Configure VNIC Tuning on Intersight Managed Mode

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Related Information

Introduction

This document describes the fine-tuning options for the VNIC adapters in Intersight Managed Mode (IMM) through the server profiles.

Prerequisites

OS vendor recommended settings for ethernet adapters.

Operational Compute, Storage, and Management Policies must be configured beforehand.

Requirements

Cisco recommends that you have knowledge of these topics:

- Intersight Managed Mode
- Physical Network Connectivity
- OS recommended ethernet adapter settings
- VNIC fine-tuning elements

Components used

The information in this document is based on these software and hardware versions:

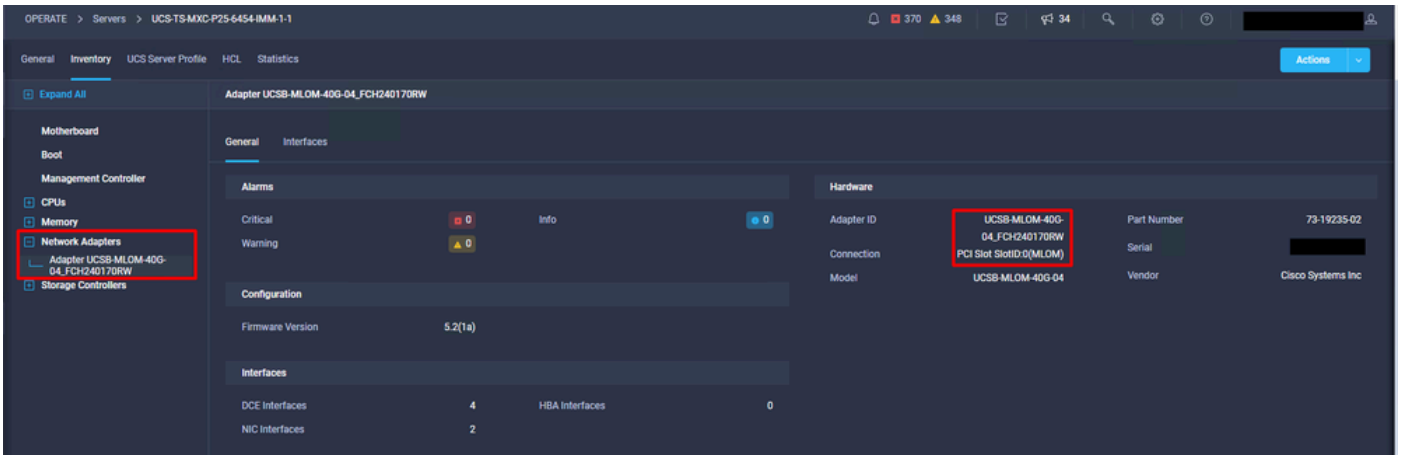
- UCS-B200-M5 firmware 4.2(1a)
- Cisco UCS 6454 Fabric Interconnect, firmware 4.2(1e)
- Intersight software as a service (SaaS)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Configure

Step 1. Identify VIC Adapter and Slot ID on the server

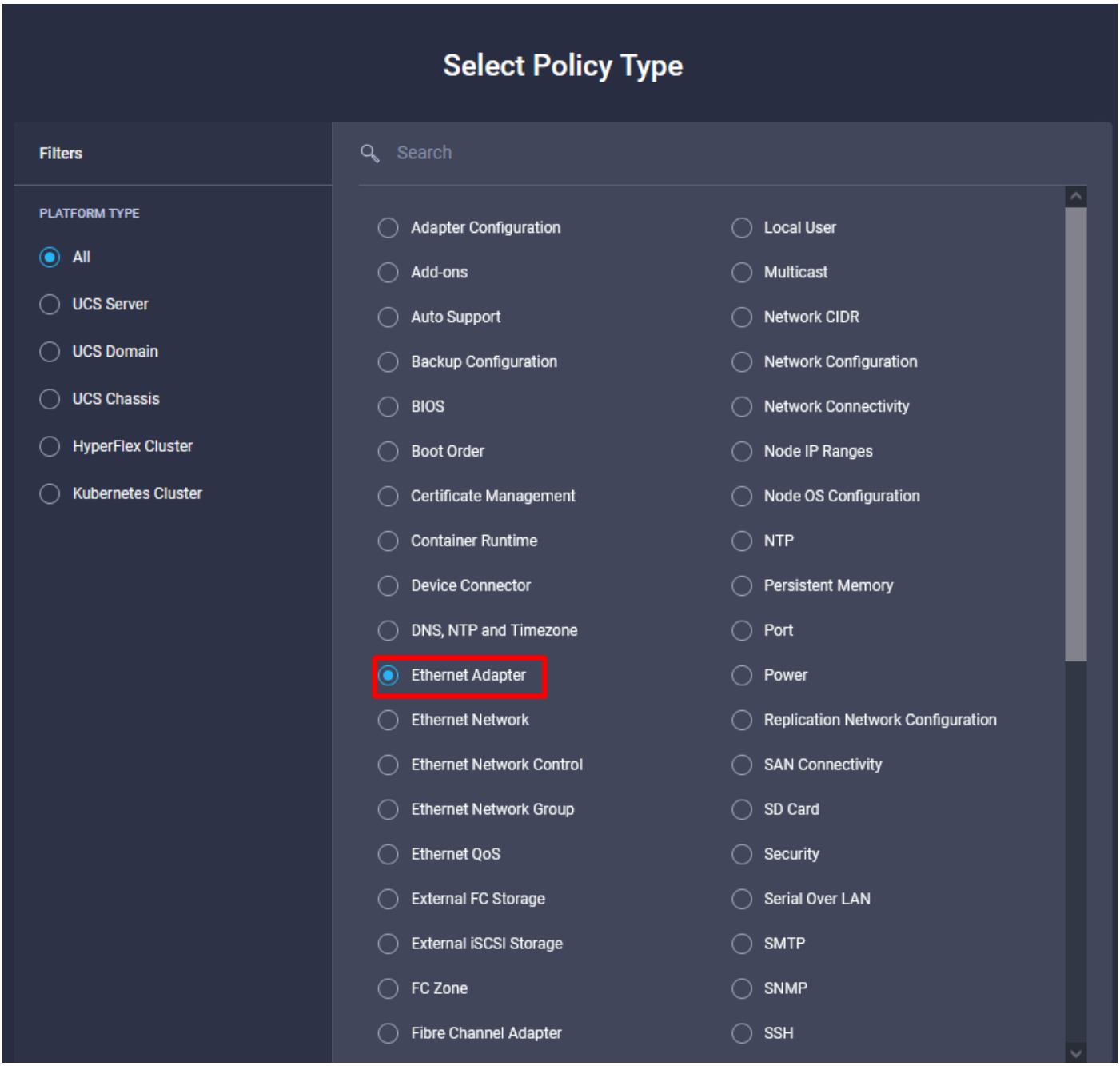
Navigate to the **Servers** tab > **Inventory** > Select the **Network Adapters** option.



