

Intel® Direct Platform Control Console User's Guide

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Using Direct Platform Control

Direct Platform Control (DPC) Console provides emergency management of servers remotely. DPC Console provides capabilities to power on or power off a server remotely, or help diagnose a problem on a server. DPC Console is independent of the Operating System installed on the server. DPC Console provides detailed information about the hardware components on the server.

For information about user interface features, see the online help system. Click the  help icon on the toolbar, then click the control or feature you need help with.

When To Use Direct Platform Control

Direct Platform Control (DPC) Console can be used to verify the state of the server or diagnose a problem in the state of the server hardware, even when the server is powered off. The ability to access hardware inventory information is helpful in accurately identifying replacement parts, if any are needed.

DPC Console provides the capabilities to:

- Reboot a server
- Restart a server that's powered off
- View the System Event Log (SEL) for information about recent server activities, such as from processors or fans
- View Sensor Data Records (SDRs) for information about sensor characteristics
- Review Field Replaceable Unit (FRU) inventories of the hardware components on the server
- Run Remote Diagnostics
- Reboot to the service partition to get access to run DOS-based programs on the server

Setting Up a System For Direct Platform Control

Communication

The DPC Console supports all COM ports on the client system, modems listed on the Microsoft[†] Windows NT[†] hardware compatibility list, and a direct RS 232 serial connection.

Server Setup

To use DPC Console, you must configure the server BIOS settings. These settings are in the BIOS Server Menu, under the System Management Submenu and the Console Redirect Submenu. You can access the BIOS settings by pressing F2 while the server is booting. The sections below focus on the settings that must be configured to use DPC Console and the server's Emergency Management Port (EMP).

Please refer to the managed server's Product Guide for detailed descriptions.

Configuring the System Management Submenu

All EMP-related settings are configured from Main>System Management. You can modify the following settings, but it is highly recommended not to change the remaining settings in this submenu.

EMP Password: You will be prompted for this password before accessing server control features. If no EMP password is specified, anyone can access the server and have access to the capabilities provided by DPC Console.

In the EMP password area of the System Management Submenu, type in a password of up to eight alphanumeric characters. If the system beeps, the password was not accepted; you must enter a different password.

EMP Access Modes: In the Pre-boot only mode, DPC Console functions are available only while the server is powered off. In the Always Active mode, DPC Console functions are available all the time, irrespective of the state of the server. In the Disabled mode, DPC Console functions are not available. In the Restricted mode, DPC Console cannot be used for power down and reset of the server. Restricted mode is available only with Pre-Boot Only or Always Active modes.

EMP Restricted Mode Access: When the EMP Restricted mode is enabled, DPC Console's server control options for power off and reset are NOT available, indicating restricted access. When this mode is disabled, all of DPC Console's server control options are available.

EMP Direct Connect/Modem Mode: Select Direct Connect if a null modem serial cable (RS 232) directly connects the server's COM2 port to any port on the DPC Console client. If they are connected via a modem, select Modem Mode.

Configuring the Console Redirection Submenu

To use the DPC Console, you must set the following options exactly as noted.

On the **Boot** menu set the **Boot Time Diagnostic Screen** option to enabled. This enables console redirection. It may require a system reboot to enable this feature and allow console redirection to set up properly.

COM Port Address: Select 2F8. This is the COM2 port that the Emergency Management Port (EMP) must use. The IRQ setting is automatically assigned with the correct number based on the COM port address choice.

Baud Rate: Select 19.2k.

Flow Control: Choose CTS/RTS + CD.

Configuring Server Serial Communications

The DPC Console requires that the server's COM2 port be connected to an external modem or directly connected to a serial (RS 232) cable.

For modem support, the server must use a Hayes-compatible 28.8 or 56.7 kbps modem found on Microsoft's Windows NT hardware compatibility list. The modem must be on the NT hardware compatibility list provided by Microsoft. For IPMI 0.9 compatible servers the modem must be set to auto-answer mode. For IPMI 1.0 compatible servers the modem must not be set for auto-answer mode.

Modems and Cables

Configuring Direct Connections

A null modem serial (RS 232) cable is needed. Connect one end of the cable into the COM2 port of the server and the other into any port on the client workstation.

Configuring Modem Connections

On the client, the DPC Console uses the Windows application program interface (API) to determine if a modem is connected and available. The DPC Console does not configure the modem; it should be pre-configured through Windows. However, the modem must be manually set to use a maximum Baud rate of 19,200.

