

Managed Bandwidth Service.

12/8/98

[Click here to start](#)

Table of Contents

Author: Jose MAnuel de Arce

[Managed Bandwidth Service.](#)

Email: jose.arce@dante.org.uk

[Why Managed Bandwidth Service?](#)

Home Page: <http://www.dante.net>

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Service Overview](#)

[Purpose of the Service](#)

[Players and interfaces](#)

[Players and interfaces](#)

[How do I get Service? \(External Procedures\)](#)

[PPT Slide](#)

[How do I get Service? \(External Procedures\)](#)

[Change and Fault Management \(Internal Procedures\)](#)

[Open Issues](#)

[Questions and feedback](#)



Managed Bandwidth Service.

- Why managed bandwidth Service ?
- Overview of the Service
- Purpose
- Players and interfaces
- How do I get Service? (External procedures)
- How do I change Something ? (Internal Procedures)
- Open Issues



Why Managed Bandwidth Service?

- Demand from Academic and research Institutions, as seen during JAMES
- To serve Projects in the EC ACTS
- Because the EC V Framework does support the concept and there are allocated resources for testbeds implementing those services
- To gain experience and being in a position to demonstrate running services

Managed Bandwidth Service APM meeting 16-11-1998



Service Overview

- **Definition:**

The Managed Bandwidth Service of TEN-155 provides ATM connections between TEN-155 Points of Presence using the ATM equipment used for the IP service. MBS main goal is extending coverage of ATM based connections and virtual private networks to all National Research Networks connected to TEN-155.

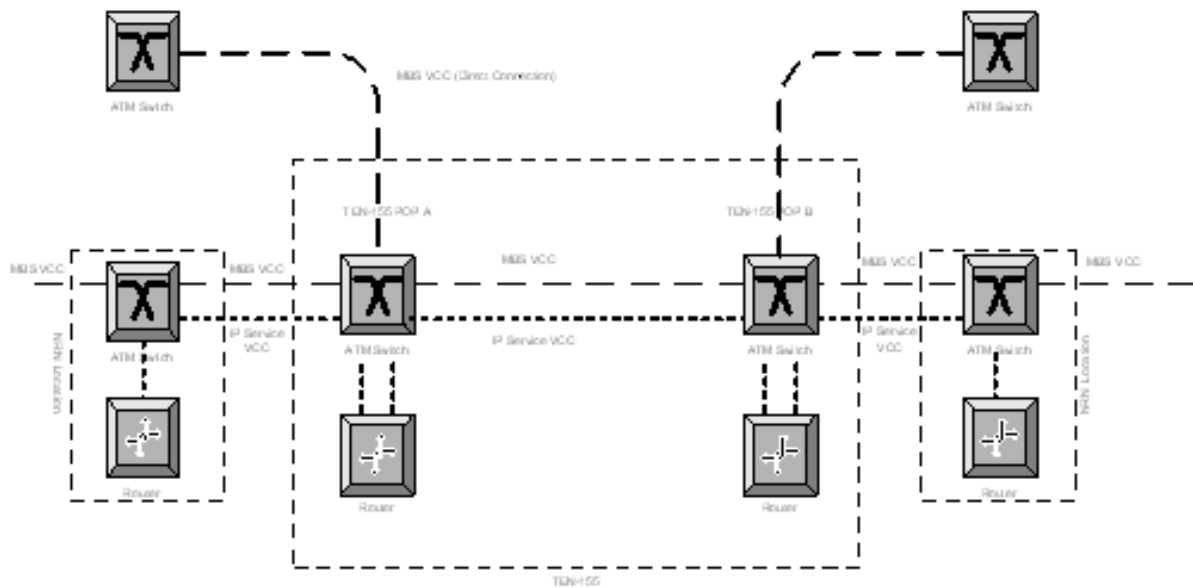
Different types of ATM connections can be established between TEN-155 Points of Presence (POP), connections that extends into each NRN own ATM network making a private virtual network with its own resources, quality of service and bandwidth. Direct ATM connections to TEN-155 POP may be considered if they are a better option and accepted by the National Research Network. TEN-155 Managed bandwidth service provides the international paths for these VPNs.

