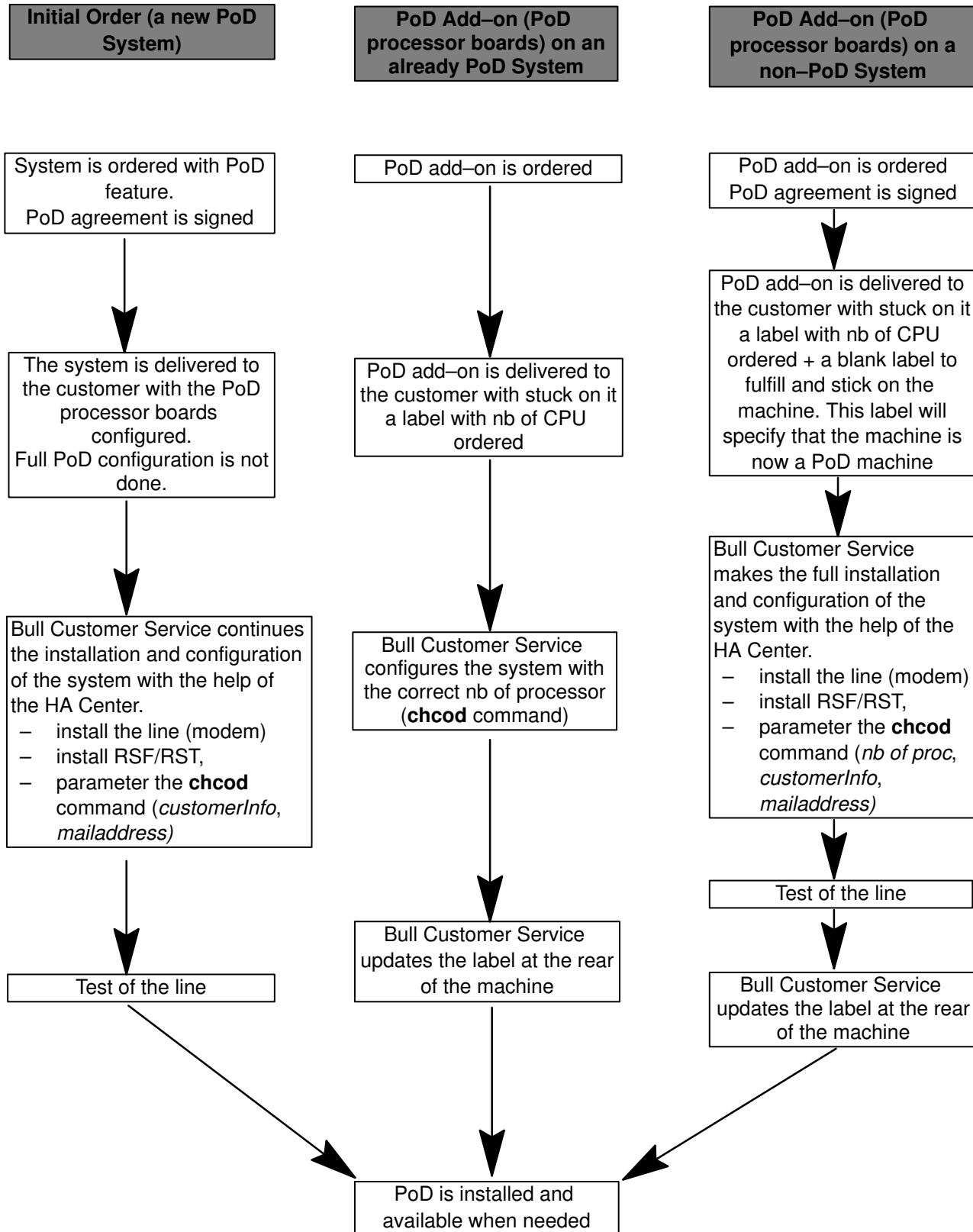
These MIs cause a processor board with six processors to be installed, with all six of the processors enabled. If a system that has any of the above feature codes is upgraded to use all six processors of a processor board, then the system records are updated to show one of these MIs.