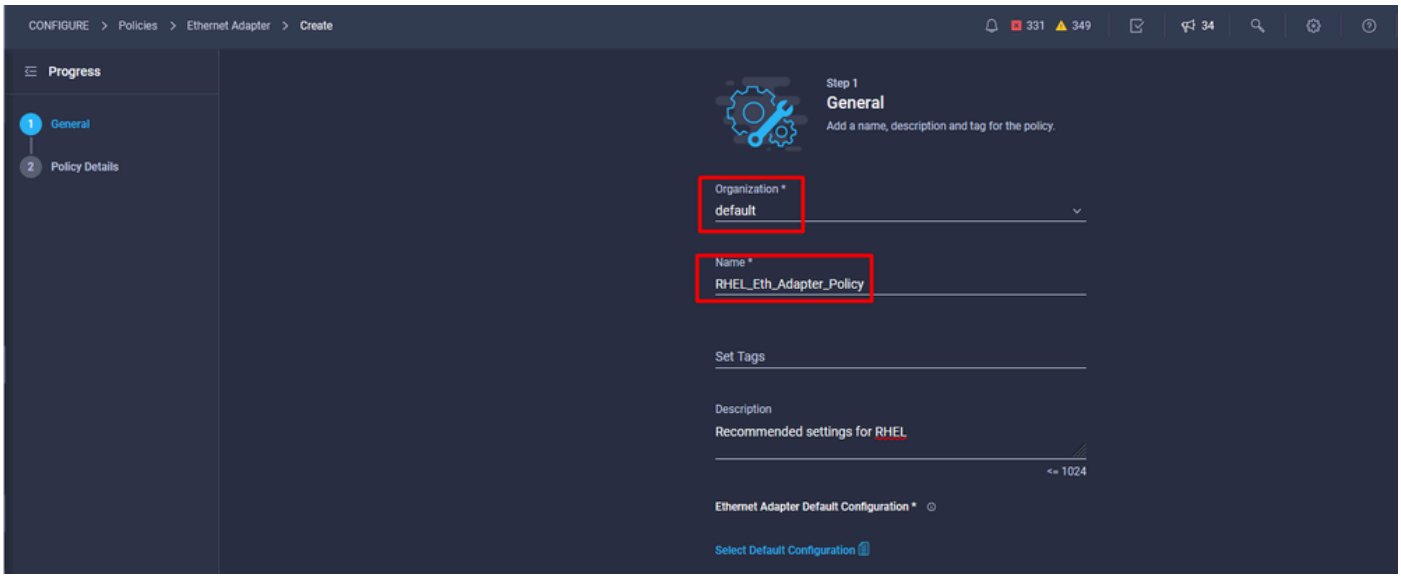
Step 2. Create Ethernet Adapter policy

Create the Ethernet Adapter policy with the suggested values by the OS Vendor.

Navigate to **Policies** tab > **Create Policy** > Select **Ethernet Adapter**.



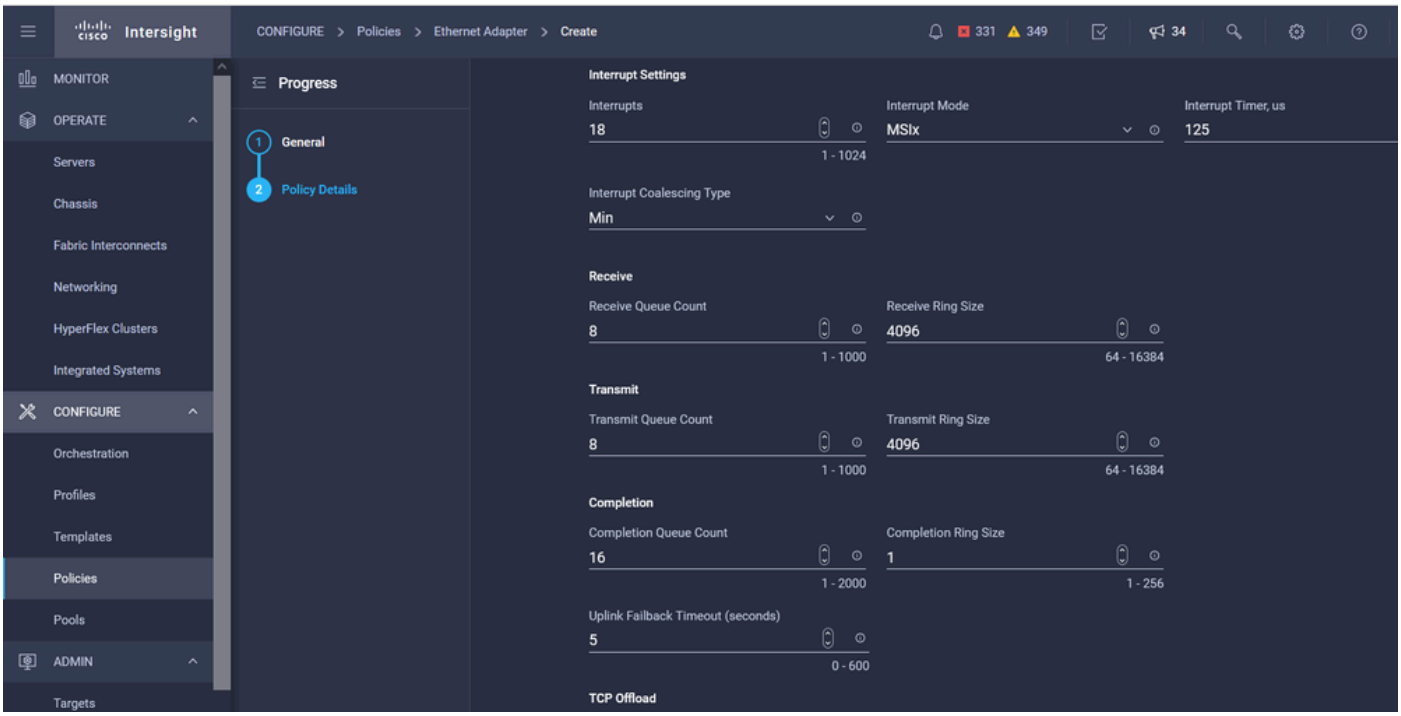
Once within the **Create Policy** menu, select the **Organization** and provide the **Policy Name.**



Step 3. Configure the suggested settings by the OS vendor. Usually, the listed features are configured within the Ethernet Adapter Policy:

- Receive Queues
- Transmit Queues
- Ring Size
- Completion Queues
- Interrupts
- Enable Receive Side Scaling (RSS) or Accelerated Receive Flow Steering (ARFS)

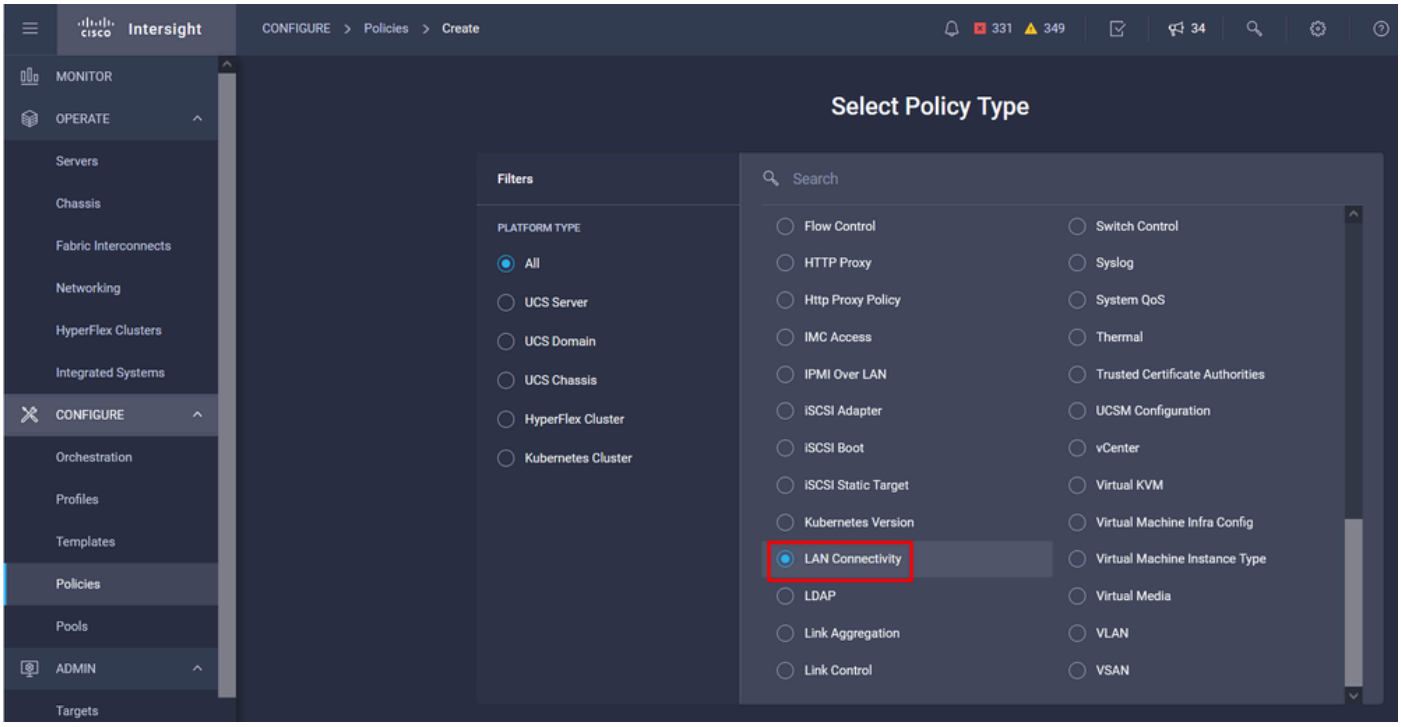
Note: RSS and ARFS are mutually exclusive so configure only one. Do not configure both.



Once created, assign the Ethernet Adapter Policy to a LAN Connectivity Policy.