Creating a Service Partition

The service partition needs to be created on the server prior to putting the server into service. See the Service Partition section of the accompanying *Installation Guide for the Intel Server Control* for details.

Starting Direct Platform Control Console

Click the DPC Console icon in the manager's tool pane to start the DPC Console application on the client workstation.

How the Direct Platform Control Console Works

DPC Console shares the server's COM2 port (the Emergency Management Port) with the server system. When DPC Console has control of the port, the port operates in command state. When the server system has control of it, the port operates in redirect state. When connecting to a server, DPC Console checks to determine the current COM2 port state.

- **Command Mode**—the default COM2 state. In this state, DPC Console communicates with the server's firmware, allowing you to remotely reset or power the server up or down. You can also view the server's SEL, FRU, or SDR information.
- **Redirect Mode**—DPC Console serves as a PC ANSI terminal window for BIOS console redirection. Commands typed in this terminal window are transmitted through BIOS to the server's console, and text displayed on the server console is displayed on the DPC Console's terminal window. With the port in this state, you can remotely view boot messages, access BIOS setup, and run DOS text mode applications.

- **PPP Mode**—a PPP connection is established when the server is booted into the service partition. You can run the DOS-based utilities or diagnostics on the service partition in this mode.
- **PPP Redirect**—the PPP Redirect mode, which uses a TCP/IP stack for data transfer, is started whenever a DOS shell or text-based application is started in the PPP Mode. Note that only one DOS-based program may be run at one time.

DPC Console features available

Availability of the various DPC Console features is determined by two things: the EMP access mode selected during configuration in the System Management Submenu of the BIOS Server Menu, and whether the server's COM2 port is configured for console redirect in BIOS. The three EMP access modes are disabled, pre-boot, and always active.

Using COM2 as your EMP device disables COM2 settings such as RAS or PPTP.

EMP Access Modes (Server Configured for Console Redirect)

| Mode | Server is powered off | During POST | After OS boots |
|---------------|---------------------------------------|--------------------|------------------------|
| Disabled | Redirect window appears, but is blank | Redirect window | Redirect window |
| Pre-boot | EMP commands available | Redirect window* | Redirect window |
| Always Active | EMP commands available | Redirect window* | EMP commands available |

* You can modify the operation mode by selections in the POST reset and POST power-up dialogs. These are server control dialogs available with the DPC Console.

EMP Access Modes (Server NOT configured for console redirect)

| Mode | Server is powered off | During POST | After OS boots |
|---------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Disabled | Redirect window appears, but is blank | Redirect window appears, but is blank | Redirect window appears, but is blank |
| Pre-boot | EMP commands available | EMP commands available | Redirect window appears, but is blank |
| Always Active | EMP commands available | EMP commands available | EMP commands available |

Connecting to a Server with Direct Platform Control Console



Select [Re]Connect from the Connect Menu or the  icon on the toolbar. Select a server from the drop down list. If the client workstation is already connected to a server, a warning message tells you that the existing connection will be terminated if you continue to initiate the new connection. You are prompted to enter the EMP password whenever a connection is attempted.

Options available in the dialog are:

- **Line Selection:** Select between direct or dial-up modem connection to the server.
 - **Dial-up:** Connects to a selected server with a modem. Server to be managed must already have an entry in the DPC Console phone book with the correct phone number.
 - **Direct connect (Serial Line):** Connects to the selected server directly using a null modem serial cable (RS 232). This selection does not support service partition features.
- **Server:** Displays a list of available servers in a dropdown list. You can select or enter a server name for an existing server; a server must be selected when the line selection is Dial-up.

- **Serial Line:** Must be filled out when the line selection is set to Direct Connect (serial line).
 - **Baud Rate:** Specifies baud rate; must be 19200 to connect properly.
 - **COM Port No.:** Sets the client workstation's COM port number where the null modem serial cable is connected.
- **Connect:** Initiates a connection to the server. When you click this button, you are prompted for the EMP password.
- **Cancel:** Exit the Connect dialog with no action taken.
- **Help:** Display dialog-level help information.

Managing a Server with Direct Platform Control Console

Power On/Off the Server Remotely

Selecting **Power On/Off** from the Action Menu or the  icon on the toolbar allows you to power the server on or off, with POST power-up options.