After the system is running with any of the above features installed, if the system administrator enables additional processors on a processor board, the records for the system are changed to show that the appropriate nb of processor is in use.

As processors are enabled by the system administrator, the feature records for the system are automatically updated in the AIX error logs to reflect the number of processors in use. For system records purposes, the error logs record changes to the processor configuration and the changes are sent, to an administrative representative.

Power on Demand Process Flow

The flow chart below provides an overview of the process that is required to enable Power on Demand on Systems that need reserve capacity.



Chapter 2. Installing a System with Power on Demand

If you are installing a system that was ordered with a processor Power on Demand feature, follow the instructions in this chapter to install and verify the Power on Demand feature. If the Power on Demand feature is already installed in your system and you want to upgrade to use additional processors, go to Chapter 3, Enabling Power on Demand Processors.

The following steps are required to install a system that has the processor Power on Demand feature installed:

1. Verifying that the Power on Demand prerequisites are installed on the system.
2. Recording the Power on Demand settings.
3. Shutting down, rebooting the system, and testing all the processors that are installed in the system.
4. Configuring the processors on the system using the **chcod** command.
5. Shutting down and rebooting the system.
6. Verifying the configuration.

Continue with Prerequisites.

Prerequisites

The following prerequisites are required before installing or configuring a system that uses the processor Power on Demand feature:

- AIX version 4.3.3.25 + PTF or later (update the system if necessary)
- RSF/RST is installed on the system and communicates with the HA Center through a dedicated phone line. RSF/RST are installed by the service representative typically during system installation.
- A processor Power on Demand feature is installed in the system.

Continue with “**Verifying Prerequisites**” on next page.

Verifying Prerequisites

The information in this section helps to verify that all the prerequisites are in place to enable the Power on Demand feature.

Verifying Power on Demand Enabling Software

To determine if the Recommended Maintenance Package is installed, and if the AIX software for Power on Demand has been updated, perform this procedure.

Note: The system must be installed with AIX 4.3.3.25.

1. Log in to the system as root user or a user with system group privileges.
2. Type the following:

```
lslpp -l bos.rte.methods bos.diag.rte devices.chrp.base.rte
```

The output on the screen should show

Fileset	Minimum Level
bos.rte.methods	4.3.3.25
bos.diag.rte	4.3.3.25
devices.chrp.base.rte	4.3.3.25

If not, have the customer install the CD # 76723874.

If yes, continue with next step.

3. For Power on Demand, the fileset `devices.chrp.base.rte` must be at 4.3.3.27 minimum level. To update it at this level, you must install the PTF 473660.

Note: This PTF is available on the CD # 76723883 delivered with PoD features. To install, use standard SMIT procedure (`smit update_all`).

4. After this PTF installed, continue with “**Verifying System Communication Capability**” on next page.

Verifying System Communication Capabilities

The system **must** have RSF/RST installed and configure to call out on a dedicated phone line. The service representative is responsible for ensuring that RSF/RST is operational.

Process

The account manager get from his customer signed PoD agreement and informs Local Customer Services. Local Customer Service contacts the Echirrolles HA Center (33 (0)4 76 29 75 55)

The person responsible (in the HA Center) of the new customers sends (by email from the `srv.has@bull.net` base) the **RST** fileset and a document (.doc) – PoD Customer Profile – to fulfill with the customer.

The fulfilled PoD Customer Profile document will be resent to the `srv.has@bull.net`.

The HA Center determines the *customerInfo* string regarding the PoD Customer Profile and sends it back to the Local Customer Service.

This *customerInfo* string includes a maximum of 255 characters that will be part of the email sent to mailers in case of CPU configuration change on the Customer system. The syntax of this string is:

<ID Pays>/<ID Region>/<name of the city>/< name of the customer>/<name+tel of the local CDT >/<name+tel Nb of the local Account Manager>.

