HPE ProLiant Easy Connect solution guide for HDI deployment

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Technical white paper

Executive summary

The demands of IT implementations continue to escalate, requiring high availability, flexibility, and performance. Standardization is required to meet the needs of today's business. This document presents a solution for hosted desktop infrastructure (HDI) (RDS and WDS) on an HPE ProLiant Easy Connect platform with emphasis on simplifying the deployment of hosted or virtual desktops on an appliance that integrates storage, networking, and computing. Hewlett Packard Enterprise tested the virtual desktops on an HPE ProLiant Easy Connect EC200a Premium leveraging HPE best-in-class technologies.

Taken together, this solution demonstrates a truly integrated hosted desktop infrastructure and end-user computing solution that can

- Decrease the cost of client infrastructure while meeting the SLA and user experience demands of the business and users

- Accelerate and streamline hosted desktop infrastructure deployments with integrated components designed for end-user computing

- Reduce risk with proven configurations on systems that are optimized for hosted desktop workloads (RDS and WDS)

- Streamline operations by automating configuration tasks for administrative staff

Target audience: This document is intended for IT professionals who use, manage, or administer hosted desktop infrastructure in environments and who also require high availability, flexibility, and performance. Specifically, this information is intended for those who evaluate, recommend, or design new IT architectures, and who wants to understand HPE's approach to and the value of the HPE ProLiant Easy Connect solution. The reader should have a solid understanding of hosted desktop infrastructure, familiarity with HPE ProLiant Easy Connect, and an understanding of sizing or characterization concepts and limitations in hosted desktop computing environments.

Document purpose: The purpose of this document is to validate the HPE ProLiant Easy Connect solution as a platform for running hosted desktops and to document recommendations for a successful implementation.

HPE ProLiant Easy Connect and hosted desktop infrastructure (RDS and WDS) installations are standard configurations except where explicitly stated in the reference configuration. This solution guide describes testing performed in December 2016 and January 2017.

Introduction

One of the key drivers in the market is the end-user productivity. Today's end users expect a fully integrated and seamless experience that integrates mobile and static devices with applications and connectivity to quickly perform business tasks. HPE ProLiant Easy Connect is an enterprise-grade solution designed to deliver all the necessary IT in one design and is a more cost-effective and flexible alternative to traditional servers. The HPE ProLiant Easy Connect solution offers a high availability option that can be quickly deployed. Businesses are looking for a complete bundled solution that is offered as a cost-effective and simple-to-manage service. HPE ProLiant Easy Connect delivers an experience that meets the high expectations of both end users and IT staff alike. The HPE ProLiant Easy Connect is a solution that provides the resiliency and integrated infrastructure, which meets the reliability, performance, and security needs of solution architects within the computing space.

Hewlett Packard Enterprise has fully tested this solution with the integration of Windows® Deployment Services and Remote Desktop Services, delivering hosted desktops in seconds. Administrators can package their desktops with the business applications. This empowers administrators providing the ability to deploy and update the desktops quickly reducing the time to deploy applications.

The validation testing in this solution guide focuses on demonstrating the viability of deploying hosted desktops in a environment. In order to showcase an integrated Windows Deployment Services or Remote Desktop Services solution, Hewlett Packard Enterprise laid out the connectivity components of a basic environment.

Solution overview

The HPE ProLiant Easy Connect is a single-node appliance that has the ability to also be configured as a clustered solution providing high availability that is deployable in less than six hours. Its virtual infrastructure is complete with server, storage, networking, and management. It is available in a single- or dual-node configuration with preconfigured models enabling standardization across sites to automate and simplify the deployment. The HPE ProLiant Easy Connect solution becomes an ideal solution for customers looking for a standardized and rapid deployment of hosted desktops.

High availability clusters
HPE EC200a High Availability Cluster
support.prolianteasyconnect.com/hc/en-us/articles/115000593565-1b-How-to-install-a-EC200a-High-Availability-Cluster

HPE ML110 High Availability Cluster
support.prolianteasyconnect.com/hc/en-us/articles/115000593685-1d-How-to-install-a-ML110-High-Availability-Cluster

Configuration

Remote Desktop Services and hosted application images
The first solution that HPE validated used Microsoft® Remote Desktop Services (Terminal Services) and a set of applications on
Windows Server® 2008 R2 and 2012 R2. Windows Server supports remote environments connected to that Windows environment.
Within the Windows environment, a series of applications are available for the end-user device. HPt410 Thin Client was used as the
client device.

