



## Network Design Considerations

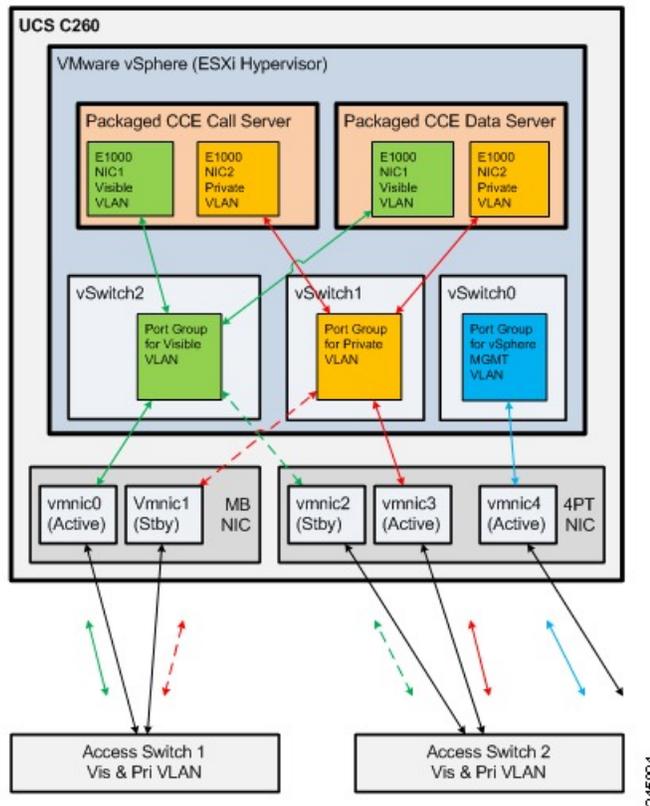
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This chapter provides guidance on performing the network configuration needed to deploy Packaged CCE on UCS C-Series servers. It includes information on fault tolerance and redundancy.

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## Network Requirements for Packaged CCE Server

The illustration below shows the recommended design for all Packaged CCE deployments on UCS C-series servers and the network implementation of the vSphere Hypervisor vSwitch design.



This design calls for using the VMware NIC Teaming (without load balancing) of virtual machine network interface controller (vmnic) interfaces in an Active/Standby configuration through alternate and redundant hardware paths to the network.

The network side implementation does not have to exactly match this illustration, but it must allow for redundancy and must not allow for single points of failure affecting both Visible and Private network communications.



**Note**

The customer also has the option, at their discretion, to configure VMware NIC Teaming on the Management vSwitch on the same or separate switch infrastructure in the data center.

**Requirements:**

- Ethernet interfaces must be Gigabit speed and connected to Gigabit Ethernet switches. 10/100 Ethernet is not supported.
- No single point of failure is allowed for visible and private networks.
- Network switch infrastructure cannot use Cisco Stacking technology to combine all switches to which the UCS C-series server is connected into a single virtual switch.
- Network switches must be configured properly for connection to VMware Hypervisor. Refer to the [VMware Knowledge Base](#) for details on ensuring proper switch configuration to prevent Spanning Tree Protocol (STP) delay in failover/fallback scenarios.

# Network Configuration and QoS

Your network must support QoS. For details, refer to the *Bandwidth Provisioning and QoS considerations* section in the Cisco Unified Contact Center Enterprise Design Guide: [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1844/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1844/products_implementation_design_guides_list.html).

## Access Switch Configuration

The following are examples of data center access switch up-link port configurations for connecting to UCS C-Series servers. You must use virtual switch tagging (VST) and ensure that you have properly configured the correct corresponding setting between the network switches and the vSphere vSwitches. Use auto negotiation for Gigabit connections on both the network switch and the ESXi host adapters.

It is essential that the network configuration be implemented correctly. Improper configuration of up-link ports can directly and negatively impact system performance, operation, and fault handling.

### Example 1

Use this configuration on a switch port that connects to the active or standby NIC on a UCS C-series host on the public network.

