Setting the Management IP Address

Management IP Address

Each server in a Cisco UCS domain must have a one or more management IP addresses assigned to its Cisco Integrated Management Controller (CIMC) or to the service profile associated with the server. Cisco UCS Manager uses these IP addresses for external access that terminates in the CIMC. This external access can be through one of the following services:

- KVM console

- Serial over LAN

- An IPMI tool

The management IP addresses used to access the CIMC on a server can be out-of-band (OOB) addresses, through which traffic traverses the fabric interconnect via the management port, or inband addresses, through which traffic traverses the fabric interconnect via the fabric uplink port. Up to six IP addresses can be configured to access the CIMC on a server, two out-of-band (OOB) and four inband.

You can configure the following management IP addresses:

- A static OOB IPv4 address assigned directly to the server

- An OOB IPv4 address assigned to the server from a global ext-mgmt pool

- An inband IPv4 address derived from a service profile associated with the server

- An inband IPv4 address drawn from a management IP pool and assigned to a service profile or service profile template

- An static inband IPv6 address assigned directly to the server

- An inband IPv6 address derived from a service profile associated with the server

You can assign multiple management IP addresses to each CIMC on the server and to the service profile associated with the server. If you do so, you must use different IP addresses for each of them.

A management IP address that is assigned to a service profile moves with that service profile. If KVM or SoL sessions are active when you migrate the service profile to another server, Cisco UCS Manager terminates the sessions and does not restart them after the migration is completed. You configure the IP address when you create or modify a service profile.

Note You cannot assign a static IP address to a server or service profile if that IP address has already been assigned to a server or service profile in the Cisco UCS domain. If you attempt to do so, Cisco UCS Manager warns you that the IP address is already in use and rejects the configuration.

A unicast Internet Control Message Protocol (ICMP) request will be sent to the gateway IP address every second from each server that is configured with an inband IP address. This request is to check if connectivity for the inband traffic through the current Fabric Interconnect (FI) is up, and to initiate a failover to the other FI if it is down. The path selected for inband and the failover operations are completely independent of the server data traffic. The default polling interval is 1 second and the polling interval is configurable to a maximum of 5 seconds. After three failed polls, the CIMC will failover to the other FI. During failover, the CIMC will issue a Gratuitous Address Resolution Protocol (GARP) on the newly selected uplinks to notify the network that the MAC has been moved to a new location.

Configuring the Management IP Address on a Modular Server

Configuring a Modular Server to Use a Static IP Address

Procedure

	Command or Action	**Purpose**
Step 1	UCS-A# **scope server** *chassis-id* / *cartridge-id* / *server-id*	Enters server mode for the specified server.
Step 2	UCS-A /chassis/cartridge/server # **scope cimc**	Enters server CIMC mode.
Step 3	UCS-A /chassis/cartridge/server/cimc # **create ext-static-ip**	Creates a static management IP address for the specified server.
Step 4	UCS-A /chassis/cartridge/server/cimc/ext-static-ip # **set addr** *ip-addr*	Specifies the static IPv4 address to be assigned to the server.
Step 5	UCS-A /chassis/cartridge/server/cimc/ext-static-ip # **set default-gw** *ip-addr*	Specifies the default gateway that the IP address should use.
Step 6	UCS-A /chassis/cartridge/server/cimc/ext-static-ip # **set subnet** *ip-addr*	Specifies the subnet mask for the IP address.

	Command or Action	Purpose
Step 7	UCS-A /chassis/cartridge/server/cimc/ext-static-ip # **commit-buffer**	Commits the transaction to the system configuration.

Example

The following example configures a static management IP address for chassis 1 cartridge 1 server 1, sets the static IPv4 address, sets the default gateway, sets the subnet mask, and commits the transaction:

```
UCS-A# scope server 1/1/1
UCS-A /chassis/cartridge/server # scope cimc
UCS-A /chassis/cartridge/server/cimc # create ext-static-ip
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # set addr 192.168.10.10
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # set default-gw 192.168.10.1
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # set subnet 255.255.255.0
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # commit-buffer
UCS-A /chassis/cartridge/server/cimc/ext-static-ip #
```

