



## **Configuring a LAN Interface test**

Version: 2038

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# Router Installation and Configuration Manual/Configuring a LAN Interface test

This chapter describes how to configure the ImageStream router Ethernet and Token Ring interfaces, Ethernet VLAN subinterfaces and VRRP, and includes the following topics:

- ◇ Understanding the Network Interface Configuration File
- ◇ Default LAN Interface Configuration
- ◇ Customizing the Configuration
- ◇ Configuring Additional Ethernet Devices
- ◇ Configuring Token Ring Interfaces

Before configuring the Ethernet or Token Ring interface, you must make the appropriate cabling connection for your needs. Refer to the hardware installation guide for your ImageStream product for information on making the LAN connection. See the Command Reference for more detailed command descriptions and instructions.

```
Configuration menu
1. AAA (Password) Configuration
2. Global configuration
3. Network interface configuration
4. Firewall and QOS configuration
5. Service configuration
6. Dynamic routing configuration
7. Save configuration to flash
0. ISis-Router main menu
```

Next, select the "Network interface configuration" option by pressing 3 and **Enter**. This will open the ImageStream router's primary configuration file, **wan.conf** in the default editor. The **wan.conf** file is also accessible from the command line in the **/usr/local/sand** directory.

## Understanding the Network Interface Configuration File

a .conf is the primary configuration file used by ImageStream's open source Inetics? Architecture. Inetics handles configuration and management of all LAN and WAN devices on an ImageStream router. For more information about ImageStream's Inetics technology, visit the ImageStream Web site at <http://www.imagestream.com/Inetics.html>. See the Command Reference for more detailed command descriptions and instructions.

T

d

ault **wan.conf** file is:

!

v

sio

2.00

!

in

erf ce Ethernet0

i

ad

ress 10.10.199.199 255.0.0.0

!

in

rf ce Serial0

s

utd wn

d

scr ption Port 0

e

cap ulation hdlc

i

ad

ress 192.168.10.1 255.255.255.252

!

1.

t he default route via Serial0 using the device #ip route add 0.0.0.0/0 dev Serial0

#

et he default route via Serial0 using an IP

#i

ro

te add default via 192.168.10.2

!  
en

T

v

ues in the default file are explained below.

,  
,

ve

**ion 2.00 - Denotes the version number of the configuration file and driver set. This value is set by ImageStream and should not be changed or modified.**

,  
,

in

**rface Ethernet0 - Denotes the start of the configuration section for the first Ethernet device in your system. All commands that follow this line until the next ! mark will be applied to Ethernet0.**

,  
,

ip

**ddress 10.10.199.199 255.0.0.0 - Specifies the IP address and netmask for Ethernet0.**

,  
,

!,

**nd - Signifies the end of a configuration section or the end of the wan.conf file. You must include a "!" to delimit each section of the configuration file and an "end" statement at the end of the file.**

,  
,

in

**rface Serial0 - Denotes the start of the configuration section for the first Serial port in your system. All commands that follow this line until the next ! mark will be applied to Serial0.**

```
sh
```

down - **Instructs the router not to start this port when Inetics is started or reloaded.**

```
de
```

ription Port 0 - **Sets a description for this device. The description is optional used for reporting purposes in other utilities. Setting a value here does not affect the operation of the port.**

```
en
```

apsulation hdlc - **Specifies the Cisco HDLC protocol for this serial port.**

```
ip
```

address 192.168.10.1 255.255.255.252 - **Specifies the IP address and netmask for Serial0.**

```
1.
# ip route 0.0.0.0/0 Serial0 - Set the default route via Serial0 using the device - A comment inserted in the configuration file. Lines that begin with # or ! are ignored by Inetics when starting or reloading configurations.
```

```
1. i
# ip route add 0.0.0.0/0 dev Serial0 - A route statement setting the default route to the Serial0 device. This syntax can not be used to route via Ethernet interfaces properly. Note that this command is commented out, so it will be ignored by Inetics.
```

```
1. i
# ip route add default via 192.168.10.2 - A route statement setting the default route to the IP address of 192.168.10.2. Note that this command is commented out, so it will be ignored by Inetics. This command also uses the alternate default route designator of default instead of the numeric 0.0.0.0/0. The designators are equivalent.
```



==

==

## LAN Interface Configuration

Th

de

ault values of the 10/100 Mbps Ethernet and Gigabit Ethernet on-board and expansion cards are as follows:

◇

-b

rd Ethernet ports are always the first device(s) in the router. A router with one on-board Ethernet port and one expansion port will use Ethernet0 for the onboard port and Ethernet1 for the expansion port.

