Server Boot

This chapter includes the following sections:

Boot Policy

Boot policy overrides the boot order in the BIOS setup menu, and determines the following:

- Selection of the boot device
- Location from which the server boots
- Order in which boot devices are invoked

For example, you can choose to have associated servers boot from a local device, such as a local disk or CD-ROM (vMedia), or you can select a SAN boot or a LAN (PXE) boot.

You can either create a named boot policy that can be associated with one or more service profiles, or create a boot policy for a specific service profile. A boot policy must be included in a service profile, and that service

profile must be associated with a server for it to take effect. If you do not include a boot policy in a service profile, the UCS domain applies the default boot policy.

> **Note** Changes to a boot policy will be propagated to all service profiles created with an updating service profile template that includes that boot policy. Reassociation of the service profile with the server to rewrite the boot order information in the BIOS is automatically triggered.

Boot Order

Cisco UCS Central enables you to use standard or enhanced boot order for the global boot policies you create in Cisco UCS Central.

- Standard boot order is supported for all Cisco UCS servers, and allows a limited selection of boot order choices. You can add a local device, such as a local disk, CD-ROM, or floppy, or you can add SAN, LAN, or iSCSI boot.

- Enhanced boot order allows you greater control over the boot devices that you select for your boot policy. Enhanced boot order is supported for all Cisco UCS B-Series M3 and M4 Blade Servers and Cisco UCS C-Series M3 and M4 Rack Servers at release 2.2(1b) or greater.

The following boot order devices are supported for standard boot order, but can be used with both:

- **Local LUN/Local Disk**—Enables standard boot from a local hard disk. Do not enter a primary or secondary LUN name. Those are reserved for enhanced boot order only.

- **CD/DVD ROM Boot**—Enables standard boot from local CD/DVD ROM drive.

- **Floppy**—Enables standard boot from local floppy drive.

- **LAN Boot**—Enables standard boot from a specified vNIC.

- **SAN Boot**—Enables standard boot from a specified vHBA.

- **iSCSI Boot**—Enables standard boot from a specified iSCSI vNIC.

The following boot order devices are supported only for enhanced boot order:

- **Local LUN/Local Disk**—Enables boot from local hard disk, or local LUN.

- **Local CD/DVD**—Enables boot from local CD/DVD drive.

- **Local Floppy**—Enables boot from local floppy drive.

- **SD Card**—Enables boot from SD Card.

- **Internal USB**—Enables boot from Internal USB.

- **External USB**—Enables boot from External USB.

- **Embedded Local Disk**—Enables booting from the embedded local disk on the Cisco UCS C240 M4SX and C240 M4L servers.

> **Note** You can add either the embedded local disk or the embedded local LUN to the boot order. Adding both is not supported.

• **Embedded Local LUN**—Enables boot from the embedded local LUN on the Cisco UCS C240 M4SX and C240 M4L servers.

> **Note** You can add either the embedded local disk or the embedded local LUN to the boot order. Adding both is not supported.

• **Local JBOD**—Enables boot from a local disk.

• **KVM Mapped CD/DVD**—Enables boot from KVM mapped ISO images.

• **KVM Mapped Floppy**—Enables boot from KVM mapped image files.

• **CIMC Mapped HDD**—Enables boot from CIMC mapped vMedia drives.

• **CIMC MAPPED CD/DVD**—Enables boot from CIMC mapped vMedia CDs and DVDs.

• **LAN Boot**—Enables you to select a specific vNIC from which to boot.

• **SAN Boot**—Enables you to select a specific vHBA from which to boot.

• **iSCSI Boot**—Enables you to select a specific iSCSI vNIC from which to boot.

• **Remote Virtual Drive**—Enables boot from a remote virtual drive.

> **Note** • If a boot policy with enhanced boot order is applied to Cisco UCS M1 and M2 blade and rack servers, or to Cisco UCS M3 blade and rack servers with a release prior to Release 2.2(1b) installed, the association fails with configuration errors.
>
> • You must enable USB for Virtual Media. If you modify the BIOS settings, that in turn affects the Virtual media. The following USB BIOS default settings are recommended for best performance:
>
>   ◦ **Make Device Non Bootable**—set to disabled
>
>   ◦ **USB Idle Power Optimizing Setting**—set to high-performance

UEFI Boot Mode

Unified Extensible Firmware Interface (UEFI) is a specification that defines a software interface between an operating system and platform firmware. Cisco UCS uses UEFI to replace the BIOS firmware interfaces. This allows the BIOS to run in UEFI mode while still providing legacy support.

