Create a Network Management VLAN on an Integrated Services Router

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Introduction

This document provides instructions for how to create a virtual LAN (VLAN) for Network Management users on your network. A network management VLAN gives network management devices and internal servers a network that is separated from the Internet and has controlled access to machines on the local network.

Note: VLANs are not supported on Cisco 800 series and SB 100 series routers.

Back to Top

Requirements

- You must have completed these worksheets from the Site Survey:
  - LAN Addressing Worksheet
  - Internet Worksheet
  - Firewall Worksheet
- You must have completed the initial configuration of your router. If you have not configured your router, refer to the Site Survey.

Back to Top

VLAN Overview

This section provides an overview of the Management VLAN and how to use VLANs in your network.

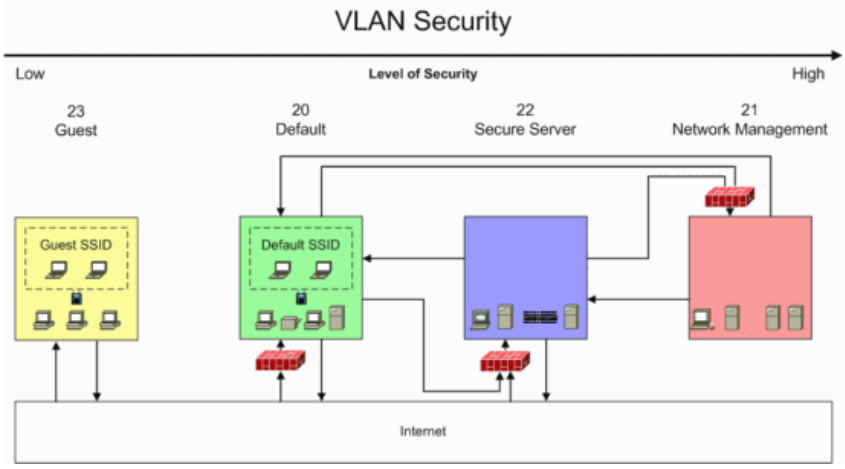
Supported VLANs

The Site IP Addressing Plan includes subnets for up to four virtual LANs (VLANs) at each site. Each VLAN has a custom level of security for a specific type of computer on the network, and uses firewalls to control access between VLANs.

The site survey defines these VLANs:

1. Default VLAN (20)
2. Network Management VLAN (21)
3. Secure Server VLAN (22)
4. Guest VLAN (23)

The diagram gives an overview of each VLAN in the network. For more information on other VLANs, refer to the Configuration Overview page.



The Network Management VLAN

A network management VLAN gives network management devices and internal servers a network that is separated from the Internet and has controlled access to machines on the local network.

The Network Management VLAN provides these benefits:

- Network Management users can send traffic to the Default and Secure Server VLANs and receive valid responses
- Network Management users are separated from the Internet for security purposes

Back to Top

Enable the Network Management VLAN

Follow these steps to configure the Network Management VLAN on an Integrated Services Router:

Enable the VLAN on the Router

To enable the Network Management VLAN on the router, follow these steps:

1. Follow these steps to create connect to the router with Telnet.
    a. Click **Start > Run**.
    b. In the Run dialog box, type **cmd** or **command**, and then click **OK** to open a command prompt window.
    c. At the command prompt, type **telnet *router-ip-address*** and press **Enter**. For ***router-ip-address*** , use the Router IP address that you entered in field L6A of the LAN Addressing Worksheet.
    d. Log into the router with the router password that you entered in field B11 of the Integrated Services Router Worksheet. For more information about how to access the router, refer to Configure Your Router with Security Device Manager.
2. Type **enable** and press **Enter** to enter privileged mode. Enter the enable password that you entered in field B12 of the Integrated Services Router Worksheet.

```
Router> enable
Router#
```

3. Type **configure terminal** and press **Enter** to enter configuration mode.

```
Router# configure terminal
Router(config)#
```

4. Type **interface vlan 21** and press **Enter**.

```
Router(config)#interface vlan 21
```

5. Type **description Network Management VLAN** and press **Enter**.

```
Router(config-if)#description Network Management VLAN
```

6. Type **encapsulation dot1Q 21** and press **Enter**.

```
Router(config-if)#encapsulation dot1Q 21
```

7. Type **ip address *router-ip-address* 255.255.255.0** and press **Enter**. For ***router-ip-address*** , use the Network Management VLAN router IP address that you entered in field L6B of the Management VLAN Addressing Worksheet.

```
Router(config-if)#ip address 192.168.11.1 255.255.255.0
```

8. Type **no shutdown** and press **Enter**.

```
Router(config-if)#no shutdown
```

9. Type **exit** and press **Enter**.

```
Router(config-if)#exit
Router(config)#
```

Enable Security

To enable security for the Network Management VLAN, follow these steps:

1. Follow these steps to create firewall rules for the Management VLAN:

   a. Type **no access-list 121** and press **Enter**.

   ```
   Router(config)#no access-list 121
   ```

   b. Type **access-list 121 remark Traffic to Management VLAN** and press **Enter**.

