Inverse Multiplexing for ATM Overview

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The Inverse multiplexing for ATM (IMA) protocol defines a technique for transporting ATM traffic over a bundle of T1 or E1 interfaces. IMA processes traffic differently from multiplexing. While multiplexing combines multiple signals into a single signal, IMA divides a data stream into multiple concurrent streams that are transmitted at the same time across separate channels (such as T1 or E1 interfaces). The data streams are reconstructed into the original data stream at the far end. IMA speeds up the flow of data across a slower interface, such as a T1 or E1 interface, by load balancing the data stream across multiple T1 or E1 interfaces, which increases the line capacity.

You can deploy IMA on Juniper Networks M7, MX and ACX devices. IMA includes the following operational features:

- Aggregated device count—A device count is the number of IMA group interfaces created on a CT1 or CE1 interface. As part of an IMA group, a logical ATM interface is identified by the naming format: "*at-fpc/pic/port*". The port number is derived from the last port on the MIC plus 1.
  For example, for an ACX2000 router with a 16-port built-in T1/E1 TDM MIC, IMA group interface numbering starts with at-0/0/16. That interface number is incremented by 1 to at-0/0/17, and so on. For an ACX1000 router with an 8-port built-in T1/E1 TDM MIC, IMA group interface numbering starts with at-0/0/8. That interface number is incremented by 1 to at-0/0/9, and so on.
- Framing mode—An emulation mechanism duplicates the essential attributes of a service, such as T1 or E1, over a packet-switched network. On the ACX Series routers, you can configure the built-in channelized T1 and E1 interfaces (CT1 and CE1) to work in either T1 or E1 mode. You can configure these child T1 and E1 interfaces to carry ATM services over the packet-switched network.
- Built-in channelized interface—The Juniper Networks devices that support ATM IMA are deployed with one full T1 or E1 interface on the channelized CT1 or CE1 interface. You cannot configure the built-in interface. However, on the built-in interface, you configure the parameters for a child T1 or E1 interface.
- T1 or E1 interface member of IMA group for IMA link—Each child T1 or E1 interface of a channelized CT1 or CE1 interface is the physical interface over which the ATM signals are transmitted. To ensure that the IMA link operates correctly, you specify the T1 or E1 interface to be a member of an IMA group.
- IMA group interface configuration—To ensure proper operation, you must configure each IMA group interface (*at-fpc/pic/g*) with all ATM properties, which include the logical link-layer

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encapsulation type and the circuit cross-connect protocol suite. Further, you must dedicate the entire ATM device to the ATM cell relay circuit.

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