Example: “ `NL//amsterdam/NCM/zanting1234567/zuurveld7654321` ” or
“ `FR/Nord/lille/CA59/cramet1234565/toto65433212` ”

Local Customer Service will be assisted for the RSF and RST configuration at customer site.

RSF will be configured to send autocalls on the Scarface station of the HA Center.

- Site ID= “**POD_**xxxx” where xxxx identify the system (warning prefix “**POD_**” is important)
- Telephone Number: 33 (0)476404227 / 33 (0)476404230
- Without diagnostic message
- HARD Autocall only

Use the RSF User’s Guide for help.

RST: Depending on the service level, only the metrologies allowing the detection of the CPU number modification are useful.

Update the **collect.cfg** file as followed (put # before all lines except **bold ones**– no change for the others)

```
@(#) $Id: collect.sample,v 1.4.2.3 2000/02/11 14:58:30 rst Exp $
#
# Copyright (C) Bull S.A. 2000
# latest
#
# rstd collect configuration file
# location : /usr/rst/collect.cfg

random 22:00 .. 6:00      : send_all_cds

#at boot                : availability.get_infos
#each 1 mn              : availability.write_alive_file
```

```

at date_change : date
at cds open : date
at cds open : header
at cds close : date

#each 10 mn : metrology_cpu.time
#each 10 mn : metrology_memory.get
#each 10 mn : metrology_io_disk.get
#at 21:30 : availability.admin_answer
#at 21:29 : hw_lscfg changed
#at 21:30 : hw_conf_cpu delta
#at 21:31 : hw_conf_filesystems delta
at 21:32 : hw_conf_io delta
#at 21:33 : hw_conf_lv delta
#at 21:34 : hw_conf_lv_disk delta 2
#at 21:35 : hw_conf_memory_size delta
#at 21:36 : hw_conf_network delta
#at 21:37 : hw_conf_pv delta
#at 21:38 : hw_conf_swap delta
#at 21:39 : hw_conf_vg delta
#at 21:40 : metrology_errlog
#at 21:41 : sw_conf_lpp delta

#at 21:50 : bclwapi_app delta
#at 21:51 : bclwapi_info delta
#at 21:52 : bclwapi_listrsc delta
#at 21:53 : bclwapi_netconf delta
#at 21:54 : bclwapi_node delta
#at 21:55 : bclwapi_svg delta

#each 5 mn : cluster_mirror
#at 03:03 : cluster_reinit

```

The Local Customer Service (ISC) with the help of the HA Center must be sure that the RST metrologies can be sent.

Based on Customer Profile information the machine is taken into account by the HA Center.

Installing Power on Demand

Use the following procedure when installing a system with the Power on Demand feature hardware. This procedure configures the Power on Demand feature and allows the system to update the system records.

1. The system and all new hardware should be installed at this time.

If the Power on Demand processor feature is not installed, the service representative should install the processor feature at this time. Refer to the instructions that were shipped with the feature for installation instructions.

2. Log in to the system as root user or a user with system group privileges.
3. Type the following command:

```
chcod
```

Record the displayed information below:

```
Current MailAddress _____Reserved_____
```

```
Current CustInfo _____
```

```
Current Model and System ID = IBM, 7017-_____IBM, _____
```

```
Current number of authorized proc(s) out of (xx_____) installed on system =  
(yy_____)
```

Where (xx) is the number processors installed in the system, (yy) is the number of Power on Demand enabled processors.

If (yy) is equal to zero, then Power on Demand is not enabled.

If (yy) is equal to 6 or higher, then Power on Demand is enabled.

Note: Power on Demand can only be enabled when optional processors are installed.