The HPE EC200a is configured in an HA cluster to support the **single** Windows Remote Desktop Services environment.

The virtual machine used to host the Windows Remote Desktop Services environment consists of eight virtual CPUs and 16 GB of virtual
memory (see Table 2 for specifications of Remote Desktop Services and application management).
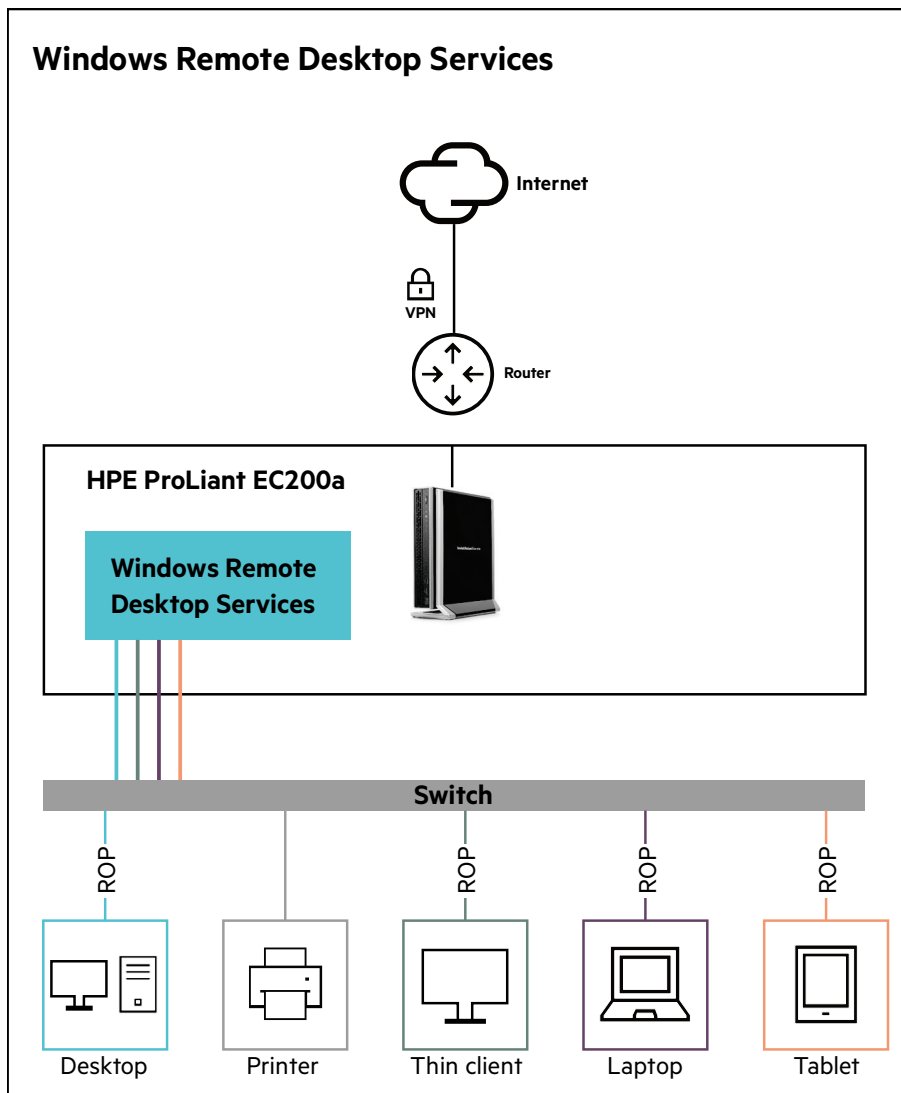
Figure 1. Solution components built on HPE ProLiant Easy Connect.

Hosted Virtual Machines

The second solution that HPE validated used multiple virtual machines hosted in the HPE EC200a cluster with each virtual machine hosting a particular application thus allowing individual client devices (thin clients) to have full access to the hosted application environment.

In this solution, the hosted image is housed as a virtual machine image (templates) on the HPE ProLiant Easy Connect server and an MSTSC session is established from individual thin clients as a connection to the application environment (see Table 3 for specifications of virtual machines hosting the applications). A master Windows image was created to improve provisioning for 2008 R2 and 2012 R2. HPt410 Thin Client was used as the client device. Figure 2 reflects this layout.

