



**ATIS-1000116.2000(\$2020)**

**Signalling System Number 7 (SS7) – Operations,  
Maintenance, and Administration Park (OMAP)**

**AMERICAN NATIONAL STANDARD FOR TELECOMMUNICATIONS**



---

As a leading technology and solutions development organization, ATIS brings together the top global ICT companies to advance the industry's most-pressing business priorities. Through ATIS committees and forums, nearly 200 companies address cloud services, device solutions, emergency services, M2M communications, cyber security, ehealth, network evolution, quality of service, billing support, operations, and more. These priorities follow a fast-track development lifecycle — from design and innovation through solutions that include standards, specifications, requirements, business use cases, software toolkits, and interoperability testing.

ATIS is accredited by the American National Standards Institute (ANSI). ATIS is the North American Organizational Partner for the 3rd Generation Partnership Project (3GPP), a founding Partner of oneM2M, a member and major U.S. contributor to the International Telecommunication Union (ITU) Radio and Telecommunications sectors, and a member of the Inter-American Telecommunication Commission (CITEL). For more information, visit < [www.atis.org](http://www.atis.org) >.

---

## AMERICAN NATIONAL STANDARD

Approval of an American National Standard requires review by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made towards their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

**CAUTION NOTICE:** This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

---

## Notice of Disclaimer & Limitation of Liability

The information provided in this document is directed solely to professionals who have the appropriate degree of experience to understand and interpret its contents in accordance with generally accepted engineering or other professional standards and applicable regulations. No recommendation as to products or vendors is made or should be implied.

NO REPRESENTATION OR WARRANTY IS MADE THAT THE INFORMATION IS TECHNICALLY ACCURATE OR SUFFICIENT OR CONFORMS TO ANY STATUTE, GOVERNMENTAL RULE OR REGULATION, AND FURTHER, NO REPRESENTATION OR WARRANTY IS MADE OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. ATIS SHALL NOT BE LIABLE, BEYOND THE AMOUNT OF ANY SUM RECEIVED IN PAYMENT BY ATIS FOR THIS DOCUMENT, AND IN NO EVENT SHALL ATIS BE LIABLE FOR LOST PROFITS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. ATIS EXPRESSLY ADVISES THAT ANY AND ALL USE OF OR RELIANCE UPON THE INFORMATION PROVIDED IN THIS DOCUMENT IS AT THE RISK OF THE USER.

<p>NOTE - The user's attention is called to the possibility that compliance with this standard may require use of an invention covered by patent rights. By publication of this standard, no position is taken with respect to whether use of an invention covered by patent rights will be required, and if any such use is required no position is taken regarding the validity of this claim or any patent rights in connection therewith. Please refer to [<a href="http://www.atis.org/legal/patentinfo.asp">http://www.atis.org/legal/patentinfo.asp</a>] to determine if any statement has been filed by a patent holder indicating a willingness to grant a license either without compensation or on reasonable and non-discriminatory terms and conditions to applicants desiring to obtain a license.</p>
--

---

## ATIS-1000116.2000(S2020), *Signalling System Number 7 (SS7) – Operations, Maintenance, and Administration Park (OMAP)*

Is an American National Standard developed by the **Signaling, Architecture, and Control (SAC)** Subcommittee under the **ATIS Packet Technologies and Systems Committee (PTSC)**.

*Published by*  
**Alliance for Telecommunications Industry Solutions**  
**1200 G Street, NW, Suite 500**  
**Washington, DC 20005**

Copyright © 2020 by Alliance for Telecommunications Industry Solutions  
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher. For information contact ATIS at 202.628.6380. ATIS is online at < <http://www.atis.org> >.

**T1.116-2000(S2020)**

(Revision and consolidation of  
T1.116-1996 and T1.116a-1998)

**American National Standard for Telecommunications –**

**Signalling System Number 7 (SS7) –  
Operations, Maintenance, and  
Administration Part (OMAP)**

Secretariat

**Alliance for Telecommunications Industry Solutions**

Approved December 13, 2000

**American National Standards Institute, Inc.**

**Abstract**

Signalling System Number 7 (SS7) - Operations, Maintenance, and Administration Part (OMAP) OMAP is an American National Standard based on ITU-T Recommendations Q.750 through Q.756 of Signalling System No. 7 (SS7) for international use, and is intended to be compatible with that standard. It has been modified for use within and between U.S. Networks to meet the anticipated needs and applications of those entities. These modifications are the result of extensive work by the members of the T1S1.3 Working Group on U.S. Standards for Common Channel Signalling.

