



BIG-IP[®] Platform Guide for the
Hewlett-Packard[®] ProLiant DL380
Generation 3 Server

version 4.5.10

Product Version

This manual applies to version 4.5.10 of the BIG-IP® software.

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In the following statement, "This software" refers to the Mitsumi CD-ROM driver: This software was developed by Holger Veit and Brian Moore for use with "386BSD" and similar operating systems. "Similar operating systems" includes mainly non-profit oriented systems for research and education, including but not restricted to "NetBSD," "FreeBSD," "Mach" (by CMU).

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BIG-IP Software on the Hewlett-Packard ProLiant DL380 Generation 3 Server

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Getting started

The **BIG-IP® Platform Guide for the Hewlett-Packard® ProLiant DL380 Generation 3 Server Appliance** is designed to help you install and activate the BIG-IP software on Hewlett-Packard ProLiant DL380 G3 system.

Before you begin installing the BIG-IP software, we recommend that you refer to the following parts of the BIG-IP software documentation.

- ◆ Browse the first chapter of the **BIG-IP Reference Guide**; read the general information about the BIG-IP product family, and familiarize yourself with the basics of the configuration tool.
- ◆ Look through the **BIG-IP Solutions Guide** to find the load balancing solution that most closely matches your load balancing needs.
- ◆ Briefly review the basic configuration tasks, and note the few pieces of network information that you should gather, such as IP addresses and host names.

All of the BIG-IP documentation is available for download from the BIG-IP system CD. To access the documentation on the CD, place the disk in a computer with a Windows® operating system that supports **autorun**. The operating system opens a browser page that lists all of the documents and resources available from the CD.

Once you have looked through the BIG-IP documentation and have some basic familiarity with the BIG-IP software, you can begin to install the BIG-IP software on your Hewlett-Packard ProLiant DL380 G3 system. The following section gives you a brief overview of the tasks you have to complete.

Task overview

To get the BIG-IP software up and running on the Hewlett-Packard ProLiant DL380 G3 system, you complete six basic tasks:

- ◆ Optimize your ProLiant DL380 G3 system hardware for the BIG-IP software.
(See *Installing the hardware*, on page 1-2.)
- ◆ Install the BIG-IP software on the ProLiant DL380 G3 system.
(See *Installing the BIG-IP software*, on page 1-5.)
- ◆ Activate the BIG-IP software license.
(See *Activating the license*, on page 1-9.)
- ◆ Run the Setup utility.
(See *Using the Setup utility*, on page 1-12.)
- ◆ Set up the BIG-IP software configuration.
(See *Setting up a basic BIG-IP software configuration*, on page 1-13.)
- ◆ Back up your configuration data and license information.
(See *Performing backup and recovery*, on page 1-14.)

What is BIG-IP software?

The BIG-IP software delivers an easy-to-use solution for deploying and managing local area traffic. The software provides a scalable and secure platform where you can build and deploy web-based applications for intranet, extranet, or Internet environments. The BIG-IP software network solutions include:

- Cost-effective, intelligent load balancing for managing user traffic to network servers, and scaling multiple firewalls while providing web site reliability
- Increased cache server performance and scalability through intelligent cache load balancing, object management, and security for cache server farms
- Increased network efficiency through competent management of Secure Sockets Layer (SSL) encryption and decryption for secure online transactions, centralized certificate management, and reduced burden of SSL traffic from web servers

To see an example of the most common network application of the BIG-IP system, see *Setting up a basic BIG-IP software configuration*, on page 1-13.

Installing the hardware

For detailed hardware installation and configuration information, refer to the Hewlett-Packard ProLiant DL380 G3 system documentation.

Before you install the hardware, you should review, in the following sections, the general information on how to optimize your server hardware for the BIG-IP software.

Power management

The BIG-IP software provides support for the graceful shutdown of the system.

- For graceful shut down of the ProLiant DL380 G3 system, press the power button on the front of the system.
- From the command line utility, you can use the **poweroff** command to gracefully shutdown and turn off power to the system. You must use the power button on the front panel, or the iLO Virtual Power Button to turn the system back on.

