CISCO UCS BLADES DEPLOY 77 PERCENT FASTER WITH 67 PERCENT FEWER STEPS THAN HP BLADES

Add blades 77% faster

with 67% fewer steps

Cisco® UCS B200 M3 Blade Servers vs. HP BL460c Gen8 Servers

CIOs and IT professionals know that as their businesses grow, the need for computing also grows, making it necessary to add servers to existing environments. While this process can be time consuming and potentially complicated, it doesn't have to be.

In the Principled Technologies labs, we tested two different blade server-deployment approaches: the Cisco Unified Computing System™ (UCS) with UCS Manager and the HP Virtual Connect Manager. Using the Cisco UCS Manager's automated configuration and deployment process, adding two blades took only 14 steps and 18 minutes. In comparison, the HP solution required 43 steps and 1 hour 23 minutes to add two blades. This means that adding two blades with the Cisco UCS solution was 77.4 percent faster and required 67.4 percent fewer steps.

The time and steps saved with UCS become even more dramatic in a large-scale deployment or server refresh. Cisco blades can save your IT staff an enormous amount of time, reduce the possibility of error by simplifying the configuration process, and lower your total cost of ownership.

FASTER + SIMPLER = BETTER

To quantify the time on task and steps required to deploy blade servers, we first deployed a single blade, documenting the steps and time. We then deployed two blade servers concurrently.

To demonstrate the deployment benefits of the Cisco UCS solution, we added a Cisco UCS B200 M3 Blade Servers to a Cisco UCS 5108 Blade Server Chassis. We took full advantage of Cisco UCS automated process using Service Profiles that are part of UCS Manager. UCS Manager is included with, and comes embedded in the UCS Fabric Interconnects. For the second step, we then added two more of these blade servers to the same chassis.

We carried out these same tasks with the HP ProLiant BL460c Gen8 Server, first adding a single blade and then two additional blades to the HP BladeSystem c7000 Enclosure, which we configured with two HP Virtual Connect FlexFabric 10 Gb/24-port modules. For both HP scenarios, we created a new server profile from a template for the HP ProLiant blade(s) using the HP Virtual Connect Manager. Because the HP solution is much less automated than the Cisco UCS solution, we had to manually perform a number of additional configuration steps in both scenarios before the server was ready for OS installation.

When we instantiated the Cisco UCS Service Profile, UCS Manager automatically assigned all policies, firmware, and server identity settings required to deploy the new blades seamlessly into the existing environment. Using the UCS service profile, we were also able to tweak many individual server settings; doing so was optional, but convenient. You can view a partial list of the 127+ available server identity settings in Appendix C.

In contrast, when we added an HP ProLiant BL460c Gen8 Server to an HP BladeSystem c7000 Enclosure, simply creating a Virtual Connect server profile did not fully prepare the new blade for deployment. We also needed to manually adjust BIOS settings and set up Enclosure Firmware Management with an ISO image of the HP Service Pack for ProLiant for firmware updates. The additional manual steps added to the time to deploy, and the lack of some repeatable automated processes increased the potential for human error.

Figure 1 highlights the reduction in steps that result from the Cisco UCS solution's approach to blade configuration, in both the one- and two-blade scenarios.

**The Cisco UCS solution reduces complexity
(number of steps - lower numbers are better)**

The Cisco UCS solution's automated approach to blade configuration took 67.7 percent fewer steps in the one-blade scenario and 67.4 percent fewer steps in the two-blade scenario versus HP, making it the solution of choice for reducing complexity. (Smaller numbers of steps are better.)