Topics included are an Overview of Signalling System Number 7 (SS7) Management (OMAP), Monitoring and Measurements for Signalling System Number 7 Networks, Signalling System Number 7 (SS7) Management Functions MRVT, SRVT, CVT and Definition of the OMASE-User, Signalling System Number 7 (SS7) - OMAP Management ASE (OMASE) Definitions for Functions MRVT, SRVT and CVT, and a Signalling System Number 7 Guide Book to OMAP.

## **Foreword**

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.

This document is entitled *American National Standard for Telecommunications – Signalling System Number 7 (SS7) – Operations, Maintenance and Administration Part (OMAP)*. It is based on the ITU-T Recommendations Q.750 through Q.756 of Signalling System No. 7 (SS7) for international use and is intended to be compatible with that standard. It has been modified for use within and between U.S. Networks to meet the anticipated needs and applications of those entities. These modifications are the result of extensive work by the members of the T1S1.3 Working Group on U.S. Standards for Common Channel Signalling. In general, these modifications fall into two categories:

1. the specification of options designated by the ITU-T for national use; and
2. extensions to the 1988 protocol to provide for new applications of the SS7 protocol. This is in accordance with current and projected ITU-T activity.

[A change bar on the right margin indicates a change from the 1996 issue of this American National Standard. These change bars are advisory only, and reflect the editors' views of which textual changes constitute significant technical changes. Because of the differences in style and content between this standard and the ITU-T Recommendations, it is not possible to indicate differences using margin marks.]

This standard contains the following seven chapters:

T1.116.0,	Overview of Signalling System Number 7 (SS7) Management (OMAP)
T1.116.1,	Network Element Management Information Model for the MTP (For Further Study)
T1.116.2,	Monitoring and Measurements for Signalling System Number 7 Networks
T1.116.3,	Signalling System Number 7 (SS7) Management Functions MRVT, SRVT, CVT and Definition of the OMASE-User
T1.116.4,	Signalling System Number 7 (SS7) - OMAP Management ASE (OMASE) Definitions for Functions MRVT, SRVT and CVT
T1.116.5,	Signalling System Number 7 Protocol Testers (For Further Study)
T1.116.6,	Signalling System Number 7 Guide Book to OMAP

This standard is intended for use in conjunction with T1.110-1999 *Signalling System Number 7 (SS7) – General Information*, which includes an overview of SS7, a glossary, and a chapter on abbreviations.

The overall and detailed organization of these specifications parallels that used in the equivalent ITU-T recommendations. Thus, T1.116.0-2000 through T1.116.6-2000 of this standard corresponds to ITU-T Recommendations Q.750 through Q.756. The major changes in organization and appearance of these ITU-T Recommendations account for many of the changes to this standard from the previous issue. The following is an overview of the changes and additions incorporated into these specifications:

- the MRVT has been clarified and revised to enhance the capability of testing MTP routes to adjacent signalling networks;
- the SRVT has been clarified and revised to enhance the capability of testing MTP routes to adjacent signalling networks;

## T1.116-2000(S2020)

- the SRVT has been clarified and revised to include new SCCP routing capabilities; and
- T1.116.0-2000, clause 6, was revised to include details on compatibility issues.

Information contained in a normative annex in these specifications *is* considered part of this standard. Information contained in an informative annex in these specifications is *not* considered part of this standard but is auxiliary to the standard. Similarly, footnotes are not officially part of this standard.

Caution should be exercised in using the Specification and Description Language (SDL) diagrams to interpret the standard since they may not fully align with the text. Please note that, in case of any conflict between the text and the SDL diagrams, the text always takes precedence over the SDL.

Future control of this document will reside with Accredited Standards Committee on Telecommunications, T1. This control of additions to the specification, such as ongoing protocol evolution, new applications, and operational requirements, will permit compatibility among U.S. networks. Such additions will be incorporated in an orderly manner with due consideration to the ITU-T-layered model principles, conventions, and functional boundaries.