Disabling hyper-threading on the ProLiant DL380 G3 system

If you are running the BIG-IP software on the Hewlett-Packard ProLiant DL380 G3 system, you must disable hyper-threading.

To disable hyper-threading

1. Open a remote console.
2. Reboot the server.
3. During the reboot process, at the Bios Option prompt, press F9.
4. Scroll down to **Advanced Options**, and press Enter.
5. Scroll down to **Processor Hyper-Threading**, and press Enter.
6. Press the down arrow key to select **Disabled**, and press Enter.
7. Press the Escape key twice.
8. Press F10 to confirm the Exit Utility.

Connecting the fail-over cable for hardware-based redundant systems

If you purchased a hardware-based redundant system, you also received one fail-over cable to connect the two HP DL380 G3 units together (network-based redundant systems do not require a fail-over cable).

If you have a hardware-based redundant system, connect the fail-over cable to the serial port on each unit.

WARNING

The fail-over cable is not the same as a serial cable.

Hardware changes or failures

Once you install and activate the BIG-IP software on a ProLiant DL380 G3 system, making any hardware changes on the server may require the assistance of F5 Networks® Technical Support.

Reviewing basic configurations

Figure 1.1 shows the most basic kind of BIG-IP system configuration. In it, the BIG-IP system sits between a router and an array of content servers, and load balances inbound Internet traffic across those servers. (For an introduction to more complex solutions, including load balancing of outbound traffic across firewalls and routers, refer to the *BIG-IP Solutions Guide*, Chapter 1, *BIG-IP System Overview*.)

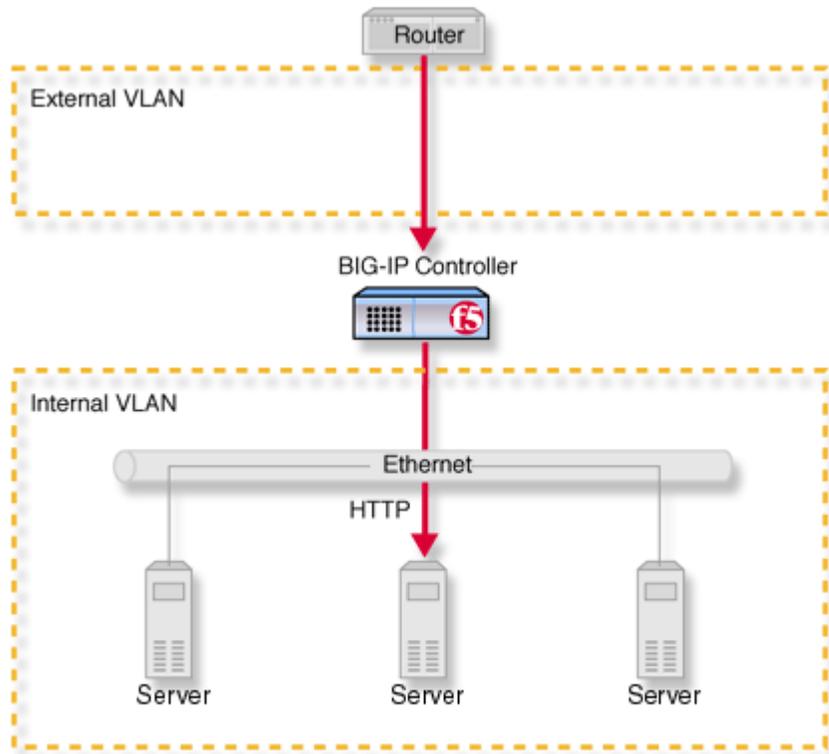


Figure 1.1 Basic BIG-IP system configuration

Installing the BIG-IP software

Once you have properly installed the hardware, you are ready to install the BIG-IP software. You can install the software one of two ways. You can install the software directly from the CD-ROM drive on the ProLiant DL380 platform or you can use the network boot procedure known as a Pre-boot Execution Environment (PXE).