**The Cisco UCS solution reduces time
(hours:minutes:seconds - lower numbers are better)**
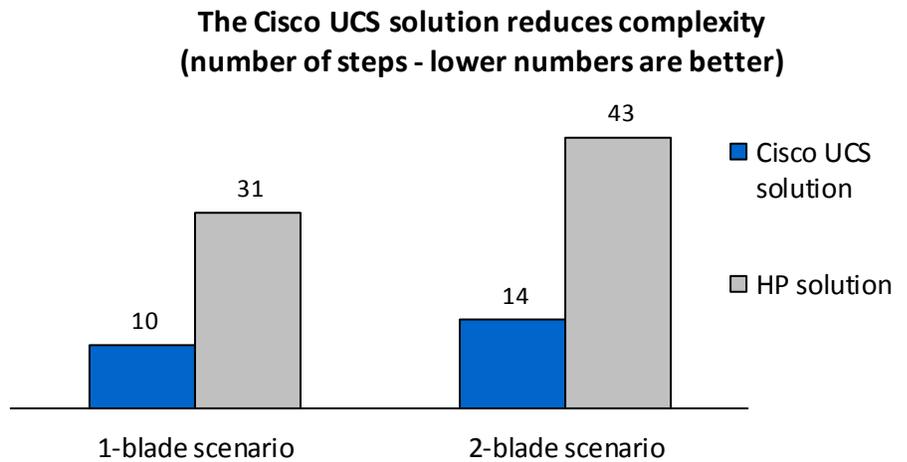
Figure 2: Deployment Time
The Cisco UCS solution's automated approach to blade configuration took 77.2 percent less time in the one-blade scenario and 77.4 percent less time in the two-blade scenario, making it the solution of choice to reduce deployment time. (Smaller numbers, reflecting less time, are better.)
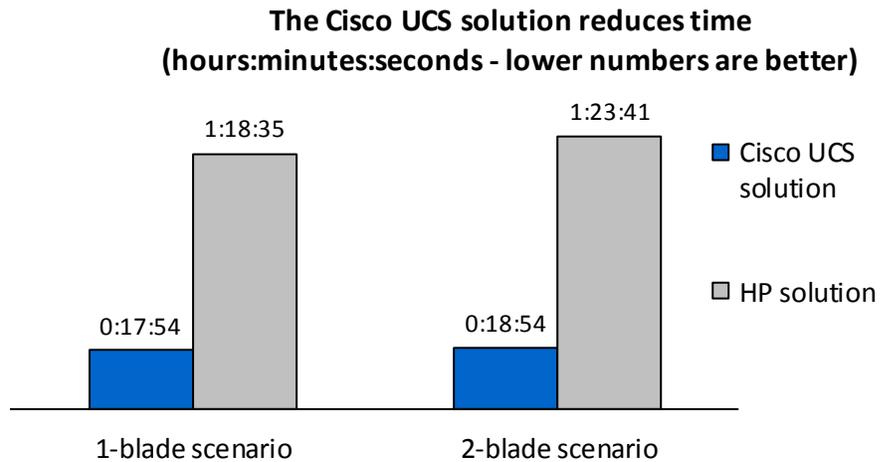

Figure 2 highlights the time savings that result from the Cisco UCS solution's approach to blade configuration, in both the one- and the two-blade scenarios.

As Figures 1 and 2 illustrate, adding a second UCS blade, leveraging Cisco UCS Service Profiles, takes minimal extra steps and time over that required to add a single blade. In contrast, the less automated and more serialized HP Virtual Connect approach means that both the time and the number of steps increases when adding additional HP blades.

It took only one more minute and four more steps to add a second blade with the Cisco UCS solution. It took us an additional 5 minutes 6 seconds and 12 additional steps (an increase of 38.7 percent) to add a second blade with the HP solution. Adding the second blade with the HP Virtual Connect solution took 5 times longer than with Cisco UCS.

Any unnecessary increase in time and effort when adding servers can have a significant impact on company productivity. This additional time and personnel needed

for deploying servers can slow your company's ability to respond to business productivity needs and competitive pressures, and can result in missed service level agreements (SLA) and lost opportunities.

In terms of number of tasks and amount of time, the Cisco UCS solution is the clear winner in both one- and two-blade scenarios.

Figure 3 breaks down the blade server deployment and configuration process for the two solutions in both the one- and two-blade scenarios. (Note: We present detailed specs on the blade servers in Appendix A, detailed settings for each solution in Appendix B, and the detailed steps we followed when performing the two deployment scenarios in Appendix D. The high installation time for the HP ProLiant BL460c Gen8 blades (1:11:50) was caused by the HP firmware update process using BladeSystem c7000 Onboard Administrator. We used HP "best practices" for the installation and documented the steps fully in Appendix D as noted.