Windows Hosted Virtual Machines

Internet

VPN

Router

HPE ProLiant EC200a

VM   VM   VM   VM   VM

ROP   ROP   ROP   ROP   ROP

Switch

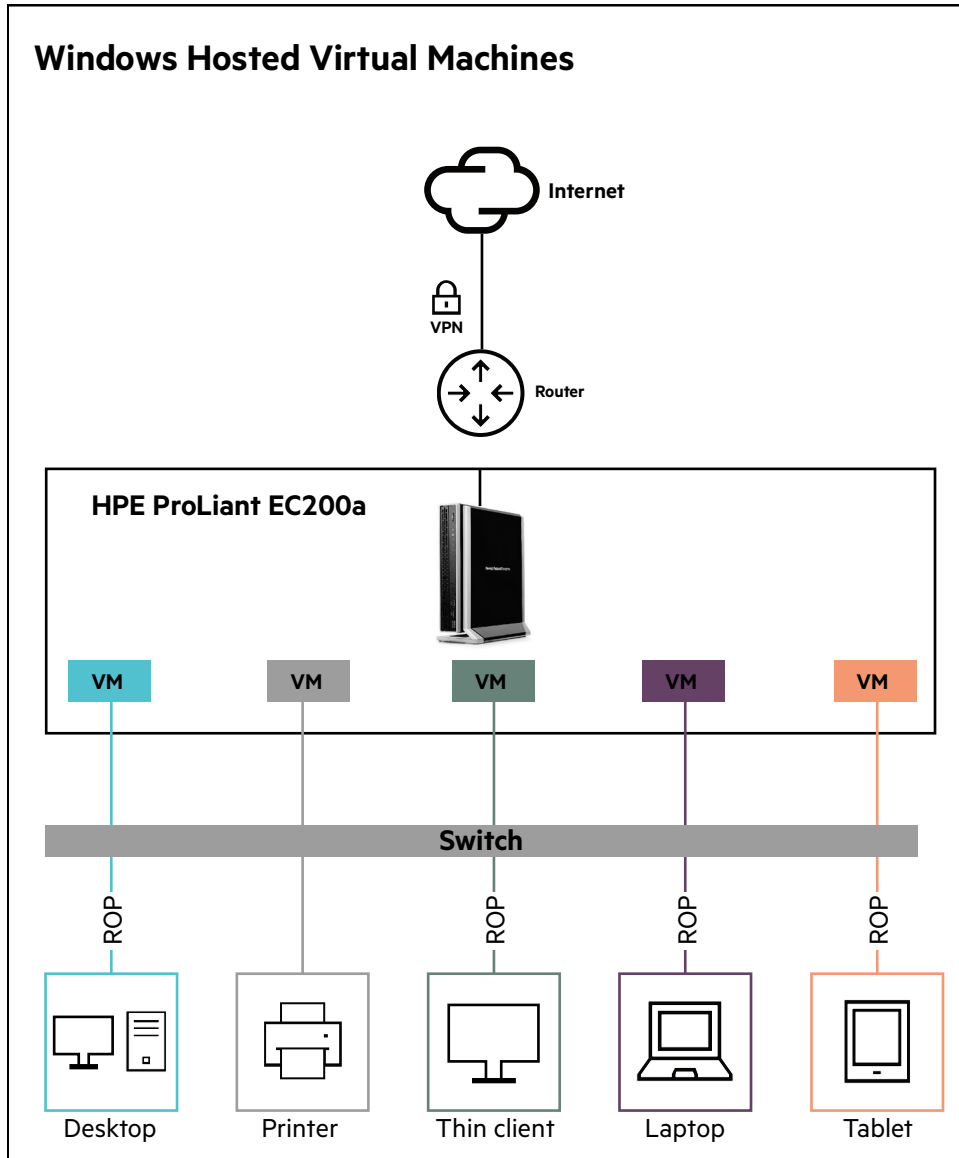Desktop   Printer   Thin client   Laptop   Tablet

Figure 2. Solution components built on HPE ProLiant Easy Connect.

Windows Deployment Services/PXE boot application environment

The third solution that HPE validated used a Windows Server 2008 image running Windows Deployment Services (WDS). The images hosted by WDS are PXE booted to the remote client allowing the local thin client processor and memory to host the application environment.

The HPE ProLiant Easy Connect server and a WDS image provided the boot environment for the device (see Table 3 for specifications of Remote Desktop Services).

