CISCO UCS DELIVERS FASTER BLADE SERVER DEPLOYMENT THAN HP c-CLASS BLADES WITH HP VIRTUAL CONNECT

Add blades **47% faster**

CISCO

with **67% fewer steps**

Cisco UCS B250 M2 Extended Memory Blade Servers vs. HP ProLiant BL460c G7 Servers

OUR FINDINGS

As a CIO or enterprise IT buyer, you purchase blade chassis with future expansion in mind. As your computing needs grow, you will eventually add blade servers to existing chassis. Unfortunately, this process is often both difficult and time consuming, miring your IT staff in what CIOs increasingly refer to as the "70 percent maintenance loop," which hampers your company's innovation. This need not be the case.

In Principled Technologies' tests in our labs, adding two blades with the Cisco Unified Computing System™ (UCS) Service Profile, automated blade configuration process was easy and quick, taking only 14 steps and 20 minutes. In comparison, the HP solution, using existing server profiles and HP Virtual Connect Manager, required 42 steps and 38 minutes to add two blades. This means that adding two blades with the Cisco UCS solution is 47 percent faster and requires one-third the number of steps.

In a large-scale deployment or server refresh, choosing Cisco blades can save your IT staff days or weeks of work, reduce the possibility of error by simplifying the configuration process, and lower your total cost of ownership.

OUR PROCESS

To demonstrate the deployment benefits of the Cisco UCS solution, we added a Cisco UCS B250 M2 Extended Memory Blade Server to a Cisco UCS 5108 Blade Server Chassis, taking full advantage of its largely automated process. We then added two of these blade servers to the same chassis.

We carried out the same tasks with the HP ProLiant BL460c G7 Server, adding first a single blade and then two blades to the HP BladeSystem c7000 Enclosure, which we configured with two HP Virtual Connect FlexFabric 10 Gb/24-port modules. For both scenarios, we copied an existing server profile to the HP ProLiant blade(s) from the HP Virtual Connect Manager. Because the HP solution lacks the automated features of the Cisco UCS solution, we had to manually perform a number of additional configuration steps before the server was ready for OS installation.

PROJECT OVERVIEW

In consultation with Cisco Systems, Inc., PT conducted a blade-server expansion test. We first added a single Cisco UCS B250 M2 Extended Memory Blade Server to a Cisco UCS 5108 Blade Server Chassis, timing the process and counting the number of steps. We then added two Cisco blades to the same chassis, again timing the process and counting the number of steps. We followed this same sequence when we added one and then two HP ProLiant BL460c G7 Servers to an HP BladeSystem c7000 Enclosure. We wanted to see how much time the Cisco UCS solution's automated procedure could save, in both one- and two-blade server scenarios. (Note: We present detailed specs on the blade servers in Appendix A.)

When we instantiated the Cisco UCS Service Profile, UCS Manager automatically assigned all policies and firmware required to deploy the new blade seamlessly into the existing virtual desktop infrastructure (VDI). Using the profile, we were also able to tweak many individual server settings; doing so was optional, but convenient.

In contrast, when we added an HP ProLiant BL460c G7 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 adjust BIOS settings and NIC behavior, edit storage controller settings, and use separate media and applications/processes for firmware updates. Multiple manual steps added significantly to the time to deploy, and the lack of repeatable automated processes dramatically increased the potential for human error. We disclose detailed settings for each solution in Appendix B.

