

# AuroraForte



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# ATM/UMTS

*Testing for next generation networks*



## AuroraForte *Serious ATM testing made simple*

- **Portable tester with modular interfaces:** - E1+E3; DS1+DS3; ATM25; OC3/STM1; OC12/STM4
- **Test procedures:** - Physical, ATM, Higher protocol  
Proof of service reliability
- **Easy to use:** - Ideal for installation & Commissioning  
where speed and reliability is critical
- **Advanced:** - Detailed analysis for maintenance and fault finding
- **Mature:** - 3 years market acceptance for ATM and DSL networks, 100s  
of units shipped
- **Modern:** - New developments to target 3G/UMTS market



- **Handheld, Battery powered,  
Large graphical screen**

Rugged design for use in field operations

- **Windows type operating system**

Icon and function keys - No text menus

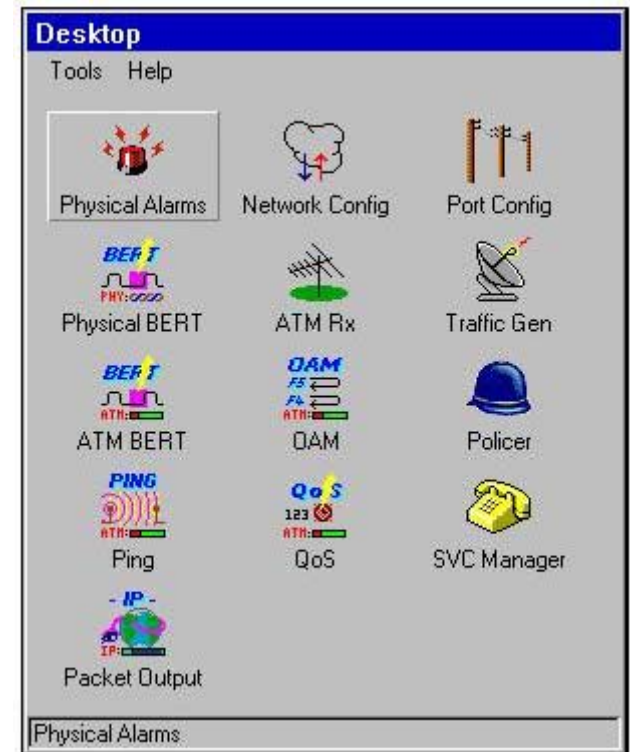
Amazingly quick to learn operation

Confidence in accuracy and reliability  
of measurements

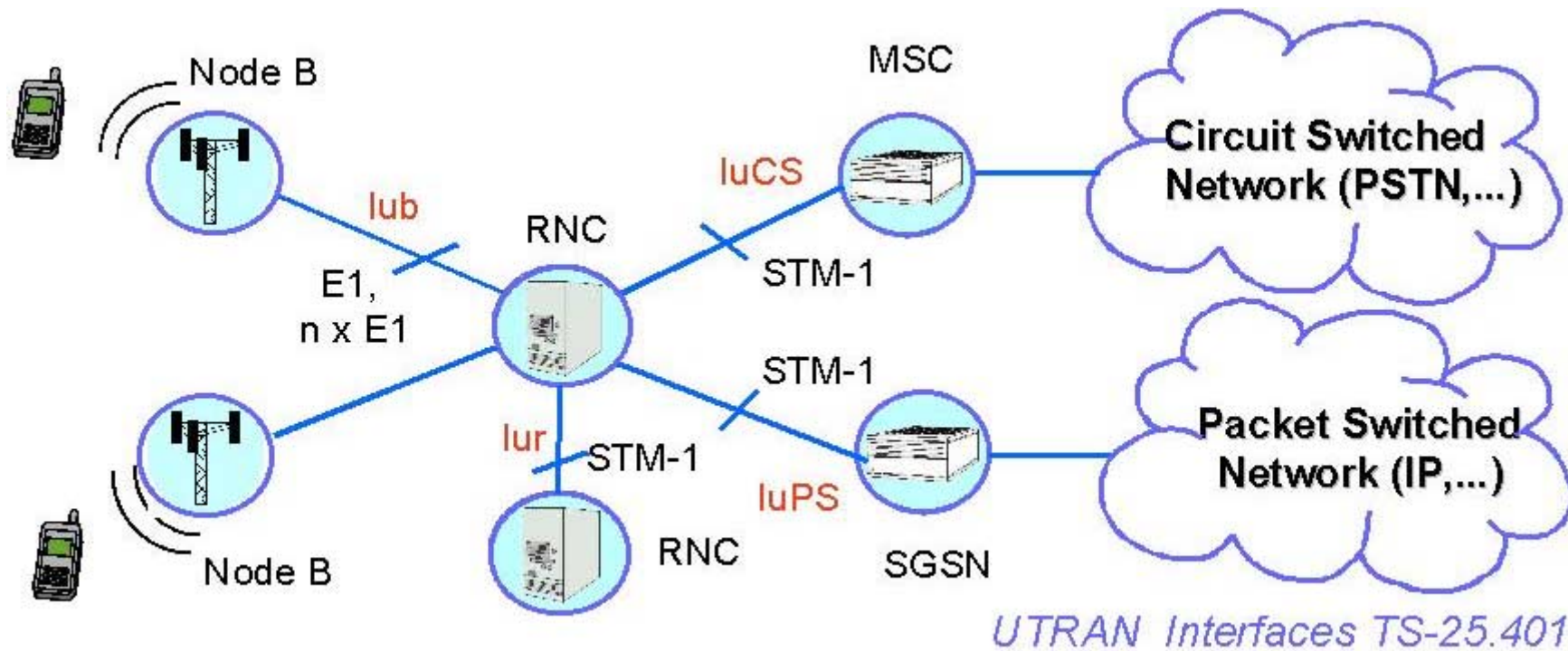
- **Plug-in swappable interface  
modules**