HPt410 Thin Client was used as the client device. Figure 3 reflects this layout.
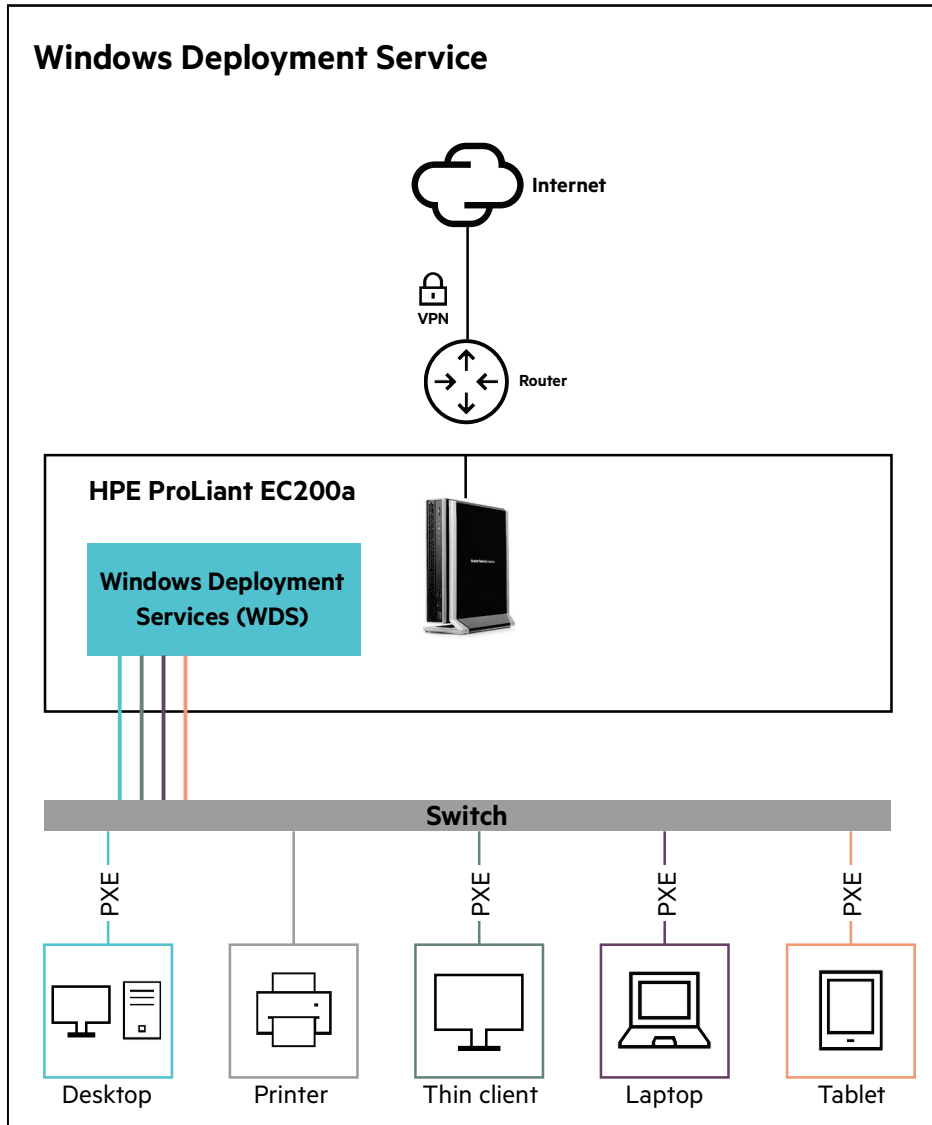

Figure 3. Solution components built on HPE ProLiant Easy Connect.

Solution components

Hardware

For this evaluation, an HPE ProLiant Easy Connect EC200a Premium server was used.

Figure 4. Front view of HPE EC200a.

Figure 5. Back view of HPE EC200a.

Software

On the HPE ProLiant Easy Connect solution, software plays a crucial role in reliability and performance of the overall system. Table 1 highlights the versions of software included with the tested solution.

Table 1. HPE software specifications

Software	Version
HPE ProLiant Easy Connect	2.0
Active Directory/Internet gateway/security/file/print/HPE iLO/backup and disaster recovery	

Table 2 highlights the Microsoft software used to deliver the solution described in this document. See Table 3 to determine where each piece of software was deployed. All Microsoft operating systems and applications are virtualized and hosted within the context of this solution. It is possible to host many of these components outside of this solution stack on existing infrastructure.