Cisco UCS B200 M3 Blade Server					HP ProLiant BL460c Gen8 Server				
	One-blade scenario		Two-blade scenario			One-blade scenario		Two-blade scenario	
Task	Steps	Time	Steps	Time	Task	Steps	Time	Steps	Time
Creating service profiles from a template and assigning them to new Cisco UCS B200 M3 Blade Server(s)	8	1:09	11	1:22	Creating server profiles and assigning them to new HP ProLiant BL460c Gen8 Server(s)	8	1:08	12	1:36
Installing Cisco UCS B200 M3 Blade Server(s), associating the service profiles, waiting for system discovery. This step includes the following: • applying firmware • editing BIOS settings Note that the Cisco UCS solution enables remote KVM by default.	2	16:45	3	17:32	Setting up the firmware update for the two new HP ProLiant BL460c Gen8 Blade Servers	11	2:41	11	2:41
					Installing the HP ProLiant BL460c Gen8 Blade Servers, associating the server profiles, waiting for system discovery and firmware update. Installing iLO Advanced pack license.	7	1:11:50	10	1:13:32
					Changing the HP ProLiant BL460c Gen8 Blade Servers BIOS settings.	5	2:56	10	5:52
Total	**10**	**17:54**	**14**	**18:54**	**Total**	**31**	**1:18:35**	**43**	**1:23:41**

Figure 3: Time on Task for deploying and configuring the Cisco or the HP blade server, in both one- and two-blade scenarios. In terms of number of tasks and amount of time, the Cisco UCS solution is the clear winner.

Cisco UCS blades deploy 77 percent faster with 67 percent fewer steps than HP blades

TEST COMPONENTS

Cisco UCS 5108 Blade Server Chassis

We used a Cisco UCS 5108 Blade Server Chassis with the 2208 XP Fabric Extender (FEX) for all Cisco blade servers. Each chassis can hold up to eight Cisco UCS B200 M3 Blade Servers.

Cisco UCS 6248UP Fabric Interconnects

We connected a Cisco UCS 5108 Blade Server Chassis to a redundant pair of Cisco UCS 6248UP Fabric Interconnects. Each 2208XP FEX can support up to eight redundant 10Gb uplinks, and each 2208XP was connected to a different Fabric Interconnect with eight SFP+ connections. This provides for full redundancy in the UCS architecture. The Cisco UCS 6248UP Fabric Interconnects provide the communications and management backbone for all UCS 5100 Blade Server Chassis. All chassis and all blades that are attached to the interconnects are part of a single, highly available management domain. We created our UCS Service Profiles and then used them to deploy the Cisco blades in the Cisco UCS 5108 Blade Server Chassis.

Cisco UCS B200 M3 Blade Server

We used a dual-socket Cisco UCS B200 M3 Blade Server with Intel® Xeon® processor E5-2690s. The blade had two 300GB SAS hard drives, but the blades were configured to boot from SAN. We configured the blade with 128 GB of system memory for parity with the HP blade configuration. The Cisco UCS B200 M3 Blade Server supports up to 768 GB of memory across 24 DIMM slots. Note that additional Cisco blades benefit from the automated configuration of the Cisco UCS solution via UCS Manager and Service Profiles and Templates. They will yield similar time savings and step reductions as the Cisco UCS B200 M3 Blade Server.

UCS Manager

UCS Manager is embedded on each Fabric Interconnect (in a clustered fashion) and all functions are managed via a single console for server, networking, and storage administrators with full Roles Based Access Control (RBAC). Currently, up to 20 UCS 5108 Blade Server Chassis are supported by each pair of UCS Fabric Interconnects, allowing up to 160 blades to be deployed and configured via a single UCS Manager instance. This creates a single large "virtual blade chassis" that is centrally managed and physically distributed. UCS C-Series Rack Servers can be seamlessly implemented into the sameUCS Manager instance (domain) as the B-Series blades and are managed via the same the same console. UCS Manager can support up to 160 blade and/or rack servers, is server form factor-agnostic and UCS Service Profiles and Templates can be used for both blade and rack servers.