Serial port for printing

Ethernet port for file syncing and Remote Control



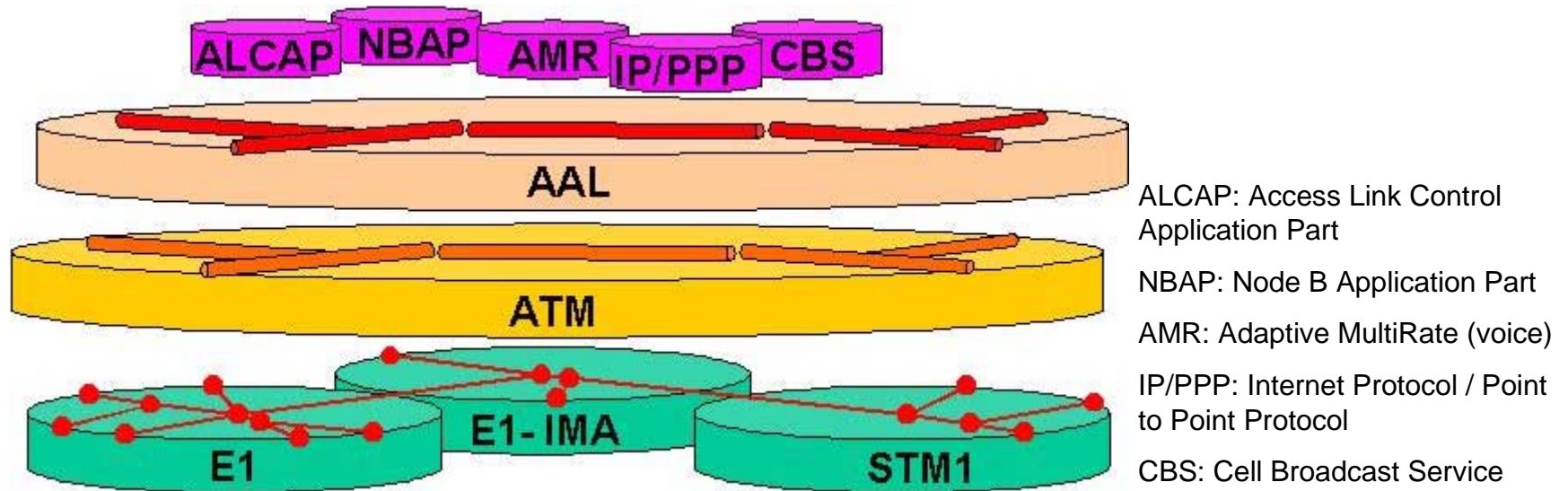
# AuroraForte Network Topology



Node B - UMTS Base Station  
 RNC - Radio Network Controller  
 SGSN - Serving GPRS Support Node  
 MSC - Mobile Switching Centre  
 GGSN - Gateway GPRS Support Node  
 ATM: Asynchronous Transmission Mode  
 AAL: ATM Adaptation Layer

Control Plane	User Plane	Control Plane	User Plane	Control Plane	User Plane	Control Plane	User Plane
AAL5	AAL2	AAL5	AAL2	AAL5	AAL2	AAL5	
ATM		ATM		ATM		ATM	
<b>Iub</b>		<b>Iur</b>		<b>IuCS</b>		<b>IuPS</b>	

**ATM networks - why is there a different test requirement?**



- E1 and STM1 physical layers - well known network connections
- ATM, AAL - transmission protocol operating end to end
- 3GPP higher protocol for network control and voice/data traffic
- The ATM layer is key to operation of the transmission network