Installing the BIG-IP software from the CD-ROM drive

To install the BIG-IP software on the Hewlett-Packard ProLiant DL380 G3 system, insert the CD into the system, and restart the system from the CD-ROM drive. Follow the prompts to complete the installation process.

Installing the BIG-IP software using a PXE boot

To install the BIG-IP software on the Hewlett-Packard ProLiant DL380 G3 system, you can use the network boot procedure known as a Pre-boot Execution Environment (PXE). The BIG-IP software installation disk supports configuring a host to act as a PXE server. Complete the following tasks to install the BIG-IP software:

- Select a host to act as a PXE server.
- Configure the host as a PXE server.
- Connect to the blade server system's PXE port as identified in the *Compaq® ProLiant BL p-Class System Setup and Installation Guide*.
- Boot the ProLiant DL380 G3 system from a PXE server.

Selecting a host to act as a PXE server

To begin the installation process, select a host machine that can act as a PXE server. The machine you select must:

- Have a CD-ROM drive
- Support booting from the CD-ROM drive
- Reside on the same network as the ProLiant DL380 G3 system

Connect the PXE server to NIC 1 of the ProLiant DL380 G3 system.

Configuring the host as a PXE server

After you have connected the host to the ProLiant DL380 G3, insert the CD into the host, and reboot the system from the CD-ROM drive, as appropriate. You can now configure the host as a PXE server.

To configure the host as a PXE server

1. To select an installation option, at the initial prompt select **2, Set up server to provide network installation.**
2. From the list of available network interfaces on the machine, select an interface as the PXE server interface.
3. When prompted, select a DHCP server, based on whether you are using an existing DHCP server, or setting up the host as the DHCP server.

To use an existing DHCP server on the subnet:

- a) Select **yes** at the prompt. This avoids possible conflicts and automatically completes the PXE server configuration. The host displays the settings you selected, and prompts you to accept or reject them.
- b) If the settings are correct, type **yes** to accept them. If the settings are not correct, type **no**, and the host repeats the prompts. The PXE server configuration is not complete until you accept the settings.

To set up the host as the DHCP server:

- a) Select **no** at the prompt. This produces the following series of prompts:

```
IP network [10.1.10]?  
IP address of server 10.1.10[n] [199]?  
Lower range for clients 10.1.10.[n] [199]?  
Upper range for clients 10.1.10.[n] [200]?
```

- b) If your subnet is private, accept the default IP addresses provided. If other machines share the subnet, and possible conflict exists, substitute appropriate unique addresses and ranges.
The host displays the settings you selected, and prompts you to accept or reject them.
- c) If the settings are correct, type **yes** to accept them. If the settings are not correct, type **no** and the host repeats the prompts. The PXE server configuration is not complete until you accept the settings.

Connecting to the ProLiant DL380 G3 system

Once you have configured the PXE server, you must connect to the ProLiant DL380 G3 system either through the integrated Lights-Out (iLO) control panel or the KVM console to install the BIG-IP software.

The Integrated Lights-Out (iLO) control panel is the central management program used by the ProLiant DL380 G3 system. This program allows you to load the BIG-IP software using the PXE server. The program offers both a web and a command line interface.

◆ Note

*The following instructions assume that you have already assigned an IP address or DNS name to the Integrated Lights-Out control panel. If you have not done this, see the **ProLiant Integrated Lights-Out User Guide**, included with your system, for further instruction.*

Interfaces

The Hewlett-Packard ProLiant DL380 G3 system has two BIG-IP accessible onboard NICs, and three expansion PCI-X slots. By convention, the Ethernet interfaces on the platform take the name <s>.<p>, where **s** is the slot number of the NIC, and **p** is the port number on the NIC. Slot numbering for the DL380 G3 system is bottom-to-top, and port numbering is right-to-left. The two onboard NICs are numbered 1.1 and 1.2. The numbers **2**, **3**, and **4** in Table 1.1 illustrate the slot numbering for the PCI expansion slots. For example, if you installed a single port NIC in the PCI slot marked **2**, the port number would be 3.1