You can choose either legacy or UEFI boot mode when you create a boot policy. Legacy boot mode is supported for all Cisco UCS servers. UEFI boot mode is supported on Cisco UCS B-Series M3 and M4 Blade Servers and Cisco UCS C-Series M3 and M4 Rack Servers, and allows you to enable UEFI secure boot mode.

The following limitations apply to the UEFI boot mode:

- UEFI boot mode is not supported on Cisco UCS B-Series M1 and M2 Blade Servers and Cisco UCS C-Series M1 and M2 Rack Servers.

- UEFI boot mode is not supported with the following combinations:

    ◦ Gen-3 Emulex & QLogic adapters on Cisco UCS blade & rack servers integrated with Cisco UCS domain.

    ◦ PXE boot for all adapters on Cisco UCS rack servers integrated with Cisco UCS domain.

    ◦ iSCSI boot for all adapters on Cisco UCS rack servers integrated with Cisco UCS domain.

- You cannot mix UEFI and legacy boot mode on the same server.

- Make sure an UEFI-aware operating system is installed in the device. The server will boot correctly in UEFI mode only if the boot devices configured in the boot policy have UEFI-aware OS installed. If a compatible OS is not present, the boot device is not displayed on the **Boot Policies** page.

- In some corner cases, the UEFI boot may not succeed because the UEFI boot manager entry was not saved correctly in the BIOS NVRAM. You can use the UEFI shell to enter the UEFI boot manager entry manually. This situation could occur in the following situations:

    ◦ If a blade server with UEFI boot mode enabled is disassociated from the service profile, and the blade is manually powered on using the **Server** page or the front panel.

    ◦ If a blade server with UEFI boot mode enabled is disassociated from the service profile, and a direct VIC firmware upgrade is attempted.

    ◦ If a blade or rack server with UEFI boot mode enabled is booted off SAN LUN, and the service profile is migrated.

UEFI Secure Boot

Cisco UCS Central supports UEFI secure boot on Cisco UCS B-Series M3 and M4 Blade Servers and Cisco UCS C-Series M3 and Rack Servers. When UEFI secure boot is enabled, all executables, such as boot loaders and adapter drivers, are authenticated by the BIOS before they can be loaded. To be authenticated, the images must be signed by either the Cisco Certificate Authority (CA) or a Microsoft CA.

The following limitations apply to UEFI secure boot:

- UEFI boot mode must be enabled in the boot policy.

- The Cisco UCS Manager software and the BIOS firmware must be at Release 2.2 or greater.

- User-generated encryption keys are not supported.

- UEFI secure boot can only be controlled by Cisco UCS Manager or Cisco UCS Central.

- If you want to downgrade to an earlier version of Cisco UCS Manager, and you have a blade server in secure boot mode, you must disassociate and reassociate the blade server before downgrading. Otherwise, the blade will not be discovered successfully.

Cautions and Guidelines for Downgrading a Boot Policy

You cannot downgrade to an earlier version of Cisco UCS Manager if:

- An associated server has a boot policy with UEFI boot mode enabled.

- An associated server has a boot policy with UEFI secure boot enabled.

- An associated server has a boot policy with enhanced boot order. For example, if an associated server has a boot policy which contains any of the following:

    ◦ SD card

    ◦ Internal USB

    ◦ External USB

- An associated server has a boot policy that includes both SAN and local LUN.

Creating a Boot Policy

Before You Begin

If you are creating a boot policy that boots the server from a SAN LUN and you require reliable SAN boot operations, you must first remove all local disks from servers associated with a service profile that includes the boot policy.

Procedure

	Command or Action	Purpose
Step 1	UCSC# **connect policy-mgr**	Enters policy manager mode.
Step 2	UCSC(policy-mgr)# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type **/** as the *org-name* .
Step 3	UCSC(policy-mgr) /org # **create boot-policy** *policy-name* [**purpose** {**operational**	**utility**}]	Creates a boot policy with the specified policy name, and enters organization boot policy mode. When you create the boot policy, specify the **operational** option. This ensures that the server boots from the operating system installed on the server. The **utility** options is reserved. Only use it if instructed to do so by a Cisco representative.
Step 4	UCSC(policy-mgr) /org/boot-policy # **set descr** *description*	(Optional) Provides a description for the boot policy.

