IBM

SHARE ORLANDO 2011

Session 9227

IPv6 Configuration on z/OS Hands-on Lab Introduction

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IMPORTANT: *Lab handout hard copy is available only if you attend the lab.*
Labs handouts are not available on the website or in soft copy.

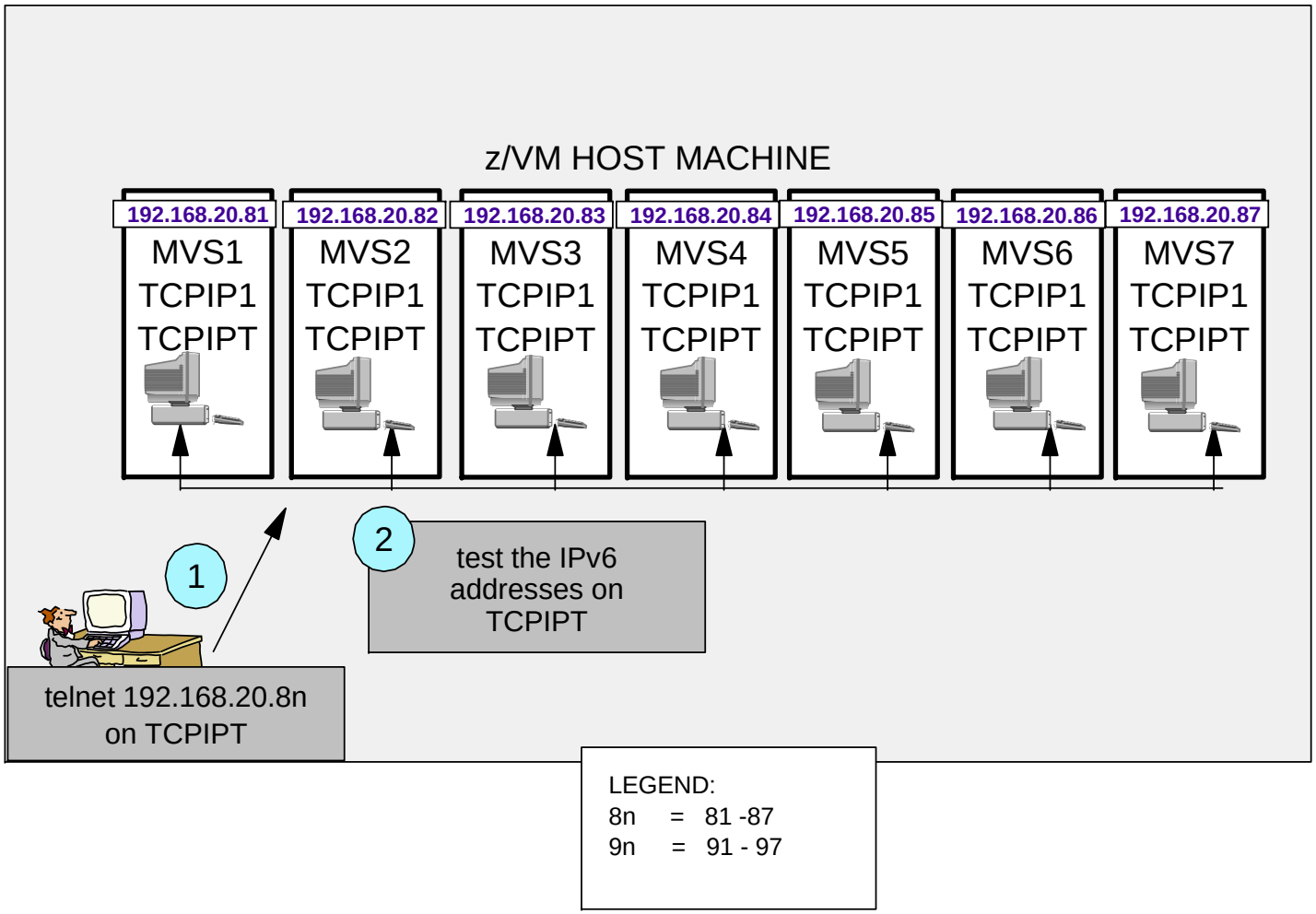
Thursday, August 11, 2011
1:30 PM-2:30 PM

