

## Chapter 14

# Configuring Channelized OC3 IQ Interfaces

Channelized intelligent queuing (IQ) interfaces allow arbitrary and dynamic channelization of serial links, allowing greater flexibility than regular channelized interfaces.

On a Channelized OC3 IQ PIC, you can configure the following interface types:

- One OC3 SONET/SDH interface

- Up to three T3 interfaces

- Up to 84 T1 interfaces

- Up to 336 *N*xDS0 interfaces on an M-series platform

- Up to 768 *N*xDS0 interfaces on a T-series platform

You can configure the following encapsulation types:

- PPP

- Frame Relay

- Cisco HDLC

- CCC

- TCC

For more information about interface encapsulation, see “Configuring Interface Encapsulation” on page 73 and page 105.

To configure channelized interfaces, include the following statements at the [edit interfaces interface-name] hierarchy level:

```
[edit interfaces interface-name]  
no-partition interface-type type;  
partition partition-number oc-slice oc-slice-range interface-type type;  
partition partition-number timeslots time-slot-range interface-type type;
```

This chapter describes how to configure interfaces on a Channelized OC3 IQ PIC, discussing the following topics:

Partitions, OC Slices, Interface Types, and Time Slots on page 266

Configuring a Clear Channel on page 267

Configuring T3 IQ Interfaces on page 267

Configuring T1 and NxDS0 Interfaces on page 268

Configuring Fractional T1 IQ Interfaces on page 271

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## Partitions, OC Slices, Interface Types, and Time Slots

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The partition number is the sublevel interface partition index and is correlated with the channel number. For channelized OC3 interfaces, you can configure up to three OC1 interfaces, so the partition number can be 1, 2, or 3. For channelized T3 interfaces (ct3), you can configure multiple interfaces at once by including a partition range, such as 1-3. This creates four T1 interfaces with channel numbers 1 through 3.



**NOTE:** For channelized OC3 IQ interfaces, channel numbering begins with 1 (:1). For regular channelized interfaces, channel numbering begins with 0 (:0).

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You configure the OC-slice range for SONET/SDH interfaces only. The OC-slice range is correlated with the bandwidth size required for the interface type you are configuring. For example, a channelized OC3 interface (coc3) can be divided into three OC1 interfaces, each containing one OC slice. Therefore the OC-slice value must be 1, 2, or 3.

The configurable interface types are dependent on the hierarchy level at which you include the interface-type and partition or no-partition statements. For example, when you include the no-partition statement at the [edit interfaces coc3-fpc/pic/port] hierarchy level, the only configurable interface type is so, because the no-partition statement signals that you are creating a clear-channel SONET/SDH interface. When you include the partition statement at the [edit interfaces coc1-fpc/pic/port] hierarchy level, the configurable interface types are ct1 or t1. If you want to create a T1 interface, you include the t1 option. If you want to further channelize down to the NxDS0 level, you include the ct1 option as an intermediate step before dividing the channelized T1 interface (ct1) into NxDS0 interfaces.

You configure time slots for fractional T1 interfaces and NxDS0 interfaces. You can configure ranges by using hyphens. You can configure discontinuous time slots by using commas. Do not include spaces.

## Configuring a Clear Channel

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A *clear channel* is an interface that uses the entire bandwidth of the PIC. To configure a clear channel, you include the `no-partition` and `interface-type` statements in the configuration.

On a 1-port Channelized OC3 IQ PIC, you can configure one OC3 clear-channel interface. To configure an OC3 interface, include the `no-partition` and `interface-type` statements at the `[edit interfaces coc3-fpc/pic/port]` hierarchy level:

```
[edit interfaces coc3-fpc/pic/port]
no-partition interface-type so;
```

This configuration creates interface `so-fpc/pic/port`. When you include the `no-partition` statement at the `[edit interfaces coc3-fpc/pic/port]` hierarchy level, the only configurable interface type is `so`, because the `no-partition` statement signals that you are creating a clear-channel SONET/SDH interface.

## Configuring T3 IQ Interfaces

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To configure a T3 interface on an OC3 PIC, include the `partition`, `oc-slice`, and `interface-type` statements at the `[edit interfaces coc3-fpc/pic/port]` hierarchy level, specifying the `coc1` interface type:

```
[edit interfaces coc3-fpc/pic/port]
partition partition-number oc-slice oc-slice-range interface-type coc1;
```

When you include the `partition` statement at the `[edit interfaces coc3-fpc/pic/port]` hierarchy level, the only configurable interface type is `coc1`. This configuration creates interface `coc1-fpc/pic/port:channel`.