Figure 1 highlights the time savings that result from the Cisco UCS solution's approach to blade configuration, in both one- and two-blade scenarios.
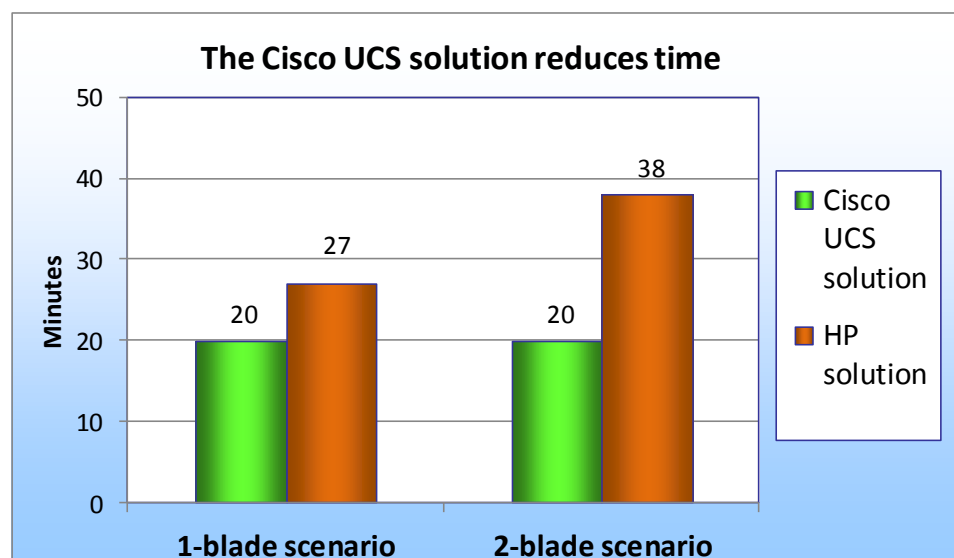
Figure 1: The Cisco UCS solution's largely automated approach to blade configuration took 26% less time in the one-blade scenario and 47% less time in the two-blade scenario, making it the solution of choice. (Smaller numbers, reflecting less time, are better.)

Figure 2 highlights the reduction in steps that result from the Cisco UCS solution's approach to blade configuration, in both one- and two-blade scenarios.
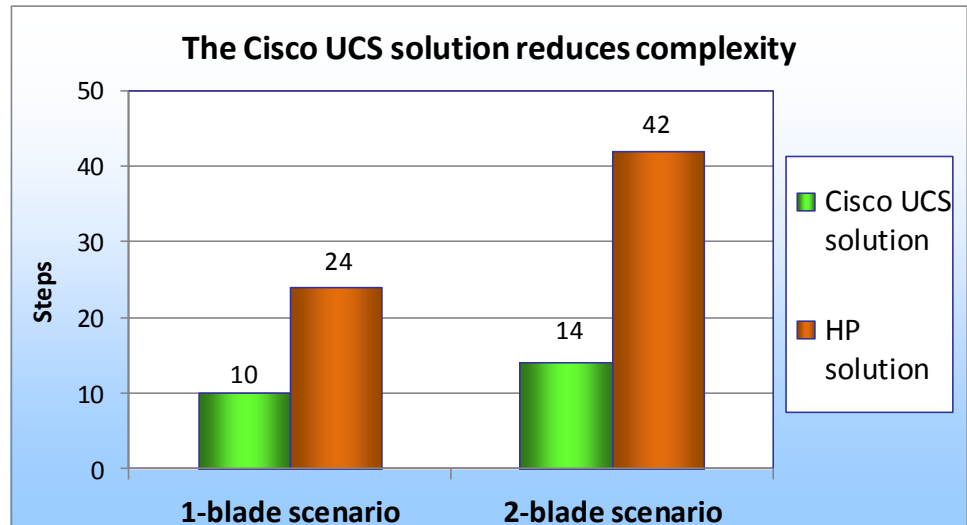
As Figures 1 and 2 show, adding two blades leveraging Cisco's UCS Service Profiles takes minimal extra time and steps compared to adding one blade. In contrast,

The Cisco UCS solution reduces complexity

Figure 2: The Cisco UCS solution's largely automated approach to blade configuration took 58% fewer steps in the one-blade scenario and 67% fewer steps in the two-blade scenario, making it the solution of choice. (Smaller numbers of steps are better.)

the less automated and more serialized HP Virtual Connect approach means that both time and number of steps dramatically increase when adding additional blades.

It took us only an additional 23 seconds and 4 additional steps to add two blades with the Cisco UCS solution. It took us 11 extra minutes (an increase of 29 percent) and 18 additional steps (an increase of 43 percent) to add two blades with the HP solution.

Any unnecessary increase in time and effort when adding servers can have a significant impact upon company productivity. Spending considerable time and personnel deploying servers can slow your company's response time to business productivity needs and other competitive pressures, and may result in lengthened service level agreements (SLA) and lost productivity.

Figure 3 breaks down the blade server deployment and configuration process for the two solutions, in both the one- and two-blade scenarios. To see the detailed steps we followed when testing the two solutions, see Appendix C.