HP BladeSystem c7000 Enclosure

We used an HP BladeSystem c7000 Enclosure for all HP blade servers. Each enclosure can hold up to 16 HP ProLiant BL460c Gen8 Servers.

HP Virtual Connect FlexFabric 10/24 modules

We installed a redundant pair of Virtual Connect FlexFabric 10/24 modules into the HP BladeSystem c7000 Enclosure. The HP Virtual Connect FlexFabric 10/24 modules deploy server profiles to HP blades inside the HP BladeSystem c7000 Enclosure.

HP ProLiant BL460c Gen8 Server

We used a dual-socket HP ProLiant BL460c Gen8 Server with Intel Xeon processor E5-2690s. The blade had two 300GB SAS hard drives, but the blades were configured to boot from SAN. The blades were configured with 128 GB of system memory. This is the maximum memory configuration using 8GB DIMMs, because the BL460c Gen8 blade has only 16 DIMM slots.

HP Virtual Connect

HP Virtual Connect Manager (VCM) is a Web console integrated into the firmware of Virtual Connect (VC) Ethernet modules. HP VCM can connect to a single HP Virtual Connect domain, or HP c-Class BladeSystem enclosure. To manage multiple BladeSystem enclosures, you must use Virtual Connect Enterprise Manager (VCEM), which is licensed per chassis. A VCEM license must be purchased for every BladeSystem c-Class enclosure in the domain and the domain is limited to four chassis, a maximum of 64 blades. Neither HP VCM nor VCEM have the ability to incorporate, deploy, or manage rack servers.

HP Integrated Lights-Out (iLO)

HP Integrated Lights-Out (iLO) is an embedded management technology that allows interaction and management of the HP ProLiant servers. iLO offers Web-based remote management to show several aspects of the server including health, inventory, and power management. It also allows a remote KVM console with HP iLO Standard for BladeSystem license, but requires purchase of an Advanced license to gain all remote console features including directory services integration.

Note: iLO Advanced is required to enable additional features and functionality that are included in Cisco UCS Manager.

Intel Xeon Processor E5-2600 series

The Intel Xeon processor E5-2600 series—the next generation of intelligent server processors—automatically regulates power consumption to combine energy efficiency with intelligent performance that adapts to a changing workload. Intel Xeon processor E5-2600 series-based servers deliver energy-efficient performance along with secure, flexible virtualization solutions for next-generation data centers.

SUMMARY

As the needs of your business grow, adding blade servers to your compute environment will be inevitable. Making this task seamless and largely automated takes less of your IT staff's time, reduces the potential for human error, and frees up time for your current IT staff reducing the need for additional head count.

The Cisco Unified Computing System makes such a scenario possible. Its automated blade configuration process lets your new blade servers integrate seamlessly into your existing infrastructure, and lets your IT staff take a largely "hands-off" approach to configuration. Fewer touch points mean less time spent on the process and less chance of error.

The time you save with the Cisco UCS solution's automated process can quickly add up when you are implementing a large-scale blade server deployment. By choosing the Cisco UCS Blade Servers, your IT staff can save days or weeks—time much better spent on other projects. Less time spent on routine tasks means that IT organizations can spend more time on value added activities, enhancing business productivity and success.

APPENDIX A – SERVER CONFIGURATION

Figure 4 provides detailed configuration information about the test servers.