Up to 20% of the access capacity in each National Research Network Port may be used to transport ATM cells between national research networks in parallel with the main IP service.



Service Overview

- Access to the service



Managed Bandwidth Service APM meeting 16-11-1998



Service Overview

- **The Project as the user:**
 - The basic element in getting service is one Project.
 - The interface with the User of the Network (the Project) is the Project Coordinator, as is usually referred in EC terms. One backup can be indentified also.
 - The Project Coordinator is responsible for contacting thenational ATM port Managers, although helped from the MBS Help Desk.
 - It is the minimum administrative unit we can deal with.



Service Overview

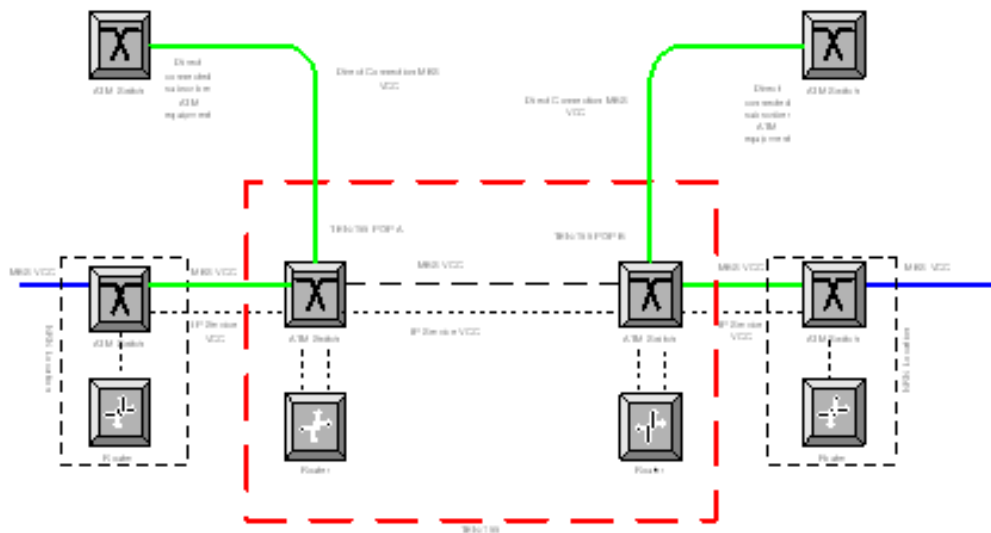
- **Service management**

- DANTE will establish an *MBS NOC* to manage all aspects of the *MBS*. The service is mainly oriented to serve projects that need sets of *ATM* connections (either *VOCs* or *VPCs*) grouped in to one or two virtual private networks. Every connection must be authorized by the proper *NRN* contact person.
- DANTE acts as a coordination center for every *MBS* request, identifying contacts in the *NRN* for every submitted project and looking for agreements in resources to be destined for the projects at every particular interface. Given the 20% of the access capacity dedicated to *MBS*, a bandwidth allocation policy is needed and should be developed based on experiences with the initial projects.
- A full workflow is defined and publicly available to allow participation and Service request. This process is specified in the External Procedures for *Managed Bandwidth* service. The process assures that every connection is reviewed by the affected *NRN* contact person and DANTE, and an agreement in values for connection definition parameters is reached. Once accepted, the connection is submitted to the *NOC* for its inclusion in the schedule.
- Project Coordinators and *ATM Access Managers* can contact the helpdesk asking for changes to scheduled or in service connections. Authorized persons are those from the *NRNs* and project coordinators. Changes in operational connections can have big impact on the rest of the connections, or simply impossible to implement. Whenever the help desk receive a request from an authorized contact that may suppose a significant risk or is not feasible (failing acceptance by Connection Admission Control system), an assessment of the request can be escalated to DANTE for revision. When changes on allocated bandwidth are required, the same policy apply if the request is out of limits, it should be submitted to agreement renewal.

Managed Bandwidth Service APM meeting 16-11-1998

Service Overview

- Management Boundaries



Coordination is Needed!