Asia 2
(Walt Disney World Dolphin Resort)

Abstract

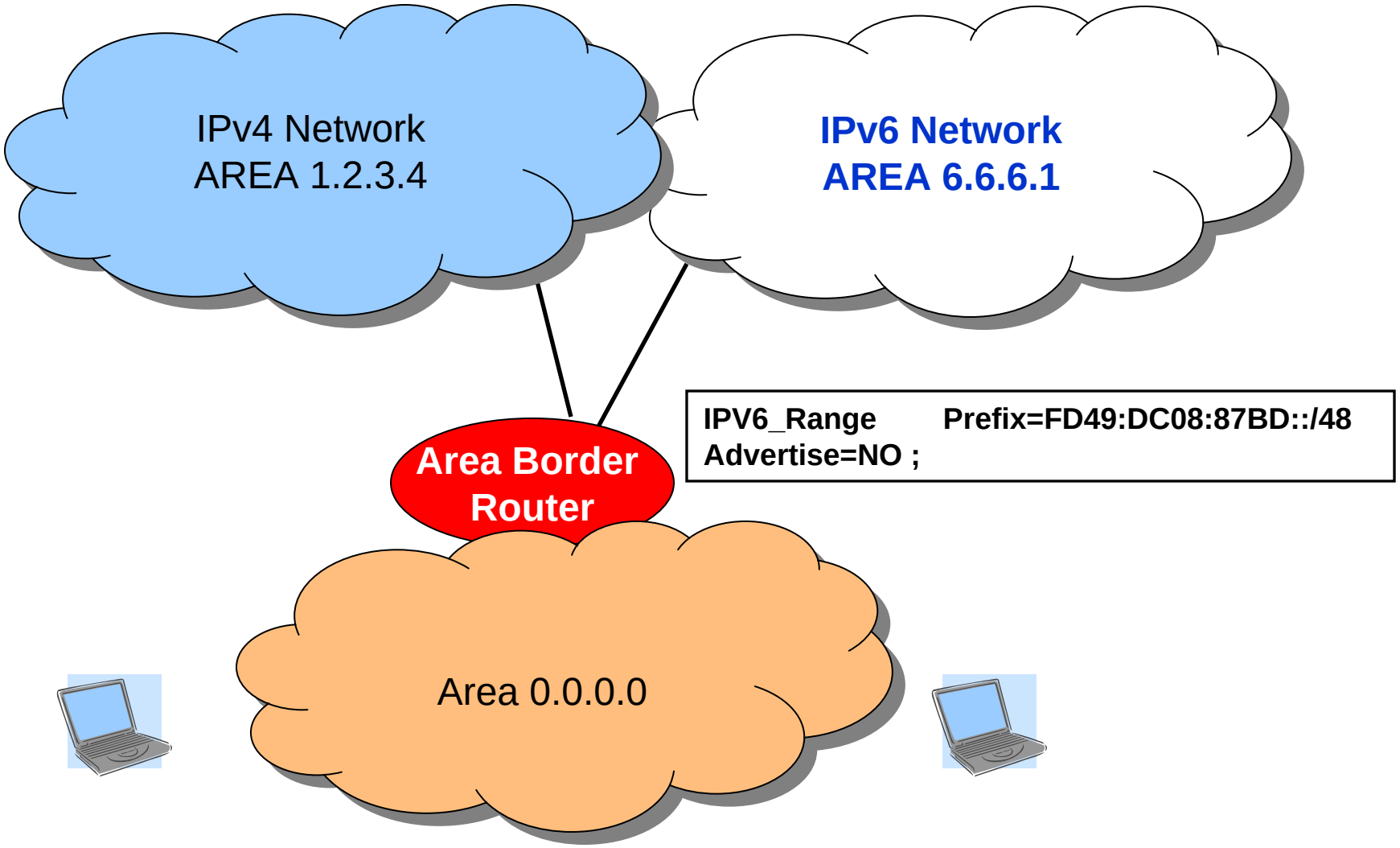
- Now that you have heard about the basics of IPv6, your next step is to implement it!
- This lab will let you change z/OS to support a TCP/IP stack capable of handling both IPv4 and IPv6 flows.
  - You will code IPv6 interfaces for QDIO ports, HiperSockets, and Static VIPAs.
  - Then you will create static routes for IPv6 routing and an “ipnodes” files so that you will not have to deal with remembering 128-bit IPv6 addresses.
  - Next you will configure OMPROUTE to support IPv6 addresses.
- As you proceed through the lab you will test the results of your configuration changes and you will leave the lab having created an IPv6 network based on Unique Local Unicast Addresses (ULAs) and Link-Local Addresses.

