

HP 5400R zl2 Switch Blitz-in-box

Technical Configuration Guide

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Introduction

This Technical Configuration Guide describes how to create a base configuration for the HP 5400R zL2 Switch Series. The intended audience is HP Solution Architects and HP Technical Consultants, HP certified partners, and customers.

Background information

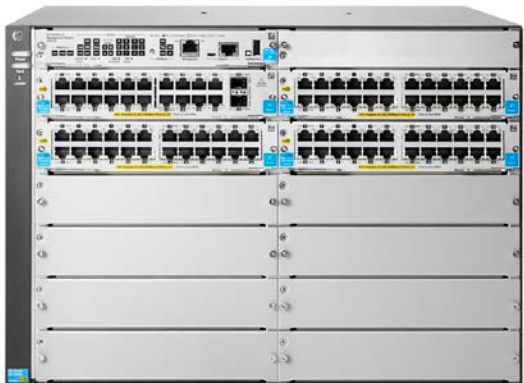
The NEW HP 5400R zL2 Switch Series delivers resiliency, flexibility, performance, and scalability for enterprise edge and core deployments for SMBs and branch offices. This compact chassis series provides a very low TCO and enables a pay-as-you-grow approach with a comprehensive portfolio of connectivity and services solutions. And with OpenFlow 1.3 support, the network is ready for SDN.

The series includes two chassis: the HP 5406R zL2 Switch and the HP 5412R zL2 Switch. Both have two management module slots, additionally the 5406R zL2 has 6 slots for Ethernet and Service modules, and the 5412R zL2 has 12 slots for these modules.

Figure 1: HP 5406R zL2 Switch



Figure 2: HP 5412R zL2 Switch



Highlights

The HP 5400R zL2 Switch Series supports the following key features:

- Enterprise-class resiliency with hitless failover and power supply redundancy
- Advanced L2 to L4 feature set with OSPF, IPv6, IPv4 BGP and policy based routing
- Redundant management, fabric and power
- Virtualization with HP Advanced Services zL2 modules
- Scalable 1 GbE and 10 GbE connectivity
- Full PoE+ provisioning on 288 ports on internal power

- 6-slot and 12-slot compact chassis switches
- Single pane-of-glass management with IMC
- SDN ready with OpenFlow 1.3 support
- License free software
- Lifetime Warranty 2.0

Ethernet Switch Modules

The HP 5400R zL2 Switch Series supports a wide array of Ethernet modules:

- HP 8-port 10GBASE-T v2 zL Module (J9546A)
- HP 8-port 10GbE SFP+ v2 zL Module (J9538A)
- HP 20-port Gig-T PoE+ / 2-port 10GbE SFP+ v2 zL Module (J9536A)
- HP 20-port Gig-T PoE+ / 4-port SFP v2 zL Module (J9535A)
- HP 24-port SFP v2 zL Module (J9537A)
- HP 12-port Gig-T PoE+ / 12-port SFP v2 zL Module (J9637A)
- HP 24-port Gig-T PoE+ v2 zL Module (J9534A)
- HP 24-port 10/100 PoE+ v2 zL Module (J9547A)
- HP 20-port Gig-T / 4-port SFP v2 zL Module (J9549A)
- HP 20-port Gig-T / 2-port 10GbE SFP+ v2 zL Module (J9548A)

Mobility and Application Modules

HP MSM775 zL Premium Controller Module: Working in unison with HP MSM and Unified Access Points, the IEEE 802.11ac-ready HP MSM Controller Series delivers a high-performance networking solution. The enhanced controller architecture scales to new WLAN standards without requiring a controller replacement. The MSM controllers provide advanced radio resource management (RRM), including client load balancing and interference mitigation. The MSM wireless controllers support a fast-roaming capability.

- HP MSM775 zL Premium Controller Module (J9840A)

HP Advanced Services v2 zL Modules: The HP Advanced Services v2 zL modules provide an open platform to host applications and simplify application deployments, centralize management and reduce IT costs in campus and branch environments. These servers-in-a-module run software applications enabling a solution that combines switching, virtualization, storage, and management. Designed for increased flexibility and scalability, these modules offer the choice of a 1 TB hard disk drive or 800 GB solid state drive.

