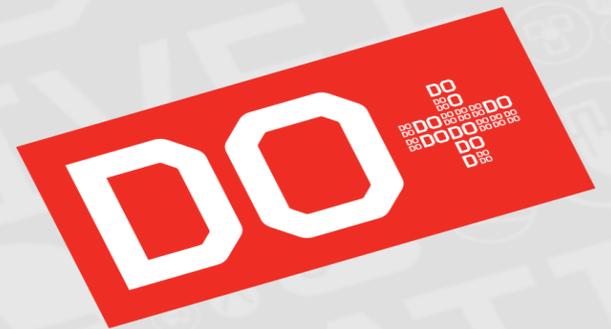
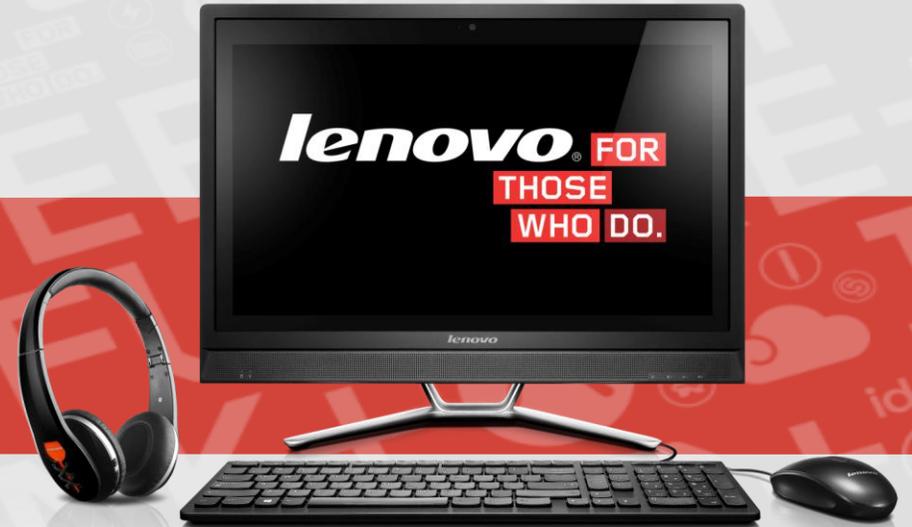


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EBG Server Education - xClarity
Administrator: Bare Metal Operating
System Deployment

Andrew Sloma | 4/13/15

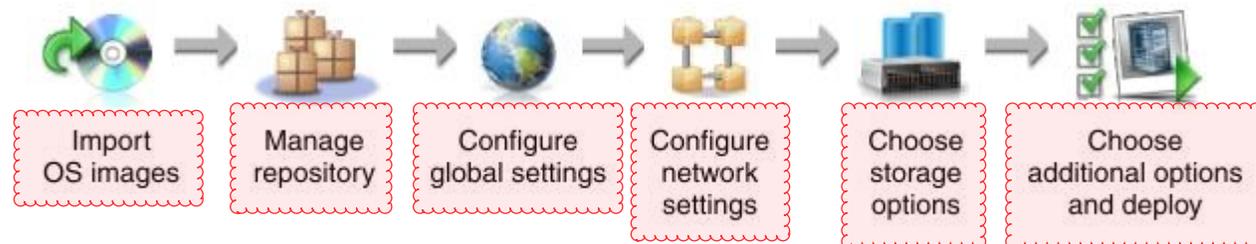


○ Bare-Metal Operating System (OS) Overview

■ General

- What is it? A bare-metal Operating System provisioning tool for mass deploying to Flex nodes and racks.
- Features:
 - No PXE server or DHCP server is needed!
 - Secure deployment (Uses TLS 1.2)
 - Uses the management network to bootstrap the install and the typically faster host data network to bulk transfer the remainder of the OS (so it's fast!)
 - Can deploy up to 28 endpoints concurrently. (Speed varies on network throughput, xClarity resources, etc)
 - Operating System support includes (VMWare 5/6, RHEL 6/7, Windows 2012)
 - User Interface with various OS settings for configuring network, storage, admin credentials, licenses, Active Directory joins, preset OS features/profiles

