Expansion Modules

The Catalyst 3900 offers several types of expansion modules that you can use to increase the number of ports on your switch or to interconnect your switch with other switches. The expansion modules currently available are:

- Stack Port Module on page 2-1
- 4-Port Fiber Token Ring Module on page 2-1
- 4-Port UTP/STP Token Ring Module on page 2-2
- Multimode Fiber ATM Module on page 2-2
- Token Ring Inter-Switch Link Module on page 2-3

Stack Port Module

The Stack port is an optional single-port expansion module with a special 50-pin connector that can be inserted into the back of the Catalyst 3900 and allows you to stack, or interconnect, switches. This port operates in FDX mode at speeds of 140 Mbps. It switches packets at wire speeds with low forwarding latency. When interconnected via the Stack port, the members of the stack function as one operational system. You can attach the Stack port directly to the Stack port of another Catalyst 3900 or to a Stack Matrix unit. For more information about stacking Catalyst switches, refer to the "Interconnecting Catalyst 3900 Switches" chapter.

4-Port Fiber Token Ring Module

The 4-port fiber Token Ring module provides four additional Token Ring connections for the base Catalyst 3900 Token Ring switch. The ports of this expansion module support four pairs of multimode fiber connections via ST-type optical transmitter and receiver ports. The ports can be connected to the following:

- A station, in which case the port acts like an active MAU port.
- A port on a concentrator, in which case the port acts like a station.
- The RI or RO ports of a Token Ring concentrator or hub.
- The ports of another 4-port fiber Token Ring expansion module installed in another Catalyst 3900, forming a TokenChannel.

4-Port UTP/STP Token Ring Module

The 4-port UTP/STP Token Ring module provides four additional Token ring connections for the base Catalyst 3900 Token Ring switch. The ports of this module support Token Ring twisted-pair (UTP/STP) media connections via RJ-45 connectors. Similar to the ports of the base Catalyst 3900, each port can be connected to either shared or dedicated media. The ports can also be connected to ports of another Catalyst 3900, forming a TokenChannel.

Multimode Fiber ATM Module

The ATM expansion module is a single-port expansion module that provides high-speed connectivity between the Catalyst 3900 Token Ring switch and an ATM backbone network. The ATM expansion module has a transmission speed of 155 Mbps over a multimode fiber interface using a duplex SC connector.

The ATM expansion module supports up to 63 emulated LANs and up to 2048 virtual channel connections (VCCs). It can support up to 128 concurrent calls and 256 concurrent LAN Emulation-Address Resolution Protocol (LE-ARP) requests.

Note The Catalyst 3900 ATM expansion module requires Release 2.0(1) or later of the Catalyst 3900 software, which is available via CCO.
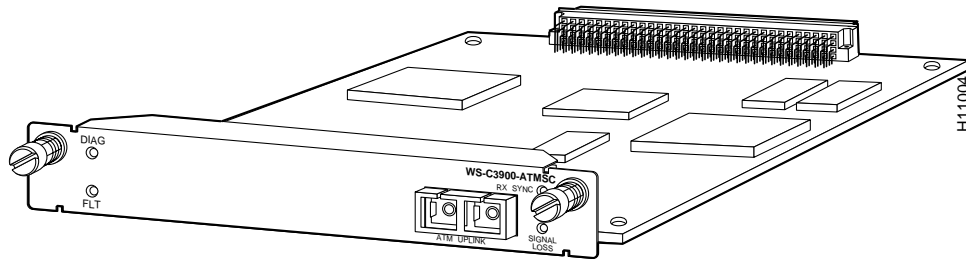

Features

Table 2-1 provides an overview of the features of the ATM expansion module.

Table 2-1   ATM Expansion Module Highlights

Feature	Description
Protocol support	ATM Forum LANE over ATM, Version 1.0
Signalling	ATM Forum UNI Version 3.0, Version 3.1, and Version 4.0 (auto-detectable)
Maximum VLANs (emulated LANs)	63 per switch stack
Maximum VCCs	2048 per ATM expansion module (distributed over all active LAN Emulation Clients [LECs])
Maximum bit rate	155 Mbps (SDH STM-1, SONET STS-3 OC-3)
VCC types	As required by the *ATM Forum LAN Emulation over ATM* Version 1.0 specification: • Multicast-send VCC: Configurable as constant bit rate (CBR), variable bit rate (VBR), or unspecified bit rate (UBR) • All other VCCs: UBR
Switching	Port-to-port hardware switching without embedded processor intervention. On-board processor is reserved for VCC establishment and maintenance.

Figure 2-1 shows the ATM expansion module. There are two port status LEDs and two expansion module status LEDs that indicate the operational status of the expansion module and the port.

Figure 2-1   ATM Expansion Module

ATM Module Usage Recommendations and Restrictions

Before installing and configuring the ATM module, be aware of the following:

- Because the ATM module cannot internally bridge between TrCRFs, you can only configure one LEC per TrBRF per ATM module. Therefore, while a TrBRF can include only one LEC from a single ATM expansion module, it can contain multiple LECs when each LEC exists on a separate ATM module.

- Configuring a TrBRF to contain an ATM port restricts the MTU of that TrBRF to 4472 or less.

  The Catalyst 3900 ATM module does not support MTUs greater than 4472. Configuring an MTU size larger than 4472 for a TrBRF that contains an ATM port will result in the ATM port being removed from the TrBRF. Additionally, if a TrBRF is configured for an MTU size larger than 4472, none of the TrCRFs assigned to the TrBRF can be assigned to an ATM port.

Token Ring Inter-Switch Link Module

The 2-port, 100 Mbps Token Ring Inter-Switch Link (ISL) module supports the encapsulation of Token Ring frames on a standard Fast Ethernet link to allow VLANs to be distributed across multiple platforms and devices. The module is available with a fiber or UTP/STP copper media interface. The ports of the ISL module can be connected to the ports of another ISL module in another router or switch. ISL Channels can also be configured between a 2-port ISL module in a Catalyst 3900 and an ISL module in another Catalyst 3900 or between a Catalyst 3900 and a Catalyst 5000, a Token Ring ISL-capable router, or a Token Ring ISL network adapter.

Note The Catalyst 3900 ISL expansion module requires Release 3.0(1) or later of the Catalyst 3900 software, which is available via CCO. ISL Channel support requires Release 4.1(1) or later of the Catalyst 3900 software.

Figure 2-2 shows the UTP/STP ISL module.
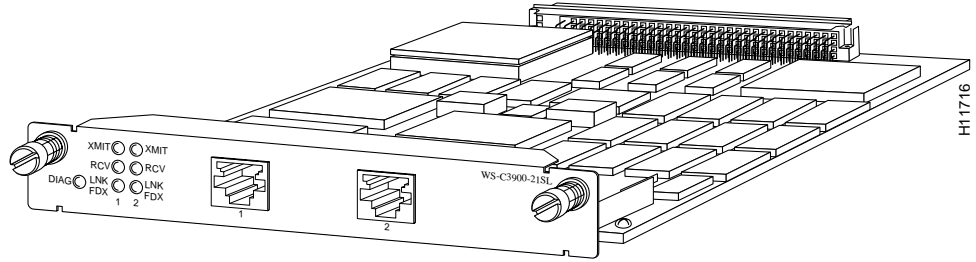
Figure 2-2   **UTP/STP ISL Module**

Figure 2-3 shows the fiber ISL module.

Figure 2-3   **Fiber ISL Module**