Managed Bandwidth Service APM meeting 16-11-1998



Service Overview

- ♦ Architecture and Implementation: ATM components
- ♦ A.- Depending on how the connection is established and released:
 - *Permanent connections (PVC),*
 - Established by network operations center staff as requested by the user.
 - *Switched connections (SVC),*
 - Established by ATM equipment using signaling as defined in User to Network Interface specification.
- ♦ B.- Depending on the duration of the connection (PVCs only):
 - *Schedule d occasional,*
 - start time and end time known.
 - *Permanent static,*
 - start time known, end time open.
 - *Permanent periodic,*
 - start date for period known, end of service date open, time pattern specified with periods of connection availability in day basis, weekly, etc.



Service Overview

- ♦ Architecture and Implementation: ATM Components
- C.- Depending on the ATM type of connection:
 - *Virtual Channel Connections (VCC)*,
 - the minimum element able to transport cells. Every ATM connection is composed of at least one VCC.
 - *Virtual Path Connections (VPC)*,
 - identifier of a set of VCCs. VPCs are only available in PVC.
- D.- Depending on the number of end-points:
 - *Point to point*,
 - one source, one end point.
 - *Point to Multipoint*,
 - one source, many end points. This type of connections are planned to be available during 1999.



Service Overview

- ♦ Architecture and Implementation: ATM Components

- ♦ E.- Depending on the requested transfer capability (I-371)
 - *Deterministic Bit Rate* (DBR)
 - with QoS-1 (as defined in I-356), traffic parameter: Peak Cell Rate (PCR)
 - *Statistical Bit Rate* (SBR2 or SBR3 as defined in I-371)
 - with QoS-3 (as defined in I-356), traffic parameters: Peak Cell Rate (PCR) and Sustained Cell Rate (SCR).
 - *Available Bit Rate* (ABR) with QoS-3 (as defined in I-356),
 - traffic parameter: Peak Cell Rate (PCR) and Minimum Cell Rate (MCR).
This transfer capability is expected to be available during 1999.



Service Overview

- **Service Level Agreement:** End-to-End ATM performance guarantees

	QoS class 1 Associated with DBR ~propagation	QoS class 3 Associated with SBR2, SBR3, ABR ~propagation
CTD		
2-pt CTDV	1.5 ms	Not Applicable
CLR_0	N.A.	$1 \cdot 10^{-6}$
CLR_{0+1}	$1 \cdot 10^{-8}$	N.A.
CER	$1 \cdot 10^{-7}$	$1 \cdot 10^{-7}$
CMR	$3.86 \cdot 10^{-6}$ (1 cell/72 h)	$3.86 \cdot 10^{-6}$ (1 cell/72 h)
SECBR	$1.85 \cdot 10^{-5}$	$1.85 \cdot 10^{-5}$

- The performance guarantees as specified only apply to cell streams in which all the cells conform with the traffic contract.

Managed Bandwidth Service APM meeting 16-11-1998



Service Overview

- ◆ **Service Level Agreement: Setting connections**
- ◆ **To set-up, change or clear down of VCC or VP, the request shall be sent to the helpdesk. The helpdesk will handle this request between 08:00 and 18:00 CET on working days. The helpdesk will answer within 30 working minutes confirming that the connection can be set-up. The set-up, change or clear-down of VC or VP will be done within 90 seconds of the scheduled time. Success rate of 95% or more for making the changes within this time limit. Until the request procedure is fully automated (expected mid-1999), the above times will be guaranteed only if the number of requests is lower than 20 per day.**
- ◆ **The help desk will be reachable 99.9% of the time, 99.9% of the trouble tickets will be issued within 15 minutes of an incident being reported.**



Service Overview

- **Service to be deployed in three Phases:**
 - Alpha Phase: ERCIM
 - » Static set-up, few countries. Testing feasibility, develop tools, gather input from the user.
 - Beta Phase:
 - » Few Projects, tuning of procedures and tools, obtain ready for service
 - Production.
- **Timing: 2 months for alpha, 2 months for Beta, production then. We wont move to the next phase if not satisfied. Start January 1, 1999.**



Service Overview

- We have a mailing list for distributing documents and serve every MBS related purpose we can imagine:
 - ten-155-mbs@dante.org.uk
- Documents to be distributed:
 - Service definition
 - External Procedures
 - Internal Procedures
 - etc ...