Table 2. Microsoft software utilized for the testing of this solution

Software	Version
Microsoft Server 2008 R2	Standard
Microsoft Server 2012 R2	Standard
Windows 7	Standard
Windows 8	Standard
Windows 10	Standard
Microsoft Remote Desktop Services	Standard
Microsoft Deployment Services	Standard

Virtual machines

A variety of virtual machines was deployed in the creation of this reference configuration. Table 3 highlights the configuration of each virtual machine (VM). Management and desktop VMs were protected by the high availability configuration of the solution.

Table 3. Virtual machine specifications

VM	vCPU	Memory	HDD	Networks	OS
Windows Remote Desktop Services Server	4	16 GB	120 GB	Networks defined	Windows Server 2008 R2
Windows Remote Desktop Services Server	4	16 GB	120 GB	Networks defined	Windows Server 2012 R2
Windows Deployment Server	2	4 GB	120 GB	Networks defined	Windows Server 2008 R2
Windows Deployment Server	2	4 GB	120 GB	Networks defined	Windows Server 2012 R2
Windows Hosted Virtual Machines	2	4 GB	30 GB	Networks defined	Windows 7
Windows Hosted Virtual Machines	2	4 GB	30 GB	Networks defined	Windows 8
Windows Hosted Virtual Machines	2	4 GB	30 GB	Networks defined	Windows 10

Capacity and sizing

The goal of the testing for this solution was to validate that a recommended number of hosted desktops could run within a specified set of parameters. As mentioned in the Solution overview section of this document, three use cases were examined during the testing period. Those use cases were PXE boot images and RDS/RDP images to deliver hosted desktops and applications to the user.

A standardized set of applications are installed within every virtual machine and actions are taken against the installed applications. The set of applications HPE tested against is listed as follows

- Adobe® Acrobat®
- Microsoft Office
- Microsoft Internet Explorer

Analysis and recommendations

Note

The numbers documented in this paper are representative of what customers can achieve if they were to utilize the tested workload with the hosted desktop configuration tested. Configurations for corporate images and application sets are highly varied. Hewlett Packard Enterprise recommends that for best results, customers new to hosted desktop infrastructure or end-user computing partner with HPE Services or an HPE reseller to conduct a deeper assessment of their environment and users. This will yield the best overall end-user experience and optimal return on investment.

Summary

The decentralization of resources including applications and devices has caused customers to rethink how to deliver an optimal end-user experience. Beyond this, user behaviors have also changed including where they work and on what device they prefer to work. Hewlett Packard Enterprise has addressed these challenges. The HPE ProLiant Easy Connect solution guide for with HDI builds on the strength and reliability of the existing HPE portfolio and leverages years of HPE innovation delivering complete end-to-end solutions. Unique improvements in HPE server, storage, and networking technologies make this newest architecture a great low-cost and easy-to-manage solution. Because of this, it is ideally suited for environments offering high availability, flexibility, and performance to meet IT and line of business needs.

Appendix A: Bill of materials

The following bill of materials (BOM) may contain electronic license to use (E-LTU) parts. Hewlett Packard Enterprise recommends purchasing electronic products over physical products (when available) for faster delivery and for the convenience of not tracking and managing confidential paper licenses. For more information, please contact your reseller or an HPE representative.

Note

Part numbers listed are current as of the time of testing and subject to change. The bill of materials does not include complete support options. If you have questions regarding ordering, please consult your HPE reseller or HPE sales representative for more details.

Even though we used the HPE ProLiant EC200a for testing in this solution guide, the HPE ProLiant EC200a Base and HPE ProLiant ML110 Base/Standard, and Premium are capable of running these workloads.

HPE ProLiant Easy Connect models also have an option for a 1-year subscription.

Table 4. Bill of materials for HPE ProLiant EC200a Premium server

Quantity	Part number	Description
2	851797-001	HPE ProLiant Easy Connect EC200a Premium
2	854160-B21	HPE Managed Server Cradle Kit
2	867590-B21	HPE Managed Server Comm w/4-Port NIC
1	JL070A#ABA	Aruba 2530 8 port PoE Switch
1	M5R73AT#ABA	HPt410 Thin Client
1	Q0D02A	HPE EC200a GW 3yr Upfront LTU
2	Q0D00A	HPE EC200a Premium 3 Yr

Note

HPE ProLiant Easy Connect EC200a requires the addition of a communication board in each server to enable the high availability option.