HP DL380	Ethernet Interface	BIG-IP Interface/Port
NIC 1 (right)	bge0	1.1
NIC 2 (left)	bge1	1.2
PCI slot 1 (bottom)		2.x
PCI slot 2		3.x
PCI slot 3 (top)		4.x

Table 1.1 Network interface numbering

◆ **Note**

If you are installing a dual Gigabit NIC, we recommend that you install this card in PCI slot 1. If you are installing SSL accelerator hardware, we recommend that you install this card in slot 2 or 3.

Activating the license

Once you have loaded the BIG-IP software onto the ProLiant DL380 G3 system, you must have a valid license certificate to activate the software. To gain a license certificate, you need to provide two items to the license server: a registration key and a dossier.

The **registration key** is a 25-character string that lets the license server know which F5 Networks products you are entitled to license. If you downloaded the BIG-IP software, you should have received the registration key by email. Otherwise, you can find it on the back of the CD case.

You obtain the dossier from the BIG-IP kernel; the **dossier** is an encrypted list of key platform characteristics that the BIG-IP software uses to identify the platform and to enforce or restrict activation on the platform.

You can obtain a license certificate using one of the following methods:

- ◆ **Automatic license activation**

This method is for systems that have direct Internet access. You perform automatic license activation either from the BIG-IP command line or from the BIG-IP Configuration utility, which is the BIG-IP software user interface. The automatic license activation method automatically retrieves and submits the dossier to the F5 Networks license server and installs the signed license certificate. For this method to succeed, the server must be installed on a network with direct Internet access.

- ◆ **Manual license activation**

This method is for systems that run behind a firewall, or in other network environments that do not have direct Internet access. This process requires that you have an administrative workstation that can access both the BIG-IP system and the Internet. You perform manual license activation using the BIG-IP Configuration utility. With the manual license activation method, you manually submit the dossier to, and retrieve the signed license file from, the F5 Networks license server. For this method to succeed, the administrative workstation must have direct Internet access.

- ◆ **Note**

You can run the Configuration utility using Netscape® Navigator, version 4.7x, or Microsoft® Internet Explorer, versions 5.0, 5.5, or 6.0.

To automatically activate a license from the command line

1. At the logon prompt on the command line, type the user name **root** and the password **default**.
2. At the prompt, type **license**.
The following prompts appear:
IP:
Netmask:
Default Route:
1.1, 1.2
Select interface to use to retrieve license
3. Type the appropriate value for each prompt (the blade server system uses this information to make an Internet connection), and continue to the following prompt:
The Registration Key should have been included with the BIG-IP software or given when the order was placed.
Do you have your Registration Key? [Y/N]:
4. Type **Y**, and the following prompt appears:
Registration Key:
5. Type the 25-character registration key you have received.
The dossier is retrieved and sent to the F5 Networks license server, and a signed license file is returned and installed. A message appears indicating the process was successful.
6. To finish the licensing process, if you have not previously accepted an End User License Agreement (EULA), proceed to the EULA acceptance screen, review the EULA, and accept it.

To automatically activate a license using the Configuration utility

1. Open a browser from the administrative workstation, and open the Configuration utility using the following address:
https://192.168.1.245.
This is a default address on the server blade's local area network.
2. Type the user name **root** and the password **default** at the logon prompt.
The Configuration utility menu displays.
3. Click **License Utility** to open the License Administration screen.
4. In the **Registration Key** box, type the 25-character registration key that you received, and click **Automated Authorization**.
The License Status screen displays status messages, and **Process complete** appears when the licensing activation is complete.
5. Click **License Terms**, review the EULA, and accept it.

6. At the Reboot Prompt screen, select when you want to reboot the server blade.
You must reboot the server blade to complete the license activation.