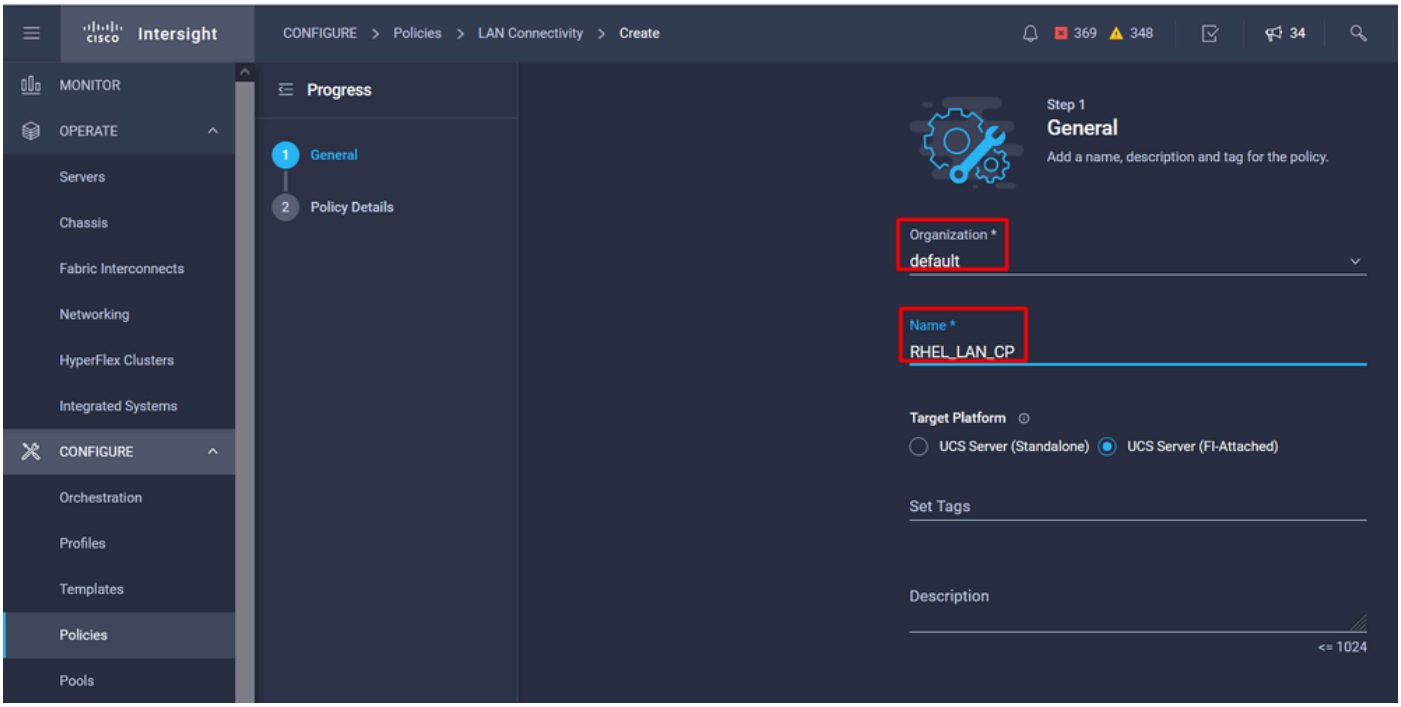
Step 4. Create LAN Connectivity Policy

Navigate to the **Policies** tab > **Create Policy** > **LAN Connectivity**



Select the **Organization** and provide the **Policy Name.**

Under target, the platform selects **UCS Server (FI-Attached).**



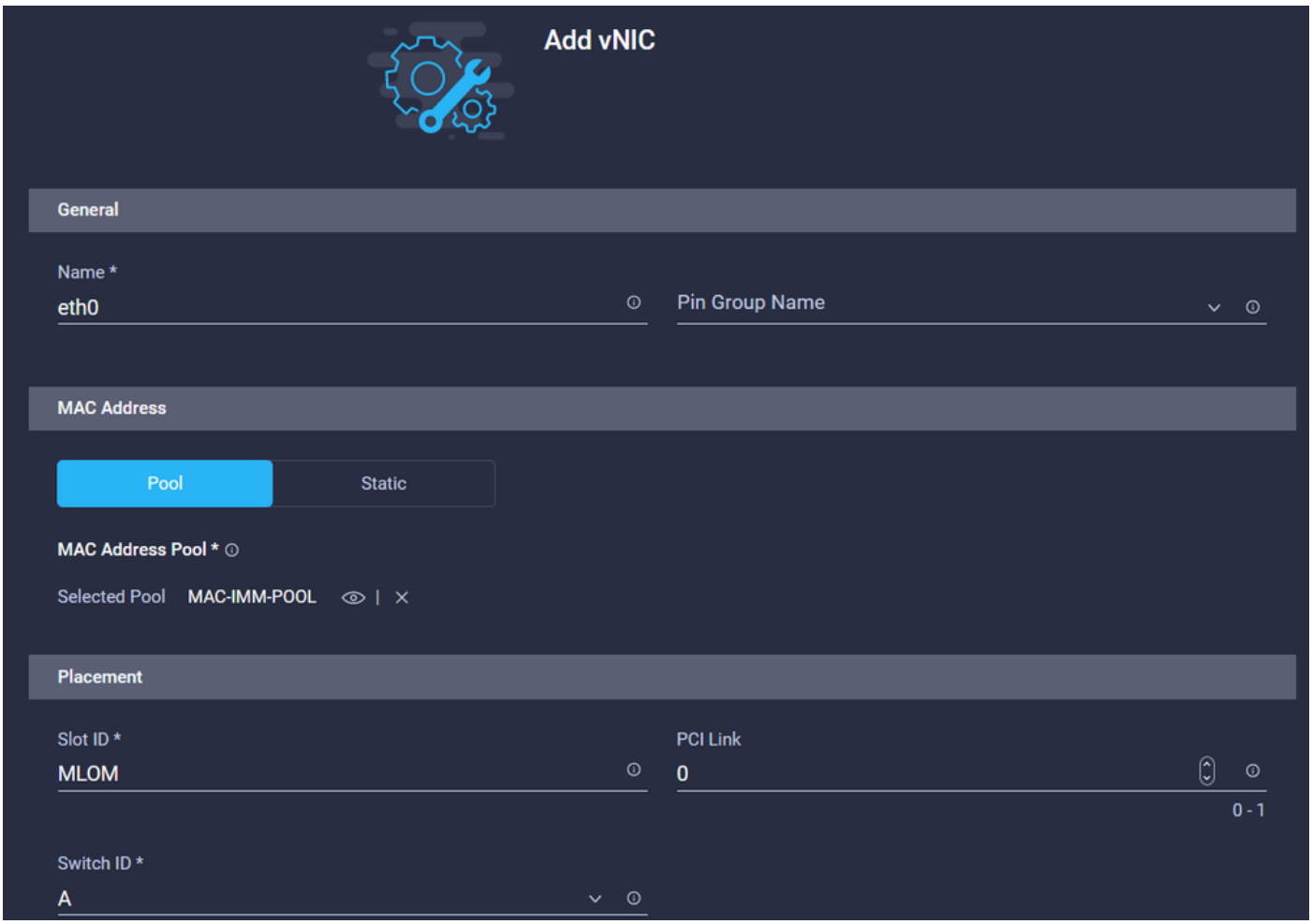
Within the LAN Connectivity policy, navigate to the **vNIC Configuration** section and configure at least two network interfaces. In this example, eth0 and eth1 interfaces are created.

On the **Add vNIC** configuration tab, under **General**, provide the name **eth0**.

Under the **MAC Address** section, select the appropriate **MAC Address Pool**.

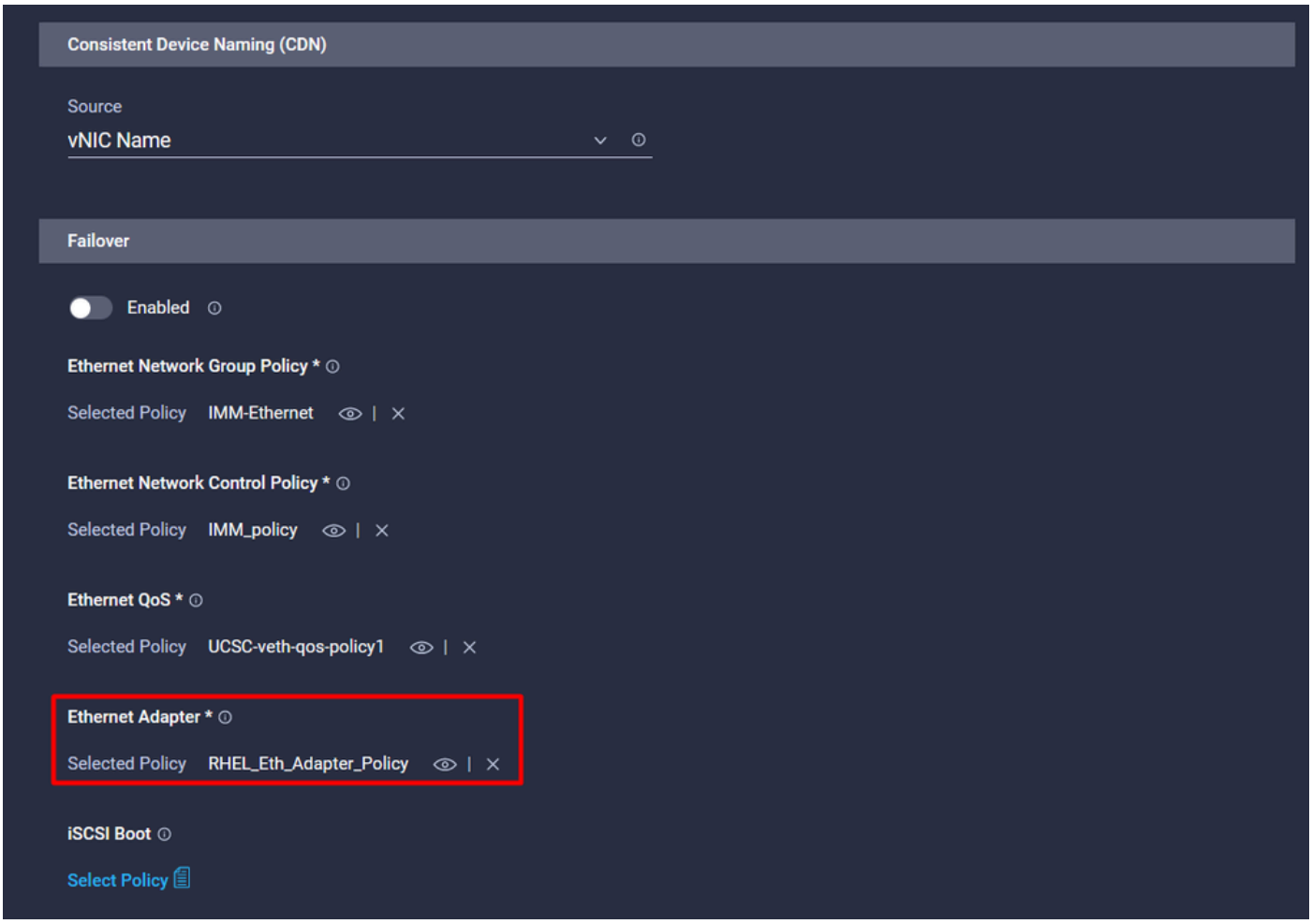
Under the **Placement** section, configure the **Slot ID** as **MLOM**.