◇ A

l 1 /100 Mbps Ethernet and Gigabit Ethernet ports are enabled. No port description is configured for any port.

◇ A

l 1 /100 Mbps Ethernet ports are set to autonegotiate speed and duplex. All Gigabit Ethernet ports are set to full duplex autonegotiation.

◇ V

AN'

are not configured.

◇ B

idg ng is not configured.

◇ V

RP s not configured.

Rem mber that default settings are not necessarily shown in the configuration file.

==

==

## ing the Configuration

To

cus omize the Ethernet port configurations, complete the following sections. The ordering of the commands is done by convention, but a specific order is not required. Likewise, all configurations are indented to make configurations easy to read, but indentation is not required. In general, ImageStream follows this ordering convention:

1.  
Co

ents

1.  
Por

description

1.  
Ban width scaling statement

1.  
Oth r optional settings

1.  
IP ddress/netmask

1.  
Sec ndary IP addresses/netmasks

1.  
VRR

configuration

==

==

### the Port Description

Yo

ca assign description to all 10/100 Ethernet and Gigabit Ethernet ports. Although this feature is optional

T

as

gn a description to a port, enter this command in the wan.conf file in the Ethernet interface configuration section:

,

de

ription *string*

U

ng

he router's default configuration below, we have added a description to Ethernet0:

!

erf ce Ethernet0

d

scr ption Office LAN

i

ad

ress 10.10.199.199 255.0.0.0

!

==

==

## ing Duplex and Speed Settings

By

def ult, all 10/100 Ethernet devices autonegotiate duplex and speed settings with the connected device. However, you can set different combinations of duplex and speed modes based on the requirements of your application or the connected device's capabilities. Most Ethernet hubs, as well as older Ethernet cards and wireless radios may not support MII autonegotiation of duplex and speeds.

T

fo  
 e a duplex setting on an Ethernet port, enter this command in the wan.conf file in the Ethernet interface configuration section:

```
'
du
ex { au{o |{full | half }
```

T

uto, full, or half keyword configures the duplex operation on an interface. auto is the default setting. To force a speed setting on an Ethernet port, enter this command in the wan.conf file in the Ethernet interface configuration section:

```
'
sp
d { au{o |{100 | 10 }
```

T

uto, 100 or 10 keyword configures the speed on an interface. auto is the default. The duplex and speed commands are not valid for 10/100/1000 Ethernet ports or Gigabit Ethernet ports.

U

ng  
 he router's default configuration below, we have added duplex and speed settings to Ethernet0:

```
!
i
erf ce Ethernet0
d
scr ption Office LAN
d
```

ple

auto  
s

eed auto

i  
ad

ress 10.10.199.199 255.0.0.0

!

T

t

le below describes the relationship between different combinations of the duplex and speed modes. The specified duplex command configured with the specified speed command produces the resulting action on the Ethernet port.

R

at

nship Between **duplex** and **speed** Commands

**d**

ple

Command !! speed Command !! Resulting Action by Ethernet Port

s

eed auto || Autonegotiates both speed and duplex modes

pee

auto || Autonegotiates both speed and duplex modes

pee

10 || Forces 10 Mbps and Autonegotiates duplex mode

pee

100 || Forces 100 Mbps and Autonegotiates duplex mode

pee

10 || Forces 10 Mbps and half duplex

pee

```

10 || Forces 10 Mbps and full duplex
pee

100 || Forces 100 Mbps and half duplex
spe d 100 || Forces 100 Mbps and full duplex
==

==
    
```

### the IP Address and Netmask

Du

ing the initial installation process, you will set the IP address and netmask for the Ethernet interface. To change the IP address and netmask of the Ethernet interface from the default, modify the ip address command. The syntax of this command is

```

,
ip
address ipaddress netmask
    
```

S

t  
IP address to the address to be used by the router on your network. If you have divided your network into

U

ng

he default configuration above, we have set the Ethernet0 IP address to 10.10.10.1 with a Class C netmask (/24, or 255.255.255.0). You will need to substitute your address and netmask for your network.

```

!
i
erf ce Ethernet0
d
scr ption Office LAN
d
ple
    
```

```

auto
s

eed auto

i
ad

ress 10.10.10.1 255.255.255.0

!

==

==
    
```

