

# TN3270 Server Client to LU Nailing and Capping

Document ID: 12309

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## **Introduction**

**Note:** Logical Unit (LU) Nailing is first supported in Cisco IOS® Software Releases 11.2BC and 11.3T and is available in Cisco IOS Software Release 12.0 and later.

TN3270 Server Client to LU Nailing is also known as Client IP Address Nailing, a feature that allows the network administrator to restrict which client IP addresses can connect to particular LUs. This feature lets clients from traditional TN3270 (non-TN3270E) devices to connect to specific LUs, thus overcoming the limitation of TN3270 devices in that they cannot specify a CONNECT LU. In order to achieve this improvement, configure the IP address to LU mappings in the TN3270 server. This feature is also useful for TN3270E clients because, in many instances, it is preferable to do the configuration centrally at the router rather than at the client.

LU Capping provides a way for a customer to limit the number of LUs that can be used concurrently by a single client IP address.

In Cisco IOS Software Release 12.1(5)T, several TN3270 Server Connectivity Enhancements are added, mainly:

- Dynamic LU Naming
- Inverse DNS Nailing
- SSL Encryption Support

Refer to TN3270 Server Connectivity Enhancements for more information.

## **Prerequisites**

## Requirements

There are no specific requirements for this document.

## 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, make sure that you understand the potential impact of any command.

## Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

## Configuration LU Nailing

Use the client TN3270 PU configuration mode command in order to define a range of **locaddrs** to be reserved for a remote device(s). Use the **no** form of this command in order to cancel this definition.

```
[no] client [printer] ip ip-address [mask] lu first-locaddr [last-locaddr]
```

where

```
printer (Optional)
```

This literal string, if present, specifies that a client connection from the nailed IP address(es) is nailed to one of the specified LUs if the client session negotiates a model type of 328, where *<printer>* is any alphanumeric. If this string is not present, all the model types can be nailed to this range of LUs.

```
ip ip-address [mask]
```

Remote client IP address. The mask is optional and is applied to the remote device address. The mask allows multiple client IP addresses in the same subnet to be nailed to the same range of **locaddrs**. The form of the mask is IP format A.B.C.D.

```
lu first-locaddr [last-locaddr]
```

Defines the range of inclusive **locaddrs** to be nailed from **first-locaddr** to **last-locaddr** (or only the first-locaddr, if the last-locaddr is not defined). The range for first-locaddr and last-locaddr is 1 to 255.

If **client ip 192.195.80.40 lu 1 2** is configured, and there is an attempt to delete this command without the specification of the last LU, this error message is displayed:

```
router(tn3270-pu)#no client ip 192.195.80.40lu 1
% client ip 192.195.80.40 lu not matched with configured lu 1 2
```

## Defaults

The default is to nail connections as screen LUs with no mask.

## Command Mode

This is a TN3270 PU configuration mode command.

## Usage Guidelines

- Multiple statements can be configured for one IP address or nail type, either on one PU or multiple PUs, but each LU can only be nailed to one IP address or nail type.

For example, this nailing configuration is rejected:

```
router(config)int c2/2
router(config-if)tn3270-server
router(cfg-tn3270)pu PU1 05D18081 172.28.1.82 ...
router(tn3270-pu)client ip 192.195.80.40 lu 1 10
router(tn3270-pu)client printer ip 192.195.80.40 lu 1 10
% client ip 192.195.80.40 conflict detected with lu 1 10
router(tn3270-pu)
```

- A nailed client IP address or nail type with no TN3270 device name is connected to the first available active (ACTLUed and not connected) LU in the range of LUs defined for a PU(s). If no active nailed LUs are available, it is connected to an inactive nailed LU and a Dynamic Definition of Dependent LU (DDDLU) activation is initiated. If no nailed LU is available, the connection is rejected.

This example shows a direct PU and a dependent LU requester (DLUR) PU configured with the same listening point. The PUs are configured with the same nailed client IP address.

```
tn3270-server
 pu PU1 05D18081 172.28.1.82 ...
   client ip 192.195.80.40 lu 1 10
dlur
 pu PU2 05D190B3 172.28.1.82
   client ip 192.195.80.40 lu 1 10
```

If both PUs each have three static LUs (which are ACTLUed and not connected), these LUs are the first to be nailed. That is, the first six connections from client ip 192.195.80.40 use the static LUs and subsequent connections use the remainder of the dynamic LUs.

- A nailed IP address can request one of the nailed LUs through the TN3270 device name. If the requested LU is not available, the connection is rejected.
- A nailed IP address cannot request an LU outside the range of nailed LUs.

