



Guide
on
Technical Requirements
for
Interconnection
with
Multimedia Broadband Network

IDA GUIDE MBN 1
Issue 1, 1 December 1999

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NOTICE
This Guide is subject to review and revision.

GUIDE ON TECHNICAL REQUIREMENTS FOR INTERCONNECTION WITH MULTIMEDIA BROADBAND NETWORK

1 INTERCONNECT CONFIGURATION

1.1 The interconnect configuration for Singapore multimedia broadband network is as shown in Figure 1.

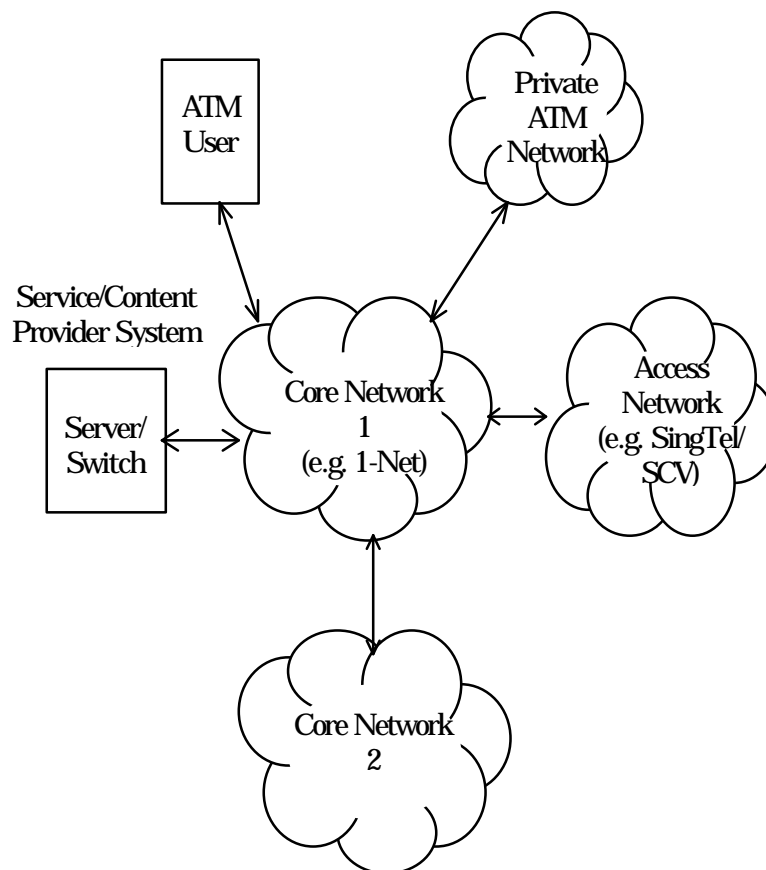


Figure 1 : Interconnect Configuration

1.2 The public User-Network Interface (UNI) shall be used between the core networks and the following:

- a) Access Networks;
- b) Service and Content Provider Systems;
- c) ATM User; and
- d) Private ATM Networks.

1.3 The ITU-T B-ISUP (ITU-T Recommendations Q.2210, Q.2761-Q.2764) or ATM Forum B-ICI Version 2 shall be used at the Network Node Interface (NNI) between the core networks of

different network operators. The level of interworking between the NNIs is subject to negotiation between network operators.

- 1.4 The network shall transport transparently any IP traffic which is encapsulated according to RFC 1483, RFC 1577 (Classical IP over ATM) or the ATM Forum's LAN Emulation 1.0 specification.

2 BROADBAND SERVICES

- 2.1 Generally, the network should support B-ISDN services that are defined in ITU-T Recommendations I.211, I.362, F.811 and F.812.

3 USER-NETWORK INTERFACE (UNI)

3.1 Physical Layer

- 3.1.1 The network shall be able to interface with the following SDH-based networks:

Interface Type	Bit Rate Mbit/s	Line Code	Physical Medium/ Transmission Distance	Transmission Convergence	Jitter
STM-1 Optical	155	scrambled NRZ (G.707, I.432)	G.957 (L1.1)/ G.957 § 2	G.707, I.432	G.825
STM-4 Optical	622	scrambled NRZ (G.707, I.432)	G.957 (L4.1)/ G.957 § 2	G.707, I.432	G.825

3.2 ATM Layer

- 3.2.1 The ATM layer shall conform with ITU-T Recommendation I.361 and ATM Forum UNI 3.1 (ATM Layer Specification).
- 3.2.2 The semi-Permanent Virtual Circuit (PVC) and the Switched Virtual Circuit (SVC) point-to-point connections will be supported. Multicast (semi-Permanent point-to-multipoint) connection will also be supported.

