

# TN3270 IP Precedence and TOS Configuration

Document ID: 12310

---

## Introduction

### Prerequisites

- Requirements

- Components Used

- Conventions

### Router Configuration for IP Precedence/TOS Support

### show Commands

### TN3270 Server MIB Changes

### Usage Notes

### NetPro Discussion Forums – Featured Conversations

### Related Information

---

## Introduction

As traffic on the Internet increases, congestion increases. You need to discriminate between different types of traffic and provide the appropriate quality of service. For example, interactive traffic must have a higher priority than bulk data transfers.

IP precedence and IP type of service (TOS) are a part of the IP specification that tries to provide this prioritization. It was not used much in the past, but is used more and more often in the router networks in order to make a more informed decision about routing the generated IP packets. In order to enable the TN3270 server to use such routing networks in a positive way, the Telnet 3270 (TN3270) server needs to generate packets that comply with the required IP TOS and IP precedence values.

In the TN3270 server, two types of TN3270 clients connect. They are interactive screens and printers. The screens are inherently interactive while the printers need bulk data transfers. This means you need to discriminate between those two types of sessions with IP TOS and IP precedence in mind.

In order to enable further flexibility in network management, you can specify the values on the TN3270 server global level or on the individual physical unit (PU) level. In fact, the values can be specified on both levels. In this case, **sift**down determines the value on the individual PUs. This provides a powerful yet efficient way to manage the values.

The specification for IP precedence allows values of zero to seven. The IP TOS specification allows values from zero to fifteen. It is up to you to choose values for the TN3270 screens and printers that are consistent with the organizational policy.

## Prerequisites

## Requirements

There are no specific requirements for this document.

## Components Used

The information in this document is based on the TN3270 server.

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.

## Router Configuration for IP Precedence/TOS Support

These two commands support IP precedence and IP TOS:

- **[no] ip precedence screen | printer 0–7**
- **[no] ip tos screen | printer 0–15**

You can specify these commands under the TN3270–server context, for example:

```
FEP(config)#interface channel 5/2
FEP(config-if)#tn3270-server
FEP(cfg-tn3270)#ip
FEP(cfg-tn3270)#ip precedence
FEP(cfg-tn3270)#ip precedence ?
  printer  IP Precedence value to be used by a TN3270 printer
  screen   IP Precedence value to be used by a TN3270 screen
```

These commands can also be specified under a Dependent Logical Unit Requestor (DLUR)/Direct PU context. The commands affect all of the logical units (LUs) under the PU based on the **siftdown** value like the rest of the defined **siftdown** parameters, such as **keepalive**, **idle-time**, and **tcp-port**.

The default value for both the IP precedence **screen** and the IP precedence **printer** parameters is zero. If **ip precedence** is not configured, it means that the **ip precedence** field is set to zero for both **screen** and **printer**. This configuration provides the same behavior as the product prior to the implementation of this feature.

The default value for **ip tos screen** is also zero. This is not exactly as recommended in Request for Comments (RFC) 1349, which lets you consciously configure the recommended values. RFC 1349 recommends that **screen** have the *minimize delay* (0x8) value and that **printer** have the *maximize throughput* (0x4) value.

**Note:** RFC 2474 obsoletes RFC 1349.

When Telnet negotiation takes place, **ip precedence** and **ip tos** values of zero are used. These values continue to be used until the bind takes place. If it is a type two bind, the TN3270 client is assumed to be screen. Otherwise, it is assumed to be printer. These definitions of screen and printer can be inconsistent with the implementations in other configurations or products. From that time on, the appropriate **ip precedence** and **ip tos** value is used until the TN3270 session is terminated.

## show Commands

The **show** commands display four distinct values for IP precedence and IP TOS. They correspond to screen and printer. This is sample output:

```
redback#show extended channel 3/2 tn3270-server

<current stats> <connection stats> <response time(ms)>
server-ip:tcp          lu in-use connect disconn fail host tcp
172.28.1.99:23         0    0    1        1        0    0    20
total                  0    0
configured max_lu 2100
idle-time 3600         keepalive 1800   unbind-action disconnect
ip-preced-screen 0   ip-preced-printer 0   ip-tos-screen 0   ip-tos-printer 0
tcp-port 23           generic-pool permit no timing-mark
dlur MPX.REDBCP      status RESET
dlus MPX.NGMVMPC

name(index) ip:tcp xid state link destination r-lsap
PUS1(1) 172.28.1.99:23 05D19001 XID tok 0 4000.7470.00e7 08 A8

redback#show extended channel
3/2 tn3270-server pu pus1

name(index)      ip:tcp          xid      state      link      destination      r-lsap
PUS1(2)          172.28.1.99:23      05D19001 XID        tok 0      4000.7470.00e7 08 A8

luseed PUS1###
idle-time 3600         keepalive 1800 unbind-act discon generic-pool perm
ip-preced-screen 0 ip-preced-printer 0 ip-tos-screen 0 ip-tos-printer 0
bytes 303 in, 3043 out; frames 12 in, 14 out; NegRsp 0 in, 0 out
actlus 5, dactlus 0, binds 1
Note: if state is ACT/NA then the client is disconnected

lu      name      client-ip:tcp      state      model      frames in out      idle for
```

## TN3270 Server MIB Changes

The TN3270 server Management Information Base (MIB) contains these updates to the PU table (tn3270sPuTable):

```
tn3270sPuIpPrecedence Printer OBJECT-TYPE
    SYNTAX INTEGER (0..7)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The IP precedence value used for outbound IP packets.
        That is from the router to the TN3270 client printer."
    REFERENCE "RFC791, RFC1349"
    ::= { tn3270sPuEntry 15 }

tn3270sPuIpTosScreen OBJECT-TYPE
    SYNTAX INTEGER (0..15)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The IP Type of Service value used for outbound IP
        packets. That is from the router to the TN3270 client
        screen."
    REFERENCE "RFC791, RFC1349"
    ::= { tn3270sPuEntry 16 }

tn3270sPuIpTosPrinter OBJECT-TYPE
```

```
SYNTAX INTEGER (0..15)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The IP Type of Service value used for outbound IP
    packets. That is from the router to the TN3270 client
    printer."
REFERENCE "RFC791, RFC1349"
 ::= { tn3270sPuEntry 17 }
```

## Usage Notes

It is up to the you to choose values consistent with the organizational policies when IP Precedence and IP TOS are configured. Whether these values work depends on what the router does with the packets that have different IP TOS or IP Precedence values. If a Cisco router network is used, configure Weighted Fair Queuing (WFQ) or Priority Queuing in order to prioritize traffic with IP Precedence. Open Shortest Path First (OSPF) can discriminate between different routes based on the IP TOS value. The IP TOS values also affect the functions such as WFQ and NetFlow switching.

## NetPro Discussion Forums – Featured Conversations

Networking Professionals Connection is a forum for networking professionals to share questions, suggestions, and information about networking solutions, products, and technologies. The featured links are some of the most recent conversations available in this technology.

NetPro Discussion Forums – Featured Conversations for IBM
---

Network Infrastructure: Enterprise Data Centers
---

---

## Related Information

- **Introduction (TN3270 Server Protocol)**
- **Technology Support**
- **Product Support**
- **Technical Support & Documentation – Cisco Systems**

---

All contents are Copyright © 2006–2007 Cisco Systems, Inc. All rights reserved. Important Notices and Privacy Statement.

---

Updated: Mar 12, 2007

Document ID: 12310

---