Leave the **PCI Link** and **PCI Order** options with value **0** and **Switch ID** with option **A.**

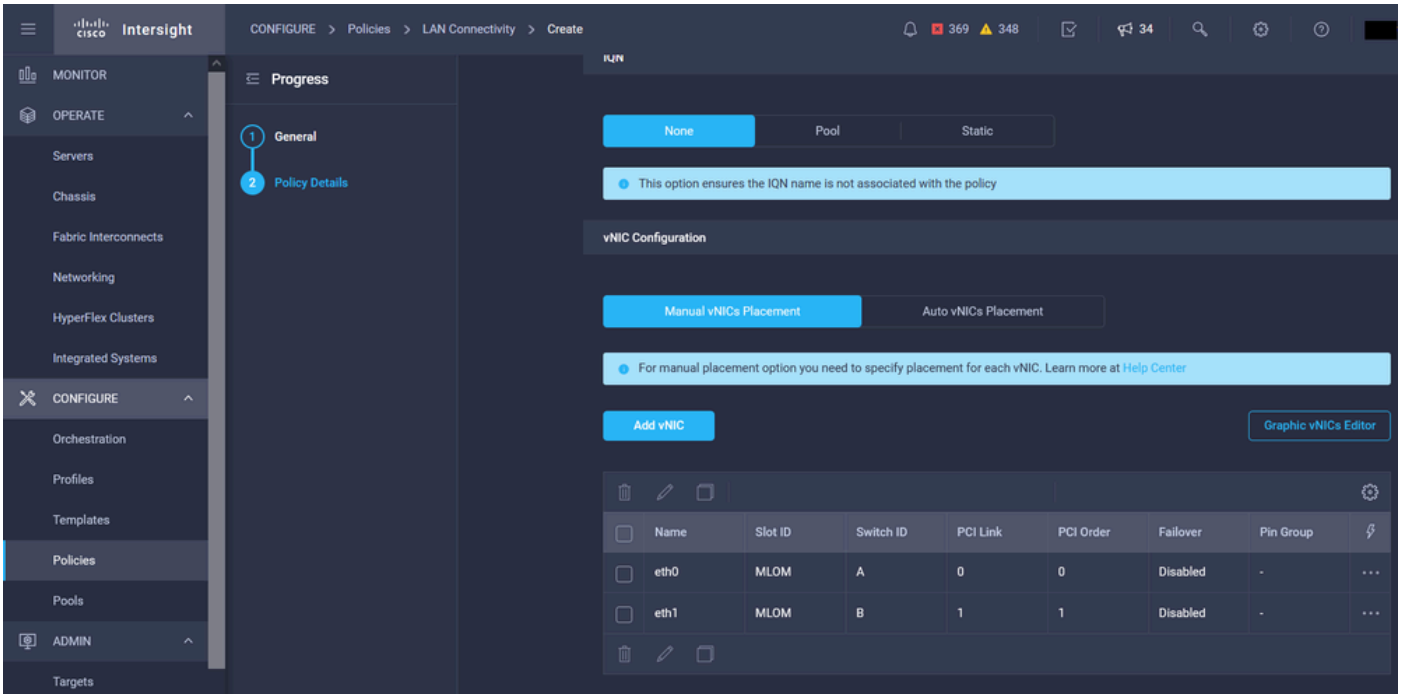


Navigate to the **Consistent Device Naming (CDN)** menu, and select **VNIC Name**.

Add the **Ethernet Network Group Policy**, **Ethernet Network Control Policy**, **Ethernet QoS,** and **Ethernet Adapter** policies**.**



Repeat the same steps to create the interface **eth1**, configure the **PCI Link**, **PCI Order** and **Switch ID** values accordingly.