3.3 **ATM Adaptation Layer**

3.3.1 The core network should support all types of AAL as described in ITU-T Recommendations I.362 and I.363.

3.4 **Signalling**

3.4.1 The signalling standard at the UNI shall conform with the ATM Forum UNI 3.1 and 4.0 standards. Service categories under CBR, VBR and UBR for point-to-point VC connection shall be supported.

3.5 **ATM Addressing**

3.5.1 The ATM addressing scheme adopted for the public ATM networks in Singapore is in compliance with the ITU-T Recommendation E.191 addressing structure A as shown in Figure 2.



Figure 2 : ITU-T E.191 B-ISDN Addressing Structure A

3.5.2 Private network addresses shall be mapped into the subaddress of the addressing structure A as shown in Figure 2. The private network address should follow the E.164 Network Services Access Point (E.164 NSAP) address.

3.6 **Traffic Management**

3.6.1 The network should support the following ATM Service Categories (ATCs) as defined in ATM Forum Traffic Management 4.0 and 3.1 specifications:

- CBR
- VBR, real-time and non real-time
- UBR with tagging

3.6.2 Usage Parameter Control (UPC) algorithms should comply with ITU-T Recommendation I.371 with the Generic Cell Rate Algorithm (GCRA) implementation.

REFERENCES

ITU-T Recommendation E.164 (1991) Numbering plan for the ISDN ERA

ITU-T Recommendation E.191 (1996) B-ISDN numbering and addressing

ITU-T Recommendation F.811 (1996) Broadband connection-oriented bearer service

ITU-T Recommendation F.812 (1992) Broadband connectionless data bearer service

ITU-T Recommendation G.707 (1996) Network node interface for the synchronous digital hierarchy

ITU-T Recommendation G.825 (1993) The control of jitter and wander with digital networks which are based on the synchronous digital hierarchy

ITU-T Recommendation G.957 (1995) Optical interfaces for equipment and systems relating to the synchronous digital hierarchy

ITU-T Recommendation I.211 (1993) B-ISDN service aspects

ITU-T Recommendation I.361 (1995) B-ISDN ATM layer specification

ITU-T Recommendation I.362 (1993) B-ISDN ATM adaptation layer (AAL) functional description

ITU-T Recommendation I.363 (1993) B-ISDN ATM adaptation layer (AAL) specification

ITU-T Recommendation I.371 (1996) Traffic control and congestion control in B-ISDN

ITU-T Recommendation I.432 (1993) B-ISDN user-network interface - physical layer specification

ITU-T Recommendation Q.2140 (1995) B-ISDN signalling at ATM adaptation layer - Service Specific Coordination Function for signalling at the Network Node Interface (SSCF at NNI)

ITU-T Recommendation Q.2210 (1996) Message Transfer Part level 3 functions and messages using the services of ITU-T Recommendation Q.2140

ITU-T Recommendation Q.2761 (1995) B-ISDN - Functional description of the B-ISDN User Part (B-ISUP) of Signalling System No. 7

ITU-T Recommendation Q.2762 (1995) B-ISDN - General functions of messages and signals of the B-ISDN User Part (B-ISUP) of Signalling System No. 7

ITU-T Recommendation Q.2763 (1995) B-ISDN - Signalling System No. 7 B-ISDN User Part (B-ISUP) - Formats and codes

ITU-T Recommendation Q.2764 (1995) B-ISDN - Signalling System No. 7 B-ISDN User Part (B-ISUP) - Basic call procedures

Internet Society - RFC 1483, Multiprotocol Encapsulation over ATM Adaptation Layer 5

Internet Society - RFC 1577, Classical IP and ARP over ATM, 1994

ATM Forum - B-ICI Specification V2.0 (af-bici-0013.003)

ATM Forum - ATM User-Network Interface Specification V3.1 (af-uni-0010.002)

ATM Forum - ATM User-Network Interface (UNI) Signalling Specification V4.0 (af-sig-0061.000)

ATM Forum - LAN Emulation over ATM 1.0 (af-lane-0021.000)

ATM Forum - Traffic Management 4.0 (af-tm-0056.001)