4. To enable testing of all the installed processors, disable Power on Demand by setting the (number _of _ processors) yy = 0:

```
chcod -r proc -n 0
```

5. Shutdown and reboot the system:

```
shutdown -Fr
```

6. At the command line, type the following command to verify the installed processors.

```
bindprocessor -q
```

Information about installed processor boards is displayed

- If 2 processor boards are installed, the available processors are 0 – 11.
- If 3 processor boards are installed, the available processors are 0 – 17.
- If 4 processor boards are installed, the available processors are 0 – 23.

If the number of installed processors is not correct, use the normal maintenance package procedures to correct any problems.

7. Test the system, at the command line, type the following command:

```
diag
```

8. Select Advanced Diagnostics

9. Select System Verification mode on sysplanar0 and all processors. Use the normal maintenance package procedures to correct any problems.

10. When the system is ready to return to normal operations, enable the Power on Demand feature:

- a. Log in to the system as root user or a user with system group privileges.
- b. At the command line, type the following command:

```
chcod -c "CustomerInfo"
```

Note: `CustomerInfo` is determined by the HA Center regarding the informations from the PoD customer profile.

For example:

```
chcod -c Jane_Doe-CustomerNumber_9999999-Phone_(333)_444-5555
```

Note: The customer information cannot contain any blank spaces.

To verify that the information was entered correctly, type the following command:

```
chcod
```

The following information is displayed:

```
Current MailAddress _____Reserved_____
```

```
Current CustInfo Jane_Doe-CustomerNumber_9999999-Phone_(333)_444-5555
```

```
Current Model and System ID = IBM, 7017-XXX_IBM,XXXXXXX
```

```
Current number of authorized proc(s) out of (xx_____) installed on system  
= (0)
```

- c. At the command line, type the following command:

```
chcod -r proc -n total_number_of_processors
```

Where the total number of processors is equal to the value of `yy` recorded in step 3.

11. At the command line, type the following command to verify the error log:

```
errpt -a | pg
```

The following displays:

```
LABEL :          COD_CHANGED
IDENTIFIER :     nnnnnAnnB
Date/Time :     DDD  MM YY  TIME
Machine ID :    nnnnnnnnnnnnnnn
Note ID :       abcdefXXX
Class :         X
Type:           INFO
Resource Name:  Cod Notify
Description
CHANGING CAPACITY UPGRADE ON DEMAND
Probable Causes
User Causes
USER RAN Chcod COMMAND
Recommended Action
NONE
```



```
Detail Data
SYSTEM MODEL
IBM, 7017-XXX_IBM, XXXXXXXXX
RESOURCE CHANGE
```

```
proc
```

```
RESOURCE INSTALLED
```

```
.....
```

(The number is equal to total number installed processors (XX), this value can be 12, 18, or 24)

```
OLD VALUE
```

```
0
```

```
NEW VALUE
```

```
.....
```

(This value must = yy, recorded in step 3)

12. Shutdown and reboot the system:

```
shutdown -Fr
```

13. Log in to the system as root user or a user with system group privileges.

14. At the command line, type the following command:

```
chcod
```

The following information is displayed:

```
Current MailAddress _____Reserved_____
```

```
Current CustInfo      Jane_Doe-CustomerNumber_9999999-Phone_(333)_444-5555
```

```
Current Model and System ID = IBM, 7017-XXX_IBM,XXXXXXX
```

```
Current number of authorized proc(s) out of (xx_____) installed on system =
(yy_____)
```

The values of (XX) and (YY) should match the values recorded in step 3.

15. The processor Power on Demand feature is enabled and ready to be used. If you want to enable additional processors, continue with Chapter 3, Enabling Power on Demand Processors.

Chapter 3. Enabling Power on Demand Processors

This section provides instructions to use the **chcod** command to enable the appropriate processors as they are needed. See Chapter 4, Using the chcod Command for the command syntax.

If you are upgrading your system to use more available processors, go to Using the Power on Demand Feature.