Figure 3: HP Advanced Services Modules



- HP Advanced Services v2 zL Module with HDD (J9857A)
- HP Advanced Services v2 zL Module with SSD (J9858A)

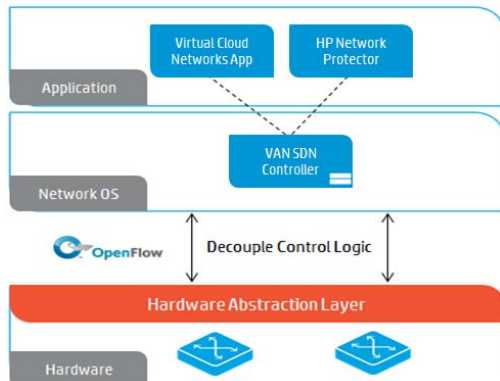
IMC: Single Pane-of Glass Network Management

The HP Intelligent Management Center (IMC) is an end to end management platform. It provides all the tools to manage wired and wireless LANs, WANs, virtual networks, access control, BYOD, software upgrades and configuration management, traffic monitoring and more.

SDN ready with OpenFlow

The HP 5400R zL2 Switch Series supports OpenFlow Switch Specification 1.3.1 from the Open Network Foundation (ONF), which is the basis for Software Defined Networks (SDN). The HP SDN solution includes the HP VAN SDN Controller and a growing number of HP and 3rd party applications.

Figure 4: HP SDN Architecture



Power System

This switch series offers three Power Supply options: 700W, 1100W and 2750W PSU. All three models are 80Plus Gold Certified.

Figure 5: HP 5400R zL2 Power Supplies



The 6 slot chassis supports two power supplies while the 12 slot chassis supports up to four. A 12 slot chassis with four 2750 PSUs provides 30W PoE+ power per port to up to 288 ports.

Out of Box Licensing Simplicity

HP switches are delivered fully licensed for all network OS features. So, there are no hidden costs: no additional licenses are required to get full L2/L3 and IPv4/IPv6 dual stack

Lifetime Warranty 2.0

The 5400R zL2 Switch Series includes **Lifetime Warranty 2.0**:

- 24x7 Phone Support for up to 3 years
- Lifetime Hardware Warranty with Next-business Day replacements
- Software updates for as long as owned
- Phone Support for as long as owned

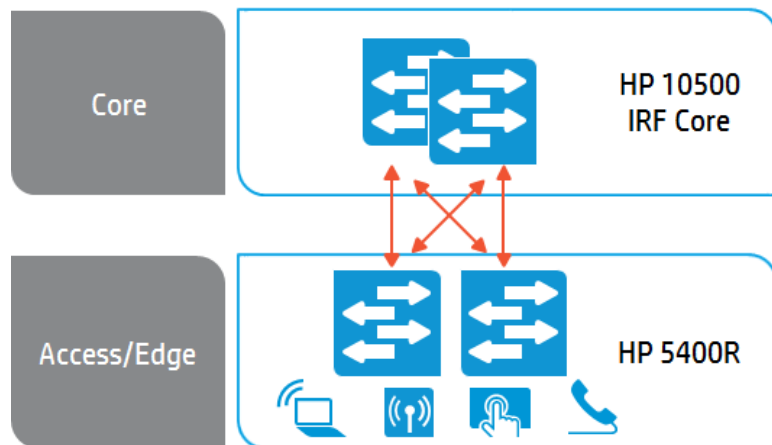
Deployment Models

Enterprise Access Switch

The HP 5400R zL2 Switch Series, with its modular design and resiliency options, is an enterprise class access switching platform for medium and large enterprise LANs.

It integrates seamlessly with the HP 10500 Switch Series at the core.