System	Cisco UCS B200 M3 Blade Server	HP ProLiant BL460c Gen8 Server
Enclosure/chassis		
Blade enclosure/chassis	Cisco UCS 5108 Blade Server Chassis connected to 2x Cisco UCS 6248UP Fabric Interconnects	HP BladeSystem c7000 Enclosure with 2x HP Virtual Connect FlexFabric 10Gb/24-port Modules
Chassis power supplies		
Total number	4	6
Maximum wattage of each (W)	2,500	2,400 Platinum
Chassis cooling fans		
Total number	8	10
Dimensions (h x w) of each	3-5/8" x 5-1/2"	4" x 4"
General		
Number of processor packages	2	2
Number of cores per processor	8	8
Number of hardware threads per core	2	2
CPU		
Vendor	Intel®	Intel
Name	Xeon®	Xeon
Model number	E5-2690	E5-2690
Stepping	C1	C1
Socket type	LGA2011	LGA2011
Core frequency (GHz)	2.90	2.90
Bus frequency (GT/s)	8.0	8.0
L1 cache	32 KB+ 32 KB (per core)	32 KB+ 32 KB (per core)
L2 cache	256 KB (per core)	256 KB (per core)
L3 cache (MB)	20	20
Platform		
Vendor and model number	Cisco UCS B200 M3 Blade Server	HP ProLiant BL460c Gen8 Server
Motherboard model number	UCSB-B200-M3	HP 654609-001
BIOS name and version	Cisco S5500.1.3.1C.0.052020102031	HP I31 12/14/2012
BIOS settings	Power policy set to Max Performance	Power policy set to Max Performance
Memory module(s)		
Total RAM in system (GB)	128	128
Vendor and model number	Samsung® M393B1K70DH0-YH9	Samsung M393B1K70DH0-YH9
Type	DDR3 PC3L-10600R	DDR3 PC3L-10600R
Speed (MHz)	1,333	1,333
Speed running in the system (MHz)	1,333	1,333
Size (GB)	8	8

Cisco UCS blades deploy 77 percent faster with 67 percent fewer steps than HP blades

System	Cisco UCS B200 M3 Blade Server	HP ProLiant BL460c Gen8 Server
Number of RAM module(s)	16	16
Rank	Dual	Dual
Chip organization	Double-sided	Double-sided
Hard disk		
Vendor and model number	Toshiba® A03-D300GA2	HP EG0300FBDSP
Number of disks in system	2	2
Size (GB)	300	300
Buffer size (MB)	16	16
RPM	10,000	10,000
Type	SAS	SAS
Controller	LSI™ MegaRAID® SAS 2004 ROMB	HP Smart Array P220i
Network adapter (mezzanine card)		
Vendor and model number	Cisco UCS Virtual Interface Card 1240	HP FlexFabric 10GB dual-port adapter #647584-001

Figure 4: Detailed configuration information for the servers.

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APPENDIX B –PROFILE SETTINGS

Figure 5 shows the configuration settings we used for server blade deployment on the Cisco UCS Server profile and the HP c7000 Virtual Connect Server profile. Note that the Cisco UCS solution automates all 15 tasks, while the HP solution automates 8 of the 15 tasks.

Note, while the firmware update for HP cannot be configured in the server profile the Enclosure Firmware Manger can be set to automatically update firmware when the blade is inserted. However, this requires additional steps to configure.

System	Cisco UCS Service Profile	HP c7000 Virtual Connect Server Profile
BIOS settings		
Power management set to Max Performance	Automatically configured	Manual
Firmware update		
Server system	Automatically updated	Manual: not configured by profile, must configure through Enclosure Firmware Manager
Ethernet adaptor	Automatically updated	Manual: not configured by profile, must configure through Enclosure Firmware Manager
Storage controller	Automatically updated	Manual: not configured by profile, must configure through Enclosure Firmware Manager
Server mezzanine card	Automatically updated	Manual: not configured by profile, must configure through Enclosure Firmware Manager
Remote management controller	Automatically updated	Manual: not configured by profile, must configure through Enclosure Firmware Manager
Server components		
Server UUID	Automatically configured	Automatically configured
Define the number of vNICs	Automatically configured	Automatically configured
PXE Boot settings	Automatically configured	Automatically configured
VLAN per NIC	Automatically configured	Automatically configured
VLAN tagging per NIC	Automatically configured	Automatically configured
NIC QOS: Prioritize storage traffic	Automatically configured	Not supported
vHBA assignment	Automatically configured	Automatically configured
Virtualized WWPN	Automatically configured	Automatically configured
Fibre Channel boot parameters	Automatically configured	Automatically configured

Figure 5: Cisco UCS Service Profiles and HP solution Server Profiles.