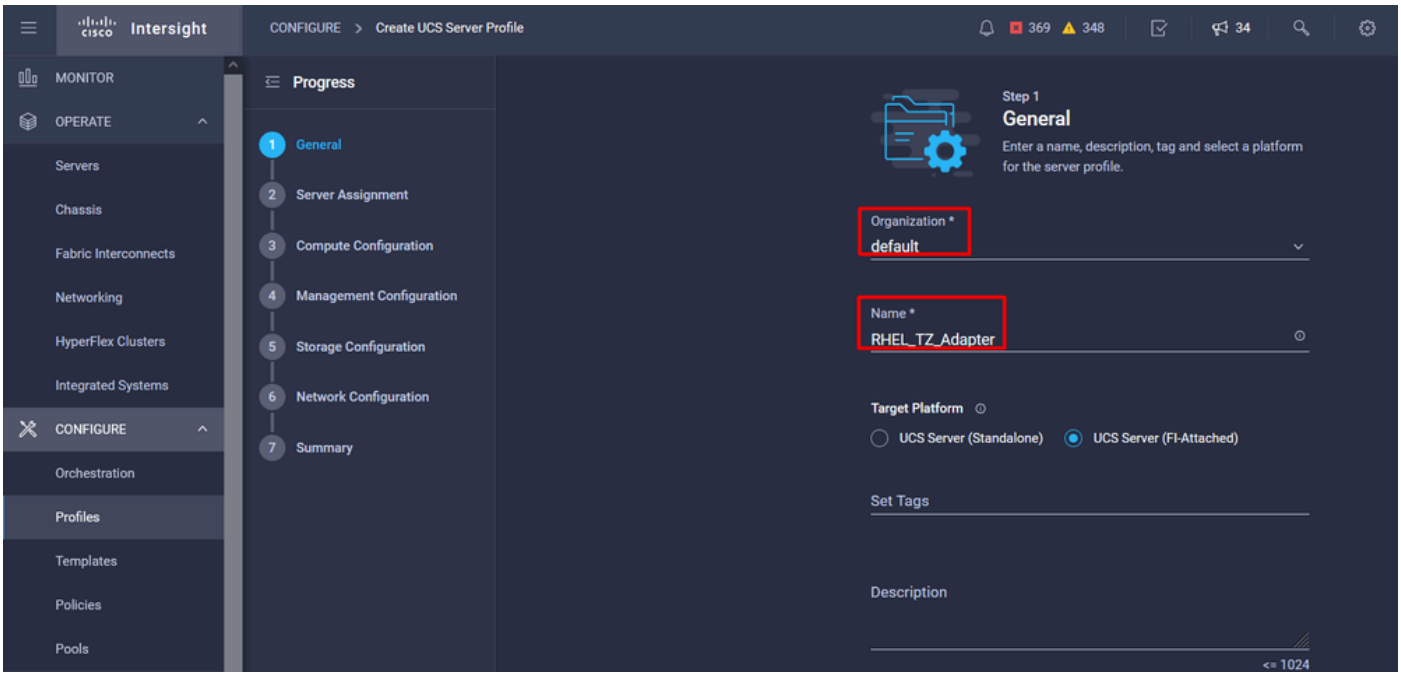


Finally, create the **LAN Connectivity Policy**. Once created, assign it to a **UCS Server Profile**.

Step 5. Create a Server profile.

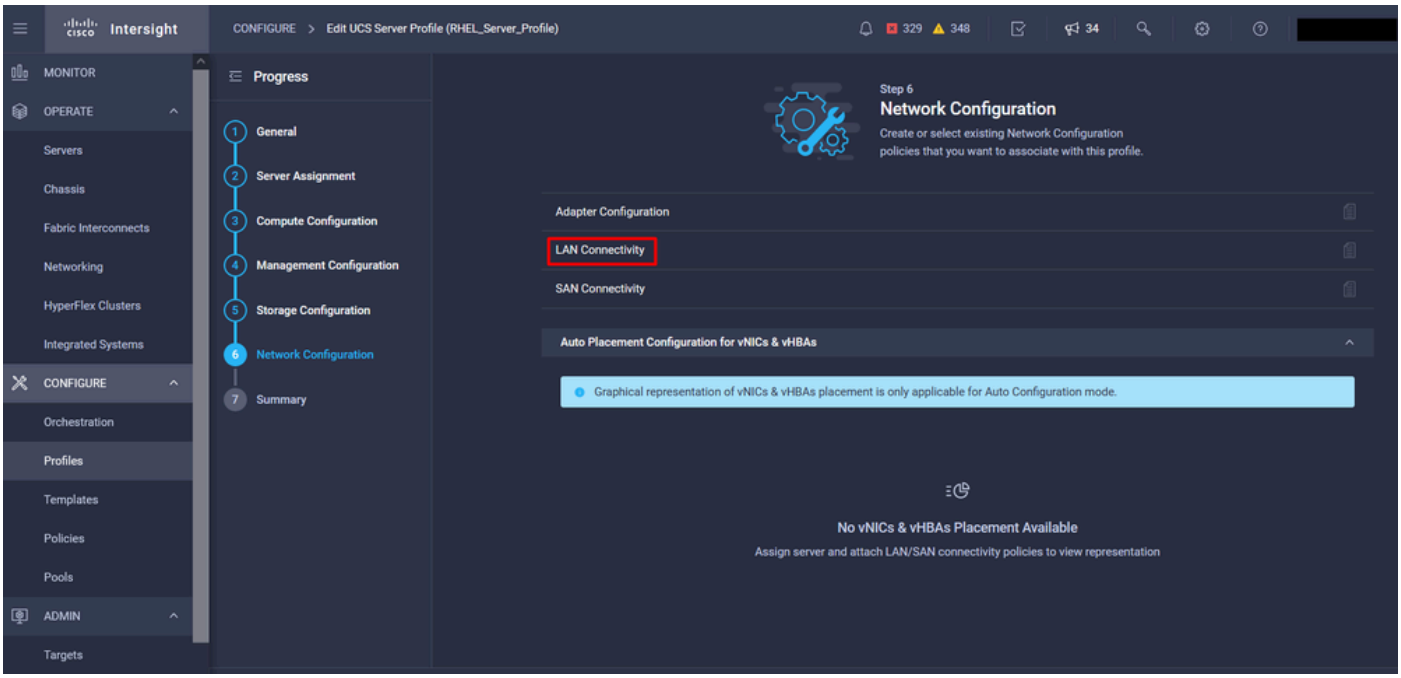
Navigate to the **Profiles** tab, and then select **Create UCS Server Profile**.

