

Chapter 33

Configuring Voice Services Interfaces

The Adaptive Services (AS) Physical Interface Card (PIC) supports the compressed real-time transport protocol (RTP) on the interface type *vsp-fpc/pic/port*. This enables voice-over-IP (VoIP) traffic to use low-speed links more effectively, by compressing the 40-byte IP/User Datagram Protocol (UDP)/RTP header down to 2 to 4 bytes in most cases.

Voice services do not require a separate service rules configuration.

The voice services feature uses a bundle configuration similar to link services interfaces. For more information, see “Configuring Link Services and Multilink Interfaces” on page 409. To configure voice services interface properties, include the following statements at the [edit interfaces] hierarchy level:

```
[edit interfaces]
interface-name {
  encapsulation ppp;
  unit logical-unit-number {
    family mlppp {
      bundle vsp-fpc/pic/port;
    }
  }
}
vsp-fpc/pic/port {
  unit logical-unit-number {
    encapsulation mlppp;
    family inet {
      address address;
    }
    compression {
      rtp {
        f-max-period number;
        queues [ queue-numbers ];
        port {
          minimum port-number;
          maximum port-number;
        }
      }
    }
  }
}
```

This chapter contains the following sections:

Configuring Voice Services Properties on page 584

Configuring the Bundle Interface on page 588

Example: Configuring Voice Services on page 588

Configuring Voice Services Properties

You define voice service properties such as compression by configuring statements and values for a voice services interface, specified by the physical interface type `vsp`. You can configure the following statements:

```
[edit interfaces]
vsp-fpc/pic/port {
  unit logical-unit-number {
    encapsulation mlppp;
    family inet {
      address address;
    }
    compression {
      rtp {
        f-max-period number;
        queues [ queue-numbers ];
        port {
          minimum port-number;
          maximum port-number;
        }
      }
    }
  }
}
```

This section describes the following tasks for configuring voice services properties:

Configuring Logical Interface Encapsulation on page 585

Configuring the Interface Address on page 585

Configuring Compression on page 586

Configuring Logical Interface Encapsulation

Voice services interfaces support only one logical interface encapsulation type, Multilink Point-to-Point Protocol (MLPPP), which is the default encapsulation.

For general information on encapsulation, see “Configuring Interface Encapsulation” on page 73. You can also configure physical interface encapsulation on voice services interfaces.

To configure voice services encapsulation, include the encapsulation statement:

```
encapsulation type;
```

You can include this statement at the following hierarchy levels:

```
[edit interfaces interface-name unit logical-unit-number]
```

```
[edit logical-routers logical-router-name interfaces interface-name unit
logical-unit-number]
```

You must also configure the T1, E1, or DS3 physical interface with the same encapsulation type.

Configuring the Interface Address

To configure the logical address for the MLPPP bundle, include the address statement:

```
address address {
...
}
```

You can include this statement at the following hierarchy levels:

```
[edit interfaces interface-name unit logical-unit-number family inet]
```

```
[edit logical-routers logical-router-name interfaces interface-name unit
logical-unit-number family inet]
```

Assign an IP address to the interface by configuring the *address* value. The AS PIC supports only Internet Protocol version 4 (IPv4) addresses configured using the *family inet* statement.

For information on other addressing properties you can configure that are not specific to service interfaces, see “Configuring the Interface Address” on page 112.

Configuring Compression

You can configure several properties that specify how the interface handles voice traffic compression:

```
compression {
  rtp {
    f-max-period number;
    queues [ queue-numbers ];
    port {
      minimum port-number;
      maximum port-number;
    }
  }
}
```

You can include these statements at the following hierarchy levels:

```
[edit interfaces interface-name unit logical-unit-number]
```

```
[edit logical-routers logical-router-name interfaces interface-name unit
logical-unit-number]
```

You can configure the following properties at the [edit interfaces *interface-name* unit *logical-unit-number* compression rtp] hierarchy level:

By default, the maximum number of compressed packets inserted between the transmission of full headers is 255 packets. To configure the maximum, include the `f-max-period` statement at the [edit interfaces *interface-name* unit *logical-unit-number* compression rtp] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number compression rtp]
f-max-period number;
```

To specify the lower and upper boundaries for a range of UDP destination port values on which RTP compression takes effect, include the `port` statement at the [edit interfaces *interface-name* unit *logical-unit-number* compression rtp] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number compression rtp]
port {
  minimum port-number;
  maximum port-number;
}
```

Values for *port-number* can be from 0 through 65,535. Within the specified range, the router software applies RTP compression to the traffic.

To set the queues on which RTP compression takes effect, include the `queues` statement at the [edit interfaces *interface-name* unit *logical-unit-number* compression rtp] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number compression rtp]
queues [ queue-numbers ];
```

You can specify q0, q1, q2, and q3 as queue numbers.

The router applies RTP compression on the traffic in the specified queues.



NOTE: If you configure both a port range and one or more queues, compression takes place if either condition is met.

Configuring Delay-Sensitive Packet Interleaving

For M-series platforms (except the M320) voice services interfaces with compressed RTP and MLPPP encapsulation, you can configure link fragment interleaving (LFI). LFI reduces excessive delays by fragmenting long packets into smaller packets and interleaving them with real-time frames. This allows real-time and non-real-time data frames to be carried together on lower-speed links without causing excessive delays to the real-time traffic. When the peer interface receives the smaller fragments, it reassembles the fragments into their original packet. For example, short delay-sensitive packets, such as packetized voice, can race ahead of larger delay-insensitive packets, such as common data packets.

By default, LFI is always active when you include the compression rtp statement at the [edit interfaces vsp-fpc/pic/port unit logical-unit-number] hierarchy level. You control the operation of LFI indirectly by setting the fragment-threshold statement on the same logical interface. For example, if you include the fragment-threshold 256 statement at the [edit interfaces vsp-fpc/pic/port unit logical-unit-number] hierarchy level, all IP packets larger than 256 bytes are fragmented.

Example: Configuring Compression

Configure compression on a T1 interface with MLPPP encapsulation. Configure fragmentation for all IP packets larger than 128 bytes.

```
[edit interfaces]
t1-1/0/0 {
  unit 0 {
    family mlppp {
      bundle vsp-1/1/0.1;
    }
  }
}
vsp-1/1/0 {
  encapsulation multilink-ppp;
  unit 1 {
    compression {
      rtp {
        port minimum 2000 maximum 64009;
      }
    }
    family inet {
      address 30.1.1.2/24;
    }
    fragment-threshold 128;
  }
}
```

Configuring the Bundle Interface

To complete a voice services interface configuration, you need to configure both the physical interface and the voice services bundle. For voice services interfaces, you configure the link bundle as a channel. The physical interface is usually connected to networks capable of supporting MLPPP; the interface types supported for voice traffic are T1, E1, and T3.

To configure a physical interface link for MLPPP, include the following statements at the [edit interfaces *interface-name*] hierarchy level:

```
[edit interfaces interface-name]
unit 0 {
    family mlppp {
        bundle vsp-fpc/pic/port;
    }
}
```

When you configure family mlppp, no other protocol configuration is allowed. For more information on link bundles, see “Configuring Bundles” on page 428.

Example: Configuring Voice Services

The following is a complete example of a voice services configuration using a T1 physical interface.

```
[edit interfaces]
t1-0/2/0:1 {
    encapsulation ppp;
    unit 0 {
        family mlppp {
            bundle vsp-1/3/0.1;
        }
    }
}
vsp-1/3/0 {
    unit 1 {
        encapsulation multilink-ppp;
        family inet {
            address 10.5.5.2/30;
        }
        compression {
            rtp {
                f-max-period 100;
                queues [ q1 q2 ];
                port {
                    minimum 16384;
                    maximum 32767;
                }
            }
        }
    }
}
```