   ```
   Router(config)#access-list 121 remark Traffic from Management
                           VLAN
   ```

   c. Type **access-list 121 permit ip *default-subnet* 0.0.0.255 *management-subnet* 0.0.0.255**. For ***default-subnet*** , use the subnet you entered in field L1A of the LAN Addressing Worksheet. For ***management-subnet*** , use the subnet that you entered in field L1B of the Management VLAN Addressing Worksheet.

   ```
   Router(config)#access-list 121 permit ip 192.168.10.0 0.0.0.255 192.168.11.0 0.0.0.255
   ```

   d. Type **access-list 121 permit ip *secure-server-subnet* 0.0.0.255 *management-subnet* 0.0.0.255** and press **Enter**. For ***secure-server-subnet*** , use the subnet that you entered in field L1C of the Secure Server VLAN Addressing Worksheet. For ***managemenet-subnet*** , use the subnet that you entered in field L1B of the Management VLAN Addressing Worksheet.

   ```
   Router(config)#access-list 121 permit ip 192.168.12.0 0.0.0.255 192.168.11.0 0.0.0.255
   ```

   e. Type **access-list 121 deny ip any any** and press **Enter**.

   ```
   Router(config)#access-list 121 deny ip any any
   ```

- Type **interface vlan 21** and press **Enter**.

```
Router(config)#interface vlan 21
```

- Type **ip access-group 121 out** and press **Enter**.

```
Router(config-if)#ip access-group 121 out
```

- Type **end** and press **Enter** to exit configuration mode.

```
Router(config-if)#end
Router#
```

- Type **write memory** and press **Enter** to save your configuration.

```
Router#write memory
```

Enable the VLAN on an Integrated Switch

Follow these steps to enable the Network Management VLAN on an integrated switch:

1. Type **enable** and press **Enter** to enter privileged mode. Enter the enable password that you entered in field B12 of the Router Worksheet and press **Enter**.

   ```
   Router>enable
   Router#
   ```

2. Type **vlan database** and press **Enter**.

   ```
   Router#vlan database
   Router(vlan)#
   ```

3. Type **vlan 21 name Management media ethernet state active** and press **Enter**.

   ```
   Router(vlan)#vlan 21 name Management media ethernet state
                   active
   ```

4. Type **exit** and press **Enter**.

   ```
   Router(vlan)#exit
   ```

```
APPLY completed.
Exiting....
Router#
```

5. Type **configure terminal** and press **Enter**.

```
Router#configure terminal
Router(config)#
```

6. Type **spanning-tree vlan 21 root primary** and press **Enter**.

```
Router(config-if)#spanning-tree vlan 21 root primary
 VLAN 21 bridge priority set to 8192
 VLAN 21 bridge max aging time unchanged at 20
 VLAN 21 bridge hello time unchanged at 2
 VLAN 21 bridge forward delay unchanged at 15
```

7. Type **end** and press **Enter**.

```
Router(config-if)#end
Router#
```

8. Type **write memory** and press **Enter**.

```
Router#write memory
```

9. Type **exit** and press **Enter** to terminate the telnet session.
10. Record the device name in the first available field from fields L8-L35 of the Management VLAN Addressing Worksheet.
11. Configure the device with the IP address in the Management VLAN Addressing Worksheet. For example, the first device in the Management VLAN is configured with the IP address 192.168.11.2. For more information about how to configure an IP address on a PC, refer to Configure an IP Address on Your PC.

Back to Top

Add Users

To move users to the Network Management VLAN, follow these steps:

Add a Wired Guest User

Follow these steps to add a network management user connected directly to a switch port on the ISR:

1. Type **configure terminal** and press **Enter**.

```
Router#configure terminal
Router(config)#
```

2. Type **interface FastEthernet *interface-number*** and press **Enter**. For ***interface-number*** , use the number of the switch port that you want to assign to a Management user. The available switch ports are listed in field B36 of the Router Worksheet.

```
Router(config)#interface FastEthernet0/2
Router(config-if)#
```

3. Type **description Management Switch Port** and press **Enter**.

```
Router(config-if)#description Management Switch Port
```

4. Type **switchport access vlan 21** and press **Enter**.

```
Router(config-if)#switchport access vlan 21
```

5. Type **end** and press **Enter**.

```
Router(config-if)#end
Router#
```

6. Type **write memory** and press **Enter**.

```
Router#write memory
```

7. Configure the user machine with an IP address in the Network Management VLAN

Back to Top

Next Step

You have now set up a Network Management VLAN on your network.

To make further changes to your network, refer to the Configuration Overview page.

Back to Top

Troubleshoot the Procedure

This section provides information about common problems that you may encounter. If this information does not solve your problem, contact the SMB Technical Assistance Center (SMB TAC) for assistance.

Problem	Cause(s) and Suggested Solution(s)
I cannot connect to the router with Security Device Manager (SDM).	Refer to Configure Your Router with Security Device Manager
I have a Network Management user that cannot connect to the Network Management VLAN.	Refer to Move a LAN User Between Groups to move the appropriate switch port to the Management VLAN.

Back to Top

Related Information

- **Site Survey**
- **Create a HyperTerminal Connection**
- **Configure Your Router with Security Device Manager**
- **Move a LAN User Between Groups**