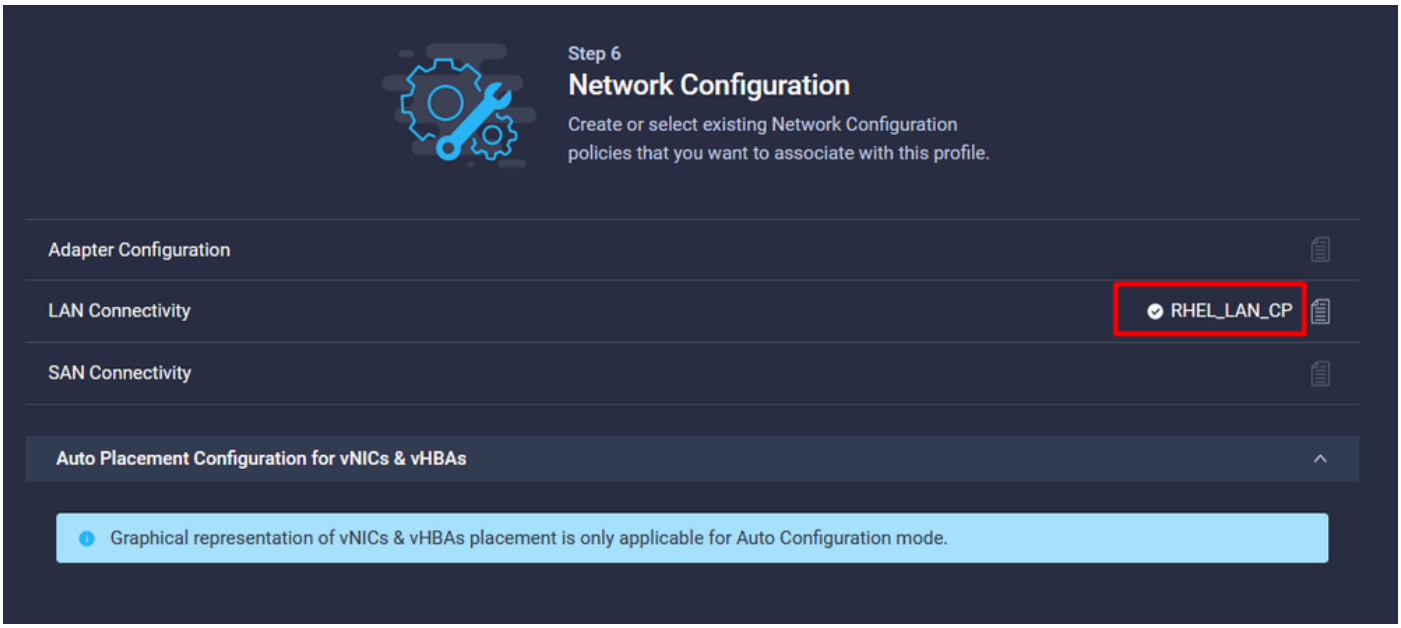
Provide the **Organization** and **Name** details.



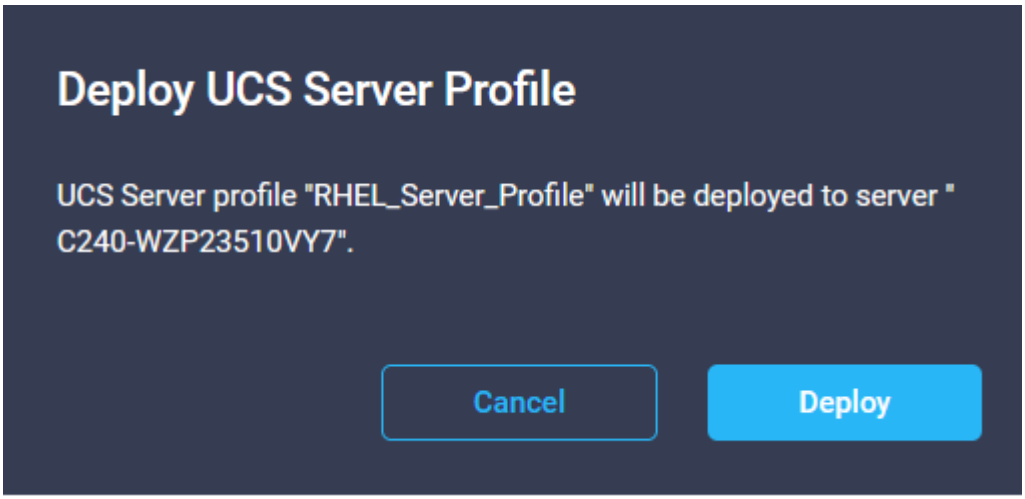
Select all the related configurations such as Compute, Management, and Storage settings.

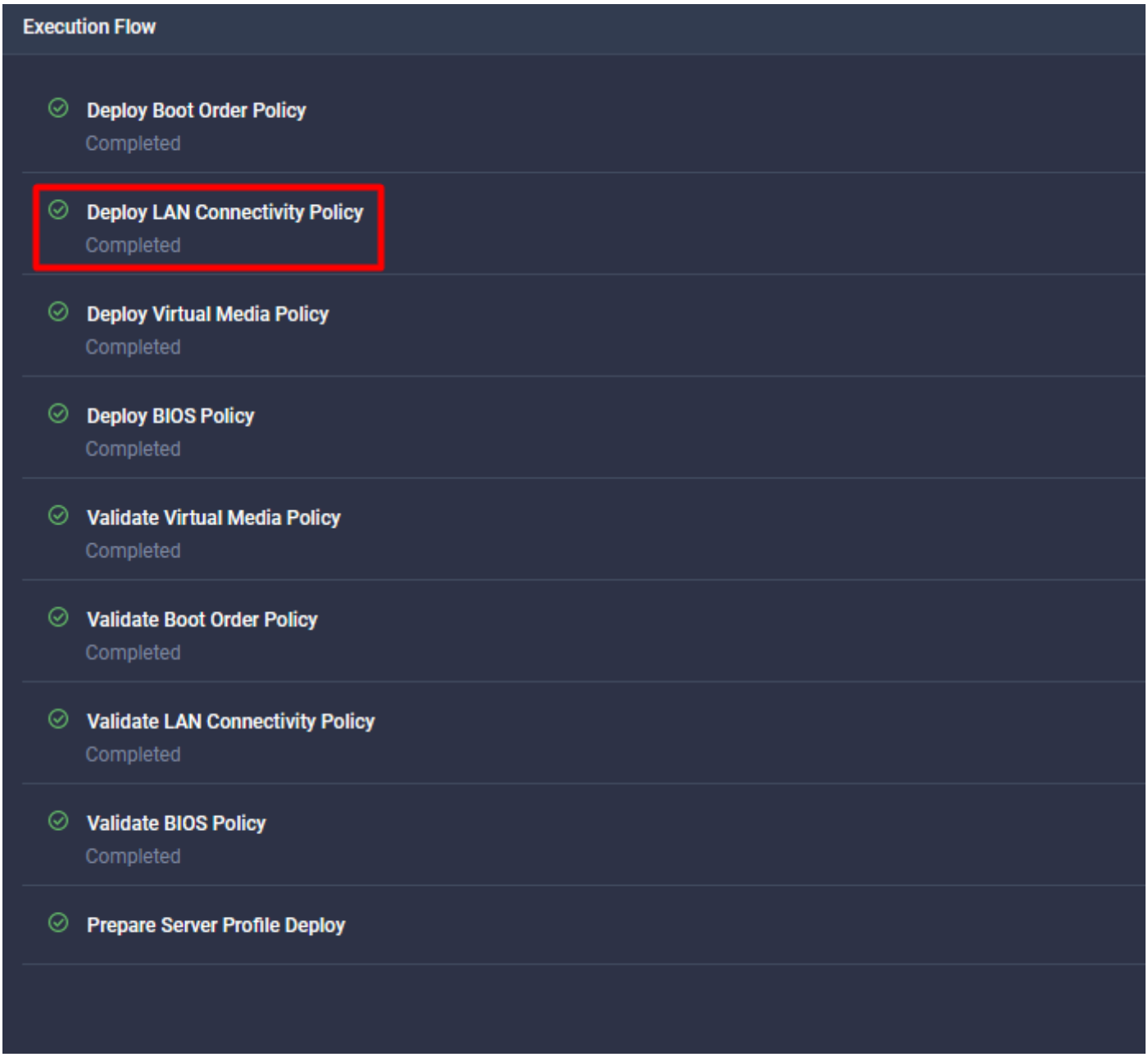
Under Network configuration, select the appropriate **LAN Connectivity** policy.





