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Interface technical specifications
for France Telecom's network

Directive 1999/5/EC

MultiLAN service access interface characteristics

Summary: This document gives a brief description of the technical characteristics of the interfaces used for accessing the MultiLAN services.

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France Telecom
6, Place d'Alleray
75505 Paris Cedex 15
France

<http://www.francetelecom.com>

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1. timer values are indicative and can be subject to modification,
2. due to various technical constraints, some services or service options may not be available on some interfaces,
3. the fact that a service not yet commercially open is described in this document can in no case be considered as a binding commitment on France Telecom part to actually open this service.

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1. Overview

MultiLAN is a service for high bit rate information transport between several sites which uses the multiplexing and Asynchronous Transfer Mode (ATM) techniques defined by the ITU-T and the ATM Forum. The ATM layer of the MultiLAN service complies with ITU-T international recommendations and with ATM Forum specification UNI 3.1.

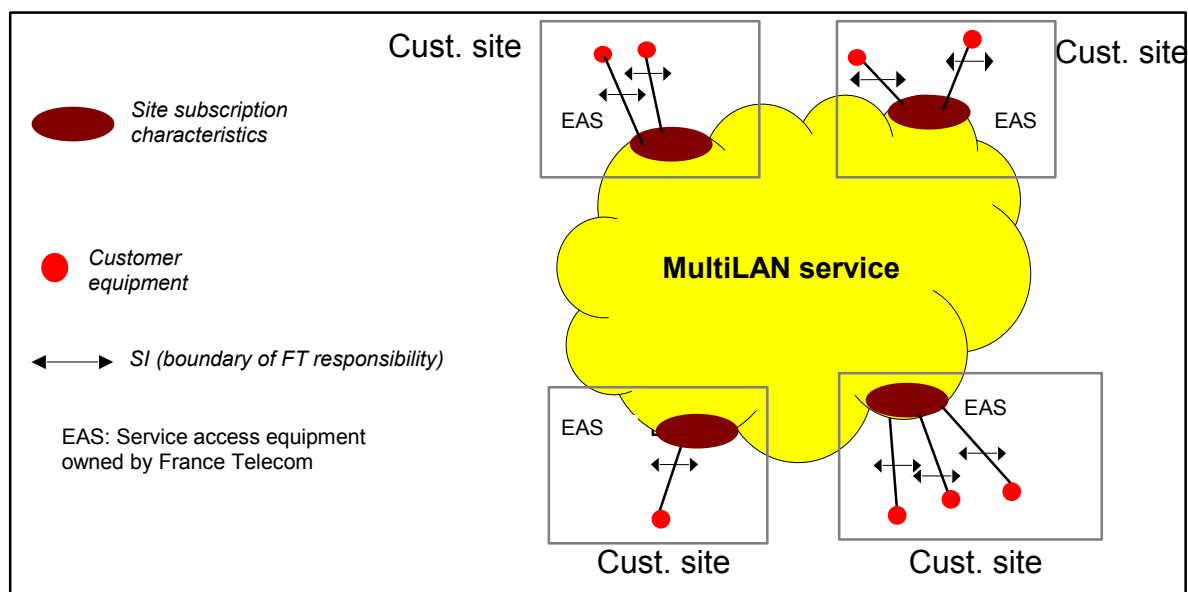
The service is made up of:

ATM native services: ATM native services are composed of permanent VP or VC connections between two Service Interfaces (SI) capable of CBR or VBR-nrt transfer.

Ethernet/ATM services: Ethernet/ATM adaptation is carried out on France Telecom equipment, and the streams are transported on ATM connections.

Hybrid services: Ethernet/ATM adaptation is carried out at one end of the link and an ATM service is delivered at the other end of the link.

Circuit emulation services: these services allow digital interfaces in structured or unstructured mode on the ATM connections.



These services are accessed using the service access equipment (EAS). The interfaces used depend on the type of service.

2. interface descriptions

2.1 native ATM service access interface

The ATM connections are at VC or VP level and the ATM cell header coding is defined in ITU-T Recommendation I.361. Each interface can offer up to 256 connections. For VC services, the connections are identified as $VP_i=0$ to 3 inclusive and $VC_i=32$ to 240 inclusive. For VP services, the identifier is $VP_i=4$ to 127 inclusive. The ATM streams are of CBR or VBR-nrt type. The rates proposed range from 256 kbit/s to

100 Mbit/s. The service access interface carries out policing on the streams coming from the terminal equipment in compliance with Recommendation I.371.