■ User Flow



Manage OS Images UI

lenovo. XClarity Administrator Status Jobs USERID

Dashboard Hardware Provisioning Monitoring Administration

Deploy Operating Systems: Manage OS Images

Use this page to import and delete operating system images. [Learn More...](#)

    | All Actions Filter

<input type="checkbox"/> OS Name	Description
<input type="checkbox"/>  rhels7.1	
<input type="checkbox"/> rhels7.1-x86_64-install-Basic	
<input type="checkbox"/> rhels7.1-x86_64-install-Minimal	
<input type="checkbox"/> rhels7.1-x86_64-install-Virtualization	
<input type="checkbox"/>  esxi5.5_2.33	
<input type="checkbox"/>  esxi6	
<input type="checkbox"/> esxi6-x86_64-install-Virtualization	

Deploy OS Images UI

lenovo XClarity Administrator Status Jobs USERID

Dashboard Hardware Provisioning Monitoring Administration

Deploy Operating Systems: Deploy OS Images

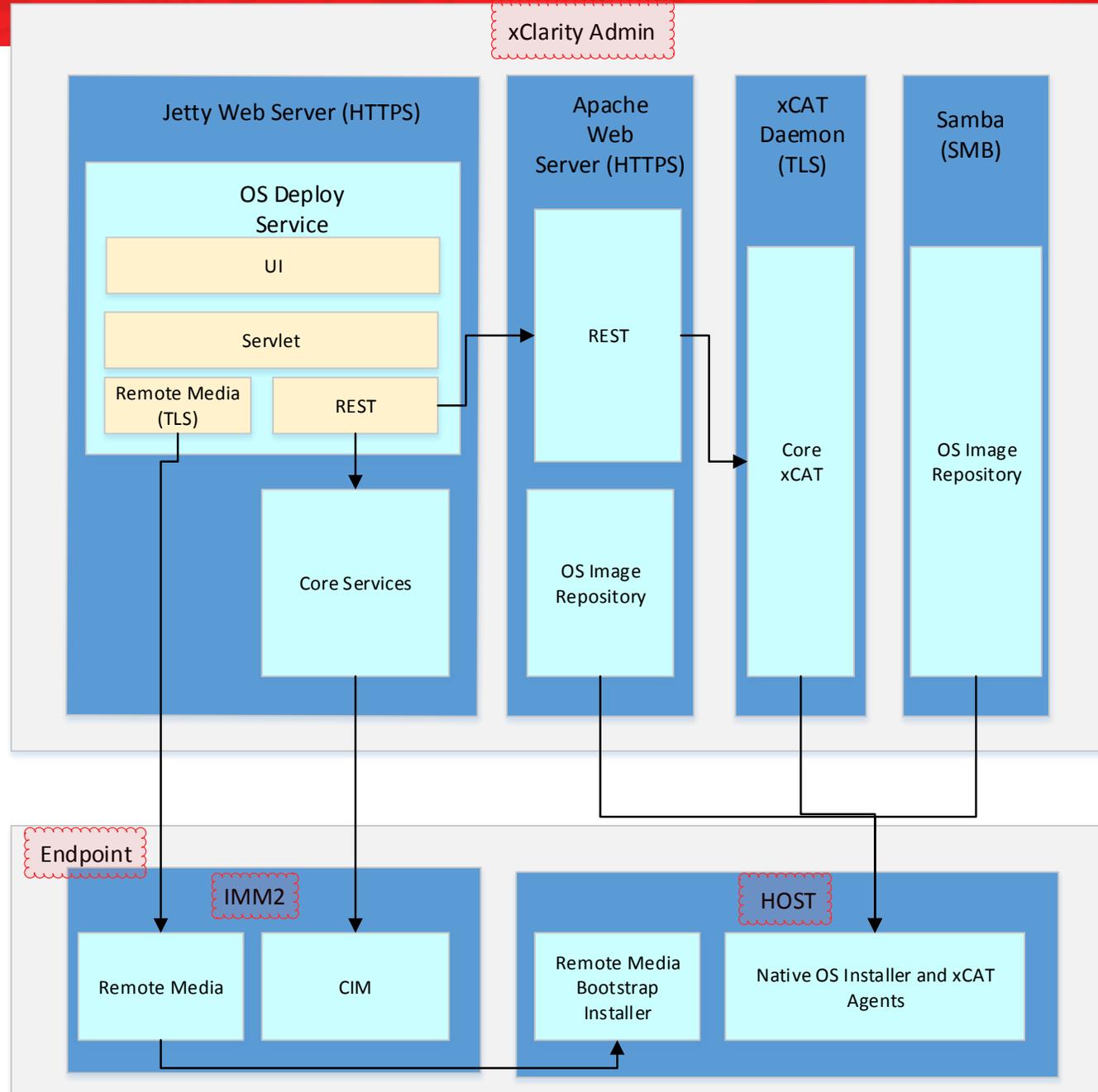
Select one or more X-Architecture compute nodes to which images will be deployed. [Learn More...](#)