### a Dynamic IP Address via DHCP

So

For users, especially those connected to broadband Internet connections, may obtain an IP address from a DHCP server. To change the IP address and netmask of the Ethernet interface from the default, modify the ip address command to instruct the router to act as a DHCP client on this interface. The syntax of this DHCP client command is:

```

,

ip

address dhcp [ [client-id { yo{r-client-id} ]] [ [client-name { yo{r-client-name} ]]
    
```

T

**client-id and client-name commands are optional. If your DHCP server, or your broadband provider, require a client ID or name, specify either one or both of these optional parameters as necessary. Using the default configuration above, we have set the Ethernet0 IP address to a dynamic IP address. When the router boots, or when the Inetics™ service is reloaded, the router will make a DHCP request on the Ethernet0 device and wait for a response from the DHCP server. The DHCP client will accept an IP address, netmask, default gateway IP, DNS server addresses, and domain name if supplied by the DHCP server.**

```

!

i

erface Ethernet0

d
    
```

```
scr ption Cable Modem Connection duplex auto
```

```
s
```

```
eed auto
```

```
i  
ad
```

```
ress dhcp
```

```
!
```

```
==
```

```
==
```

### Secondary Ethernet Addresses

De

ending on your network configuration, you may need to configure more than one address on an Ethernet device. This task is accomplished by adding the secondary keyword to the ip address line used previously. The secondary keyword is used for all addresses on an Ethernet device other than the primary address. Only one primary address can be configured on an Ethernet device. Configuring more than one primary address or leaving the secondary keyword off of a secondary address configuration will cause the last primary IP address to be used when the port is configured by SAND.

U

ng

he default configuration above, we have added two secondary IP addresses to Ethernet0. You will need to substitute your address and netmask for your network.

```
!
```

```
erf ce Ethernet0
```

```
d
```

```
scr ption Office LAN
```

```
d
```

```
ple
```



```
auto  
s
```

```
eed auto
```

```
i  
ad
```

```
ress 10.10.10.1 255.255.255.0
```

```
i  
ad
```

```
ress 192.168.0.1 255.255.255.128 secondary
```

```
i  
ad
```

```
ress 192.168.10.1 255.255.254.0 secondary
```

```
!
```

```
==
```

```
==
```

### or Disabling an Ethernet Interface

To

disable an interface, use the shutdown interface configuration command. Unlike other command line interfaces, the wan.conf file does not require a "no" version of a command to reverse the operation. Entering "no" followed by a command will be ignored by SAND.

S

```
t
```

```
default configuration below to see how to enter the shutdown command.
```

```
!
```

```
in
```

```
rf ce Ethernet0
```

```
s
```

```
utd wn
```

```
d
```

scr ption Office LAN

```

d
ple
auto
s
eed auto
i
ad
ress 10.10.10.1 255.255.255.0
i
ad
ress 192.168.1.1 255.255.255.128 secondary
i
ad
ress 192.168.10.1 255.255.254.0 secondary
!
T
en

```

le Ethernet0 in the configuration, remove the **shutdown** command. Do not use "no shutdown", as this will be ignored by SAND. It is not necessary to enter "no" and a command to negate the command. Simply remove the command from the configuration file to enable the interface.

```

T
di

```

ble an Ethernet interface, you must use the **shutdown** command. Disconnecting the Ethernet cable, removing the interface's IP address, or removing the interface from wan.conf does not disable the Ethernet interface. Only the shutdown command can disable an Ethernet interface.

```

==
==

```

## Comments to an Ethernet Configuration

Comments

Comments may be added to the Ethernet configuration, or anywhere in the **wan.conf** file by inserting a line that begins with the # symbol. The contents of the line will be ignored by SAND. Comments may be used to place contact information, ticket numbers, circuit IDs or any other information into the **wan.conf** file. There are no limits on the number or length of comments that may be inserted.

Interface Ethernet0

#

Comments to DES-3326, Port 5 in 3rd floor wiring closet #Call Dave at x4653 for cable or port problems

description

Office LAN

description

ip

address

ip address

ip address

address 10.10.10.1 255.255.255.0

ip address

address 192.168.1.1 255.255.255.128 secondary

ip address

address 192.168.10.1 255.255.254.0 secondary

!