Configuring a Modular Server to Use a Static IPv6 Address

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-id* / *cartridge-id* / *server-id*	Enters server mode for the specified server.
Step 2	UCS-A /chassis/cartridge/server # **scope cimc**	Enters server CIMC mode.
Step 3	UCS-A /chassis/cartridge/server/cimc # **create ext-static-ip6**	Creates a static management IPv6 address for the specified server.
Step 4	UCS-A /chassis/cartridge/server/cimc/ext-static-ip6 # **set addr ipv6-addr**	Specifies the static IPv6 address to be assigned to the server.
Step 5	UCS-A /chassis/cartridge/server/cimc/ext-static-ip6 # **set default-gw ip6-addr**	Specifies the default gateway that the IPv6 address should use.
Step 6	UCS-A /chassis/cartridge/server/cimc/ext-static-ip6 # **set prefix ip6-addr**	Specifies the network prefix for an IPv6 address.
Step 7	UCS-A /chassis/cartridge/server/cimc/ext-static-ip6 # **commit-buffer**	Commits the transaction to the system configuration.

Example

The following example configures a static management IPv6 address for chassis 1 cartridge 1 server 1, sets a static IPv6 address, sets the default gateway, sets the network prefix, and commits the transaction:

```
UCS-A# scope server 1/1/1
UCS-A /chassis/cartridge/server # scope cimc
UCS-A /chassis/cartridge/server/cimc # create ext-static-ip6
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # set addr 2001:888::10
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # set default-gw 2001:888::100
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # set prefix 64
UCS-A /chassis/cartridge/server/cimc/ext-static-ip* # commit-buffer
UCS-A /chassis/cartridge/server/cimc/ext-static-ip #
```

Configuring a Server to Use the Management IP Pool

Deleting the static management IP address returns the specified server to the management IP pool.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-id* / *cartridge-id* / *server-id*	Enters server mode for the specified server.
Step 2	UCS-A /chassis/cartridge/server # **scope cimc**	Enters server CIMC mode.
Step 3	UCS-A /chassis/cartridge/server/cimc # **delete** {*ext-static-ip* | *ext-static-ip6*}	Deletes the external static IPv4 or IPv6 address and returns the server to the management IP pool.
Step 4	UCS-A /chassis/cartridge/server/cimc/ # **commit-buffer**	Commits the transaction to the system configuration.

Example

The following example deletes the static management IP address for chassis 1 cartridge 1 server 1 and commits the transaction:

```
UCS-A# scope server 1/1/1
UCS-A /chassis/cartridge/server # scope cimc
UCS-A /chassis/cartridge/server/cimc # delete ext-static-ip
UCS-A /chassis/cartridge/server/cimc* # commit-buffer
UCS-A /chassis/cartridge/server/cimc/ #
```

The following example deletes the static management IPv6 address for chassis 1 cartridge 1 server 1 and commits the transaction:

```
UCS-A# scope server 1/1/1
UCS-A /chassis/cartridge/server # scope cimc
UCS-A /chassis/cartridge/server/cimc # delete ext-static-ip6
UCS-A /chassis/cartridge/server/cimc* # commit-buffer
UCS-A /chassis/cartridge/server/cimc/ #
```

Setting the Management IP Address on a Service Profile or Service Profile Template

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the org-name.
Step 2	UCS-A /org # **scope service-profile** *profile-name*	Enters organization service profile mode for the specified service.
Step 3	UCS-A /org/service-profile # **set ext-mgmt-ip-state** {*none* | *ext-pooled-ip* | *ext-pooled-ip6* | *ext-static-ip* | *ext-static-ip6*}	Specifies how the management IPv4 or IPv6 address will be assigned to the service profile. You can set the management IP address policy using the following options: • None--The service profile is not assigned an IP address. • Pooled--The service profile is assigned an IP address from the management IPv4 or IPv6 pool. • Static--The service profile is assigned the configured static IPv4 or IPv6 address. **Note** Setting the ext-management-ip-state to static for a service profile template is not supported and will result in an error.
Step 4	UCS-A /org/service-profile # **commit-buffer**	Commits the transaction to the system configuration.