Then, include the `no-partition interface-type` statement at the `[edit interfaces coc1-fpc/pic/port:channel]` hierarchy level, specifying the `t3` interface type:

```
[edit interfaces coc1-fpc/pic/port:channel]
no-partition interface-type t3;
```

This configuration creates interface `t3-fpc/pic/port:channel`.

### Example: Configuring T3 IQ Interfaces

Configure a T3 interface using partition 3 and OC slice 3. This configuration creates interface `t3-1/1/0:3`.

```
[edit interfaces coc3-1/1/0]
partition 3 oc-slice 3 interface-type coc1;
```

```
[edit interfaces coc1-1/1/0:3]
no-partition interface-type t3;
```

For a full configuration example, see the *JUNOS Feature Guide*.

## Configuring T1 and NxDS0 Interfaces

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To configure T1 interfaces on a Channelized OC3 IQ PIC, you perform the following tasks:

1. Partition the channelized OC3 interface into channelized OC1 interfaces by including the `partition`, `oc-slice`, and `interface-type` statements at the `[edit interfaces coc3-fpc/pic/port]` hierarchy level, specifying the `coc1` interface type:

```
[edit interfaces coc3-fpc/pic/port]
partition partition-number oc-slice oc-slice-range interface-type coc1;
```

2. If your network equipment uses VT mapping, partition the channelized OC1 interface into T1 interfaces by including the `partition` and `interface-type` statements at the `[edit interfaces coc1-fpc/pic/port:channel]` hierarchy level, specifying the `t1` interface type:

```
[edit interfaces coc1-fpc/pic/port:channel]
partition partition-number interface-type t1;
```

If your network equipment uses M13 or C-bit parity, convert the channelized OC1 interface into a channelized T3 interface by including the `no-partition` and `interface-type` statements at the `[edit interfaces coc1-fpc/pic/port:channel]` hierarchy level, specifying the `ct3` interface type:

```
[edit interfaces coc1-fpc/pic/port:channel]
no-partition partition-number interface-type ct3;
```

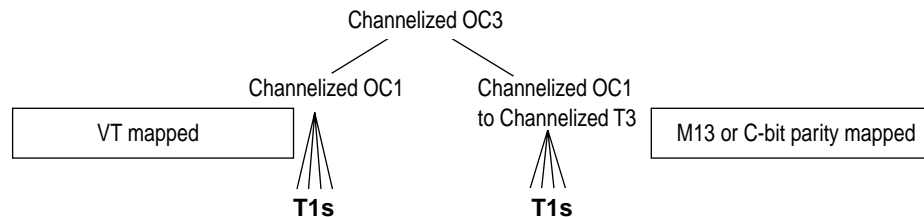
Note that because the `no-partition` statement is included, this configuration does not create another level of channelization, as denoted by the number of colons in the resulting interface.

To configure T1 interfaces, partition the channelized T3 interface into T1 interfaces by specifying the `t1` interface type:

```
[edit interfaces ct3-fpc/pic/port:channel]
partition partition-number interface-type t1;
```

Figure 17 shows VT-mapped and M13 or C-bit parity-mapped configurations of T1 IQ interfaces.

**Figure 17: T1 Interfaces on a Channelized OC3 PIC**



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**Bold** entries correspond to actual packet channels.

To configure  $NxDS0$  interfaces, partition the channelized T3 interface into channelized T1 interfaces by specifying the `ct1` interface type:

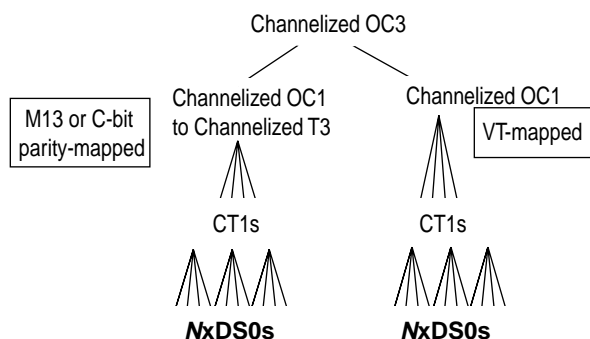
```
[edit interfaces ct3-fpc/pic/port:channel]
partition partition-number interface-type ct1;
```