Select **Deploy** to configure the Server Profile and validate all the steps are completed successfully.





Verify

Use this section to confirm that your configuration works properly.

Note: These values have been configured as an example. The actual values may differ according to the adapter model and the OS version.

Validate the adapter settings on RHEL.

To check the currently available resources provided by the VIC adapter, validate the transmit and receive queues on the **dmesg** file:

```
$ grep enic /var/log/dmesg | grep resources
```

```
[root@localhost ~]# grep enic /var/log/dmesg | grep resources
[    2.647884] enic 0000:62:00.0: vNIC resources avail: wq 8 rq 8 cq 16 intr 18
[    2.649430] enic 0000:62:00.0: vNIC resources used:  wq 8 rq 8 cq 16 intr 18 intr mode MSI-X
[    2.657201] enic 0000:62:00.1: vNIC resources avail: wq 8 rq 8 cq 16 intr 18
[    2.658272] enic 0000:62:00.1: vNIC resources used:  wq 8 rq 8 cq 16 intr 18 intr mode MSI-X
```

Validate the configured **Ring Size**.

```
ethtool -g interface_name
```

```
[root@localhost ~]# ethtool -g enp98s0f0
Ring parameters for enp98s0f0:
Pre-set maximums:
RX:             4096
RX Mini:        0
RX Jumbo:       0
TX:             4096
Current hardware settings:
RX:             4096
RX Mini:        0
RX Jumbo:       0
TX:             4096

[root@localhost ~]# ethtool -g enp98s0f1
Ring parameters for enp98s0f1:
Pre-set maximums:
RX:             4096
RX Mini:        0
RX Jumbo:       0
TX:             4096
Current hardware settings:
RX:             4096
RX Mini:        0
RX Jumbo:       0
TX:             4096
```

Validate the adapter settings on VMware ESXi.

In order to check the current available resources provided by the VIC adapter, validate the transmit and receive queues with the command below, where X is the vmnic number.

vsish -e get /net/pNics/vmnicX/txqueues/info
vsish -e get /net/pNics/vmnicX/rxqueues/info

Run this command to validate the ring size:

```
esxcli network nic ring current get -n vmnicX
```

Validate the adapter settings directly on UCS.

In order to validate the settings, connect to any of the Fabric Interconnects via SSH.

Connect to the server adapter with the command **connect adapter x/y/z** where **x** is the chassis number, **y** is the slot number and **z** is the adapter number.

When connected to the adapter, on the extra login, enter **dbgsh**.

Run the command **attach-mcp**.

Next run the command **vnicl** , to list the available vnics.

Look for the corresponding vnic name **eth0** and **eth1** and validate the settings:

```
UCS-IMM-A# connect adapter 1/1/1

Entering character mode
Escape character is '^]'.

(none) login: dbgsh
adapter (top):1#
adapter (top):4# attach-mcp
adapter (mcp):1# vnicl
adapter (mcp):19# vnicl

================================
vnicid : 18
name : eth0
type : enet
state : UP
adminst : UP
flags : OPEN, INIT, LINKUP, NOTIFY_INIT, ENABLE, USING_DEVCMD2
ucsm name : eth0
spec_flags : MULTIFUNC, TRUNK
mq_spec_flags :
slot : 0
h:bdf : 0:03:00.0
vs.mac : 00:25:b5:01:00:46
mac : 00:25:b5:01:00:46
vifid : 801
vifcookie : 801
uif : 0
portchannel_bypass : 0x0
cos : 0
vlan : 0
rate_limit : unlimited
cur_rate : unlimited
stby_vifid : 0
stby_vifcookie : 0
stby_recovery_delay : 0
channel : 0
stdby_channel : 0
profile :
stdby_profile :
```

```
init_errno : 0
cdn : eth0
devspec_flags : TSO, LRO, RXCSUM, TXCSUM, RSS, RSSHASH_IPV4, RSSHASH_TCPIPV4, RSSHASH_IPV6, RSSHASH_TCP
lif : 18
vmode : STATIC
encap mode : NONE
host wq : [11-18] (n=8)
host rq : [2010-2017] (n=8) (h=0x080107da)
host cq : [2002-2017] (n=16)
host intr : [3008-3025] (n=18)
notify : pa=0x10384de000/40 intr=17
devcmd2 wq : [19] (n=1)
================================
vnicid : 19
name : eth1
type : enet
state : UP
adminst : UP
flags : OPEN, INIT, LINKUP, NOTIFY_INIT, ENABLE, USING_DEVCMD2
ucsm name : eth1
spec_flags : MULTIFUNC, TRUNK
mq_spec_flags :
slot : 0
h:bdf : 0:03:00.1
vs.mac : 00:25:b5:01:00:45
mac : 00:25:b5:01:00:45
vifid : 800
vifcookie : 800
uif : 1
portchannel_bypass : 0x0
cos : 0
vlan : 0
rate_limit : unlimited
cur_rate : unlimited
stby_vifid : 0
stby_vifcookie : 0
stby_recovery_delay : 0
channel : 0
stdby_channel : 0
profile :
stdby_profile :
init_errno : 0
cdn : eth1
devspec_flags : TSO, LRO, RXCSUM, TXCSUM, RSS, RSSHASH_IPV4, RSSHASH_TCPIPV4, RSSHASH_IPV6, RSSHASH_TCP
lif : 19
vmode : STATIC
encap mode : NONE
host wq : [20-27] (n=8)
host rq : [2002-2009] (n=8) (h=0x080107d2)
host cq : [1986-2001] (n=16)
host intr : [2976-2993] (n=18)
notify : pa=0x1038e27000/40 intr=17
devcmd2 wq : [28] (n=1)
================================
```

Related Information

[Technical Support & Documentation - Cisco Systems]

Server Profiles in Intersight

Tuning Guidelines for Cisco UCS Virtual Interface Cards (White Paper)

Red Hat Enterprise Linux Network Performance Tuning Guide

Seeing "rx_no_bufs" drops with the Cisco enic driver (Red Hat Customer Portal account required)