In this example, if the 192.195.80.40 client ip requests LU 11 of PU1, the connection attempt is rejected because this 192.195.80.40 client ip is only nailed to LUS 1 to 10 of PU1.

```
tn3270-server
 pu PU1 05D18081 172.28.1.82 ...
   client ip 192.195.80.40 lu 1 10
```

- A non-nailed IP address cannot request an LU that is configured as nailed. Nailed LUs are only reserved for nailed client IP addresses.
- In order to cancel the definition, the command must be entered exactly as configured. For example, if a range of locaddrs is specified, the whole range of locaddrs must be specified to cancel this definition. There is no way to cancel only one locaddr if a whole range of locaddrs is configured.

## Configuration Example

In this example, if the 198.32.1.1 client ip connects to listening point 172.22.0.1, this client gets LU 1 of PU1. If the 198.32.1.1 client ip connects to listening point 172.22.0.2, this client gets LU 1 of PU2.

```
tn3270-server
  pu PU1 05d1801 172.22.0.1
    client ip 198.32.1.1 lu 1
  pu PU2 05d1802 172.22.0.2
    client ip 198.32.1.1 lu 1
```

## Configuration of LU Capping

The TN3270 server client command is used in order to limit the number of LU sessions from the one client IP address in the subnet.

```
[no] client ip ip-address <ip-mask> lu maximum <n>
```

### Syntax Description:

<*ip*> (Optional) Client IP address.

<*ip-mask*>  
(Optional) Client IP subnet mask.

**max** <*n*>  
Maximum number of LU sessions from the  
one client IP address in the subnet.  
The range is 0-65535.

## Defaults

If no IP address is configured, the default is for all clients to be limited to a maximum of LU sessions.

## Command Mode

TN3270 configuration

## Usage Guidelines

Because of the subnets-within-subnets function, there is sift-down. Therefore, the **no** form of this command cannot mean "make unlimited". It means "take away the statement that matches".

## Examples

These examples illustrate the LU capping function:

- In order to limit all clients to a maximum of two LU sessions.

```
client lu maximum 2
```

- In order to limit the client with IP address 10.1.1.28 to a maximum of three LU sessions.

```
client ip 10.1.1.28 lu maximum 3
```

- This limit can be applied to different subnets as in this example. The most exact match to the client IP address is chosen.

```
client ip 10.1.1.0 255.255.255.0 lu maximum 4
```

```
client ip 10.1.1.64 255.255.255.192 lu maximum 5
```

The effect is that clients with IP addresses that reside in the 10.1.1.64 subnet (that is, 10.1.1.64 – 127) are limited to a maximum of five LU sessions while other clients with IP addresses in the 10.1.1.0 subnet are limited to a maximum of four LU sessions.

## show Commands

- This show command displays mappings between a nailed client IP address(es) and nailed LUs.

```
show extended channel slot/2 tn3270-server nailed-ip ip-address
```

where *ip-address* is the IP address of the client. This is sample output:

```
router#show extended channel 3/2 tn3270-server nailed-ip 172.28.0.0
172.28.1.0 255.255.255.0 pu PU1 lu 1 50
172.28.1.80 pu PU2 lu 100 200 printer
172.28.1.83 pu PU3 lu 1 60 printer
172.28.1.82 pu PU1 lu 100 200
```

- The existing show command is issued in order to display the PU configuration parameters, statistics, and all the LUs currently attached to the PU.

```
show extended channel slot/2 tn3270-server pu pu-name
```

The command output now contains two modifications. The first is the addition of the nail column in order to identify the nailed LUs. The second modification is the nailed table output with the client IP, mask, nail type, LU first, and LU last columns. This is sample output:

```
router#sh extended channel 2/2 tn3270-server pu PU1

name(index) ip:tcp          xid          state          link          destinat
PU1(1)      172.28.1.82:23          05D18081     ACTIVE         tok 0         4000.7470
idle-time   0          keepalive 1800          unbind-act discon generic-pool perm
bytes 560 in, 3765 out; frames 20 in, 27 out; NegRsp 0 in, 0 out
actlus 12, dacltus 0, binds 2

lu  name          client-ip:tcp          nail          state          model          frames i
1   PU1001         never connected       Y            ACTIVE         1
2   PU1002         never connected       Y            ACTIVE         1
3   PU1003         192.195.80.40:2077   N            ACT/SESS      327804        5
4   PU1004         192.195.80.40:2644   Y            ACTIVE         327804        5

client ip          mask          nail-type  lu first  lu last
192.195.80.40     255.255.255.0 screen     1         2
192.195.80.40     255.255.255.0 printer    4
```

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Updated: Sep 09, 2005

Document ID: 12309

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