Note: Before you begin, validate that the management server network port being used to attach to the data network is configured to be on the same network as the data network ports on the compute nodes.

Change Selected | All Actions Show: All Systems

Server	Rack Name / Unit	Chassis / Bay	IP Address	Deploy Status	Image to Deploy	Storage	Network Settings	
<input checked="" type="checkbox"/>	rpx-c2-bv11	No Location Configu...	SN#Y034BG16F019...	10.241.137.29	Ready	rhels7.1 rhels7.1-x86_64...	Local Disk	Edit
<input checked="" type="checkbox"/>	rpx-c2-bt14	No Location Configu...	SN#Y034BG16F019...	10.241.137.33	Ready	esxi6 esxi6-x86_64-insta...	Local Disk	Edit
<input checked="" type="checkbox"/>	rpx-c2-cc13u	No Location Configu...	SN#Y034BG16F019...	10.241.137.32	Ready	esxi5.5_2.33 esxi5.5_2.3...	Local Disk	Edit
<input type="checkbox"/>	rpx-c2-np1	No Location Configu...	SN#Y034BG16F019...	10.241.137.27	Ready	esxi5.5_2.33 esxi5.5_2.3...	Local Disk	Edit
<input type="checkbox"/>	rpx-c2-cc13l	No Location Configu...	SN#Y034BG16F019...	10.241.137.31	Ready	esxi5.5_2.33 esxi5.5_2.3...	Local Disk	Edit
<input type="checkbox"/>	Demo - 00007X8737	No Location Configu...	Demo - Lenovo dem...	169.254.1.8	Ready	esxi5.5_2.33 esxi5.5_2.3...	Local Disk	Edit
<input type="checkbox"/>	Demo - 00034X8737	No Location Configu...	Demo - Lenovo dem...	169.254.1.35	Ready	esxi5.5_2.33 esxi5.5_2.3...	Local Disk	Edit

Architectural Flow



Common Issues

■ No Network Connectivity between the management server and the Host OS

– Common Symptom:

```
Lenovo uLdr 1.0.6 v3
© Copyright Lenovo 2015
Connecting devices... complete.

>>Start PXE over IPv4
xNBA initialising devices...ok

xCAT Network Boot Agent
iPXE 1.0.3-140805 (2b28f) -- Open Source Network Boot Firmware -- http://ipxe.org
Features: HTTP HTTPS iSCSI DNS TFTP EFI
IP Address: 10.150.1.154
Netmask: 255.255.252.0
Gateway: 10.150.0.1
https://10.150.97.141:8443/tftpboot/xcat/xnba/nodes/vi-rcrhvdi13.uefi..... Connection t
imed out (http://ipxe.org/4c0a6012)
xNBA initialising devices..._
```

– Possible Solutions:

– It is almost always a network configuration issue. Configurations to check:

- If VLANs are in use make sure the Host is on the same VLAN as the management server. Deploy currently doesn't support OS level VLAN configuration so may have to set on the Ethernet adapter or Switch.
- Ensure the MAC Address selected in "Network Settings" matches a MAC in uefi that has an uplink.
- If using DHCP make sure there is a DHCP server that is doling out IP addresses properly.

– Attempt to install an Operating System manually (using IMM Remote Media and an iso) configure the same NIC as the deployment and attempt to ping the management server.