Example

The following example sets the management address policy for a service profile called accounting to static IPv4 and then commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope service-profile accounting
UCS-A /org/service-profile # set ext-mgmt-ip-state ext-static-ip
UCS-A /org/service-profile* # commit-buffer
UCS-A /org/service-profile #
```

What to do next

If you have set the management IP address to static, configure a server to use a static IP address.

Configuring the Management IP Pool

Management IP Pools

The default management IP pool, **IP Pool ext-mgmt** is a collection of external IPv4 and IPv6 addresses. Cisco UCS Manager reserves each block of IP addresses in the management IP pool for external access that terminates in the CIMC on a server.

By default, the **IP Pool ext-mgmt** is used to configure the CIMC outbound management IP address. You cannot change this IP pool if already a static IP address is assigned to the server from this pool. If you want to configure the outbound management IP address for CIMC from a static IP address, then you can delete the IP addresses from the default management IP pool.

You can configure separate out-of-band IPv4 address pools, and in-band IPv4 or IPv6 address pools. You can configure in-band pools that contain both IPv4 and IPv6 address blocks.

Tip To avoid assigning an IP pool that contains only IPv4 addresses as the in-band IPv6 policy, or assigning an IP pool that contains only IPv6 addresses as the in-band IPv4 policy to a server CIMC, it is suggested that you configure separate in-band address pools, each with only IPv4 or IPv6 addresses.

You can configure service profiles and service profile templates to use IP addresses from the management IP pools. You cannot configure servers to use the management IP pool.

All IP addresses in the management IP pool must be in the same IPv4 subnet, or have the same IPv6 network prefix as the IP address of the fabric interconnect.

Note The management IP pool must not contain any IP addresses that were assigned as static IP addresses for a server or service profile.

Configuring IP Address Blocks for the Management IP Pool

The management IP pool must not contain any IP addresses that were assigned as static IP addresses for a server or service profile.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org /**	Enters root organization mode.
Step 2	UCS-A /org # **scope ip-pool ext-mgmt**	Enters organization IP pool mode.

	Command or Action	**Purpose**
		Note You cannot create (or delete) a management IP pool. You can only enter (scope to) the existing default pool.
Step 3	(Optional) UCS-A /org/ip-pool # **set descr** *description*	Provides a description for the management IP pool. This description applies to all address blocks in the management IP pool. **Note** If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any **show** command output.
Step 4	UCS-A /org/ip-pool # **set assignmentorder {default | sequential}**	This can be one of the following: • **default**—Cisco UCS Manager selects a random identity from the pool. • **sequential**—Cisco UCS Manager selects the lowest available identity from the pool.
Step 5	UCS-A /org/ip-pool # **create block** *first-ip-addr last-ip-addr gateway-ip-addr subnet-mask*	Creates a block (range) of IP addresses, and enters organization IP pool block mode. You must specify the first and last IP addresses in the address range, the gateway IP address, and subnet mask. **Note** An IP pool can contain more than one IP block. To create multiple blocks, enter multiple **create block** commands from organization IP pool mode.
Step 6	UCS-A /org/ip-pool/block # **set primary-dns** *ip-address* |**secondary-dns** *ip-address*	Specifies the primary DNS and secondary DNS IP addresses.
Step 7	UCS-A /org/ip-pool/ ipv6-block # **commit-buffer**	Commits the transaction to the system configuration.
Step 8	UCS-A /org/ip-pool/block # **exit**	Exits IPv4 block configuration mode.
Step 9	UCS-A /org/ip-pool # **create ipv6-block** *first-ip6-addr last-ip6-addr gateway-ip6-addr prefix*	Creates a block (range) of IPv6 addresses, and enters organization IP pool IPv6 block mode. You must specify the first and last IPv6 addresses in the address range, the gateway IPv6 address, and network prefix.

	Command or Action	Purpose
		Note An IP pool can contain more than one IPv6 block. To create multiple IPv6 blocks, enter multiple **create ipv6-block** commands from organization IP pool mode.
Step 10	UCS-A /org/ip-pool/ipv6-block # **set primary-dns** *ip6-address* **secondary-dns** *ip6-address*	Specifies the primary DNS and secondary DNS IPv6 addresses.
Step 11	UCS-A /org/ip-pool/ipv6-block # **commit-buffer**	Commits the transaction to the system configuration.

Example

The following example configures an IPv4 address block for the management IP pool, specifies the primary and secondary IPv4 addresses, creates an IPv6 block, specifies the primary and secondary IPv6 addresses and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope ip-pool ext-mgmt-ip
UCS-A /org/ip-pool* # set descr "This is a management ip pool example."
UCS-A /org/ip-pool* # create block 192.168.100.1 192.168.100.200 192.168.100.10 255.255.255.0
UCS-A /org/ip-pool/block* # set primary-dns 192.168.100.1 secondary-dns 192.168.100.20
UCS-A /org/ip-pool/block* commit-buffer
UCS-A /org/ip-pool/block exit
UCS-A /org/ip-pool* # create ipv6-block 2001:888::10 2001:888::100 2001:888::1 64
UCS-A /org/ip-pool/ipv6- block* set primary-dns 2001:888::11 secondary-dns 2001:888::12
UCS-A /org/ip-pool/ipv6- block* commit-buffer
UCS-A /org/ip-pool/ipv6- block #UCS-A /org/ip-pool/block* # commit-buffer
UCS-A /org/ip-pool/block #
```