To manually activate a license using the Configuration utility

1. Open a browser from the administrative workstation and open the Configuration utility using the following address:
https://192.168.1.245.
This is a default address on the server blade's local area network.
2. At the logon prompt, type the user name **root** and the password **default**.
The Configuration utility menu appears.
3. Click **License Utility** to open the License Administration screen.
4. In the **Registration Key** box, type the 25-character registration key that you received, and click **Manual Authorization**.
5. At the Manual Authorization screen, retrieve the dossier using one of the following methods:
 - Copy the entire contents of the **Product Dossier** box.
 - Click **Download Product Dossier**, and save the dossier to the hard drive.
6. Click the following link in the **License Server** box:
(http://activate.f5.com/f5/index.jsp)
The Activate F5 License screen opens in a new browser window.
7. On the Activate F5 License screen, submit the dossier using the following method that is appropriate to your choice in step 5:
 - In the **Enter your dossier** box, paste the data you just copied, and click **Activate**.
 - At the **Product Dossier** box, click **Browse** to locate the dossier on the hard drive, and click **Activate**.The screen returns a signed license file.
8. Retrieve the license file using one of the following methods:
 - Copy the entire contents of the signed license file.
 - Click **Download license**, and save the license file to the hard drive.
9. Return to the Manual Authorization screen, and click **Continue**.
10. At the Install License screen, submit the license file using the following method that is appropriate to your choice in step 8:
 - Into the **License Server Output** box, paste the data you have copied, and click **Install License**.

- At the **License File** box, click **Browse** to locate the license file on the hard drive, and click **Install License**.

The License Status screen displays the status messages, and the message **Process complete** appears when the BIG-IP software has finished activating the license.

11. To finish the licensing process, click **License Terms**, review the EULA, and accept it.
12. At the Reboot Prompt screen, select when you want to reboot the system.
You must reboot the ProLiant DL380 G3 system to complete the license activation.

Using the Setup utility

Once you activate the license, the next step in the process is to run the Setup utility. The Setup utility defines the initial configuration settings required to install the BIG-IP system into the network.

See the ***BIG-IP Reference Guide***, Part II, *The Base Network* for full details and instructions on running the Setup utility. You can download the guide from the CD.

WARNING

*If you are using the BIG-IP software in a redundant system, and you are using network-based failover, we recommend that you configure network-based failover during the Setup utility, as opposed to configuring it in the Configuration utility. For additional information on configuring failover, see the ***BIG-IP Reference Guide***, Part IV, ***Redundant BIG-IP Systems***.*

Setting up a basic BIG-IP software configuration

The most common application of the BIG-IP software is to distribute traffic across an array of web servers that host standard web traffic, including e-commerce traffic. Figure 1.2 shows a configuration where a BIG-IP system load balances two sites: **www.siterequest.com** and **store.siterequest.com**. The **www.siterequest.com** site provides standard Web content, and the **store.siterequest.com** site is the e-commerce site that sells items to **www.siterequest.com** customers.

To set up load balancing for these sites, you need to create two pools that are referenced by two virtual servers, one for each site. Even though the sites are related and may even share the same IP address, each requires its own virtual server. This requirement exists because each site uses a different port to support its particular protocol: port **80** for the HTTP traffic going to **www.siterequest.com**, and port **443** for the SSL traffic going to **store.siterequest.com**. Note that this is true even when there are both a port **80** and a port **443** on the same physical server, as is the case with **Server 2**.

For specific information on how to create pools and virtual servers, see the *BIG-IP Reference Guide*, Part III, *The High-Level Network*.