3. Configure channelized  $NxDS0$  IQ interfaces on the channelized T1 IQ interface by including the partition, timeslots, and interface-type statements at the `[edit interfaces ct1-fpc/pic/port<:channel>]` hierarchy level, specifying the `ds` interface type:

```
[edit interfaces ct1-fpc/pic/port:channel:channel]
partition partition-number timeslots time-slot-range interface-type ds;
```

Figure 18 shows VT-mapped and M13 or C-bit parity-mapped configurations of  $NxDS0$  IQ interfaces.

**Figure 18: Sample Channelization of OC3 IQ PIC**



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**Bold** entries correspond to actual packet channels.

**Example: Configuring T1 and NxDS0 IQ Interfaces**

Configure the following T1 interfaces:

```
t1-0/0/0:1:1
t1-0/0/0:1:2
t1-0/0/0:1:3
t1-0/0/0:1:4
t1-0/0/0:1:5
```

**VT-Mapped Configuration**

```
[edit interfaces coc3-0/0/0]
partition 1 oc-slice 1 interface-type coc1;
```

```
[edit interfaces coc1-0/0/0:1]
partition 1-5 interface-type t1;
```

**M13 or C-bit Parity-Mapped Configuration**

```
[edit interfaces coc3-0/0/0]
partition 1 oc-slice 1 interface-type coc1;
```

```
[edit interfaces coc1-0/0/0:1]
no-partition interface-type ct3;
```

```
[edit interfaces ct3-0/0/0:1]
partition 1-5 interface-type t1;
```

Configure the following two NxDS0 interfaces with 10 time slots and 4 time slots, respectively:

```
ds-0/0/0:1:2:1
ds-0/0/0:1:2:2
```

**VT-Mapped Configuration**

```
[edit interfaces coc3-0/0/0]
partition 1 oc-slice 1 interface-type coc1;
```

```
[edit interfaces coc1-0/0/0:1]
partition 2 interface-type ct1;
```

```
[edit interfaces ct1-0/0/0:1:2]
partition 1 timeslots 1-10 interface-type ds;
partition 2 timeslots 12-16 interface-type ds;
```

**M13 or C-bit Parity-Mapped Configuration**

```
[edit interfaces coc3-0/0/0]
partition 1 oc-slice 1 interface-type coc1;
```

```
[edit interfaces coc1-0/0/0:1]
no-partition interface-type ct3;
```

```
[edit interfaces ct3-0/0/0:1]
partition 2 interface-type ct1;
```

```
[edit interfaces ct1-0/0/0:1:2]
partition 1 timeslots 1-10 interface-type ds;
partition 2 timeslots 12-16 interface-type ds;
```

For a full configuration example, see the *JUNOS Feature Guide*.

## Configuring Fractional T1 IQ Interfaces

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By default, all the time slots on a channelized T1 interface are used. To configure a fractional T1 interface on a Channelized OC3 IQ PIC, you must perform the following tasks:

1. Configure a T1 interface on the Channelized OC3 IQ PIC. For more information, see “Configuring T1 and NxDS0 Interfaces” on page 268.
2. Configure the number of time slots allocated to the T1 IQ interface by including the `timeslots` statement at the `[edit interfaces t1-fpc/pic/port<:channel> t1-options]` hierarchy level:

```
[edit interfaces t1-fpc/pic/port<:channel> t1-options]
timeslots time-slot-range;
```

For channelized T1 IQ interfaces, the time-slot range is from 1 through 24. You can designate any combination of time slots. To configure ranges, use hyphens. To configure discontinuous time slots, use commas. Do not include spaces. For more information, see “Configuring Fractional T1 Time Slots” on page 553.

### **Example: Configuring Fractional T1 IQ Interfaces**

Configure a fractional T1 interface that uses time slots 1 through 5 and 10:

```
[edit interfaces coc3-0/0/0]
partition 1 oc-slice 1 interface-type coc1;

[edit interfaces coc1-0/0/0:1]
partition 1 interface-type t1;

[edit interfaces t1-0/0/0:1:1 t1-options]
timeslots 1-5,10;
```

For a full configuration example, see the *JUNOS Feature Guide*.