==

==

Configuring the Configuration

## the Interface Bandwidth Calculation

Fo

so

e media, such as Ethernet and Token Ring, the bandwidth is fixed; for other media, such as serial lines, you can change the actual bandwidth by adjusting the hardware. For both classes of media, you can use the bandwidth configuration command to communicate the current bandwidth to the router's statistical output program and other programs. The bandwidth command sets an informational parameter only to communicate the current bandwidth to other programs. The bandwidth command does not adjust the actual bandwidth of an interface. For certain types of interfaces (Bonder, Ethernet, ATM, ports with integrated CSU/DSUs), the bandwidth value is automatically calculated for you. The syntax of the bandwidth command is:

```
'
ba
width <bit< pe< second>
```

U

ng

he default example from above, you can see how we have added a bandwidth of 5 Mbps to the "Connection to co-lo" interface, Ethernet1:

```
!
i
erf ce Ethernet0
#
onn cts to DES-3326, Port 5 in 3rd floor wiring closet #Call Dave at x4653 for cable or port problems
d
scr ption Office LAN
d
ple
auto
s
eed auto
```

```
i  
ad
```

```
ress 10.10.10.1 255.255.255.0
```

```
i  
ad
```

```
ress 192.168.1.1 255.255.255.128 secondary
```

```
i  
ad
```

```
ress 192.168.10.1 255.255.254.0 secondary
```

```
!  
in
```

```
erf ce Ethernet1
```

```
#
```

```
OC hone: 800-555-1212 - Our account #58935 description Connection to co-lo
```

```
b
```

```
ndw dth 5000000
```

```
i  
ad
```

```
ress 63.67.72.155 255.255.255.0
```

```
!  
==  
==
```

## ing Additional Ethernet Devices

If

you

router is equipped with multiple Ethernet devices, you can add additional interface configuration

A

it

nal Ethernet devices are configured in the same manner as the on-board Ethernet0 device. Add an additional interface command for each additional Ethernet port, separating each section with a ! symbol. The syntax of the interface command is:

```

,
in
rface DeviceName

```

U

ng

he default example above you can see how we added a second Ethernet port at Ethernet1.

```

!
i
erf ce Ethernet0
#
onn cts to DES-3326, Port 5 in 3rd floor wiring closet #Call Dave at x4653 for cable or port problems

```

d

scr ption Office LAN

d

ple

```

auto
s

```

eed auto

```

i
ad

```

ress 10.10.10.1 255.255.255.0

```

i
ad

```

ress 192.168.1.1 255.255.255.128 secondary

```

i
ad

```

```
ress 192.168.10.1 255.255.254.0 secondary
```

```
!  
in
```

```
erf ce Ethernet1
```

```
#
```

```
OC hone: 800-555-1212 - Our account #58935 description Connection to co-lo
```

```
b
```

```
ndw dth 5000000
```

```
i  
ad
```

```
ress 63.67.72.155 255.255.255.0
```

```
!  
in
```

```
rf ce Ethernet2
```

```
d
```

```
scr ption public servers
```

```
i  
ad
```

```
ress 20.215.25.1 255.255.254.0
```

```
!  
==
```

```
==
```

## ing Token Ring Devices

If

you

router is equipped with expansion Token Ring devices, you can add additional interface configurat

,

```
i
erface DeviceName
s n
he default example above, we added a Token Ring port at TokenRing0.
!
i
erface Ethernet0
#
onn cts to DES-3326, Port 5 in 3rd floor wiring closet #Call Dave at x4653 for cable or port problems
d
scr ption Office LAN
d
ple
auto
s
eed auto
i
ad
ress 10.10.10.1 255.255.255.0
i
ad
ress 192.168.1.1 255.255.255.128 secondary
i
ad
ress 192.168.10.1 255.255.254.0 secondary
!
in
erface Ethernet1
#
```



OC hone: 800-555-1212 - Our account #58935 description Connection to co-lo

b

ndw dth 5000000

i  
ad

ress 63.67.72.155 255.255.255.0

!

in

rf ce TokenRing0

d

scr ption Legacy network

i  
ad

ress 20.215.25.1 255.255.254.0

!

No

You must save the settings to the router's non-volatile flash memory! If the router is rebooted before saving, your changes will be lost! See Chapter 26, [\[\[Ro\[\[ernstallation and Configuration Manual/Backup/Restore Menu: Managing Configurations f\]\] m\]\]e information.](#)