	Command or Action	Purpose
		Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks do not appear in the description field of any **show** command output.
Step 5	UCSC(policy-mgr) /org/boot-policy # **set reboot-on-update** {**no** | **yes**}	Specifies whether the servers using this boot policy are automatically rebooted after you make changes to the boot order.
Step 6	UCSC(policy-mgr) /org/boot-policy # **set boot-mode** {**legacy** | **uefi**}	Specifies whether the servers using this boot policy are using UEFI or legacy boot mode.
Step 7	UCSC(policy-mgr) /org/boot-policy # **set enforce-vnic-name** {**no** | **yes**}	If you choose **yes**, Cisco UCS Central uses any vNICs or vHBAs defined in the boot order. If you choose **no**, Cisco UCS Central uses the priority specified in the vNIC or vHBA.
Step 8	UCSC(policy-mgr) /org/boot-policy # **commit-buffer**	Commits the transaction to the system configuration.
Step 9	UCSC(policy-mgr) /org/boot-policy # **create boot-security**	Enters boot security mode for the specified boot policy.
Step 10	UCSC(policy-mgr) /org/boot-policy/boot-security # **set secure-boot** {**no** | **yes**}	Specifies whether secure boot is enabled for the boot policy.
Step 11	UCSC(policy-mgr) /org/boot-policy/boot-security # **commit-buffer**	Commits the transaction to the system configuration.

The following shows how to:

- Create a boot policy named boot-policy-LAN

- Provide a description for the boot policy

- Specify that servers using this policy will not automatically reboot when the boot order is changed

```
UCSC# connect policy-mgr
UCSC(policy-mgr)# scope org /
UCSC(policy-mgr) /org* # create boot-policy boot-policy-LAN purpose operational
UCSC(policy-mgr) /org/boot-policy* # set descr "Boot policy that boots from the LAN."
UCSC(policy-mgr) /org/boot-policy* # set reboot-on-update no
UCSC(policy-mgr) /org/boot-policy* # set boot-mode uefi
UCSC(policy-mgr) /org/boot-policy* # commit-buffer
UCSC(policy-mgr) /org/boot-policy* # create boot-security
UCSC(policy-mgr) /org/boot-policy* # set secure-boot yes
UCSC(policy-mgr) /org/boot-policy* # commit-buffer
UCSC(policy-mgr) /org/boot-policy #
```

What to Do Next

Configure one or more of the following boot options for the boot policy and set their :

- **LAN Boot**—Boots from a centralized provisioning server. It is frequently used to install operating systems on a server from that server.

  If you choose the LAN Boot option, continue to .

- **SAN Boot**—Boots from an operating system image on the SAN. You can specify a primary and a secondary SAN boot. If the primary boot fails, the server attempts to boot from the secondary.

  We recommend that you use a SAN boot, because it offers the most service profile mobility within the system. If you boot from the SAN, when you move a service profile from one server to another, the new server boots from exactly the same operating system image. Therefore, the new server appears to be exactly the same server to the network.

  If you choose the SAN Boot option, continue to .

- **Virtual Media Boot**—Mimics the insertion of a physical CD into a server. It is typically used to manually install operating systems on a server.

  If you choose the Virtual Media boot option, continue to .

- **Local Disk Boot**—Boots from local storage.

  If you choose the Local Disk Boot option, continue to .

LAN Boot

You can configure a boot policy to boot one or more servers from a centralized provisioning server on the LAN. A LAN (or PXE) boot is frequently used to install operating systems on a server from that LAN server.

You can add more than one type of boot device to a LAN boot policy. For example, you could add a local disk or virtual media boot as a secondary boot device.

Configuring a LAN Boot for a Boot Policy

Before You Begin

Create a boot policy to contain the LAN boot configuration.

Procedure

	Command or Action	Purpose
Step 1	UCSC# **connect policy-mgr**	Enters policy manager mode.