Cisco UCS B250 M2 Extended Memory Blade Server					HP ProLiant BL460c G7 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 B250 M2 Extended Memory Blade Server(s)	8	1:05	11	1:10	Creating server profiles and assigning them to new HP ProLiant BL460c G7 Server(s)	8	2:14	12	2:37
Installing Cisco UCS B250 M2 Extended Memory 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	18:30	3	18:48	Installing HP ProLiant BL460c G7 Server(s), associating server profiles, waiting for system discovery	2	9:07	2	9:07
					Installing ILO Advanced pack license, and configuring Boot Order on HP ProLiant BL460c G7 Blade Server(s).	5	3:35	10	5:41
					Installing host firmware updates	6	7:42	12	15:24
					BIOS: Editing the default boot controller order	3	4:35	6	4:51
Total	10	19:35	14	19:58	Total	24	27:13	42	37:40

Figure 3: The tasks involved in 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.

TEST COMPONENTS

Cisco UCS 5108 Blade Server Chassis

We used a Cisco UCS 5108 Blade Server Chassis for all Cisco blade servers. Each chassis can hold up to four Cisco UCS B250 Extended Memory Blade Servers.

Cisco UCS 6120XP Fabric Interconnects

We connected a Cisco UCS 5108 Blade Server Chassis to a redundant pair of Cisco UCS 6120XP Fabric Interconnects. The connection can support redundant 4x10Gb links via eight 10Gb SFP connections—four to Interconnect A and four to Interconnect B. The Cisco UCS 6120XP Fabric Interconnects serve as convergence points for all network and fabric uplinks into the connected Cisco UCS 5108 Blade Server Chassis. We created our UCS Service Profiles and deployed them to Cisco blades inside the Cisco UCS 5108 Blade Server Chassis.

Cisco UCS B250 M2 Extended Memory Blade Server

We used a dual-socket Cisco UCS B250 M2 Extended Memory Blade Server with Intel® Xeon® processor X5670s. The blade had two 146GB SAS hard drives, but we configured the blades to boot from SAN. We configured the blade with 256 GB of system memory. The Cisco UCS B250 M2 Extended Memory Blade Server supports up to 384 GB of memory, which allows VDI scaling when client memory requirements are higher. Note that additional Cisco blades, such as the Cisco UCS B200 M2 Blade Server, benefit from the automated configuration of the Cisco UCS solution. They will yield similar time savings and step reductions as the Cisco UCS B250 M2 Extended Memory Blade Server.

UCS Manager

UCS Manager functionality runs 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 for up to 160 half-slot or 80 full-slot blades to be deployed and configured via a single UCS Manager instance, creating a single large "virtual blade chassis" from a connectivity and deployment perspective inside a single deployment domain.

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 G7 Servers, and each can have up to eight network expansion modules.

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 modules support a redundant 40GB connection via four dedicated 10 GbE per switch, which connect to network switches. These switches also have four additional ports that can be either 10GbE or Fibre Channel or stacking ports, and can serve as convergence points for all network and Fibre Channel uplinks for the HP BladeSystem c7000 Enclosure in which they reside. The HP Virtual Connect FlexFabric 10/24 modules deploy server profiles to HP blades inside the HP BladeSystem c7000 Enclosure and have separate northbound connections for 1/10GbE and Fibre Channel.

HP ProLiant BL460c G7 Server

We used a dual-socket HP ProLiant BL460c G7 Server with Intel Xeon processor X5670s. The blade had two 146GB SAS hard drives, but we configured the blades to boot from SAN. We configured the blade with 192 GB of system memory, as it was the maximum configuration using 16GB DIMMs. The HP ProLiant BL460c G7 Server supports up to 384 GB of memory using 32GB DIMMs.

HP Virtual Connect

HP Virtual Connect Manager (VCM) is a Web console integrated into the firmware of VC Flex 10 Ethernet modules. HP VCM allows RBAC to Server, networking, and storage administrators for a single HP Virtual Connect domain with up to four BladeSystem enclosures allowing VCM to manage up to 64 half-slot or 32 full-slot blades.

Intel Xeon Processor 5600 Series

The Intel Xeon processor 5600 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 5600 series-based servers deliver energy-efficient performance along with secure, flexible virtualization solutions for next-generation data centers.