Using the Power on Demand Feature

If your system has a Power on Demand processor board feature, use this procedure to configure the additional processors for use:

1. Log in to the system as root user or as a member of the system group.
2. At the command line, type the following command:

```
chcod
```

The screen displays information about the installed and authorized processors.

```
Current MailAddress _____Reserved_____
```

```
Current CustInfo      Jane_Doe-CustomerNumber_9999999-Phone_(333)_444-5555
```

```
Current Model and System ID = IBM, 7017-XXX_IBM,XXXXXXX
```

```
Current number of authorized proc(s) out of (xx____) installed on system =  
(yy____)
```

The values of (xx) and (yy) are the current values for the number of processors installed (xx) and the number of authorized processors (yy). Record the information at this time. The following tables show how many of each feature code must be installed on a system to enable each level of processors available. Use the following tables and the information about the current configuration to determine the number of processors to enable in **“Adding Processor Capacity”** on page 3-3.

Note: If CPUG057-0000 (450 MHz) or CPUG054-0000 (600 MHz) processors were ordered for the system, a processor board with zero processors enabled is installed. A maximum of three of these feature codes can be installed.

Table 1. MI's for systems with 450 MHz Processors are shown in the following table.

Total Number of 450 MHz Processors Enabled on System	CPUG041-0000 6-Way	CPUG042-0000 6-Way	CPUG058-0000 2-Way PoD	CPUG059-0000 4-Way PoD	CPUG057-0000 0-Way PoD Possible
6-Processors	1				3
8-Processors	1		1		2
10-Processors	1			1	2
12-Processors	1	1			2
14-Processors	1	1	1		1
16-Processors	1	1		1	1
18-Processors	1	2			1
20-Processors	1	2	1		0
22-Processors	1	2		1	0
24-Processors	1	3			0

Table 2. MI's for systems with 600 MHz Processors are shown in the following table.

Total Number of 600 MHz Processors Enabled on System	CPUG052-0000 6-Way	CPUG053-0000 6-Way	CPUG055-0000 2-Way PoD	CPUG056-0000 4-Way PoD	CPUG054-0000 0-Way PoD Possible
6-Processors	1				3
8-Processors	1		1		2
10-Processors	1			1	2
12-Processors	1	1			2
14-Processors	1	1	1		1
16-Processors	1	1		1	1
18-Processors	1	2			1
20-Processors	1	2	1		0
22-Processors	1	2		1	0
24-Processors	1	3			0

- Continue with **“Adding Processor Capacity”** on next page to enable additional processors that you need.

Adding Processor Capacity

If you want to enable additional processors in the configuration of a system that has the Power on Demand feature installed and running, use this procedure.

1. Log in to the system as root user or a user with system group privileges.
2. At the command line, type the following command:

```
chcod
```

The following information is displayed:

```
Current MailAddress _____Reserved_____
```

```
Current CustInfo
```

```
Jane_Doe-CustomerNumber_9999999-Phone_(333)_444-5555
```

```
Current Model and System ID = IBM, 7017-XXX_IBM,XXXXXXX
```

```
Current number of authorized proc(s) out of (xx_____) installed  
on system = (yy_____)
```

The values of (xx) and (yy) are the current values for the number of processors installed (xx) and the number of authorized processors (yy).

3. To increase the number of authorized processors, At the command line, type the following command:

```
chcod -r proc -n total_number_of_processors
```

An example of the above command is as follows:

```
chcod -r proc -n 10
```

In the example above, the value for `-n 10` is equal to the total number of processors that you want to have authorized (yy) by entering this command. To upgrade your system to use more of the installed processors, increase the value of yy in increments of 2. In this case, 10 would represent 6 base processors plus 4 additional Power on Demand processors.

When the system performs the command to enable additional processors, information about the new system configuration is added to the error log and sent to the service support center.