APPENDIX C – UCS MANAGER SERVICE PROFILE SETTINGS, PARTIAL LIST

According to Cisco, with UCS Manager Service Profiles, you can manage over 127 different server identity parameters. Figure 6 presents a partial list of the settings available with Cisco UCS Service Profile.

Cisco UCS Service Profile settings - Partial list				
Server setting	**Capability**		**Server setting**	**Capability**
Scale per Mgmt instance	160 servers per domain (blade/rack); 10,000 with UCS Central		Number of vNICS created	YES; up to 256
Movement between chassis	YES		Number of vHBAs created	YES
BIOS settings	YES; 48 BIOS settings		QoS settings	YES
Server UUID	YES		NIC adapter settings	YES
Host BIOS firmware	YES		HBA adapter settings	YES
Enet firmware	YES		Remote Mgmt Controller firmware (CIMC, iLO, iDRAC)	YES
Hardware NIC teaming (fabric failover)	YES		vHBA WWPN assignment	YES
FC adapter firmware	YES		vHBA WWNN assignment	YES
Storage controller firmware	YES		HBA FC SAN membership	YES
PCIe bus scan order	YES		FC boot parameters	YES
PCIe device slot placement	YES		iSCSI boot parameters	YES
BIOS scrub actions	YES		VLAN assignment per NIC	YES
Disk scrub actions	YES		VLAN tagging per NIC	YES
Remote Mgmt Controller firmware (CIMC, iLO, iDRAC)	YES		Virtual server serial number	No
IPMI settings	YES		NIC transmit rate	YES
Boot order	YES		NIC receive rate	YES
Power Control policy and capping	YES		NIC MAC assignment	YES
Local storage RAID configuration	Yes		NIC MTU size	YES
Dynamic vNICs (VM FEX)	YES		Serial over LAN settings	YES

Figure 6: Partial list of Cisco UCS Service Profile settings.

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APPENDIX D – TEST METHODOLOGY

Figure 7 provides the steps we followed and total time to install one or two Cisco or HP blades and prepare them for the OS installation process. Fewer steps and less time demonstrate a higher level of operational efficiency. Note that we stopped timing when each server began booting from SAN.

Adding new blade servers into an existing blade chassis	
Cisco UCS B200 M3 Blade Server	HP ProLiant BL460c Gen8 Server
Two-blade deployment scenario	

Creating service profiles from a template and assigning them to two new Cisco UCS B200 M3 Blade Servers *(time 1:22)*

1. Log into the Cisco Unified Computing Manager.
2. Select the Servers tab.
3. Select the Server template for the Cisco UCS B200 M3 Blade.
4. Select Create Service Profiles from Template.
5. Name the profile UCS-, and for number, enter 2 to make two new profiles.
6. Select the profile UCS-1, and select Change Service Profile Association.
7. Select Pre-provision a slot.
8. Specify the slot as Chassis 1, slot 1.
9. Select the profile UCS-2, and select Change Service Profile Association.
10. Select Pre-provision a slot.
11. Specify the slot as Chassis 1, slot 2.

Installing Cisco UCS B200 M3 Blade Servers, associating the service profiles, waiting for system discovery *(time 17:32)*

1. Physically install both the Cisco UCS B200 M3 Blades into the UCS chassis and wait for system discovery, the UCS will automatically install firmware updates and edit default BIOS settings by setting system to max performance. When complete, the servers are ready for OS install.
2. Open a remote session In the UCS Manager, click the Server tab→Server 1→KVM.
3. Open another session to the second blade In the UCS Manager, click the Server tab→Server 2→KVM.