SUMMARY

As your IT organization grows, the need to add blade servers to your blade chassis becomes inevitable. Making this task seamless and largely automated would take a minimum of your IT staff's valuable time and reduce the potential for human error.

The Cisco Unified Computing System offers just such a scenario. The Cisco UCS solution's 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. The math is easy: fewer touch points = less chance of error = faster time to productivity.

The time that the Cisco UCS solution's automated process saves becomes especially significant when you are implementing a large-scale blade server deployment. Choosing the Cisco UCS Blade Servers can save your IT staff days or weeks—time they could spend on other projects.

APPENDIX A – SERVER CONFIGURATION

Figure 4 provides detailed configuration information about the test servers.

System	Cisco UCS B250 M2 Extended Memory Blade Server	HP ProLiant BL460c G7 Server
Enclosure/chassis		
Blade enclosure/chassis	Cisco UCS 5108 Blade Server Chassis connected to 2x Cisco UCS 6120XP 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
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	6	6
Number of hardware threads per core	2	2
CPU		
Vendor	Intel	Intel
Name	Xeon	Xeon
Model number	X5670	X5670
Stepping	C0	C0
Socket type	LGA 1366	LGA 1366
Core frequency (GHz)	2.93	2.93
Bus frequency (GT/s)	6.4	6.4
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)	12	12
Platform		
Vendor and model number	Cisco UCS B250 M2 Extended Memory Blade Server	HP ProLiant BL460c G7 Server
Motherboard model number	N20-B6625-2	HP 4K10B5
Motherboard chipset	Intel 5520	Intel 5520
BIOS name and version	Cisco S5500.1.3.1C.0.052020102031	HP I27 12/01/2010
BIOS settings	Default	Default
Memory module(s)		
Total RAM in system (GB)	256	192

System	Cisco UCS B250 M2 Extended Memory Blade Server	HP ProLiant BL460c G7 Server
Vendor and model number	Samsung M393B1K70BH1-CH9	Hynix HMT42GR7BMR4C
Type	DDR3 PC3-10600R	DDR3 PC3-8500
Speed (MHz)	1,333	1,066
Speed running in the system (MHz)	1,333	1,066
Size (GB)	8	16
Number of RAM module(s)	32	12
Chip organization	Double-sided	Double-sided
Hard disk		
Vendor and model number	Seagate ST9146803SS	Seagate ST9146803SS
Number of disks in system	2	2
Size (GB)	146	146
Buffer size (MB)	16	16
RPM	10,000	10,000
Type	SAS	SAS
Controller	LSI™ Logic SAS 1064E	HP Smart Array P410i
Network adapter (mezzanine card)		
Vendor and model number	2 x Cisco UCS Cisco UCS M81KR Virtual Interface Card	N/A
USB ports		
Number	0	0
Type	N/A	N/A

Figure 4: Detailed configuration information for the servers.

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 Flex 10 Server profile. Note that the Cisco UCS solution automates all 18 tasks, while the HP solution automates 8 of the 18 tasks.

System	Cisco UCS Service Profile	HP c7000 Virtual Connect Flex 10 Server Profile
BIOS settings		
Low voltage DDR Mode: performance	Automatically configured	Default
Quiet Boot	Automatically configured	Manual
Server boot order, configure storage controller	Automatically configured	Manual
Firmware update		
Server system	Automatically updated	Manual: Use Firmware DVD
Ethernet adaptor	Automatically updated	Manual: Use Firmware DVD
Storage controller	Automatically updated	Manual: Use Firmware DVD
Server mezzanine card	Automatically updated	Manual: Use Firmware DVD
Remote management controller	Automatically updated	Manual: Use Firmware DVD
Server components		
Server UUID	Automatically configured	Automatically configured
Define the number of vNICs	Automatically configured	Automatically configured
PXE Boot settings	Automatically configured	Automatically configured
Fabric failover settings	Automatically configured	Manual setting on the OS installed
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.

Figure 6 shows those tasks that are either manual or unsupported on the HP c7000 Virtual Connect Flex 10 Server Profile. Note that the Cisco UCS Service Profile automates these tasks.