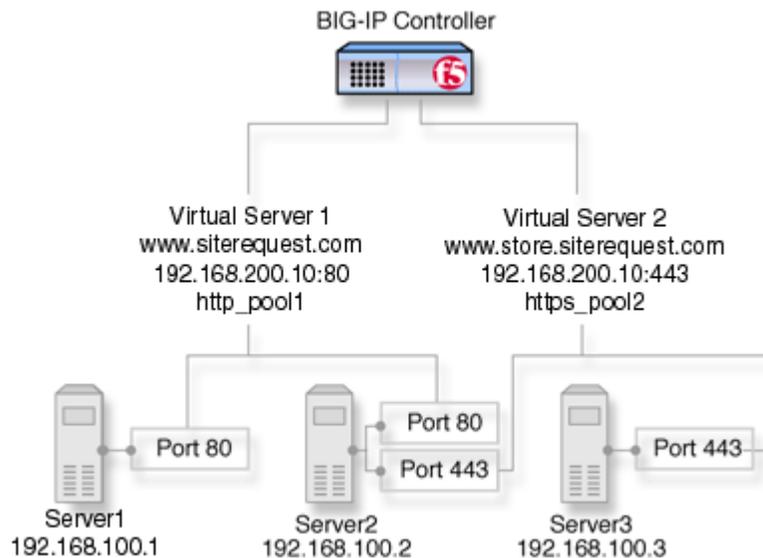


Figure 1.2 Basic network configuration

◆ Important

In this example, we use only non-routable IP addresses. In a real topology, you have to include virtual server IP addresses that are routable to the Internet

Performing backup and recovery

Each time you perform a clean installation, you completely delete all configuration data. Therefore, we recommend that each time you perform a new installation or upgrade of the BIG-IP software, you also back up the configuration data and license information, and store it in a remote location. Completing this backup ensures that you have retained your configuration data and license information in case you need to recover the BIG-IP software in the future.

You perform backups by running the **bigpipe config save** command on the client system. This command creates a User Configuration Set (**.ucs**) file that you can copy to a remote location. If you need to perform a recovery, you can copy this file from its remote location back to your local system prior to running the **bigpipe config install** command. You can also perform a backup or recovery from the Configuration utility.

To back up or recover a configuration using the Configuration utility

1. Open a browser from the administrative workstation.
2. Open the Configuration utility, using the address you configured for the BIG-IP system when you ran the Setup utility.
3. In the navigation pane, click **System Admin**.
The User Administration screen opens.
4. Click the Configuration Management tab.
The Configuration Management screen opens.
5. Complete the following steps, depending on whether you are going to back up or restore a configuration.

To back up a configuration:

- a) From the **Save Configuration** section, in the **Enter Path** box, type the path where you want your configuration file(s) saved, or select a path from the box. If you do not specify a path, the BIG-IP system saves files to the **/usr/local/ucs** directory. The BIG-IP system appends the extension **.ucs** to file names without the extension.
- b) Click the **Save** button.

To restore a configuration:

- a) From the **Restore a Configuration** section, in the **Enter Path** box, type a path or select a path from the list.
- b) To restore the configuration to the BIG-IP system, click the **Restore** button.
- c) To check the status of the restoration, click the **View Log** button.

For specific information on how to perform a backup or recovery from the Configuration utility, see the online help for the System Admin/Configuration Management screen.

For detailed information on backup and recovery procedures, see the Technical Note **BIG-IP Backup and Recovery**; you can find this on the F5 Networks technical support web site (<http://tech.f5.com>).

If you have a working system and are performing a clean installation, you can update your configuration data simply by running the **bigpipe config save /config.ucs** command. This command automatically rolls your current configuration data to the new version of the BIG-IP software that you are installing. Although this method of retaining your configuration data is reliable, we recommend that you also store a copy of your configuration data in a remote location.

Finding additional resources

You can use the following resources to find additional technical information about BIG-IP software:

◆ **Reference and solutions guides**

You can download additional documentation such as the ***BIG-IP Reference Guide*** and the ***BIG-IP Solutions Guide*** from the Documentation section of the CD.

◆ **Release notes**

You can obtain a copy of the release notes for the current version of this product from the product web server home page or from the technical support web site (<http://tech.f5.com>). The release notes contain the latest information for the current version, including a list of new features and enhancements, a list of fixes, and, in some cases, a list of known issues.