Figure 6: HP 5400R as an access switch

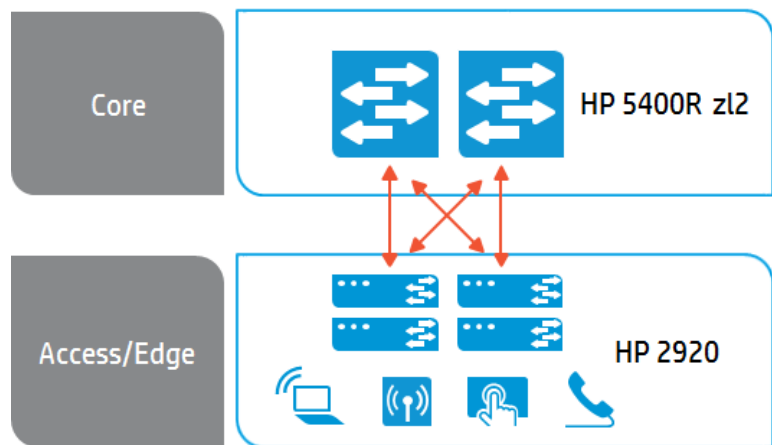


SMB Core Switch

The HP 5400R zL2 Switch Series is ideal as a core switch for small to medium size campus and branch networks. It provides a good balance of 10GbE ports, 1 GbE PoE+ ports.

In conjunction with the MSM775 Premium Controller module it is the optimal platform for a unified access strategy. And in conjunction with the Advanced Services modules it provides a Branch in a Box solution.

Figure 7: HP 5400R as a core switch



HP 5400R Blitz-in-box

Hardware Components

Component	Quantity
HP 5406R -44G-PoE+/2XG-SFP+ (No PSU) v2 zL2 Switch Chassis	1
HP 5400R zL2 Management Module	1
HP 5400R 2750W PoE+ zL2 Power Supply	2
HP 5400R PowerCable	4

Hardware Installation

Note

For more information on the installation of a 5400R zL2 switch, please read the [HP 5400R zL2 Switches Quick Setup Guide](#) and [Safety/Regulatory Information](#) sheet.

All the modules and Power Supplies in the Blitz-in-box package are hot-swappable.

Power Supplies

IMPORTANT

During the installation or replacement of a Power Supply, ensure that AC power is NOT connected to that Power Supply.

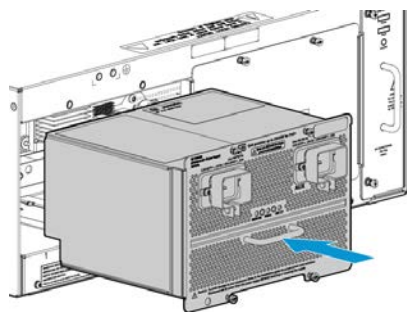
Power Supply Slots:

- HP recommends that you install the same model of power supplies in a switch
- See the [HP 5400R zL2 Installation and Getting Started Guide](#) for selecting the correct power cord to use with the supply

Installation:

1. Remove the slot cover plate.
2. Align the power supply in the switch slot and insert it until the external wall of the power supply is flush with the switch chassis.
3. Tighten the retaining screws to secure the power supply to the switch.

Figure 8: Inserting a Power Supply



Modules

- The following cases automatically change to the running-configuration on your switch
 - Replacing a module with another module of a different type and then rebooting the switch
 - Installing a module in a slot that has not previously been used (including when you install a module and apply power to the switch for the first time)
 - If you want to save such changes to the startup-configuration file, use the write memory command in the switch's command line interface. This causes the switch to use the current new hardware configuration for subsequent reboots (The switch always reboots from the startup-configuration file)
- One of the features of the 5400R zL2 switch is the ability to “hot swap” the switch modules. You can install, exchange, or remove modules after the switch has been powered on. Whenever a module is installed during this process, it is initialized and tested for correct operation. During this process, the switch Self Test LED is on. If you hot swap another module while the switch is initializing and testing the first module, it is possible to cause the first module or the entire switch to be reset
- To prevent the modules or switch from being reset when you hot swap multiple modules, follow these simple precautions:
 - Before removing or installing any modules, make sure that all network cables are disconnected from the module
 - Do not remove any modules from the switch while the switch Self Test LED is lit

Basic Switch Management

Minimal Software Setup

In the factory default configuration, the switch has no Internet Protocol (IP) address and subnet mask, and no passwords. In this state, it can be managed only through a direct console connection. To manage the switch through in-band (networked) access, you should configure the switch with an IP address and subnet mask compatible with your network. Also, you should configure a Manager password to control access privileges from the console and web browser interface. Other parameters in the Switch Setup screen can be left at their default settings or you can configure them with values specific to your network.