System	Cisco UCS Service Profile	HP c7000 Virtual Connect Flex 10 Server Profile
Manual tasks		
Server system	Automatically configured	Manual: Use Firmware DVD
Ethernet adaptor	Automatically configured	Manual: Use Firmware DVD
Storage controller	Automatically configured	Manual: Use Firmware DVD
Server mezzanine card	Automatically configured	Manual: Use Firmware DVD
Remote management controller	Automatically configured	Manual: Use Firmware DVD
Fabric failover settings	Automatically configured	Manual setting on the OS installed
BIOS settings		
Quiet Boot	Automatically configured	Manual
Turbo Boost	Automatically configured	Manual
Enhanced Intel SpeedStep®	Automatically configured	Manual
Hyper Threading	Automatically configured	Manual
Virtualization Technology (VT)	Automatically configured	Manual
Processor C3 Report	Automatically configured	Manual
Processor C6	Automatically configured	Manual
Intel Directed I/O	Automatically configured	Manual
VT for Directed I/O	Automatically configured	Manual
Interrupt Remap	Automatically configured	Manual
Coherency Support	Automatically configured	Manual
ATS Support	Automatically configured	Manual
Pass-through DMA support	Automatically configured	Manual
Memory RAS Config	Automatically configured	Manual
NUMA	Automatically configured	Manual
Low voltage DDR Mode	Automatically configured	Manual
Console redirect OPM	Automatically configured	Manual
Server boot order (include Boot from SAN and PXE)	Automatically configured	Manual
Unsupported tasks		
NIC QOS	Automatically configured	Not supported
BIOS scrub policy	Automatically configured	Not supported
Disk scrub policy HBA MTU	Automatically configured	Not supported Not supported
HBA persistent binding (PIN groups)	Automatically configured	Not supported

Figure 6: Cisco UCS Service Profiles and HP solution Server Profiles.

Figure 7 provides detailed profile settings for the Cisco UCS Service Profile and the HP Server Profile.

Note that all the Cisco UCS profile settings are automated, while the majority of the HP settings are manual.

System	Cisco UCS solution	HP c7000 Virtual Connect Flex 10
Firmware update		
Server system	Automatically configured	Manual: Use Firmware DVD
Ethernet adaptor	Automatically configured	Manual: Use Firmware DVD
Storage controller	Automatically configured	Manual: Use Firmware DVD
Server mezzanine card	Automatically configured	Manual: Use Firmware DVD
Remote management controller	Automatically configured	Manual: Use Firmware DVD
Server components		
Server UUID	Automatically configured	Automatically configured
Define the number of vNICs	Automatically configured	Automatically configured
PXE Boot settings	Automatically configured	Automatically configured
Fabric failover settings	Automatically configured	Manual setting on the OS installed
VLAN per NIC	Automatically configured	Automatically configured
VLAN tagging per NIC	Automatically configured	Automatically configured
NIC transmit rate limiting	Automatically configured	Automatically configured
NIC MAC addressing	Automatically configured	Automatically configured
NIC QOS	Automatically configured	Not supported
IPMI username and passwords	Automatically configured	Automatically configured
IPMO user roles	Automatically configured	Automatically configured
Serial over LAN configuration	Automatically configured	Automatically configured
BIOS scrub policy	Automatically configured	Not supported
Disk scrub policy	Automatically configured	Not supported
vHBA assignment	Automatically configured	Automatically configured
Virtualized WWPN	Automatically configured	Automatically configured
Fibre Channel boot parameters	Automatically configured	Automatically configured
HBA MTU	Automatically configured	Not supported
HBA persistent binding (PIN groups)	Automatically configured	Not supported

Figure 7: Detailed profile settings for the Cisco UCS Service Profile and HP Server Profile.

APPENDIX C – TEST METHODOLOGY

Figure 8 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. To see how we set up our VDI solution, see the How We Tested section of our companion performance report.[1] Note that we stopped timing when each server began booting from the CD.