Table 5. Bill of materials for HPE EC200a Base

Quantity	Part number	Description
2	851797-001	HPE ProLiant Easy Connect EC200a Premium
2	854160-B21	HPE Managed Server Cradle Kit
2	867590-B21	HPE Managed Server Comm w/4-Port NIC
1	JL070A#ABA	Aruba 2530 8 port PoE Switch
1	M5R73AT#ABA	HPt410 Thin Client
1	Q0D02A	HPE EC200a GW 3yr Upfront LTU
2	Q0D00A	HPE EC200a Premium 3 Yr

Note

HPE ProLiant Easy Connect EC200a requires the addition of a communication board in each server to enable the high availability option.

Table 6. Bill of materials for HPE ML110 Base

Quantity	Part number	Description
2	776934-B21	HPE ProLiant ML110 Gen9 CTO/SMART ARRAY B140I WITHOUT FBWC, 4LFF Hotplug Broadcom 5717 1 GB 2-PORT 330I ADAPTER
2	826101-L21	Intel® Xeon® E5 2620v4 2.1GHz/8 Core
2	805349-B21	64 GB STD (4x16 GB)
2	BD774A	iLO Essentials
1	784584-B21	4LFF HDD Cage
12	858596-B21	HP 2 TB 6 G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty
2	811546-B21	1 GB 4-Port 366T
2	780310-B21	HP ML150 Gen9 Dedicated iLO Management Port Kit
2	776444-B21	HP 550 W ATX-Gen9 PS
2	788028-B21	HP 120 GB M.2 SSD Kit
2	U8JA5E	3 Year NBD Service

Note
The previously mentioned configuration and quantities are based on the high availability option.

Table 7. Bill of materials for HPE ML110 Standard

Quantity	Part number	Description
2	776934-B21	HPE ProLiant ML110 Gen9 CTO/SMART ARRAY B140I WITHOUT FBWC, 4LFF Hotplug Broadcom 5717 1 GB 2-PORT 330I ADAPTER
2	826100-L21	Intel Xeon E5 2640v4 2.4 GHz/10 Core
2	805349-B21	64 GB STD (4x16 GB)
2	BD774A	iLO Essentials
1	784584-B21	4LFF HDD Cage
12	628061-B21	HP 3 TB 6 G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty
2	811546-B21	1 GB 4-Port 366T
2	780310-B21	HP ML150 Gen9 Dedicated iLO Management Port Kit
2	776444-B21	HP 550 W ATX-Gen9 PS
2	788028-B21	HP 120 GB M.2 SSD Kit
2	U8JA5E	3 Year NBD Service

Note
The previously mentioned configuration and quantities are based on the high availability option.

Table 8. Bill of materials for HPE ML110 Premium

Quantity	Part number	Description
2	776934-B21	HPE ProLiant ML110 Gen9 CTO/SMART ARRAY B140I WITHOUT FBWC, 4LFF Hotplug Broadcom 5717 1 GB 2-PORT 330I ADAPTER
2	826099-L21	Intel Xeon E5 2660v4 2.0 GHz/14 Core
8	805349-B21	HP 32 GB (1x32 GB) Dual Rank x4 DDR4-2133
2	BD774A	iLO Essentials
1	784584-B21	4LFF HDD Cage
12	861678-B21	HP 4 TB 6 G SATA 7.2 K rpm LFF (3.5-inch) SC Midline 1yr Warranty
2	811546-B21	1 GB 4-Port 366T
2	780310-B21	HP ML150 Gen9 Dedicated iLO Management Port Kit
2	512327-B21	HP 750W Common Slot Gold Hot Plug Power Supply Kit
2	788028-B21	HP 120 GB M.2 SSD Kit
2	U8JA5E	3 Year NBD Service

Note

The previously mentioned configuration and quantities are based on the high availability option.

Resources

HPE ProLiant Easy Connect knowledge
knowledge.prolianteasyconnect.com

HPE ProLiant Easy Connect product family
hpe.com/servers/easyconnect

HPE ProLiant Easy Connect EC200a
hpe.com/servers/ec200a

HPE ProLiant Easy Connect ML110
hpe.com/servers/ecml110

To help us improve our documents, please provide feedback at hpe.com/contact/feedback.

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