Options available in the dialog are:

- **Power ON:** Powers on the server.
- **Power OFF:** Powers off the server. This option is not allowed if the server is configured in restricted mode for EMP operations.
- **Post-power-up option:** Sets the server mode EMP active or BIOS redirection. The setting is effective at the next power-up. The default selection is EMP active.
- **OK:** Initiates the specified action.
- **Cancel:** Exits the dialog with no action taken.
- **Help:** Displays dialog-level help information.

Resetting a Server Remotely

Selecting Reset from the Action Menu or the  icon on the toolbar displays the Reset dialog so that you can remotely reset the server with POST reset options.

Options available in the dialog are:

- **System Reset:** Resets the server with the selected POST reset options. This operation is not allowed if the server is configured in restricted mode for EMP operations.
- **Option Group:** Sets the POST reset option that will be effective after reset. The options are EMP active or BIOS redirection. The default selection is EMP active.
- **Cancel:** Exits the dialog with no action taken.
- **OK:** Initiates the specified reset.
- **Help:** Displays dialog-level help information.

Managing the Server Phonebook

The DPC Console provides a phonebook that stores the server name, the server phone number, the IP address for the network card, and the server partition installation status. This information can be updated by adding, modifying, or deleting entries. You can open the phonebook from the



Main Menu, using the  icon on the toolbar, or by selecting the phone book from the Action menu item. A list of servers with their phone number, already known to DPC Console is displayed in the Servers list box.

Options available in the dialog are:

- **Add:** Displays the Add dialog. All fields are blank and must be filled in before clicking OK.
- **Delete:** Deletes the currently selected entry in the server list.
- **Modify:** Opens the Modify dialog with the selected entry in the server list.
- **Close:** Closes the phonebook dialog.
- **Help:** Displays dialog-level help information.

Add Phonebook entry

This dialog allows you to create a new phonebook entry.

Options available in the dialog are:

- **Server Name:** Enter the name of the server. This is the name displayed in the connection dialog. It should be unique.
- **Phone Number:** Enter the phone number to be used to connect to the server.
- **IP Address:** Enter the IP address of the above server.
- **Service Partition is installed:** Check this box if service partition has been installed on the server.
- **OK:** Saves the newly created server entry to the phonebook.
- **Cancel:** Does not save the newly created server entry to the phonebook.
- **Help:** Displays dialog-level help information.

Modify Phonebook entry

This dialog allows you to modify a phonebook entry.

Options available in the dialog are:

- **Server Name:** Modify the name of the server. This is the name displayed in the connection dialog. It should be unique.
- **Phone Number:** Modify the phone number to be used to connect to the server.

- **IP Address:** Modify the IP address of the above server.
- **Service Partition is installed:** Check this box if service partition has been installed on the server.
- **OK:** Saves the modified server entry to the phonebook.
- **Cancel:** Does not save any changes to the phonebook.
- **Help:** Displays dialog-level help information.

Using the System Event Log

The System Event Log contains a sequential record of events that occur within the managed server. These events are logged by a variety of hardware components, such as a power supply or fans.

The contents of the SEL will help you to determine the cause of server system failures.

The System Event Log (SEL) manager allows you to

- View SEL events.
- View the properties of the non-volatile storage area for SEL.
- Save SEL events to a file.
- Print the SEL events to a local printer.
- Clear SEL records from the non-volatile storage area on the server.



Click the SEL icon in the DPC Console toolbar to start the SEL Manager. If a server connection exists, you'll see a status message to tell you that the SEL records are loading. If no server is connected, then connect dialog is displayed. After a successful connection, the SEL Manager starts loading.

You can sort by any column in the SEL Manager, grouping the events to your requirements. When the column heading is clicked once, the items in the column are sorted in the ascending order. When the column heading is clicked again, the items in the column are sorted in the descending order. The width of each column can be adjusted.

Clearing the SEL is a destructive operation. Once the SEL is cleared, only new SEL events generated by the managed server can be viewed.

SEL events can be saved to a file on the client workstation.

For each entry, the SEL manager displays:

- Number of events is a count of the system events being displayed. When sorted on any other column, it is possible that this column may no longer be in sequence.
- Time stamp is the time that the SEL event was generated. This is the time on the server.
- Sensor Type and Number.
- Event Description, based on the event generated.
- Generator ID.

Use the online help to find information about specific controls and features of the SEL Manager.

Using the Sensor Data Records

The Sensor Data Records contain the information recorded from each of the configured sensors in the managed server.

The contents of the SDR file will help you to determine the cause of server system failures.