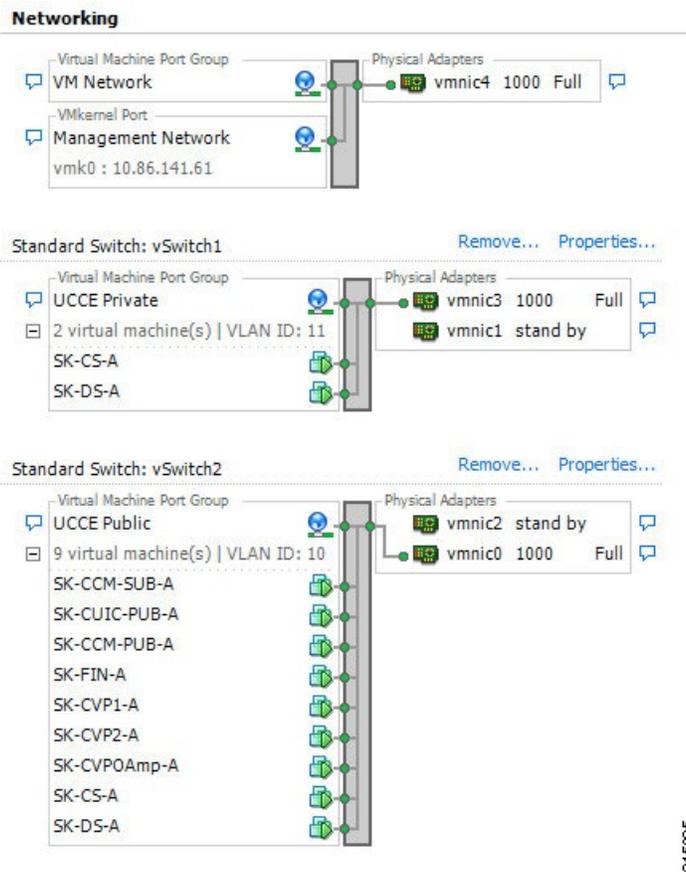
**Note**

*vlan 10* in this example is for the Packaged CCE Public VLAN. You can use any VLAN of your choosing.

```
interface GigabitEthernet1/0/1
description Connects to PCCE UCS Host on the Public Network
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 10
switchport mode trunk
switchport nonegotiate
spanning-tree portfast trunk
```

## vSwitch and Virtual NIC Configuration

This figure illustrates a configuration for the vSwitches and vmnic adapters on a C-Series server using the redundant Active/Standby vSwitch NIC Teaming design. The configuration is the same for the Side A server and the Side B server.



## Configure the ESXi Host Network for the Virtual Machines

To configure the network for VMs, you create a virtual switch connected to an Ethernet port on the server, and then associate the virtual machine's network adapter to this virtual switch. Perform the following procedure to create vSwitches for the public and private networks on the Side A and B servers, referring to the illustration above as an example.

### Procedure

- Step 1** Add a vSwitch as follows:
- Log in to the ESXi host using VMware Infrastructure Client.
  - Select the ESXi host.
  - Click the Configuration tab.
  - Under Hardware, click **Networking**.
  - Click **Add Networking...**
  - Select **Connection Type >Virtual Machine**. Then click **Next**.
  - Select Create a vSphere standard switch and select an associated a VM nic. Be sure to reference the figures in this section to ensure you are aware of which physical VM NIC you're associating with the vSwitch.

- h) Under Port Group Properties, enter Network Label: VM X, where X describes the network. For example, the UCCE Public or UCCE Private network as illustrated in the figure above.
- i) Click **Next**. Then click **Finish**.

**Step 2** Associate a VM Network Adapter to Network Connection as follows:

- a) Click **Edit virtual machine settings**.
  - b) Select the Network Adapter.
  - c) Select a virtual switch from the Network Connection/network label (must be "UCCE Public" or "UCCE Private").  
If your switchports are using VLANs, enter the VLAN id in the VLAN ID field.
  - d) Click **OK**.
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## Link Speed Considerations

Configuring the speed and duplex of a network link is essential for reliable network operation. While VMware allows for fixed 1000/Full to be set on the Host and the Switch, use Auto/Auto on both ends. Manually configuring 1000/Full on the Host requires Host configuration steps that are not detailed here and are not exposed in VMware.



**Note**

Refer to this article on the VMware Knowledge Base: [Configuring the speed and duplex of an ESXi/ESX host network adapter](#).

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