Creating the server profiles and assigning them to two new HP ProLiant BL460c Gen8 Blade Servers *(time 1:36)*

1. Log onto the HP Onboard Administrator.
2. Click Virtual Connect Manager.
3. Log onto the Virtual Connect Manager.
4. Click All Server Profiles.
5. Right-click the server profile template and select Copy from the drop-down menu.
6. Rename the profile to slot HP-1.
7. Click the drop-down menu under Server in the Assign Profile to Server Bay section and assign the profile to slot 1.
8. Click Apply & Close.
9. Right-click the server profile template and select Copy from the drop-down menu.
10. Rename the profile to slot HP-2.
11. Click the drop-down menu under Server in the Assign Profile to Server Bay section and assign the profile to 2.
12. Click Apply to close.

Setting up the firmware update for the two new HP ProLiant BL460c Gen8 Blade Servers *(time 2:41)*

1. Copy the latest Service Pack for ProLiant from HP Support ISO image to USB drive, and insert USB into HP blade chassis.[1] (Note: Time to copy and insert USB not included in total time.)
2. Log onto the HP Onboard Administrator.
3. Click on Enclosure Settings in the left window to expand menu.
4. Click Enclosure Firmware Management.
5. Click the Enable Enclosure Firmware Management box.
6. Select Firmware ISO on local Media and choose USB drive from drop-down menu.

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[1] The HP ProLiant BL460c Gen8 QuickSpecs document gives detail about the HP Service Pack for ProLiant (http://h18001.www1.hp.com/products/quickspecs/14208_na/14208_na.pdf).

Adding new blade servers into an existing blade chassis	
Cisco UCS B200 M3 Blade Server	**HP ProLiant BL460c Gen8 Server**
	7. Select Automatic Update of Firmware on Insertion from Update Policy menu. Click to select all boxes for bay 1 and 2 in the Bays to include menu. 8. Click Apply. 9. Click OK to continue on Caution popup window. 10. Wait for the Firmware ISO to show Valid ISO URL. **Installing the HP ProLiant BL460c Gen8 Blade Servers, associating the server profiles, waiting for system discovery and firmware update. Installing iLO Advanced pack license.** *(time 1:13:32)* 1. Physically install the two blades in bays 1 and 2. 2. Wait for server discovery, power on, and system memory check, and wait for HP (ProLiant splash screen) to appear. 3. In the HP Onboard Administrator, click bay 1. 4. Click iLO→Web administration. 5. In the iLO menu, open Administration→Licensing, enter the 25-digit activation license key, and click Install. 6. Click OK on the end user license agreement. 7. In the HP Onboard Administrator, click bay 2. 8. Click iLO→Web administration. 9. In the iLO menu, open Administration→Licensing, enter the 25-digit activation license key, and click Install. 10. Wait for automatic firmware to finish. Stop time when both blades have finished firmware updates. **Changing the HP ProLiant BL460c Gen8 Blade Servers BIOS settings.** *(time 5:52)* 1. In the HP Onboard Administrator, click bay 1. 2. Click iLO→Integrated Remote Console. 3. Press F9 when it post. 4. In BIOS set Power Management Options→HP Power Profile to Maximum Performance. 5. Press F10 to exit and reboot. 6. In the HP Onboard Administrator, click bay 2. 7. Click iLO→Integrated Remote Console. 8. Press F9 when it post. 9. In BIOS set Power Management Options→HP Power Profile to Maximum Performance. 10. Press F10 to exit and reboot.
Total number of steps for two-blade scenario: 14 **Total time for two-blade scenario: 18 min., 54 sec.**	**Total number of steps for two-blade scenario: 43** **Total time for two-blade scenario: 1 hr., 23 min., 41 sec.**

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Adding new blade servers into an existing blade chassis	
Cisco UCS B200 M3 Blade Server	**HP ProLiant BL460c Gen8 Server**
One-blade deployment scenario	

Creating a service profile from template and assigning it to a new Cisco UCS B200 M3 Blade Server *(time 1:09)*

1. Log into the Cisco Unified Computing Manager.
2. Select the Servers tab.
3. Select the Server template for the Cisco UCS B200 M3 Blade.
4. Select Create Service Profiles from Template.
5. Name the profile UCS-, and for number, enter 1 to make 1 new profile.
6. Select the profile UCS-1, and select Change Service Profile Association.
7. Select Pre-provision a slot.
8. Specify the slot as Chassis 1, slot 1.