Maintenance TCPIP1 Stack and Test TCPIPT Stack



1. Telnet into Maintenance Stack (TCPIP1) at the MVSn Guest Machine.
   A. Edit TCP/IP configurations for Test Stack (TCPIPT) with ISPF editor under TSO
2. Initialize and Test your TCPIPTwith your new profile.

Overview of Isolated Routing for IPv6 Test Environment: Suppressing IPv6 Advertisement into Area 0 during Test



Unique IPv6 Local Address Prefix Calculation with bitace.com/ipv6calc

Private subnet / Unique Local IPv6 Unicast Addresses

A private subnet is akin to the IPv4 private networks 10.0.0.0/8, 172.16.0.0/12 and 192.168.0.0/16.

To address the problem of everyone using one of just three choices for private network, the IPv6 standard defines a 40 bit random part of the address range reserved for private use.

It has been defined by RFC 4193

This tool will calculate a 40 bit random part and display a subnet ready for use.

Your private subnet is: `fd49:dc08:87bd::/48`

Calculate IPv6 private subnet

Unicast-Prefix-based IPv6 Multicast Addresses

Your IPv6 subnet can be converted to a multicast subnet. You can use a subnet assigned by your ISP, a private subnet generated by the above calculator or or even a tunnel address. Do not use a link local address.

This method is defined by RFC 3306

Please remember to specify the prefix length. Prefix length must be in the interval [1 ; 64]. If you ommit the prefix, 64 is assumed.

