Configure UCS B/C/X/S/HyperFlex-Series Team and Bond Options with the VIC Card Connected to Fabric Interconnects

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Introduction

This document describes the team and bond options with the Cisco VIC adapters in UCS servers (B/C/X/S/HX Series) connected to a Fabric Interconnect.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Unified Computing System (UCS) Servers connected to Fabric Interconnects and managed either via UCS Manager (UCSM/UMM) or Intersight (IMM)
- Cisco Virtual Interface Card (VIC)
- VMware ESXi Hypervisor
- Microsoft Windows Server
- Linux Operating Systems

Components Used

This document is not restricted to specific software and hardware versions.

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.

Note: This same information applies to all other hypervisors/operating systems running bare metal on UCS servers connected to Fabric Interconnects.

Support Matrix

All teaming/bonding methods that are switch-independent are supported in the UCS Fabric Interconnect environment. These bonding modes do not require any special configuration on the switch/UCS side.

The restriction to this is that any load balancing method used in the switch-independent configuration must send traffic for a given source MAC address via a single UCS Fabric Interconnect other than in a failover event (where the traffic is sent to the alternate fabric interconnect) and not periodically to redistribute load.

Using other load balancing methods that operate on mechanisms beyond the source MAC address (such as IP address hashing, TCP port hashing, and so on) can cause instability as a given MAC address is flapped between UCS Fabric Interconnects. Such configuration is hence unsupported.

Switch-dependent bonding modes require a port channel to be configured on the switch side. The Fabric Interconnect, which is the switch in this case, cannot form a port channel with the VIC card present in the servers. Furthermore, such bonding modes also cause MAC flapping on the UCS and upstream switches and are hence unsupported.

Note: For FI-Attached servers (UCSM or IMM), you can use Fabric Failover on the vNIC or one of the supported bonding/teaming options mentioned. Do not use both concurrently.

This list is applicable for both the native (bare metal) operating system and for a hypervisor environment with virtual machines.

Operating System	Supported	Not Supported
VMWare ESXi	1. Route Based on Originating Port ID 2. Route Based on Source MAC Hash	1. Route Based on IP Hash 2. Route Based on Physical Network Interface Controller or Card (NIC) Load
Windows Server	Switch independent modes (Active/Standby and Active/Active[2]) When using the Load balancing method: Hyper-V port	Switch Dependent 1. Static teaming 2. Link Aggregation Control Protocol (LACP)

		Switch independent modes (Active/Standby and Active/Active[2]) When using the Load balancing method: 1. Dynamic 2. Address Hash
Linux Operating Systems[1]	1. active-backup (mode 1) 2. balance-xor (mode 2) (using option: xmit_hash_policy=vlan+srcmac) 3. balance-tlb (mode 5) 4. balance-alb (mode 6)	1. balance-rr (mode 0) 2. balance-xor (mode 2) (using option: xmit_hash_policy=layer2, layer2+3, layer3+4, encap2+3, encap3+4) 3. broadcast (mode 3) 4. 802.3ad (mode 4)

1. The option 'fail_over_mac=1' must be used to avoid limitations as documented in Cisco bug ID CSCva09592.
2. When connected behind an ACI fabric there are certain active/active algorithms that can cause endpoints to move from one leaf switch another. When a leaf detects too many endpoint moves it disables learning for the bridge domain of the endpoint with an error message.

Related Information

- VMware Load Balancing Algorithms
- Linux bonding modes
- Switch Embedded Teaming (SET)
- Cisco Technical Support & Downloads