◆ **Online help**

You can find help online in three different locations:

- The web server on the product includes PDF versions of the BIG-IP software guides.
- The web-based Configuration utility has online help for each screen. Simply click the **Help** button.
- Individual **bigpipe** commands have online help, including command syntax and examples, in standard UNIX man page format. To get this help, from the command line, type the command followed by the word **help**, and the BIG-IP software displays the syntax and usage associated with the command.

◆ **Third-party documentation for software add-ons**

The web server on the product contains online documentation for all third-party software, such as ZebOS.

◆ **Technical support through the World Wide Web**

The F5 Networks Technical Support web site, <http://tech.f5.com>, provides the latest technical notes, answers to frequently asked questions, updates for administrator guides (in both PDF and HTML formats), and the Ask F5 natural language question and answer engine.



Glossary

bigpipe

The **bigpipe** utility provides command line access to the BIG-IP software.

BIOS

BIOS stands for basic input/output system. The BIOS is software that is built-in to the computer and determines what the computer can do without accessing programs from a disk.

Configuration utility

The Configuration utility is the browser-based application that you use to configure the BIG-IP software.

DHCP

DHCP stands for Dynamic Host Configuration Protocol. It is a protocol used to assign dynamic IP addresses to network devices. When using DHCP, a network device can have a different IP address each time it connects to the network.

DNS

DNS stands for Domain Name System. It is a service that translates domain names into IP addresses. For example, the domain name **www.siterequest.com** might translate to **101.102.103.104**.

dossier

A dossier is an encrypted list of key platform characteristics used to identify the platform, and to enforce or restrict activation on the platform. See also *registration key*.

host

A host is a network server that manages one or more virtual servers that the BIG-IP software uses for load balancing.

Integrated Lights-Out (iLO)

The integrated Lights-Out (iLO) control panel is the central management program used by the ProLiant BL380 G3 system. The program offers a web and command line interface.

license certificate

A license certificate is a digital file created by the F5 Networks license server. The license server uses your product registration key and dossier to process the file, which is stored on the BIG-IP system. See also *registration key* and *dossier*.

network boot

A network boot is a method of starting up a computer (loading the operating system and other basic software) from a network, rather than from a source within the computer itself, such as the hard drive or CD-ROM. See also *PXE*.

NIC

NIC stands for network interface card. It is an expansion board used to connect a computer to a network.

PCI

PCI stands for Peripheral Component Interconnect, a local bus standard. The HP DL380 G3 includes three PCI-X expansion slots. See also *PCI-X*.

PCI-X

PCI-X stands for PCI extended which is an enhanced PCI bus. PCI-X is backward-compatible with existing PCI cards. See also *PCI*.

port

A port is represented by a number that is associated with a specific service supported by a host.

PXE

PXE stands for Pre-Boot Execution Environment, a network boot method. It allows you to boot a computer from a server on a network before you boot the operating system on the local hard drive. See also *network boot*.

registration key

The registration key is a 25-character string that you need to license your F5 Networks products. You may have received the registration key from F5 Networks by email, or you may find it on the back of the CD case. See also *dossier*.

Setup utility

The Setup utility guides you through the initial system configuration process. The Setup utility runs automatically when you turn on a system for the first time.

SSH

SSH stands for Secure Shell. It is a protocol used for secure remote login and other secure network services over a non-secure network.

SSL

SSL stands for Secure Sockets Layer. It is a protocol that uses a public key to encrypt data that is transmitted through the Internet over an SSL connection. URLs that use an SSL connection start with **https:** instead of **http:**.

subnet

A subnet is the portion of a network that shares a common address component. For instance, on a TCP/IP networks, subnet includes all devices whose IP addresses have the same prefix segment.

Telnet

Telnet is a terminal emulation program for TCP/IP networks. Telnet runs on your computer and connects it to a server on the network. Telnet then allows you to enter and execute commands as though you were directly connected to the server console.

terminal emulator

A terminal emulator is a program that mimics a terminal.

virtual server

A virtual server is a specific combination of a virtual IP address and a virtual port, associated with a content site that is managed by BIG-IP software or other type of host server.



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