4. Shut down and reboot the system to enable the additional processors:

```
shutdown -Fr
```

5. Log in to the system as root user or a user with system group privileges.

6. At the command line, type the following command:

```
chcod
```

The following information is displayed:

```
Current MailAddress _____Reserved_____
```

```
Current CustInfo
```

```
Jane_Doe-CustomerNumber_9999999-Phone_(333)_444-5555
```

```
Current Model and System ID = IBM, 7017-XXX_IBM,XXXXXXXX
```

```
Current number of authorized proc(s) out of (xx_____) installed  
on system = (yy_____)
```

The values of (yy) should match the value you entered in 3.

For details about the flag variables entered in the command above, see Chapter 4, **“Using the chcod Command”**.

Chapter 4. Using the chcod Command

Purpose

Manages Power on Demand

Syntax

```
chcod [-r ResourceType -n NbrResource] [-c CustomerInfo] [-h]
```

Description

The **chcod** command manages Power on Demand. Power on Demand allows configuration of more *ResourceType*, in this instance processors, on the system than were initially configured. The additional resources may be enabled if they are available, and if the system supports Power on Demand for the specified *ResourceType*. Only one *ResourceType* can be managed at a time. The change in the number of *ResourceType* takes effect after the next system boot.

Power on Demand management also includes displaying the current number of *ResourceType* that have Power on Demand support, monitoring the number of *ResourceType* on the system, and notifying appropriately. Notification occurs when *NbrResources* changes and also on a periodic basis.

Notification in the form of error logging is sent to the service support center. An entry is made in the system error log whenever the specified *ResourceType* changes and also on a periodic basis. The *CustomerInfo* text is included in the error log.

Flags

- | | |
|-------------------------------|--|
| -c <i>CustomerInfo</i> | Specifies the text string to include in the error log. <i>CustomerInfo</i> may not be more than 255 characters. Blank spaces may not be included in the string. After <i>CustomerInfo</i> has been specified, subsequent uses of the chcod command do not have to specify the -c flag, but you do have the option of changing it. <i>CustomerInfo</i> can consist of alphanumeric characters and any of "." (decimal point), "," (comma), "-" (hyphen), "(" (open parenthesis), or ")" (close parenthesis). This flag is optional. |
| -h | Displays the usage message. This flag is optional. |
| -n <i>NbrResources</i> | Specifies the number of <i>ResourceType</i> to be authorized on the system. The value for <i>NbrResources</i> should be entered in increments of 2. The number that is entered represents the total number of processors for the system. If you are adding the first additional processor board, the number should be 6, 8, 10, or 12. Each time a processor board is added, the total number of desired processors is entered. If the number is 0, capacity on demand will be disabled for the specified <i>ResourceType</i> . This flag is optional. If -n is specified, then -r must also be specified. |

-r *ResourceType* Specifies the *ResourceType*, `proc` for processors, to be enabled and monitored on the system. The system must support Power on Demand for *ResourceType*. If **-r** is specified, then **-n** must also be specified.

The default for the **chcod** command (with no flags) displays the current value of *CustomerInfo*, a reserved field named *MailAddr*, the system's model name and serial number, and the current values for any *ResourceType*.

Chapter 5. System Power on Demand Recovery

Because Power on Demand data is stored in system hardware, if a system failure occurs where certain hardware must be replaced, the Power on Demand data may be lost. Use the procedures in this chapter to ensure that the Power on Demand data is restored (if necessary) after a service action.

Determining Current Configuration

Before performing any other actions, use this procedure to determine the system configuration:

1. Log in to the system as root user or a user with system group privileges.
2. At the command line, type the following command:

```
chcod
```
3. The configured Power on Demand features are displayed. Make a note of the current configuration.

Recovery Procedures

Perform any required service actions to repair the system. After the service action is complete, use the following procedure to check the Power on Demand information and if necessary, return the system to its original configuration.

1. Log in to the system as root user or a user with system group privileges.
2. At the command line, type the following command:

```
chcod
```

3. The configured Power on Demand features are displayed. Compare the current configuration with the configuration you recorded earlier.