- **What is the goal?**

  - 3G User experience must be satisfactory for business success

- **3G Deployment: what are the practical problems?**

  - New signalling protocol 3GPP - experience of live performance is low

  - New network installations - likelihood of installation faults

  - New transmission protocol ATM - common misunderstandings

  - No network traffic until service is live - can't predict network behaviour

  - No 3G operational experience - knowledge of problem fixes is low

- **What is the solution?**

  - Identify likely problems with vendor partnerships on trial networks

  - Ensure procedures for investigation and resolution are in place

  - Deploy suitable testers and procedures to field and support engineer teams



## Physical layer to Protocol layer testing and analysis

Traditional Telecom and Bit Error Testing

ATM layer traffic loading and analysis

ATM BERT

ATM QoS/O.191 test procedure

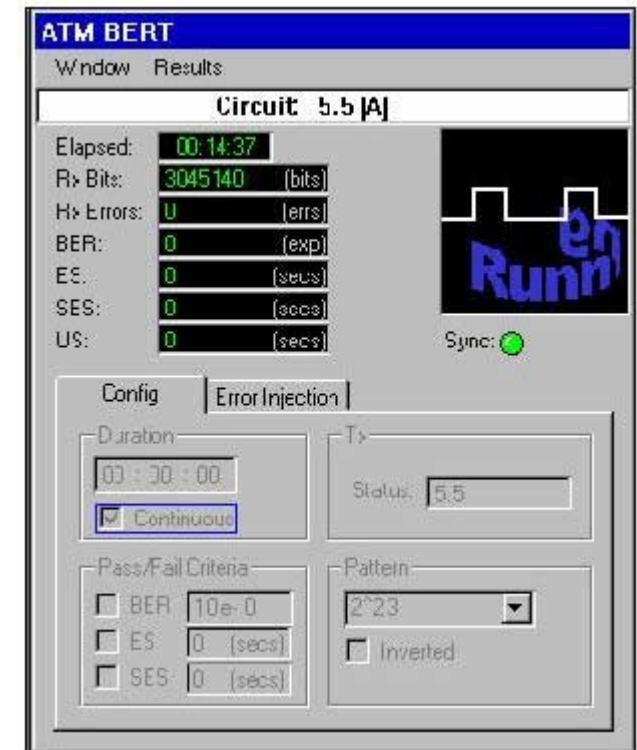
IP Ping over ATM

OAM/I.610 ATM fault analysis

Traffic policing congestion test/I.371

SVC signalling protocol emulation

IP Protocol realtime analysis and decodes

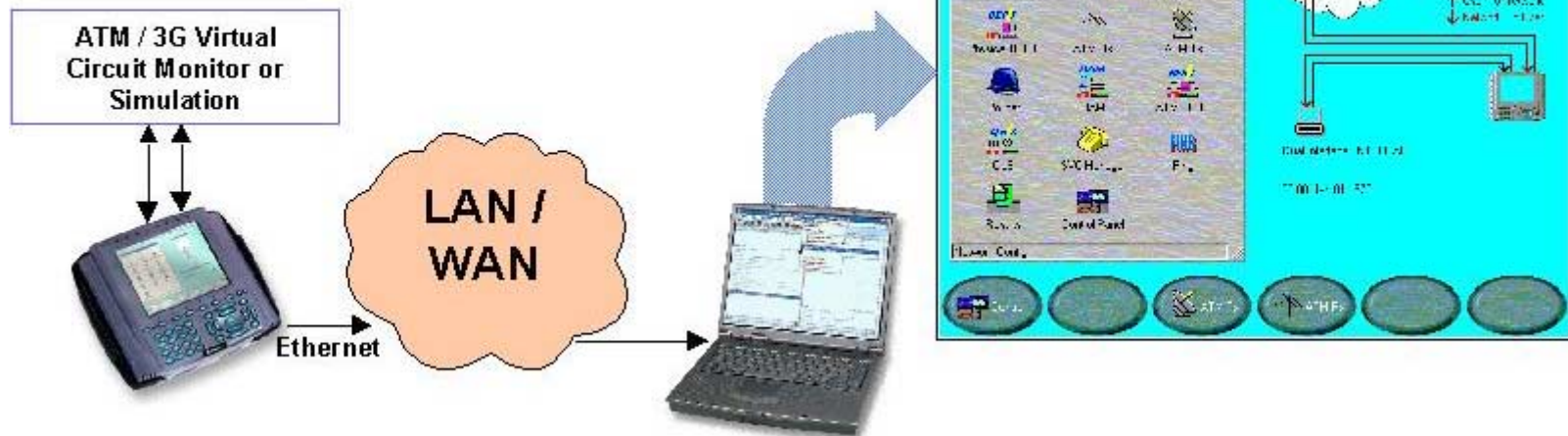


## File Manager

Store result and config files with on-board File System  
Seamlessly transfer test results from Tester to PC  
Text or spreadsheet format aids report writing etc.

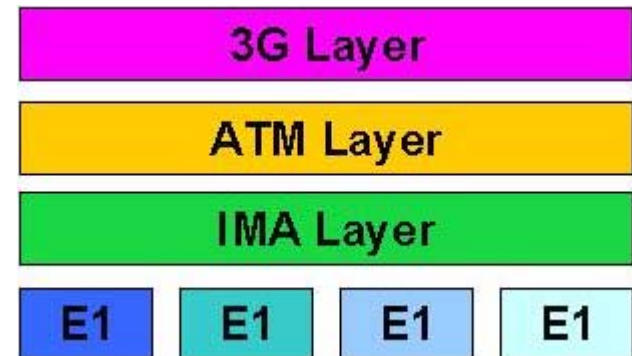
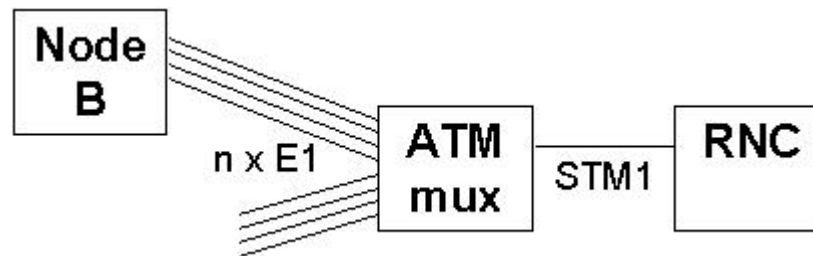
## Remote control