	Command or Action	Purpose
Step 2	UCSC(policy-mgr)# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type **/** as the *org-name*.
Step 3	UCSC(policy-mgr) /org # **scope boot-policy** *policy-name*	Enters organization boot policy mode for the specified boot policy.
Step 4	UCSC(policy-mgr) /org/boot-policy # **create lan**	Creates a LAN boot for the boot policy and enters organization boot policy LAN mode.
Step 5	UCSC(policy-mgr) /org/boot-policy/lan # **set order** {**1** | **2** | **3** | **4**}	Specifies the boot order for the LAN boot.
Step 6	UCSC(policy-mgr) /org/boot-policy/lan # **create path** {**primary** | **secondary**}	Creates a primary or secondary LAN boot path and enters organization boot policy LAN path mode.
Step 7	UCSC(policy-mgr) /org/boot-policy/lan/path # **set vnic** *vnic-name*	Specifies the vNIC to use for the LAN path to the boot image.
Step 8	UCSC(policy-mgr) /org/boot-policy/lan/path # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to:

- Enter the boot policy named lab2-boot-policy

- Create a LAN boot for the policy

- Set the boot order to 2

- Create primary and secondary paths using the vNICs named vNIC1 and vNIC2

```
UCSC# connect policy-mgr
UCSC(policy-mgr)# scope org /
UCSC(policy-mgr) /org* # scope boot-policy lab2-boot-policy
UCSC(policy-mgr) /org/boot-policy* # create lan
UCSC(policy-mgr) /org/boot-policy/lan* # set order 2
UCSC(policy-mgr) /org/boot-policy/lan* # create path primary
UCSC(policy-mgr) /org/boot-policy/lan/path* # set vnic vNIC1
UCSC(policy-mgr) /org/boot-policy/lan/path* # exit
UCSC(policy-mgr) /org/boot-policy/lan* # create path secondary
UCSC(policy-mgr) /org/boot-policy/lan/path* # set vnic vNIC2
UCSC(policy-mgr) /org/boot-policy/lan/path* # commit-buffer
UCSC(policy-mgr) /org/boot-policy/lan/path #
```

What to Do Next

Include the boot policy in a service profile and/or template.

SAN Boot

You can configure a boot policy to boot one or more servers from an operating system image on the SAN. The boot policy can include a primary and a secondary SAN boot. If the primary boot fails, the server attempts to boot from the secondary.

Cisco recommends using a SAN boot, because it offers the most service profile mobility within the system. If you boot from the SAN when you move a service profile from one server to another, the new server boots from the same operating system image. Therefore, the new server appears as the same server to the network.

To use a SAN boot, ensure that the following is configured:

- The Cisco UCS domain must be able to communicate with the SAN storage device that hosts the operating system image.

- A boot target LUN (Logical Unit Number) on the device where the operating system image is located.

Note SAN boot is not supported on Gen-3 Emulex adapters on Cisco UCS blade and rack servers.

Configuring a SAN Boot for a Boot Policy

Note We recommend that the boot order in a boot policy include either a local disk or a SAN LUN, but not both, to avoid the possibility of the server booting from the wrong storage type. If you configure a local disk and a SAN LUN for the boot order storage type and the operating system or logical volume manager (LVM) is configured incorrectly, the server might boot from the local disk rather than the SAN LUN.

For example, on a server with Red Hat Linux installed, where the LVM is configures with default LV names and the boot order is configured with a SAN LUN and a local disk, Linux reports that there are two LVs with the same name and boots from the LV with the lowest SCSI ID, which could be the local disk.

This procedure continues directly from .

Before You Begin

Create a boot policy to contain the SAN boot configuration.

Note If you are creating a boot policy that boots the server from a SAN LUN and you require reliable SAN boot operations, we recommend that you first remove all local disks from servers associated with a service profile that includes the boot policy.