If the system configurations do not match, use the procedures beginning with Chapter 2, “**Installing a System with Power on Demand**” to reinstall the Power on Demand feature and reconfigure the hardware as appropriate.

System Verification

Refer to the system user or service documentation and perform the system verification procedures.

Power on Demand Diagnostics

Power on Demand means delivering to a customer more hardware capacity in a system than is initially enabled, and providing the means for enabling the remainder of the capacity at a later time.

Power on Demand is used to increase the number of processors when needed. Unauthorized devices cannot be tested by AIX Diagnostics, nor do they appear when running the **lscfg** command on the NEW RESOURCE menu, or any AIX Diagnostic task. For example, a system may have 12 processors originally installed, but only 10 of the 12 have been authorized for use. Diagnostics will only show the 10 authorized processors in the diagnostic test list or NEW RESOURCE list. The 2 unused processors cannot be tested by Standalone and Online Diagnostics, and will not display in the diagnostic test list.

However, they are tested by the power-on self-test (POST), and if a processor has failed, the failure is:

- Logged in the POST error log
- Logged in the AIX error log
- Reported at boot time by Automatic Error Log Analysis
- Reported if the sysplanar0 diagnostics are run

System Management Services and Service Processor Menus are not affected by Power on Demand and all processors are tested at boot time. If one processor failed at IPL, Power on Demand will still enable the number of authorized processors, having the remaining good processors marked as available for future capacity and the failed processors marked as failed. The customer is able to continue to run the system without degradation. However, in such a case, the failing processor card should be replaced at the customer's convenience to allow the customer to add capacity as needed.

The **chcod** command is used to manage Power on Demand resources. It is also used to determine the number of resources that are authorized and the total number of resources installed.

Testing the System in the Power on Demand Environment

In order to test all the processors installed in a machine that has a Power on Demand feature installed, you must use the following procedure to allow the diagnostics to test each processor.

1. Log in to the system as root user or a user with system group privileges.
2. Type the following command to determine if Power on Demand is currently enabled:

```
chcod
```

Record the displayed information below:

```
Current MailAddress _____Reserved_____
```

```
Current CustInfo _____
```

```
Current Model and System ID = IBM, 7017-_____IBM, _____
```

```
Current number of authorized proc(s) out of (xx_____) installed  
on system = (yy_____)
```

Where (xx) is the number processors installed in the system, (yy) is the number of Power on Demand enabled processors.

If (yy) is equal to zero, then Power on Demand is not enabled.

If (yy) is equal to 6 or higher, then Power on Demand is enabled.

Note: Power on Demand can only be enabled when optional processors are installed.

3. To enable testing of all the installed processors, disable Power on Demand by setting the (number_of_processors) yy = 0:

```
chcod -r proc -n 0
```

4. Shutdown and reboot the system:

```
shutdown -Fr
```

5. At the command line, type the following command to verify the installed processors.

```
bindprocessor -q
```

- If 2 processor cards are installed, the available processors are 0 – 11.
- If 3 processor cards are installed, the available processors are 0 – 17.
- If 4 processor cards are installed, the available processors are 0 – 23.

If the number of installed processors is not correct, use the normal maintenance package procedures to correct any problems.

6. Test the system, at the command line, type the following command:

```
diag
```

7. Select Advanced Diagnostics

8. Select System Verification mode on sysplanar0 and all processors. Use the normal maintenance package procedures to correct any problems.

9. When the system is ready to return to normal operations, reset the Power on Demand feature:

- a. Log in to the system as root user or a user with system group privileges.

- b. At the command line, type the following command:

```
chcod -r proc -n total_number_of_processors
```

Where the total number of processors is equal to the value of yy recorded in step 2.

10. Shutdown and reboot the system:

```
shutdown -Fr
```

11. Allow the system to do a normal boot.

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