Purpose of the Service

- The Service must be end-to-end
- Main Goal:
 - Serve the community/EC Projects needs.
 - Provide advanced services in the network.
 - Open the door for QoS networks.
- Is anybody else deploying/using something similar?

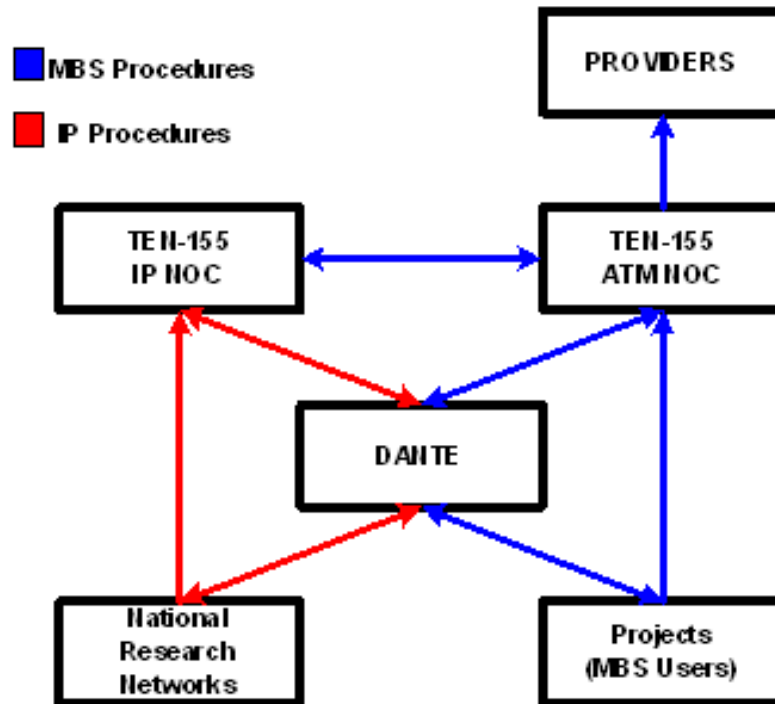


Players and interfaces

- National Research Networks (NRN)
- Projects
- TEN-155 ATM NOC (Unisource)
- TEN-155 IP NOC
- DANTE
- Other Transmission providers (OTE, MATAV, MERO, Slovenia Telecom)



Players and interfaces



Managed Bandwidth Service APM meeting 16-11-1998



How do I get Service? (External Procedures)

- **Proposed Workflow:**

- Agreement Stage (DANTE, Project coordinator, NRN ATM Access Managers)
- Delivery Stage (DANTE, Project coordinator, NRN ATM Access Managers, TEN-155 ATM NOC)
- Production Stage (DANTE, Project coordinator, Unisource)
- Finish Stage (DANTE, Project coordinator)

Managed Bandwidth Service APM meeting 16-11-1998



Managed Bandwidth Service APM meeting 16-11-1998



How do I get Service? (External Procedures)

- Tools to be used
 - Point of information (distributed?)
 - » Instructions for Projects coordinators.
 - Web based interface to tracking projects
 - » Identifying projects, managing and displaying status of on-track requests.
 - Colaborative Working tools (BCSW, Mailing list, etc.)
 - » To allow authorized persons access (rw) to the same information in a constructive, efficient manner.
 - » Easier coordination.
- Check the web: <http://www.dante.net/operations>



Change and Fault Management (Internal Procedures)



- **Change request management**
 - Authorized contacts are listed and can reach the TEN-155 ATM NOC and ask for changes or last minute modifications.
 - A policy to define margins within the changes is needed and has to be included in the requests.
- **Fault management and escalation procedures**
 - Same contacts for fault management and Trouble Tickets mail distribution.
- **Reporting**

Managed Bandwidth Service APM meeting 16-11-1998



Open Issues

- **Evolution of the Service:**

- Integrating new features (during 1999)
 - » SVC
 - » New ATM Transfer Capabilities
 - » Hardware Vendor Specific (Ascend)
- Implementing QTP results

- **Billing**

- To be discussed in the next QPC, 18 Dec, (but don't expect a final decision here)



Questions and feedback