Using the SDR tool, you can

- View Sensor Data Records.
- View the properties of the non-volatile storage area for SDR.
- View SDRs from a previously stored file.
- Save SDRs to a file.

Click the SDR icon  in the DPC Console toolbar to start the SDR Manager. If a server connection exists, you'll see a status message to tell you that the sensor data records are loading. If no server is connected, then connect dialog is displayed. After a successful connection the SDR Manager starts loading.

A hierarchical tree on the left displays SDR information for the server organized by the type of SDR Record and each record. A grid on the right displays detailed information about a SDR Record, based on the selection of a record in the tree. The width of each column can be adjusted. The description of each field of the selected record is displayed at the right bottom, based on the field selected in the grid.

SDRs can be saved to a file on the client workstation, or opened from an SDR file saved earlier. SDRs can also be printed to a local printer based on the selection in the tree. Only the selected record, or all records in a selected record type, or all records can be printed.

Use the online help to find information about specific controls and features of the SDR Manager.

Using the FRU Inventory

The Field Replaceable Unit (FRU) inventory records contain information about the components that comprise the server. This includes such things as part numbers, serial numbers, manufacturer's names, version numbers, and asset tag numbers.

The contents of the FRU inventory files help you to identify components that may be of interest while troubleshooting a system failure. Using the FRU, you can

- View some FRU inventory areas on the server.
- View the properties for FRU.
- Save FRU inventory information to a file on the client workstation.

Click the FRU icon  in the DPC Console toolbar to start the FRU Manager. If a server connection exists, you'll see a status message to tell you that the FRU inventory records are loading. If no server is connected, then connect dialog is displayed. After a successful connection the FRU Manager starts loading.

The FRU Manager displays a hierarchical tree of FRU areas, and detailed inventory information for each selected area. Highlight an area in the tree to see its associated inventory information in the grid on the right. The width of each column in the grid can be adjusted. The description of each field selected in the grid is displayed in the right bottom pane. The FRU Manager displays selected information from the chassis, board, and product areas that will be helpful in identifying the components of a managed server.

FRUs can be saved to a file on the client workstation, or opened from a FRU file saved earlier. FRUs can also be printed to a local printer based on the selection in the tree.

Use the online help to find information about specific controls and features of the FRU Manager.

Using Status Menu

An informational dialog provides chassis status and EMP Configuration of the server.

Separate check boxes are displayed for each capability, if checked then the capability is supported.

Status is displayed in three groupings:

- **Server Capability:** Provides the status for SEL, SDR, FRU, Power interlock, secure mode, and intrusion mode.
- **Server Status:** Provides the status for Power On, Interlock active, Power fault, Cooling fault, Secure mode active, intrusion active, and OS running.
- **EMP Configuration:** Provides status for Restricted mode enabled and activation mode.

Using Reboot to Service Partition

The reboot to the to service partition reboots the server and disables all end user activities. This is allowed only if the service partition has been installed on the server. Once the server has rebooted to service partition, you can run diagnostics, any other DOS program already installed on the server, or a DOS shell on the server.

Use the run DOS shell to run any DOS-based command in the service partition on the server. The Edit Program list allows you to add DOS-based programs to the easy access list used from Run Program within DPC Console. Enter the full path of the DOS program to run on the server. Check the redirection box if you need to view the output from the DOS program.

Use Run Program to run any DOS-based program from the drop down list of programs.

Please note that only one DOS-based shell, program, or diagnostics can be available at any given time.

Using Remote Diagnostics

Remote diagnostics execute locally on the managed server but are controlled remotely by DPC. When needed, select Action>Boot To Service Partition, and then click Run Diagnostics.

From the command-line interface, “testmenu” starts the diagnostics locally.

Components of Remote Diagnostics

Diagnostic Wizard

The Diagnostic Wizard is a group of test utilities that display the FRUs and test modules to be tested and analyze the results of the tests. They are intended as an aid to identify failing FRU components. They display the PASS or FAIL results of the test modules, related to a FRU.

Test Selection Menu Display (runtest.exe)

Runtest is called from the testmenu.bat file and displays a list of test packages to be run. Select a test using the UP/DOWN Cursor controls and press ENTER.

The TEST.SUM file is deleted before each test package is called to assure that only the results of the current test run are reported. After each test selection is made the bios_id.out file is checked to determine if the system is appropriate for the test package. The bios_id string is compared with the BIOS_ID in the test package. If they do not match the following error message is displayed and runtest exits.

This Motherboard is not supported by this test.

Press any key to exit.