Many other features can be configured through the switch's console interface, to optimize the switch's performance, to enhance your control of the network traffic, and to improve network security. Once an IP address has been configured on the switch, these features can be accessed more conveniently through a remote Telnet session, through the switch's web browser interface, and from an SNMP network management station running a network management program, such as HP IMC.

For a listing of switch features available with and without an IP address, refer to “How IP Addressing Affects Switch Operation” in the Management and Configuration Guide which is on the HP networking Web site.

For more information on IP addressing, refer to “IP Configuration” in the **Management and Configuration Guide**.

Note

By default, the switch is configured to acquire an IP address configuration from a DHCP or Bootp server. To use DHCP/Bootp instead of the manual method described in this chapter, see “DHCP/Bootp Operation” in the **Management and Configuration Guide**.

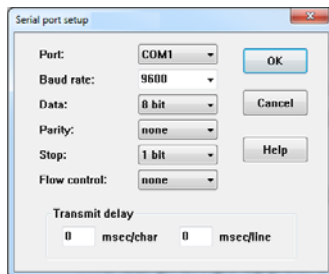
Using the Switch Setup Screen

The quickest and easiest way to minimally configure the switch for management and password protection in your network is to use a direct console connection to the switch, start a console session, and access the Switch Setup screen.

1. Connect a terminal device to the switch and display the switch console command (CLI) prompt (the default display).

The CLI prompt appears displaying the switch model number, for example: **HP 5400Rzl2#**

Figure 9: Serial port configuration



2. At the prompt, enter the **setup** command to display the Switch Setup screen. The following illustration is an example of a Setup screen with default settings.

Figure 10: Switch Setup Screen

```

HP-5406Rzl2                               15-May-2014 18:47:28
===== CONSOLE - MANAGER MODE =====
                               Switch Setup

System Name : HP-5406Rzl2
System Contact :
Manager Password : *****
Confirm Password : *****
Login Default : CLI                      Time Zone [0] : 0
Community Name : public                  Default Gateway :
Spanning Tree Enabled [No] : No
Time Sync Method [None] : TIMEP
TimeP Mode [Disabled] : Disabled

IP Config [Manual] : DHCP/Bootp

IP Address   : 127.0.0.1
Subnet Mask  : 255.255.255.255
Actions->   Cancel      Edit      Save      Help

Enter System Name - up to 32 characters.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.

```

3. Use the Tab key to select the **Manager Password** field and enter a manager password.
4. Tab to the **IP Config (DHCP/Bootp)** field and use the Space bar to select the Manual option.
5. Tab to the **IP Address** field and enter the IP address that is compatible with your network.
6. Tab to the **Subnet Mask** field and enter the subnet mask used for your network.
7. Press Enter, then S (for **save**).

The following is information on the fields in the Setup screen. For more information on these fields, see the **Management and Configuration Guide**.

Table 1: Setup Screen fields

Parameter	Default	
System Name	blank	Optional; up to 25 characters, including spaces
System Contact	blank	Optional; up to 48 characters, including spaces

Manager Password	blank	Recommended; up to 16 characters (no blank spaces)
Logon Default	CLI	The default setting selects the command line interface for console access. The alternative is the Menu interface.
Time Zone	0 (none)	Optional; 1440 to -1440. The number of minutes your location is to the West (-) or East (+) of GMT.
Community Name	public	It is recommended to change this password.
Spanning Tree Enabled	No	Default setting recommended unless STP is already running on your network or the switch will be used in complex network topologies.
Default Gateway	blank	Recommended; Enter the IP address of the next-hop gateway node if network traffic needs to be able to reach off-subnet destinations.
Time Sync Method	TimeP	Optional; The protocol the switch uses to acquire a time signal. The options are SNTP and TimeP.
TimeP Mode	Disabled	Synchronizes the time kept on the switch to the TimeP server.
IP Config	DHCP/Bootp	Set to Manual unless a DHCP/Bootp server is used on your network to configure IP addressing.
IP Address	xxx.xxx.xxx.xxx	Recommended; If you set IP Config to Manual, then enter an IP address compatible with your network.
Subnet Mask	xxx.xxx.xxx.xxx	Recommended; If you entered an IP address, then enter a subnet mask compatible with your network.