ATM monitoring or simulation at a distance  
Ethernet connection using IP  
Operates over low bandwidth links  
Same remote and local user interface



## Inverse Multiplexing over ATM

Uses multiple E1 links with aggregate ATM layer.  
Allows re-use of existing access network.  
No need to upgrade to STM1 optical.  
Extra bandwidth enabled by connecting more E1 links.



## IMA on Aurora Forte

New interface module  
Supports 8 x E1 simultaneous  
All ATM applications still available  
New application for IMA layer for IMA frame status and link differential delay



## Same old problems

- Physical layer faults
- Network configuration errors
- Substandard link performance

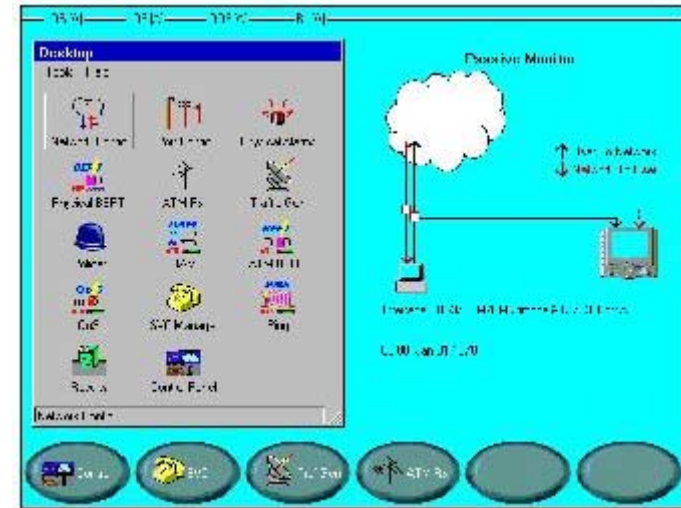
## Trusted test techniques

- Physical link testing
- Access link connectivity
- Network performance verification

## New test methods

### - define the best procedures for your network

- |                        |                  |
|------------------------|------------------|
| VCC traffic generation | VCC scanning     |
| ATM BERT               | QoS              |
| ATM OAM                | IP Ping over ATM |
| Traffic Policing       |                  |



### 1. **E1 installation testing - proves physical layer is OK**

E1 physical alarm logging

Network Clock Synchronisation monitoring

E1 traditional Bit Error Rate Test

### 2. **VCC route testing - proves ATM network is OK**

Multiple VCC transmission to simulate network traffic loads

OAM loopback protocol simulation and decode for route verification

ATM QoS procedure to verify network reliability and delay times

### 3. **ATM network scanning - discover network activit**

Bi-directional monitoring of network links

Identification of all active VCCs

Live data rate statistics for upto 1024 VCCs



## 4. IP route testing - proves VCC is routed to correct device

IP Ping transmit or respond to verify IP over ATM configuration

## 5. Monitoring the AAL2 and AAL5 layer

Traffic type identification

Protocol decoding

## 6. Remote testing - detailed knowledge at a distance

Skilled operation from the central office

Detailed monitoring of remote sites



# AuroraForte *Product Summary*

- **Handheld, portable, battery powered**
- **Multi interface – Two interface ports, user changeable**

E1 + E3	OC3/STM1
DS1 + DS3	OC12/STM4
ATM25	
- **Large colour LCD, plus LED indication, Graphical user interface**
- **Physical layer testing**
- **ATM layer testing up to – 1024 cellstreams**
- **IP PING over ATM**
- **Ethernet port for Results and Config management from PC, Remote Control and software upgrades**