Adding new blade servers into an existing blade chassis	
Cisco UCS B250 M2 Extended Memory Blade Server	**HP ProLiant BL460c G7 Server**
Two-blade deployment scenario **Creating service profiles from a template and assigning them to two new Cisco UCS B250 M2 Extended Memory Blade Servers** *(time 1:10)* 1. Log into the Cisco Unified Computing Manager. 2. Select the Servers tab. 3. Select the Server template for the Cisco UCS B250 M2 Blade. 4. Select Create Service Profiles from Template. 5. Name the profile UCS-, and for number, enter 2 to make 2 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 5. 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 7. **Installing Cisco UCS B250 M2 Extended Memory Blade Servers, associating the service profiles, waiting for system discovery** *(time 18:48)* 1. Physically install both the Cisco UCS B250 M2 Extended Memory Blades into the UCS chassis and wait for system discovery, the UCS will also automatically install firmware updates and edit default BIOS settings. When complete, the servers are ready for OS install.	***Two-blade deployment scenario*** **Creating the server profiles and assigning them to two new HP ProLiant BL460c G7 Blade Servers** *(time 2:37)* 1. Log onto the HP Onboard Administrator. 2. Click Virtual Connect Manager. 3. Log onto the Virtual Connect Manager. 4. Click Server Profiles. 5. Select a profile that you want to use as a template. 6. Click Copy. 7. Select the copy, and rename it slot HP-15. 8. Assign the profile to slot 15. 9. Select the same profile that you want to use in step 5. 10. Click Copy. 11. Select the copy, and rename it HP-16. 12. Assign the profile to slot 16. **Installing the HP ProLiant BL460c G7 Blade Servers, associating the server profiles, waiting for system discovery** *(time 9:07)* 1. Physically install the two blades in bays 15 and 16. 2. Wait for server discovery, power on, and system memory check, and wait for HP (ProLiant splash screen) to appear.

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[1] http://principledtechnologies.com/clients/reports/Cisco/UCS_vs_HP_scaling.pdf

Adding new blade servers into an existing blade chassis	
2. Open a remote session In the UCS Manager, click the Server tab→Server 5→KVM. 3. Open another session to the second blade In the UCS Manager, click the Server tab→Server 7→KVM.	**Installing ILO Advanced pack license, and configuring Boot Order on the HP ProLiant BL460c G7 Blade Servers** *(time 5:41)* 1. In the HP Onboard Administrator, click bay 15. 2. Click the Boot Options tab 3. Use the arrow keys to select Standard Boot Order (IPL). Select Hard Disk C: and move it to device 1. Click Apply. 4. Click ILO→Web administration. 5. In the ILO menu, open Administration→Licensing, enter the 25-digit activation license key, and click Install. 6. In the HP Onboard Administrator, click bay 16. 7. Click the Boot Options tab 8. Use the arrow keys to select Standard Boot Order (IPL). Select Hard Disk C: and move it to device 1. Click Apply. 9. Click ILO→Web administration. 10. In the ILO menu, open Administration→Licensing, enter the 25-digit activation license key, and click Install. **Blade 1: Installing host firmware updates** *(time 7:42)* 1. Click bay 15→ILO→Integrated Remote Console. 2. Click Virtual drives→CD/DVD→Virtual Image. 3. Browse to HP firmware.iso. 4. Wait for the HP firmware DVD to automatically install all applicable firmware updates. 5. When the firmware updates complete, reboot the system. 6. After the HP ProLiant BL460c G7 Server reboots, press F9 to configure BIOS settings. **Blade 1: BIOS, Editing the default boot controller order***(time 0:16)* 1. Use the arrow key on the BIOS menu to select Boot Controller order boot order, and change HP Smart Array P41-I Controller to boot order 3. 2. Press Esc two times to return to the main menu.

Adding new blade servers into an existing blade chassis	
	3. Press F10 to reboot the system, while Blade 1 is rebooting, Begin Blade2. **Blade 2: Installing host firmware updates** *(time 7:42)* 1. In the Onboard administrator Click Bay16→Click ILO→Integrated Remote Console. 2. Click Virtual drives→CD/DVD→Virtual Image. 3. Browse to HP firmware.iso. 4. Wait for the HP firmware DVD to automatically install all applicable firmware updates. 5. When the firmware updates complete, reboot the system. 6. After the HP ProLiant BL460c G7 Server reboots, press F9 to configure BIOS settings. **Blade 2: BIOS, Editing the default boot controller order*** *(time 4:35)* 1. Use the arrow key on the BIOS menu to select Boot Controller order boot order, and change HP Smart Array P41-I Controller to boot order 3. 2. Press Esc two times to return to the main menu. 3. Press F10 to reboot the system. When the system has finished rebooting, both blades are ready for OS install.
Total number of steps **Two-blade scenario: 14** **Total time** **Two-blade scenario: 19 minutes, 58 seconds**	**Total number of steps** **Two-blade scenario: 42** **Total time** **Two-blade scenario: 37 minutes, 40 seconds**