Service interface physical rate (Mbit/s)	Support type	Service interface connector	Reference standards
E1 (2,048)	L904/L907 pair 2 individually-foiled symmetrical pairs	120 Ω female DB-15 connector 120 Ω RJ-45 strip	G.703 - G.804
E3 (34, 368)	Coaxial	75 Ω BNC connector	G.703 - G.804
STM-1 (155, 52)	<i>Optical</i> single-mode short-haul fibre	ST	G.957 S1.1 - I.432
	<i>Optical</i> multimode fibre	SC	ANSI T1.646
	<i>Electrical</i> coaxial	75 Ω BNC connector	G.703 - I.432

Table 1: ATM interface characteristics

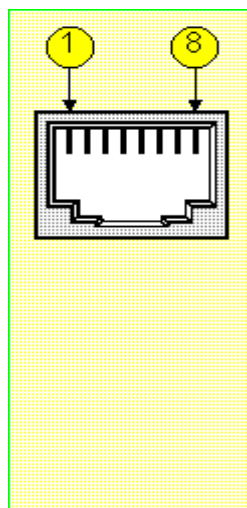
2.2 Ethernet service access interface

The transmission mode is either half-duplex or full-duplex and the connector used is an MDI female RJ-45 connector. The same interface supports Ethernet 10 Base-T (according to IEEE standard 802.3i) or Ethernet 100 Base-TX (according to IEEE standard 802.3u). The Ethernet frames must comply with IEEE standard 802.3, CSMA/CD access method. The France Telecom access equipment is transparent to the spanning tree protocol frames and to the IEEE 802.1Q Virtual Local Area Networks (VLAN).

Service interface type	Range	Connector type	Impedance	Type of cables to be used
Ethernet (10 Base-T) and Fast Ethernet (100 Base-TX)	100 metres	ISO 8877 (RJ-45)	100 Ohms	UTP 3 or above

Table 2: Ethernet interface characteristics

The following figure describes the ISO 8877 (RJ-45) female connector present on the France Telecom EAS and its wiring:



The connector is shown as it appears on the front of the equipment.

Assignment of contacts:

- 1 Data out (Transmit data+)
- 2 Data out (Transmit data-)
- 3 Data in (Received+)
- 4 Not used
- 5 Not used
- 6 Data in (Received-)
- 7 Reserved
- 8 Reserved

Figure 1: Ethernet physical interface

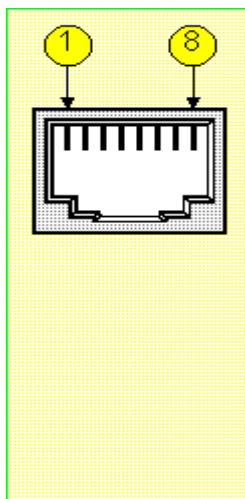
2.3 G.703 and G.703/G.704 Circuit emulation service access interfaces

France Telecom provides a circuit emulation service in unstructured mode with a rate of 2048 kbit/s (with G.703) or a circuit emulation service in structured mode with rates of 256, 512, 1024 and 1536 kbit/s on a 2048 kbit/s basic frame (with G.703/G.704). An RJ-45 physical connector is used.

Interface type	G.703 2048 kbit/s circuit emulation	G.703/G.704 2048 kbit/s circuit emulation
Service interface physical rate	2048 kbit/s	2048 kbit/s
Signal coding	High Density Bipolar order 3 encoding (HDB3)	HDB3
Support type	Shielded symmetrical twisted electrical pairs	Shielded symmetrical twisted electrical pairs
Impedance	120 Ohms	120 Ohms
Connector type	ISO 8877 (RJ-45)	ISO 8877 (RJ-45)
Maximum distance between terminal equipment and EAS	300 metres	300 metres
Reference recommendations	G.703/G.823	G.703/G.704/G.823

Table 3: Circuit emulation interface characteristics

The following figure describes the ISO 8877 (RJ-45) female connector present on the France Telecom EAS and its wiring:



The connector is shown as it appears on the front of the equipment.

Assignment of contacts:

- 1 Data in (Received-)
- 2 Data in (Received+)
- 3 GND
- 4 Data out (Transmit data-)
- 5 Data out (Transmit data+)
- 6 GND
- 7 Not used
- 8 Not used

Figure 2: Circuit emulation physical interface

The link is synchronised by France Telecom via the G.703/G.704 interface. The frames must comply with Recommendation G.823 for controlling jitter and wander. The CRC-4 procedure may or may not be enabled on the terminal equipment. TS0 of the G.704 frame delivered by the terminal equipment is not transmitted in the network. TS16 is transmitted like the other data TS's.

3. History

Edition	Date	Comments
1	March 2000	First version
2	October 2000	Title changed and minor modifications made
3	June 2002	Service name changed, document simplified, description of Ethernet and circuit emulation interfaces added