

## Configuring ATM-to-Ethernet Interworking

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The ATM-to-Ethernet interworking feature is useful where ATM2 interfaces are used to terminate ATM DSLAM traffic. The ATM traffic can be forwarded with encapsulation type `ccc` (circuit cross-connect) to a local or remote Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet IQ2 and IQ2-E interface or label-switched path (LSP). The ATM VPI and VCI are converted to stacked VLAN inner and outer VLAN tags.

These ATM-to-Ethernet interworking circuits can be mapped to individual logical interfaces configured on an ATM2 IQ interface and Gigabit Ethernet IQ2 and IQ2-E or 10-Gigabit Ethernet IQ2 and IQ2-E physical interface.

The ATM-to-Ethernet interworking cross-connect essentially provides Layer 2 switching, and statistics are reported at the logical interface level.

During conversion from ATM to Ethernet, the least significant 12 bits of the ATM cell VCI are copied to the Ethernet frame inner VLAN tag. Cells received on an ATM logical interface configured with encapsulation type `vlan-vci-ccc` and falling within the configured VCI range are reassembled into packets and forwarded to a designated Ethernet logical interface that is configured with encapsulation type `vlan-vci-ccc`.

During conversion from Ethernet to ATM, the Ethernet frame inner VLAN tags that fall within the configured range, are copied to the least significant 12 bits of the ATM cell VCI. The ATM logical interface uses its configured VPI when segmenting the Ethernet packets into cells.

ATM-to-Ethernet interworking is supported on M120, M320, and T-series routing platforms.

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### Enabling ATM-to-Ethernet Interworking

To enable the ATM-to-Ethernet interworking cross-connect function, include the `vlan-vci-tagging` statement at the `[edit interfaces interface-name]` hierarchy level:

```
[edit interfaces interface-name]  
vlan-vci-tagging;
```

## Configuring the ATM-to-Ethernet Interworking Ethernet Interface

Configure the Ethernet or aggregated Ethernet physical interface by including the encapsulation statement with the `vlan-vci-ccc` option at the `[edit interfaces interface-name]` hierarchy level:

```
[edit interfaces interface-name]  
[Unresolved xref] vlan-vci-ccc;
```

When the encapsulation type `vlan-vci-ccc` is configured on the physical interface, all logical interfaces configured on the Ethernet interface must also have the encapsulation type set to `vlan-vci-ccc`.

## Configuring the ATM-to-Ethernet Interworking Ethernet Encapsulation

Configure the Ethernet logical interface by including the encapsulation statement with the `vlan-vci-ccc` option at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
[Unresolved xref] vlan-vci-ccc;
```

The chassis configuration cannot contain the `atm-l2circuit-mode` statement if any logical interfaces are configured with the `vlan-vci-ccc` encapsulation option.

## Configuring the ATM-to-Ethernet Interworking Outer VLAN Identifier

Configure the Ethernet logical interface outer VLAN ID by including the `vlan-id` statement specifying the outer VLAN ID at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
[Unresolved xref] outer-vlan-identifier;
```

It is the administrator's responsibility to ensure that the outer VLAN tag and VPI match and the inner VLAN tags fall within the VCI range of the VPI.

The allowable VPI range is from 0 to 255. So the outer VLAN tags must not be configured for values above 255.

## Configuring the ATM-to-Ethernet Interworking Inner VLAN Identifier Range

Configure the Ethernet logical interface inner VLAN ID range by including the `inner-vlan-id-range` statement and specifying the starting VLAN ID and ending VLAN ID at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
inner-vlan-id-range start start-id end end-id;
```

VLAN IDs 0 and 4095 are reserved by IEEE 801.1q and must not be used for the inner or outer VLAN ID.

VCIs 0 through 31 are reserved for ATM management purposes by convention. Therefore inner VLAN IDs 1 through 31 should not be used.

VLAN ID 1 might be used by Ethernet switches for certain bridge management services, so using VLAN ID 1 for the inner or outer VLAN ID is discouraged.

## **Configuring the ATM-to-Ethernet Interworking Physical Interface VPI**

Configure the ATM physical interface VPI by including the `vpi` statement at the [edit interfaces *interface-name* atm-options] hierarchy level:

```
[edit interfaces interface-name atm-options]  
[Unresolved xref] virtual-path-identifier;
```

VPI 0 is reserved, and must not be used.

ATM F4/F5 OAM is not supported for VPIs used in ATM-to-Ethernet interworking cross-connects. Any F4/F5 OAM cells received are discarded.

Only one logical interface may be declared per virtual path specified in the `atm-options` statement hierarchy.

It is not necessary to dedicate all the VPIs of an ATM2 interface for ATM-to-Ethernet interworking cross-connects.

## **Configuring the ATM-to-Ethernet Interworking ATM Logical Interface**

Configure the ATM logical interface by including the `encapsulation` statement and specifying the encapsulation type `vlan-vci-ccc` at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
[Unresolved xref] vlan-vci-ccc;
```

An ATM logical interface configured with the encapsulation type `vlan-vci-ccc` only supports the `epd-threshold`, `shaping`, `traps | no-traps`, `disable`, and `description` statements. No other configuration statements are supported. ATM interface CoS features are not supported by logical interfaces configured with the encapsulation type `vlan-vci-ccc`.

The ATM2 OC48 PIC does not support the encapsulation type `vlan-vci-ccc`.

The encapsulation type `vlan-vci-ccc` only supports the `ccc` protocol family. Attempts to configure any other interface protocol family are rejected.

## Configuring the ATM-to-Ethernet Interworking Protocol Family

Configure the ATM logical interface protocol family by including the `family` statement and specifying the `ccc` option at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

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

## Configuring the ATM-to-Ethernet Interworking Logical Interface VPI

Configure the ATM logical interface virtual path identifier by including the `vpi` statement at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
\[Unresolved xref\] virtual-path-identifier;
```

VPI 0 is reserved, and must not be used.

It is the administrator's responsibility to ensure the outer VLAN tag and VPI match and the inner VLAN tags fall within the VCI range of the VPI.

Once a VPI is used in an ATM-to-Ethernet interworking cross-connect, it cannot be used with any other logical interface, even if the `vpi.vci` value falls outside the VCI range for the cross-connect.

## Configuring the ATM-to-Ethernet Interworking Logical Interface VCI

Configure the ATM logical interface virtual channel identifier range by including the `vci-range` statement and specifying the starting VCI and ending VCI at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
vci-range start start-vci end end-vci;
```

Do not use VCIs 0 through 31, which are reserved for ATM management purposes by convention.