Installing the Cisco UCS B200 M3 Blade Server, associating the service profile, waiting for system discovery *(time 16:45)*

1. Physically install a Cisco UCS B200 M3 Blade Server into the UCS chassis and wait for system discovery, the UCS will also automatically install firmware updates and edit default BIOS settings by setting system to max performance. When complete, the server is ready for OS install.
2. Open a remote session In the UCS Manager, click the Server tab→Server 1→KVM.

Creating a server profile and assigning it to a new HP ProLiant BL460c Gen8 Blade Server *(time 1:08)*

1. Log onto the HP Onboard Administrator.
2. Click Virtual Connect Manager.
3. Log onto the Virtual Connect Manager.
4. Click All Server Profiles.
5. Right-click the server profile template and select Copy from the drop-down menu.
6. Rename the profile to slot HP-1.
7. Click the drop-down menu under Server in the Assign Profile to Server Bay section and assign the profile to slot 1.
8. Click Apply & Close.

Setting up the firmware update for the new HP ProLiant BL460c Gen8 Blade Server *(time 2:41)*

1. Copy the latest Service Pack for ProLiant from HP Support ISO image to USB drive and insert USB into HP blade chassis. (time to copy and insert USB not included in total time)
2. Log onto the HP Onboard Administrator.
3. Click on Enclosure Settings in the left hand window to expand menu.
4. Click Enclosure Firmware Management.
5. Click the Enable Enclosure Firmware Management box.
6. Select Firmware ISO on local Media and choose USB drive from drop-down menu.
7. Select Automatic Update of Firmware on Insertion from Update Policy menu.
8. Click to select all boxes for bay 1 in the Bays to include menu.
9. Click Apply.
10. Click OK to continue on Caution popup window.
11. Wait for the Firmware ISO to show Valid ISO URL.

Installing the HP ProLiant BL460c Gen8 Blade Server, associating the server profile, waiting for system discovery and firmware update. Installing iLO Advanced pack license. *(time 1:11:50)*

Note: For this task, the two scenarios take the same amount of time.

1. Physically install the one blade in bay.
2. Wait for server discovery, power on, and system

Adding new blade servers into an existing blade chassis	
Cisco UCS B200 M3 Blade Server	**HP ProLiant BL460c Gen8 Server**
	memory check, and wait for HP (ProLiant splash screen) to appear.
	3. In the HP Onboard Administrator, click bay 1.
	4. Click ILO→Web administration.
	5. In the ILO menu, open Administration→Licensing, enter the 25-digit activation license key, and click Install.
	6. Click OK on the end user license agreement.
	7. Wait for automatic firmware to finish. Stop time when both blades have finished firmware updates.
	Changing the HP ProLiant BL460c Gen8 Blade Servers BIOS settings. *(time 2:56)*
	1. In the HP Onboard Administrator, click bay 1.
	2. Click iLO→Integrated Remote Console.
	3. Press F9 when it post.
	4. In BIOS set Power Management Options→HP Power Profile to Maximum Performance.
	5. Press F10 to exit and reboot.
Total number of steps for one-blade scenario: 10	**Total number of steps for one-blade scenario: 31**
Total time for one -blade scenario: 17 min., 54 sec.	**Total time for one -blade scenario: 1 hr., 18 min., 35 sec.**

Figure 7: Steps required when installing one or two blades into an existing setup on either the Cisco UCS solution or HP solution. Fewer steps and less time are better.

ABOUT PRINCIPLED TECHNOLOGIES

Principled Technologies®

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We provide industry-leading technology assessment and fact-based marketing services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

We provide customized services that focus on our clients' individual requirements. Whether the technology involves hardware, software, Web sites, or services, we offer the experience, expertise, and tools to help our clients assess how it will fare against its competition, its performance, its market readiness, and its quality and reliability.

Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.