Note

The IP address and subnet mask assigned for the switch must be compatible with the IP addressing used in your network. For more information on IP addressing, see the *Management and Configuration Guide* which is on the HP networking Web site.

The steps above configure your switch with a Manager password, IP address, and subnet mask. With the proper network connections, you can now manage the switch from a PC equipped with Telnet, a web browser interface, or from an SNMP-based network management station using a tool such as HP Intelligent Management Center (IMC).

Some basic information on managing your switch is included in the next section. For more information on the console, web browser, and SNMP management interfaces and all the features that can be configured on the 5400 zL switches, please see the **Management and Configuration Guide** which is on the HP networking Web site.

To Recover from a Lost Manager Password: If you cannot start a console session at the manager level because of a lost Manager password, you can clear all passwords and user names by getting physical access to the switch and pressing and holding the Clear button for a full second.

Remote Switch Management

With your 5400R zL2 switches, you can use the switch's IP address to manage the switch from any PC that is on the same subnet as the switch. You can use either a Telnet session or a standard web browser to manage the switch.

Starting a Telnet Session

To access the switch through a Telnet session, follow these steps:

1. Ensure the switch is configured with an IP address and that the switch is reachable from the PC that is running the Telnet session (for example, by using a **ping** command to the switch's IP address).

2. Start the Telnet program on a PC that is on the same subnet as the switch and connect to the switch's IP address.
3. You will see the copyright page and the message "Press any key to continue". Press a key, and you will then see the switch console command (CLI) prompt, for example (assuming there is no password):

HP 5400Rzl2#

Enter **help** or **?** to see a list of commands that can be executed at the prompt. Entering any command followed by **help** provides more detailed context help information about the command. Entering any command followed by **?** displays a list of options that are available at that point in the command entry.

Starting a Web Browser Session

Your 5400R zl2 switch can be managed through a graphical interface that you can access from any PC or workstation on the network by running your web browser and typing in the switch's IP address as the URL. No additional software installation is required to make this interface available; it is included in the switch's onboard software.

Figure 11: HP 5406R zL Switch web management interface

The screenshot displays the HP 5406R zL Switch web management interface in a browser window. The interface is organized into several sections:

- Left Navigation Panel:** Contains links for Home, Quick Setup, Status, System, Interface, VLAN, Traffic Mgmt, Spanning Tree, Multicast, Security, and Troubleshooting.
- Home > Status:** The main content area, featuring:
 - Switch Status:** Displays system information such as System Name (HP-5406RzL2), System Location, System Contact, System Uptime (13 minutes, 31 seconds), System CPU Util (5%), and System Memory (772468736 Bytes).
 - Basic VLAN Information:** Shows Total VLANs (1) and a table for the Primary VLAN.

Id	Name	Status	IP Address
1	DEFAULT_VLAN	Port-based	10.0.0.1
 - Device View:** Provides a visual representation of the switch hardware, including Fan status (PS), Temperature (PS), Management Modules (MM1: Active, MM2: Standby), and Port Status (2/1).
 - Unit Information:** Displays product details like Product Name (HP Switch 5406RzL2 (J9850A)), IP Address (10.0.0.1), Base MAC Address (40 a8 f0 9e a0 00), Serial Number (SG44G490G1), Mgmt Server (http://h17007.www1.hp.com/device_help), Version (KB.15.15.0000u, ROM KB.15.01.0001), and Redundant Version (KB.15.15.0000u, ROM KB.15.01.0001).
 - Alert Log:** Shows a table of alerts with columns for Date & Time, Status, Alert, and Description. A recent alert from Thu May 15 18:54:52 2014 is listed with status 'Info' and description 'First time installation'.
 - Details:** A section for port-specific statistics, including Utilization (Receive/Transmit), Recv Discards, Unknown Protos, Out Queue Len, Totals (Bytes, Unicast, Broadcast/Multicast), Errors (FCS, Alignment, Runt, Giant, Total Errors, Drops, Collisions, Late Colls, Excess Colls, Deferred), and various other metrics.

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