

# APPLICATION NOTE

## ATM STM-1/OC-3c NTU Project



Carrier Division



## Project Background

ATM is feasible on any speed of link from E1 upwards, but the speed most commonly considered "standard" is 155 Mbps, which is delivered as STM-1 over SDH rings and as OC-3c over SONET. An STM-1/OC-3c interface is therefore almost always fitted to an ATM networking device (i.e. excluding workstations and other end systems) such as an ATM switch or the ATM interface on a router.

Such a 155 Mbps interface is usually designed for multimode fibre or twisted pair on RJ45 for three reasons:

- It is appreciably cheaper than single mode fibre or coax;
- Its short-haul range of < 5 kms (fibre) and 250m (coax) is usually quite adequate for most usages.
- The multimode fibre uses inexpensive LED transceivers.

However, for longer haul applications it is necessary to use the more expensive single-mode option. How does one connect an ATM switch with multimode interface to a single-mode line? This was a problem recently faced by a PTO with a high speed ATM network, and to solve it Metrodata's designed and manufactured a Single-mode to multimode ATM Switching NTU.

## Product Overview

This product is an extension to the Metrodata's existing range of ATM DSUs. The table below shows the new ATM NTU range of interface conversions:

### METRODATA ATM NTU RANGE

Switch port type	Line or Trunk Interface		
	Single-mode fibre long haul @ 155 Mbit/s	Single-mode fibre short haul @ 155 Mbit/s	Coax @ 155 Mbit/s
OC-3C/STM1 155 Mbit/s - Multimode	Yes	Yes	Yes
Twisted pair RJ45 -Copper	Yes	Yes	Yes



## Overview of the ATM NTU

The functionality is similar to that of the ATM DSUs, the SNMP module is included as standard giving the ability of HP Open View or Sun Net Manager to control these NTUs. The ATM NTU offers flexibility and protection of investment. The product is composed of a common services unit carrying the LINE (WAN) interface together with the plug-in ATM switch port option (LAN).

### Cell filtering

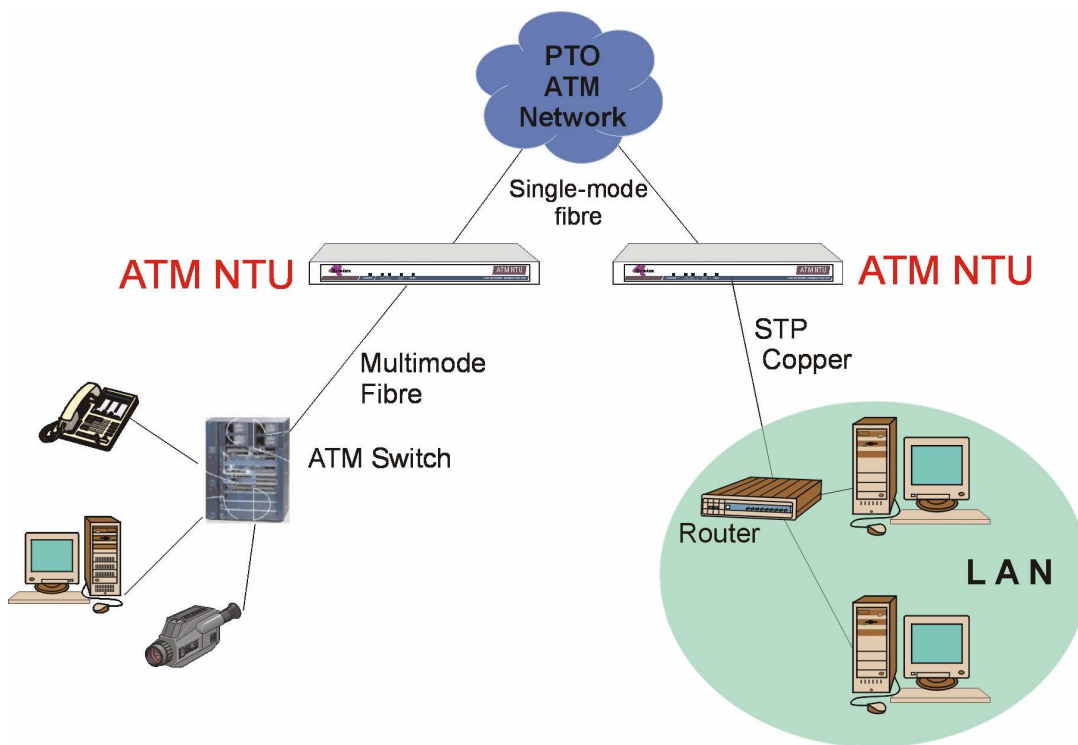
In addition to cell forwarding the ATM NTU also performs cell address filtering. The propagation of specified VPI/VCI traffic permits the construction of ATM firewalls giving security to an enterprise site.

### Statistics

The ATM NTU is capable of providing statistics on traffic passed through the NTU, enabling tariffing based upon Cell usage.

### Applications & Usage

The Metrodata SM-MM NTU is used for delivering an ATM link over long distances where single mode fibre is needed. It can either be installed as follows:



1. If the ATM NTU is treated as Customer premises equipment and is connected to the customer's ATM switch. The carrier controls the ATM NTU. This system has the advantage of in that the carrier is using the ATM NTU as its' Network Terminating Unit, and this gives the carrier the ability of monitoring the fibre to the customer site.

2. If the ATM NTU is located adjacent to the carrier's SDH multiplexors installed in street cabinets. The carrier provides the local loop by laying a Multimode fibre link to a customer's site. The SDH network allows them to connect this local loop link to a central ATM network.
3. If the carrier extends the single-mode fibre to the customer premise and the customer connects his ATM NTU to this. The customer has control of the ATM NTU and can use it to monitor the quality of the link provided by the carrier.

## Management of the ATM NTU

Only the FM4000 is manageable, and application note APN005 shows the various ways of managing this unit.

## Summary

The Metrodata ATM Switching NTU simplifies the short-long haul connectivity issues faced by carriers. It also increases both users' and carriers connectivity options with respect to ATM switch ports.

An added benefit is the increased control and monitoring ability that it lends both carriers and users over their expensive STM-1/OC-3c links.

In summary we can conclude that it offers all parties:

- Optimal choice of fibre, coax and twisted pair interfaces.
- Flexibility of interface or fibre choice leading to significant cost savings
- Greatly enhanced network monitoring and management
- Extension of high-speed ATM network range.

