

# Set Up UCS-E Network by Bridge Virtual Interface (BVI) and Bridge Domain Interface (BDI)

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## Introduction

This document describes Unified Computing System-E series (UCS-E) network setup by BVI and BDI.

BVI is a Layer-3 routable logical interface that groups physical interfaces into one logical group. BVIs are used on ISR G2 series routers.

BDI is a logical interface that allows bidirectional flow of traffic between a Layer-2 bridged network and a Layer-3 routed network. BDI interface is used on ISR 4000 series routers.

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## Prerequisites

Knowledge of routed (L3) and bridged (L2) traffic.

## Requirements

Basic knowledge of IP networking and routing. Also, it is expected that the audience has basic knowledge of virtual machines and hypervisors.

## Components Used

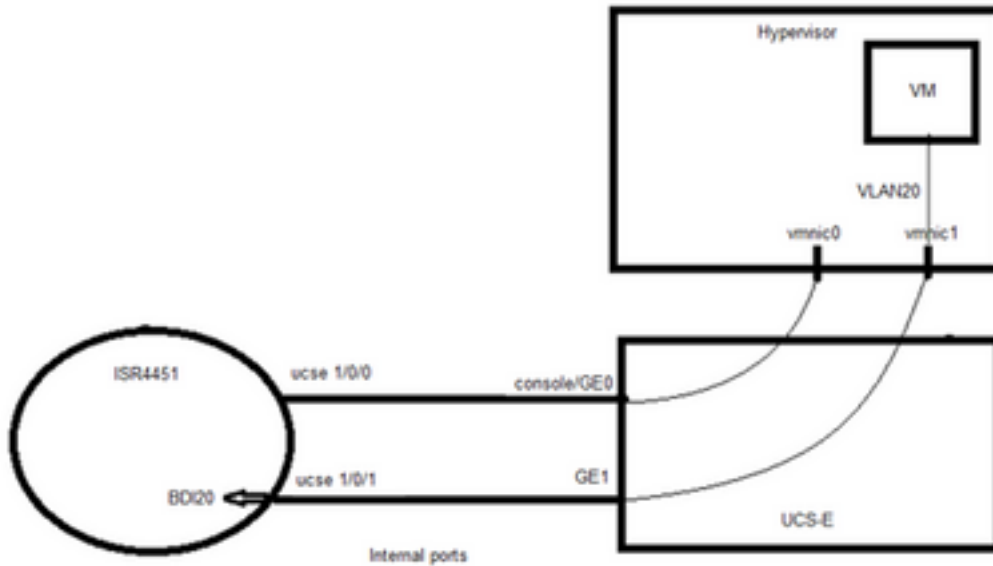
UCS-E series server modules, Integrated Services Routers (ISR) G2 (3900) and ISR 4K (4451).

## Configure

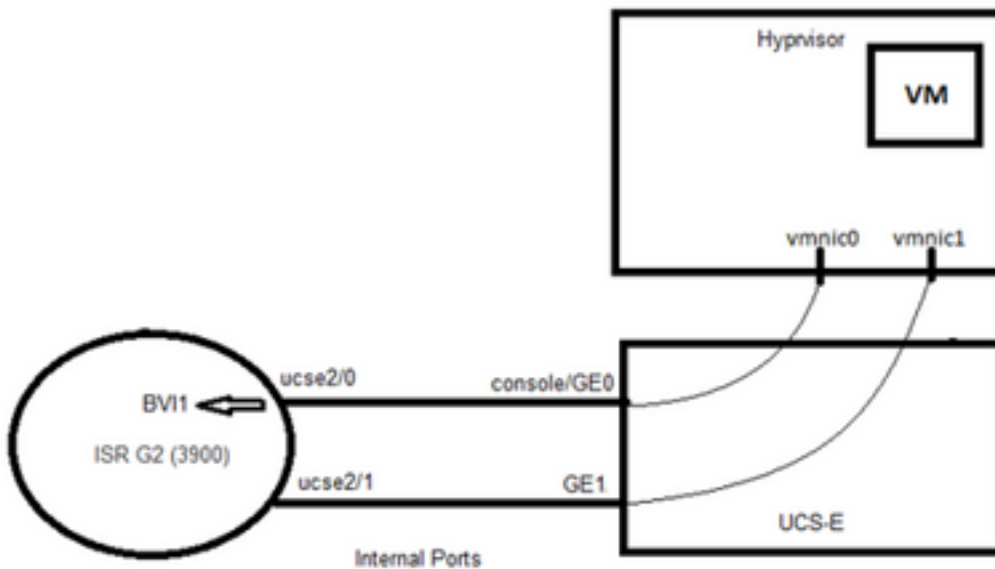
This article covers two configuration examples. One example is based on ISR4K and BDI. The other example covers ISR G2 and BVI.