Procedure

	Command or Action	**Purpose**
Step 1	UCSC# **connect policy-mgr**	Enters policy manager mode.
Step 2	UCSC(policy-mgr)# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name* .
Step 3	UCSC(policy-mgr) /org # **scope boot-policy** *policy-name*	Enters organization boot policy mode for the specified boot policy.
Step 4	UCSC(policy-mgr) /org/boot-policy # **create san**	Creates a SAN boot for the boot policy and enters organization boot policy san mode.
Step 5	UCSC(policy-mgr) /org/boot-policy/san # **set order** *order_num*	Sets the boot order for the SAN boot. Enter a number between 1 and 16.
Step 6	UCSC(policy-mgr) /org/boot-policy/san # **create san-image** {**primary** | **secondary**}	Creates a SAN image location, and if the san-image option is specified, enters organization boot policy SAN image mode. The use of the terms primary or secondary boot devices does not imply a boot order. The effective order of boot devices within the same device class is determined by PCIe bus scan order.
Step 7	UCSC(policy-mgr) /org/boot-policy/san/san-image # **set vhba** *vhba-name*	Specifies the vHBA to be used for the SAN boot.
Step 8	UCSC(policy-mgr) /org/boot-policy/san/san-image # **create path** {**primary** | **secondary**}	Creates a primary or secondary SAN boot path and enters organization boot policy SAN path mode. The use of the terms primary or secondary boot devices does not imply a boot order. The effective order of boot devices within the same device class is determined by PCIe bus scan order.
Step 9	UCSC(policy-mgr) /org/boot-policy/san/san-image/path # **set** {**lun** *lun-id* | **wwn** *wwn-num*}	Specifies the LUN or WWN to be used for the SAN path to the boot image.
Step 10	UCSC(policy-mgr) /org/boot-policy/san/san-image/path # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to:

- Enter the boot policy named lab1-boot-policy

- Create a SAN boot for the policy

- Set the boot order to 1

- Create a primary SAN image

- Use a vHBA named vHBA2

- Create a primary path using LUN 967295200

```
UCSC# connect policy-mgr
UCSC(policy-mgr)# scope org /
UCSC(policy-mgr) /org* # scope boot-policy lab1-boot-policy
UCSC(policy-mgr) /org/boot-policy* # create san
UCSC(policy-mgr) /org/boot-policy/san* # set order 1
UCSC(policy-mgr) /org/boot-policy/san* # create san-image primary
UCSC(policy-mgr) /org/boot-policy/san* # set vhba vHBA2
UCSC(policy-mgr) /org/boot-policy/san/san-image* # create path primary
UCSC(policy-mgr) /org/boot-policy/san/san-image/path* # set lun 967295200
UCSC(policy-mgr) /org/boot-policy/san/san-image/path* # commit-buffer
UCSC(policy-mgr) /org/boot-policy/san/san-image/path #
```

What to Do Next

Include the boot policy in a service profile and/or template.

iSCSI Boot

iSCSI boot enables a server to boot its operating system from an iSCSI target machine located remotely over a network.

iSCSI boot is supported on the following Cisco UCS hardware:

- Cisco UCS blade servers that have the Cisco UCS M51KR-B Broadcom BCM57711 network adapter and use the default MAC address provided by Broadcom.

- Cisco UCS M81KR Virtual Interface Card

- Cisco UCS VIC-1240 Virtual Interface Card

- Cisco UCS VIC-1280 Virtual Interface Card

- Cisco UCS rack servers that have the Cisco UCS M61KR-B Broadcom BCM57712 network adapter.

- Cisco UCS P81E Virtual Interface Card

- Cisco UCS VIC 1225 Virtual Interface Cardon Cisco UCS rack servers

There are prerequisites that must be met before you configure iSCSI boot. For a list of these prerequisites, see Configuring an iSCSI Boot for a Boot Policy.

For a high-level procedure for implementing iSCSI boot, see the UCS Manager GUI Configuration Guide.

Configuring an iSCSI Boot for a Boot Policy

Before You Begin

You can add up to two iSCSI vNICs per boot policy. One vNIC acts as the primary iSCSI boot source, and the other acts as the secondary iSCSI boot source.

Procedure

	Command or Action	Purpose
Step 1	UCSC# **connect policy-mgr**	Enters policy manager mode.
Step 2	UCSC(policy-mgr)# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name* .
Step 3	UCSC(policy-mgr) /org # **scope boot-policy** *policy-name*	Enters organization boot policy mode for the specified boot policy.
Step 4	UCSC(policy-mgr) /org/boot-policy # **create iscsi**	Adds an iSCSI boot to the boot policy and enters iSCSI mode.
Step 5	UCSC(policy-mgr) /org/boot-policy/iscsi # **create path {primary	secondary}**	Specifies the primary and secondary paths that Cisco UCS Central uses to reach the iSCSI target. With iSCSI boot, you set up two paths. Cisco UCS Central uses the primary path first, and if that fails, then it uses the secondary path.
Step 6	UCSC(policy-mgr) /org/boot-policy/iscsi/path # **set iscsivnicname** *vnic-name*	Specifies the vNIC to use for the iSCSI path to the boot image.
Step 7	UCSC(policy-mgr) /org/boot-policy/iscsi/path # **exit**	Exits iSCSI path mode.
Step 8	UCSC(policy-mgr) /org/boot-policy/iscsi # **set order** *ordernum*	Specifies the order for the iSCSI boot in the boot order.
Step 9	UCSC(policy-mgr) /org/boot-policy/iscsi # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to:

- Enter the boot policy named lab2-boot-policy
- Create an iSCSI boot for the policy
- Create primary and secondary paths using the vNICs named vNIC1 and vNIC2
- Set the boot order to 2

```
UCSC# connect policy-mgr
UCSC(policy-mgr)# scope org /
UCSC(policy-mgr) /org* # scope boot-policy lab2-boot-policy
UCSC(policy-mgr) /org/boot-policy # create iscsi
UCSC(policy-mgr) /org/boot-policy/iscsi* # create path primary
UCSC(policy-mgr) /org/boot-policy/iscsi/path* # set vnic vNIC1
UCSC(policy-mgr) /org/boot-policy/iscsi/path* # exit
UCSC(policy-mgr) /org/boot-policy/iscsi* # set order 2
UCSC(policy-mgr) /org/boot-policy/iscsi* # create path secondary
UCSC(policy-mgr) /org/boot-policy/iscsi/path* # set vnic vNIC2
UCSC(policy-mgr) /org/boot-policy/iscsi/path* # commit-buffer
UCSC(policy-mgr) /org/boot-policy/iscsi/path #
```

What to Do Next

Include the boot policy in a service profile and/or template.

Local Disk Boot

If a server has a local drive, you can configure a boot policy to boot the server from the top-level local disk device or from any of the following second-level devices:

- **local-any**—Enables boot from any local device. This is the top-level local disk device. Use for Cisco UCS M1 and M2 blade and rack servers using standard boot order.

- **local-lun**—Enables boot from local disk or local LUN.

- **local-jbod**—Enables boot from a bootable JBOD.

- **sd-card**—Enables boot from SD card.

- **usb-intern**—Enables boot for internal USB.

- **usb-extern**—Enables boot from external USB.

- **embedded-local-lun**—Enables boot from the embedded local LUN on the Cisco UCS 240 M4 server.

- **embedded-local-disk**—Enables boot from the embedded local disk on the Cisco UCS C240 M4SX and the M4L servers.

> **Note** For Cisco UCS blade and rack servers using enhanced boot order, you can select both top-level and second-level boot devices. For Cisco UCS blade and rack servers using standard boot order, you can only select a top-level device using **local-any**.

Configuring a Local Disk Boot for a Boot Policy

This procedure continues directly from .

Before You Begin

Create a boot policy to contain the local disk boot configuration.

Procedure

	Command or Action	Purpose
Step 1	UCSC# **connect policy-mgr**	Enters policy manager mode.
Step 2	UCSC(policy-mgr)# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name* .

	Command or Action	**Purpose**
Step 3	UCSC(policy-mgr) /org # **scope boot-policy** *policy-name*	Enters organization boot policy mode for the specified boot policy.
Step 4	UCSC(policy-mgr) /org/boot-policy # **create storage**	Creates a storage boot for the boot policy and enters boot policy storage mode. **Note** If you delete all of the boot order items under **storage**, the storage group is also deleted. You will need to recreate the storage group before you can add a new local boot disk.
Step 5	UCSC(policy-mgr) /org/boot-policy/storage # **set order** *order_num*	Sets the boot order for the local disk boot. Enter a number between 1 and 16. **Note** If you create more than one local disk boot, set the order on the local disk boot level.
Step 6	UCSC(policy-mgr) /org/boot-policy/storage # **create local**	Creates a local disk location and enters organization boot policy local storage mode.
Step 7	UCSC(policy-mgr) /org/boot-policy/storage/local # **create {embedded-local-jbod** | **embedded-local-lun** | **local-any** | **local-jbod** | **local-lun** | **sd-card** | **usb-extern** | **usb-intern}**	Specifies the type of local storage. For more information, see Local Disk Boot, on page 13. **Note** You can add either the embedded local disk or the embedded local LUN to the boot order. Adding both is not supported.
Step 8	UCSC(policy-mgr) /org/boot-policy/storage/local # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to:

- Enter the boot policy named lab1-boot-policy

- Create a local jbod and sd card boots for the policy

- Set the boot orders for each

```
UCSC# connect policy-mgr
UCSC(policy-mgr)# scope org /
UCSC(policy-mgr) /org* # scope boot-policy lab1-boot-policy
UCSC(policy-mgr) /org/boot-policy* # create storage
UCSC(policy-mgr) /org/boot-policy/storage* # create local
UCSC(policy-mgr) /org/boot-policy/storage/local* # create local-jbod
UCSC(policy-mgr) /org/boot-policy/storage/local/local-jbod* # set order 1
UCSC(policy-mgr) /org/boot-policy/storage/local/local-jbod* # up
UCSC(policy-mgr) /org/boot-policy/storage/local* # create sd-card
UCSC(policy-mgr) /org/boot-policy/storage/local/sd-card* # set order 2
UCSC(policy-mgr) /org/boot-policy/storage/local/sd-card* # commit-buffer
UCSC(policy-mgr) /org/boot-policy/storage/local/sd-card #
```

What to Do Next

Include the boot policy in a service profile and/or template.

Virtual Media Boot

You can configure a boot policy to boot one or more servers from a virtual media device that is accessible from the server. A virtual media device mimics the insertion of a physical CD/DVD disk (read-only) or floppy disk (read-write) into a server. This type of server boot is typically used to manually install operating systems on a server.

Configuring a Virtual Media Boot for a Boot Policy

> **Note** Virtual Media requires the USB to be enabled. If you modify the BIOS settings that affect the USB functionality, you also affect the Virtual Media. Therefore, we recommend that you leave the following USB BIOS defaults for best performance:
>
>   • Make Device Non Bootable—set to **disabled**.
>
>   • USB Idle Power Optimizing Setting—set to **high-performance**

Before You Begin

Create a boot policy to contain the virtual media boot configuration.

Procedure

	Command or Action	Purpose
Step 1	UCSC# **connect policy-mgr**	Enters policy manager mode.
Step 2	UCSC(policy-mgr)# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name* .
Step 3	UCSC(policy-mgr) /org # **scope boot-policy** *policy-name*	Enters organization boot policy mode for the specified boot policy.
Step 4	UCSC(policy-mgr) /org/boot-policy # **create virtual-media** {**read-only** | **read-write**}	Creates a virtual media boot for the boot policy, specifies whether the virtual media is has read-only or read-write privileges, and enters organization boot policy virtual media mode.
Step 5	UCSC(policy-mgr) /org/boot-policy/virtual-media # **set order** {**1** | **2** | **3** | **4**}	Sets the boot order for the virtual-media boot.
Step 6	UCSC(policy-mgr) /org/boot-policy/virtual-media # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to:

- Enter the boot policy named lab3-boot-policy

- Create a virtual media boot with read-only privileges for the policy

- Set the boot order to 3

```
UCSC# connect policy-mgr
UCSC(policy-mgr)# scope org /
UCSC(policy-mgr) /org* # scope boot-policy lab3-boot-policy
UCSC(policy-mgr) /org/boot-policy* # create virtual-media read-only
UCSC(policy-mgr) /org/boot-policy/virtual-media* # set order 3
UCSC(policy-mgr) /org/boot-policy/virtual-media* # commit-buffer
```

What to Do Next

Include the boot policy in a service profile and/or template.

Deleting a Boot Policy

Procedure

	Command or Action	Purpose
Step 1	UCSC# **connect policy-mgr**	Enters policy manager mode.
Step 2	UCSC(policy-mgr) # **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name*.
Step 3	UCSC(policy-mgr) /org # **delete boot-policy** *policy-name*	Deletes the specified boot policy.
Step 4	UCSC(policy-mgr) /org # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to delete a boot policy:

```
UCSC# connect policy-mgr
UCSC(policy-mgr)# scope org /
UCSC(policy-mgr) /org # delete boot-policy boot-policy-LAN
UCSC(policy-mgr) /org* # commit-buffer
UCSC(policy-mgr) /org #
```