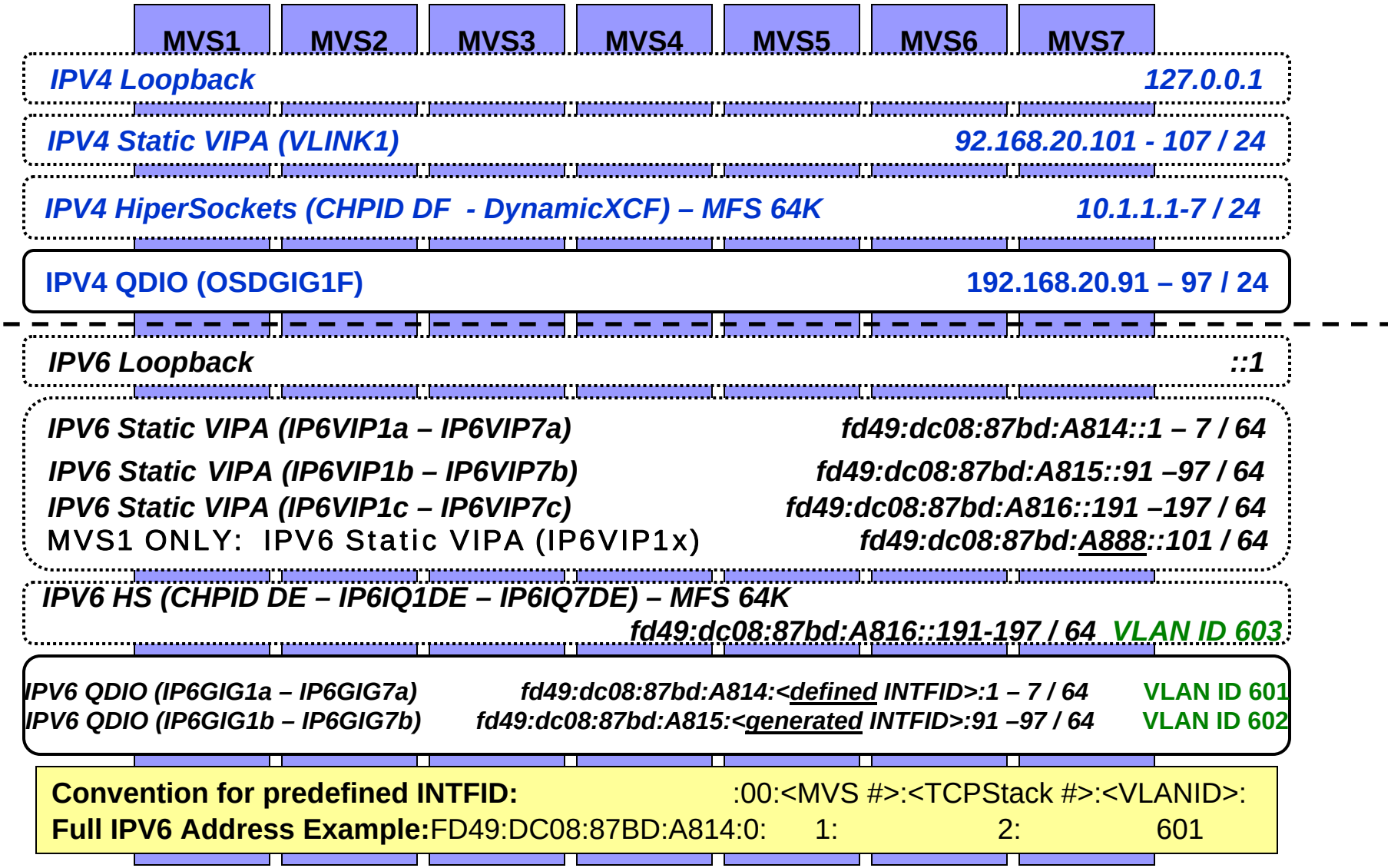
Your multicast subnet is: `ff38:30:fd49:dc08:87bd::/96`

Enter IPv6 subnet: fd49:dc08:87bd::/48

- ○ node-local scope
- ○ link-local scope
- ○ site-local scope
- ◉ organization-local scope
- ○ global scope

calculate

TCPIPT Dual-Mode Stack: Profile IP6PRO1a – IP6PRO7a



Lab Flow

- Review Diagram with IPv6 addresses for HiperSockets and for OSA QDIO ports
- Issue Netstat to see IPv4 format
- Issue Netstat CONFIG to see what entries are there prior to migration …
- Change BPXPRM to support IPv6
- Recycle TCP/IP stack
- Issue Netstat to see IPv6 format
- Add IPV6 Statements to TCPIPT stack:
  - IPCONFIG6
  - IPV6 VIPAs, HiperSockets, QDIO Adapters
- Create IPNODES file with IPv6 addresses
- Create static routing table with REPL to reach VIPA over HiperSockets
- Test IPNodes and BEGINRoutes with PINGs and FTP
  - Connection to IPv6
  - Connection to IPv4
- Modify OMPROUTE for IPv6
- Test with PING and FTP
  - Connection to IPv6
  - Connection to IPv4

Instructor-run Jobs Prior to Lab

- SYS1.CS.CNTL(EMPTSEC) – on all systems
- NOTE: Your instructor will already have initialized the following procedures at MVS1 – the system against which you will be testing:
  - //STARTING EXEC TCPIPT,PROF=IP6PRO1A,CS=SYS1
  - //STARTING EXEC OMPRT,CS=SYS1,ENV=OENV6T1
  - S ftpt
    - //FTPT PROC MODULE='FTPD',CS=SYS1,DATA=DAT&CL1.A, FDAT=FTPSEC,PARMS=''
  - S tn3270t
    - TN3270T PROC PARMS='CTRACE(CTIEZBTN)',PROF=TN&CL1.A, CS=SYS1, DATA=DAT&CL1.A

IPv6 Configuration on z/OS

Hands-on Lab

End of Lab

IPv6 Configuration on z/OS

Hands-on Lab

End of Lab