The following example configures an IPv6 address block for the management IP pool and commits the transaction:

```
UCS-A# scope org /
UCS-A /org #scope ip-pool ext-mgmt-ip
UCS-A /org/ip-pool* # set descr "This is a management IPv6 pool example."
UCS-A /org/ip-pool* # create ipv6-block 2001:888::10 2001:888::100 2001:888::1 64
UCS-A /org/ip-pool/ipv6-block* # commit-buffer
UCS-A /org/ip-pool/ipv6-block* #
```

What to do next

Configure one or more service profiles or service profile templates to obtain the CIMC IP address from the management IP pool.

Deleting an IP Address Block from the Management IP Pool

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type **/** as the *org-name* .
Step 2	UCS-A /org # **scope ip-pool ext-mgmt**	Enters the management IP pool.
Step 3	UCS-A /org/ip-pool # **delete** {*ip-block|ipv6-block*} {*first-ip-addr|first-ip6-addr*} {*last-ip-addr | last-ip6-addr*}	Deletes the specified block (range) of IPv4 or IPv6 addresses.
Step 4	UCS-A /org/ip-pool # **commit-buffer**	Commits the transaction to the system configuration.

Example

The following example deletes an IP address block from the management IP pool and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope ip-pool ext-mgmt
UCS-A /org/ip-pool # delete block 192.168.100.1 192.168.100.200
UCS-A /org/ip-pool* # commit-buffer
UCS-A /org/ip-pool #
```

This example shows how to delete an IPv6 address block from the management IP pool and commit the transaction:

```
UCS-A# scope org /
UCS-A /org # scope ip-pool pool4
UCS-A /org/ip-pool # delete ipv6-block 2001::1 2001::10
UCS-A /org/ip-pool* # commit-buffer
UCS-A /org/ip-pool #
```

Changing the System Name

Procedure

	Command or Action	Purpose
Step 1	UCS-A # **scope system**	Enters system mode.
Step 2	UCS-A /system # **set name** *name*	Sets the system name.
Step 3	UCS-A /system # **commit-buffer**	Commits the transaction to the system configuration.

The name is updated on both fabric interconnects within about 30 seconds after the transaction is committed.

Example

The following example changes the system name and commits the transaction:

```
UCS-A# scope system
UCS-A /system* # set name SanJose5
UCS-A /system* # commit-buffer
UCS-A /system #
```

Changing the Management Subnet of a Cluster

When changing the IPv4 management subnet in a cluster configuration, you must change the following three IPv4 addresses simultaneously and you must configure all three in the same subnet:

• Management port IP address for fabric interconnect A

• Management port IP address for fabric interconnect B

• Cluster IP (virtual IP) address

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fabric-interconnect a**	Enters fabric interconnect mode for fabric A.
Step 2	UCS-A /fabric-interconnect # **set out-of-band ip** *ip-address* **netmask** *netmask* **gw** *gateway-ip-address*	Sets the IP address, network mask, and gateway IP address of the fabric interconnect.
Step 3	UCS-A /fabric-interconnect # **scope fabric-interconnect b**	Enters fabric interconnect mode for fabric B.
Step 4	UCS-A /fabric-interconnect # **set out-of-band ip** *ip-address* **netmask** *netmask* **gw** *gateway-ip-address*	Sets the IP address, netmask, and gateway IP address of the fabric interconnect.
Step 5	UCS-A /fabric-interconnect # **scope system**	Enters system mode.
Step 6	UCS-A /system # **set virtual-ip** *vip-address*	Sets the virtual IP address for the cluster.
Step 7	UCS-A /system # **commit-buffer**	Commits the transaction to the system configuration.

When you commit the transaction, you are disconnected from the management session. Reconnect at the new management IP address.

Example

This example changes both fabric-interconnect IP addresses, changes the virtual IP address, and commits the transaction, disconnecting the session:

```
UCS-A# scope fabric-interconnect a
UCS-A /fabric-interconnect # set out-of-band ip 192.0.2.111 netmask 255.255.255.0 gw 192.0.2.1
UCS-A /fabric-interconnect* # scope fabric-interconnect b
UCS-A /fabric-interconnect* # set out-of-band ip 192.0.2.112 netmask 255.255.255.0 gw
192.0.2.1
UCS-A /fabric-interconnect* # scope system
UCS-A /system* # set virtual-ip 192.0.2.113
UCS-A /system* # commit-buffer
```

Changing the Management Prefix of a Cluster

When changing the IPv6 management prefix in a cluster configuration, you must change the following three IPv6 addresses simultaneously and you must configure all three with the same network prefix:

- Management port IPv6 address for fabric interconnect A

- Management port IPv6 address for fabric interconnect B

- Cluster IPv6 (virtual IPv6) address

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fabric-interconnect a**	Enters fabric interconnect mode for fabric A.
Step 2	UCS-A fabric-interconnect # **scope ipv6-config**	Enters IPv6 configuration mode for fabric A.
Step 3	UCS-A fabric-interconnect/ ipv6-config # **set out-of-band ipv6** *ipv6-addr* **ipv6-gw** *ipv6-gw-addr* **ipv6-prefix** *prefix*	Sets the management IPv6 address, gateway IPv6 address, and network prefix for fabric A.
Step 4	UCS-A fabric-interconnect/ipv6-config # **scope fabric-interconnect b**	Enter fabric interconnect mode for fabric B.
Step 5	UCS-A fabric-interconnect/ # **scope ipv6-config**	Enter IPv6 configuration mode for fabric B
Step 6	UCS-A/fabric-interconnect/ipv6-config # **set out-of-band ipv6** *ipv6-addr* **ipv6-gw** *ipv6-gw-addr* **ipv6-prefix** *prefix*	Sets the management IPv6 address, gateway IPv6 address, and network prefix for fabric B.
Step 7	UCS-A/fabric-interconnect/ipv6-config # **scope system**	Enters system mode.
Step 8	UCS-A/system # **set virtual-ip ipv6** *virtual-ip6-addr*	Sets the virtual IPv6 address for the cluster.
Step 9	UCS-A/system # **commit-buffer**	Commits the transaction to the system configuration.

When you commit the transaction, you are disconnected from the management session. Reconnect at the new management IPv6 address.

Example

This example changes both management IPv6 addresses, changes the virtual IPv6 address, and commits the transaction:

```
UCS-A# scope fabric-interconnect a
UCS-A /fabric-interconnect # scope ipv6-config
UCS-A /fabric-interconnect/ipv6-config # set out-of-band ipv6 2001:10::157
UCS-A /fabric-interconnect/ipv6-config* # set out-of-band ipv6-gw 2001:10::1
UCS-A /fabric-interconnect/ipv6-config* # set out-of-band ipv6-prefix 64
UCS-A /fabric-interconnect/ipv6-config* # scope fabric-interconnect b
UCS-A /fabric-interconnect* # scope ipv6-config
UCS-A /fabric-interconnect/ipv6-config* # set out-of-band ipv6 2001:10::158
UCS-A /fabric-interconnect/ipv6-config* # set out-of-band ipv6-gw 2001:10::1
UCS-A /fabric-interconnect/ipv6-config* # set out-of-band ipv6-prefix 64
UCS-A /fabric-interconnect/ipv6-config* # scope system
UCS-A /system* # set virtual-ip ipv6 2001:10::156
UCS-A /system* # commit-buffer
UCS-A /system #
```