Suggestions for improvement of this standard will be welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, 1200 G Street NW, Suite 500, Washington, DC 20005.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Telecommunications, T1. Committee approval of the standard does not necessarily imply that all members voted for its approval. At the time it approved this standard, the T1 Committee had the following members:

E. R. Hapeman, T1 Chair  
W.R. Zeuch, T1 Vice-Chair  
J.A. Crandall, T1 Director  
S.M. Carioti, T1 Disciplines  
S.D. Barclay, T1 Secretary  
C.A. Underkoffler, T1 Chief Editor  
B. Lerich, T1 Editor  
M. A. McGrew, T1S1.3 Technical Editor

### EXCHANGE CARRIERS

Organization Represented	Name of Representative
AT&T Wireless Services, Inc.	Peter Musgrove
Bell Atlantic	Josephine Gallagher James F. Baskin (Alt.)
BellSouth Telecommunications Inc.	Malcolm Threlkeld, Jr. John Spencer (Alt.)
Covad Communications Co.	Ron Marquardt David Rosenstein (Alt.)
GTE Telephone Operations	Thomas Deaton Gary E. McAninch (Alt.)
ICG Communications	Raul Romero Aram Taylor (Alt.)
NorthPoint Communications, Inc.	Mark Peden Mike Borsetti (Alt.)
Rhythms	Rand Kennedy David Reilly (Alt.)
Rogers Wireless Inc.	Edward O'Leary Watson Zan (Alt.)
SBC Communications, Inc.	C.C. Bailey John E. Roquet (Alt.)
Sprint – Local Telecom. Division	Leroy D. Kellogg

Organization Represented	Name of Representative
U S West	James L. Eitel Richard Prince (Alt.)
US Telecom Association (USTA)	Paul Hart Anthony Pupek (Alt.)
GENERAL INTEREST	
Organization Represented	Name of Representative
Aerial Communications	George P. Lynch Rob Rowe (Alt.)
BellSouth Cellular Corp.	Don Zelmer Andy Clegg (Alt.)
BOPS Inc.	Ali S. Sadri, PhD
CSI Telecommunications	Michael S. Newman William J. Buckley (Alt.)
Catapult Communication	Katya Girgus Nancy Gayed (Alt.)
CDMA Development Group	Sam Samra Jim Takach (Alt.)

**T1.116-2000(S2020)**

<b>Organization Represented</b>	<b>Name of Representative</b>
Defense Information Systems Agency	Don Choi
Golden Bridge Technology Inc.	Kouros Parsa Karin Zickermann (Alt.)
MediaOne Labs	Vasant Ramkumar Paul Hughes (Alt.)
Microcell Connexions	Venkatesh Sampath Andrew Chow (Alt.)
National Communications System	Nicholas Andre F. McClelland (Alt.)
NTIA	Neal B. Seitz
Pacific Bell Wireless	David Williams Randolph Wohlert (Alt.)
Powertel Inc.	Irfan Khan
Rural Utilities Service	Orren E. Cameron III Norberto Esteves (Alt.)
Telcordia Technologies	Rick Harrison Cliff Halevi (Alt.)
Voicestream Wireless Corp.	Gary K. Jones Mark Younge (Alt.)

**INTEREXCHANGE CARRIERS**

<b>Organization Represented</b>	<b>Name of Representative</b>
AT&T	Doris S. Lebovits Rick Canaday (Alt.)
Bell Canada	P. Norman Smith Joseph A. Zebarth (Alt.)
Comsat Corporation	Mark T. Neibert Prakash Chitre (Alt.)
General Communication, Inc.	Derek L. Welton C.R. Baugh, Ph.D. (Alt.)
MCI Worldcom	Yi-Shang Shen J. Martin Carroll (Alt.)
Sprint – Long Distance Division	Thomas G. Croda James Lord (Alt.)

**MANUFACTURERS**

<b>Organization Represented</b>	<b>Name of Representative</b>
3COM	Fred Lucas Richard L. Stuart (Alt.)
ADC Telecommunications Inc.	Cliff Davidow
Airspan Communications Corp.	Douglas M. McCallister Chris Rogers (Alt.)
Alcatel USA Inc.	Ken Biholar Roz Sahakian (Alt.)
ASCOM Enterprise Networks	Z. Putnins