Adding new blade servers into an existing blade chassis

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One-blade deployment scenario

Creating a service profile from template and assigning it to a new Cisco UCS B250 M2 Extended Memory Blade Server *(time 1:05)*

1. Log into the Cisco Unified Computing Manager.
2. Select the Servers tab.
3. Select the Server template for the Cisco UCS B250 M2 Extended Memory 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 5.

Installing the Cisco UCS B250 M2 Extended Memory Blade Server, associating the service profile, waiting for system discovery *(time 18:30)*

1. Physically install a Cisco UCS B250 M2 Extended Memory Blade Server into the UCS chassis and wait for system discovery, the UCS will also automatically install firmware updates and edit default BIOS settings. When complete, the server is ready for OS install.
2. Open a remote session In the UCS Manager, click the Server tab→Server 5→KVM.

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One-blade deployment scenario

Creating a server profile and assigning it to a new HP ProLiant BL 460c G7 Blade Server *(time 2:14)*

1. Log onto the HP Onboard Administrator.
2. Click Virtual Connect Manager.
3. Log onto the Virtual Connect Manager.
4. Click Server Profiles.
5. Select a profile that you want to use as a template.
6. Click Copy.
7. Select the copy, and rename it slot HP-15.
8. Assign the profile to slot 15.

Installing the HP ProLiant BL460c G7 Blade Server, associating the server profile, waiting for system discovery *(time 9:07)*

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

1. Physically install the two blades in bays 15 and 16.
2. Wait for server discovery, power on, and system memory check, and wait for HP (ProLiant splash screen) to appear.

Installing ILO Advanced pack license on the HP ProLiant BL460c G7 Blade Server, configuring Boot Order *(time 3:35)*

1. In the HP Onboard Administrator, click bay 15.
2. Click the Boot Options tab
3. Use the arrow keys to select Standard Boot Order (IPL). Select Hard Disk C: and move it to device 1. Click Apply.
4. Click ILO→Web administration.
5. In the ILO menu, open Administration→Licensing, enter the 25-digit activation license key, and click Install.

Adding new blade servers into an existing blade chassis	
	Installing host firmware updates *(time 7:42)*
	1. Click ILO→Integrated Remote Console.
	2. Click Virtual drives→CD/DVD→Virtual Image.
	3. Browse to HP firmware.iso.
	4. Wait for the HP firmware DVD to automatically install all applicable firmware updates.
	5. When the firmware updates complete, reboot the system.
	6. After the HP ProLiant BL460c G7 Blade Server reboots, press F9 to configure BIOS settings.
	BIOS: Editing the default boot controller order* *(time 4:35)*
	1. Use the arrow key on the BIOS menu to select Boot Controller order boot order, and change HP Smart Array P41-I Controller to boot order 3.
	2. Press Esc two times to return to the main menu.
	3. Press F10 to reboot the system.
Total number of steps	**Total number of steps**
One-blade scenario: 10	**One-blade scenario: 24**
Total time	**Total time**
One-blade scenario: 19 minutes, 35 seconds	**One-blade scenario: 27 minutes, 13 seconds**
	*These steps above are necessary if a local disk array is present, as was the case in our test. The Cisco UCS Service Profile has additional settings enabled to ensure the local disk array is never the primary boot device on a UCS blade. The HP Virtual Connect Server Profiles do not have any options to specify the primary boot controller, so a system administrator must configure the server through the system BIOS. If there was no consideration for local disks, the HP ProLiant BL460c G7 Server would reflect the following reductions:

Adding new blade servers into an existing blade chassis	
	One-blade scenario– step & time reductions:
	3 steps, 4 minutes 35 seconds
	Two-blade scenario– step & time reductions:
	6 steps, 9 minutes 10 seconds

Figure 8: 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, Inc.
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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.