## Network Image

This image is a simple set up that uses ISR4k and BDI:



This image is a simple set up that uses ISR G2 (3900) and BVI:



## Configurations

Configuration example for ISR4K and BDI:

```
#####
```

```
Router(config)# vlan 20
```

!

Router(config)#interface BDI20

Router (config-if)# ip address 192.168.7.1 255.255.255.0

Router(config-if)# encapsulation dot1Q 20

Router(config-if)# end

!

Router(config)# ucse subslot 0/1

Router(config-ucse)# imc access-port shared-lom console

Router(config-ucse)# imc ip address 192.168.254.3 255.255.255.0 default-gateway 192.168.254.1

!

Router(config)# interface ucse0/1/0

Router(config-if)# ip unnumbered Loopback1

Router(config-if)# carrier-delay 60

Router(config-if)# no negotiation auto

Router(config-if)# switchport mode trunk

Router(config-if)# no mop enabled

Router(config-if)# no mop sysid

!

Router(config)#interface ucse0/1/1

Router(config-if)# no ip address

Router(config-if)# no negotiation auto

Router(config-if)# switchport mode trunk

Router(config-if)# no mop enabled

Router(config-if)# no mop sysid

Router(config-if)# service instance 20 ethernet

Router(config-if-srv)#encapsulation dot1q 20

Router(config-if-srv)#bridge-domain 20

#####

Configuration example for ISR G2 and BVI:

#####

```
Router(config)#interface ucse2/0
Router(config-if)# ip unnumbered BVI1
Router(config-if)#service-module heartbeat-reset disable
Router(config-if)# imc ip address 192.168.13.2 255.255.255.0 default-gateway 192.168.13.1
Router(config-if)# imc access-port shared-lom console
Router(config-if)#bridge-group 1
!
Router(config)# interface ucse2/1
Router(config-if)# switchport mode trunk
Router(config-if)#no ip address
!
Router(config)# interface BVI1
Router(config-if)#ip address 192.168.13.1 255.255.255.0
Router(config-if)#end
```

#####

## Verify

Verify BDI state by this command:

```
Router# show bridge-domain 20
```

Bridge-domain 20 (2 ports in all)

State: UP                    Mac learning: Enabled

Aging-Timer: 300 second(s)

BDI20 (up)

ucse0/1/1 service instance 20

AED MAC address Policy Tag Age Pseudoport

- 00C1.64AF.7CF3 to\_bdi static 0 BDI20 >>

0 000C.29DC.297B forward dynamic 299 ucse0/1/1.EFP20

Verify BVI interface state by this command:

Router# **show ip interface brief**

Interface	IP-Address	OK?	Method	Status	Protocol
ucse2/0	192.168.13.1	YES	unset	up	up
ucse2/1	unassigned	YES	unset	up	up
BVI1	192.168.13.1	YES	NVRAM	up	up

## Troubleshoot

Run these commands to check UCS-E module status:

Router# **ucse subslot 2/0 status**

Service Module is Cisco ucse2/0

Service Module supports session via TTY line 67

Service Module is in Steady state

Service Module reset on error is disabled

Service Module heartbeat-reset is disabled

Router# **ucse subslot 2/0 statistics**

Module Reset Statistics:

CLI reset count = 0

CLI reload count = 1

Registration request timeout reset count = 0

Error recovery timeout reset count = 0

Module registration count = 2

Run this command to check the router inventory:

Router# **show inventory**

NAME: "CISCO3925-CHASSIS", DESCR: "CISCO3925-CHASSIS"

PID: CISCO3925-CHASSIS , VID: V01 , SN: FTX1425A55N

.....  
NAME: "Cisco UCS E-Series Double Wide Intel Performance level 4 Generation with PCIe support on Slot 2", DESCR: "Cisco UCS E-Series Double Wide Intel Performance level 4 Generation with PCIe support"

PID: UCS-E140DP-M1/K9 , VID: V01 , SN: FOC16270UHN

Run this command to check interface status:

Router# **show ip interface brief**

Interface	IP-Address	OK?	Method	Status	Protocol
ucse2/0	192.168.13.1	YES	unset	up	up
ucse2/1	unassigned	YES	unset	up	up
BVI1	192.168.13.1	YES	NVRAM	administratively down	down

## Related Information

- [Understanding Bridge Virtual Interface \(BVI\) and Bridge Domain Interface \(BDI\)](#)
- [Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine](#)