Common Issues

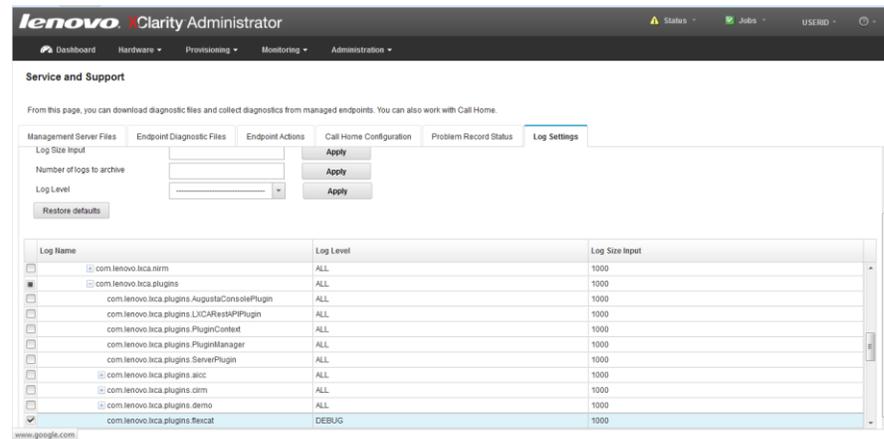
- **ESXi Fails** with **automatic reboot** or **Purple Screen of Death (PSOD)**
 - The **endpoint does not have enough memory** allocated in **uEFI**. See this Lenovo TIP:
– <https://www-947.ibm.com/support/entry/portal/docdisplay?brandind=5000008&Indocid=MIGR-5096729>
- **How do I deploy an OS to a bootable SAN Volume?**
 - Lenovo XClarity Administrator documentation includes instructions on **configuring a bootable SAN volume** and specifying it for OS deployment. *Managing Servers* -> *Configuration and deployment scenarios* -> *Deploying ESXi to SAN storage*
- **How do I deploy VMWare ESXi to a local hard drive?**
 - A very common use case which is documented in Lenovo XClarity Administrator documentation at: *Managing Servers* -> *Configuration and deployment scenarios* -> *Deploying ESXi to a local hard drive*
- **How do I join my Windows 2012 Server installation to an Active Directory domain?**
 - We provide support to join with a domain. Very specific steps must be taken on both the management server and the Windows Active Directory domain server before attempting to deploy Windows and join the domain. Details are documented in Lenovo XClarity Administrator documentation at: *Managing Servers* -> *Installing Operating Systems* -> *Integrating with Windows Active Directory*

Supported Operating Systems and Restrictions

- What **Operating Systems** and versions are **supported**?
 - Lenovo XClarity Administrator Documentation lists the particular OSs: **Managing Servers** -> **Installing Operating Systems** -> **Supported Operating Systems**
 - At a high level **RHEL 6/7**, **Windows 2012 R1 and R2**, **VMWare ESXi 5/6**
- What **OS restrictions** should I be aware of?
 - When running XClarity Administrator in NIST 800-131A mode **some OSs** will **not be available** for **deployment** since they do not have built-in support for that level of secure communication. View the documentation referenced above for details.
 - **Only Retail** and **Volume License (VL) copies** of **Windows 2012** are supported.
 - Support for **Windows 2012 R1 deployment** to **ServeRAID M1215 SAS/SATA controller** is **not supported**, 2012 R2 is supported.
 - Support for **Windows 2012 R1** and **R2** is **not supported** when a **Flex System EN4172 2-port 10 Gb Ethernet Adapter** is present. We hope to support in a future release.
 - Be aware of certain storage best practices, for example when deploying to a **SAN boot target** make sure this volume is the only one visible to the Host. Other storage recommendations can be found in Lenovo XClarity Administrator Documentation: **Managing Servers** -> **Installing Operating Systems** -> **Configuring Storage Settings for Managed Servers**

FFDC and debug

- Always download xClarity Service and Support Service Data
 - Administration -> Service and Support -> Management Server Files -> Download All Service Data
- Because logs can wrap it is also helpful to download individual FFDC dumps. OS Deploy is mapped to the 8000 ID range so you can filter on 8001 for example.
- If OS deployment fails it is many times because of network connectivity or storage configuration issues on the Host (see Common Issues). Open xClarity Remote Control to the endpoint's IMM2 and screenshot errors on the endpoint's video to aid in debug.
- In rare cases we will ask for FFDC Log Level's for the OS deploy component be set to "DEBUG", this should be at the request of development only.
 - Administration -> Service and Support -> Log Settings -> com.lenovo.lxca.plugins.flexcat -> Set Log Level to "DEBUG"



Questions?

- Questions?
- Presenter Contact Info:
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 - Austin, Texas