<b>Organization Represented</b>	<b>Name of Representative</b>
Aware, Inc.	Marcos Tzannes William Meyer (Alt.)
Broadcom Corporation	David C. Jones Aidan O'Rourke (Alt.)
Centillum Communications, Inc.	Dr. Syed Abbas Guozhu Long (Alt.)
Ciena Corporation	Rajender Razdan Jerry Shrimpton (Alt.)
Cisco Systems, Inc.	Dan Greene Chip Sharpe (Alt.)
Conexant Systems, Inc.	Quentin C. Cassen
Copper Mountain Networks	Joseph D. Markee John Reister (Alt.)
ECI Telecom Inc.	Ron Murphy Todd Poole (Alt.)
Elastic Networks, Inc.	Patrick H. Stanley, P.E. Jack Terry (Alt.)
Ericsson Inc.	Linda Troy Stephen Hayes (Alt.)
Excelsus Technologies Inc.	Frederick Kiko Don Robert House (Alt.)
Fujitsu America Inc.	Kenneth T. Coit Hirohiko Yamamoto (Alt.)
General Datacomm Inc.	Fred Cronin Mike McLoughlin (Alt.)
Globespan Semiconductor, Inc.	Massimo Sorbara Clete Gardenhour (Alt.)
Harris Corp.	Marlis Humphrey Tony Harb (Alt.)
Hekimian Laboratories	William H. Duncan
Hewlett-Packard	Karen Higginbottom
Hughes Network Systems, Inc.	Dr. Leonard Golding Enrique Laborde (Alt.)
Lucent Technologies	Dave R. Andersen Greg Ratta (Alt.)
Marconi Communications	Mark Scott David K. Brown (Alt.)
Mayan Networks	Farooq Raza Kevin W. Williams (Alt.)
Megaxess/Atanet, Inc.	John Boal Mihnea Nemes (Alt.)
Motorola Inc.	Syed Niaz Dan Grossman (Alt.)
NEC America Inc.	Donovan Nak Hajime Koto (Alt.)
Next Level Communications	Sabit Say Jeffrey Weber (Alt.)
Nokia Telecommunications Inc.	Chris Wallace Walt Tamminen (Alt.)

## T1.116-2000(S2020)

Organization Represented	Name of Representative
Nortel Networks	Mel N. Woinsky Ed Eckert (Alt.)
OKI America Inc.	Henri Suyderhoud Hisao Fujikawa (Alt.)
Paradyne Corp.	Richard K. Smith Phil Kyees (Alt.)
PMC-Sierra, Inc.	Winston Mok Terence Lau (Alt.)
Qualcomm Inc.	Mark Epstein Ed Tiedemann (Alt.)
Siemens Information & Communications Networks, Inc.	David E. Francisco Jim Stanco (Alt.)
ST Microelectronics	Jean-J Raynal Roy Harvey (Alt.)

Organization Represented	Name of Representative
Symmetricom Inc.	Kishan Shenoj Phil Mann (Alt.)
Telecommunications Techniques	Bernard E. Worne Michael Lewis (Alt.)
Tellabs Operations, Inc.	Corey Parollina Tom Rarick (Alt.)
Tellium, Inc.	Krishna Bala, PhD Siegfried Giebl (Alt.)
Texas Instruments	James T. Carlo Pete Chow, Ph.D. (Alt.)
TranSwitch Corp.	Jitender Vij Edwin Soltysiak (Alt.)
Westell Technologies, Inc.	Guy Cerulli Tariq Amjed (Alt.)

At the time it approved this standard, Technical Subcommittee T1S1 on Services, Architectures & Signalling, which is responsible for the development of this standard, had the following members:

B. Hall, T1S1 Chair  
G. Ratta, T1S1 Vice-Chair

Organization Represented	Name of Representative
ADC Telecommunications Inc.	Quan Jiang Richard McKinney (Alt.)
Alcatel USA Inc.	Jeff Copley
AT&T	Doris S. Lebovits John Keselica (Alt.)
Bell Atlantic	Dana Shillingburg Michael Brusca (Alt.)
Bell Canada	Stewart Patch P. Norman Smith (Alt.)
BellSouth Telecommunications Inc.	Robert V. Epley David Whitney (Alt.)
CSI Telecommunications	Michael S. Newman William J. Buckley (Alt.)
Cisco Systems	Dan Greene Sue Geyer (Alt.)
Compaq Computer Corp.	John L. Schantz Anantha Ramu (Alt.)
Comsat Corporation	Mark T. Neibert Andy Gallant (Alt.)
Defense Information Systems Agency	Don Choi Ralph Liguori (Alt.)
Ericsson Incorporated	Linda Troy
Fujitsu America Inc.	Doug Hunt Kenneth T. Coit (Alt.)
General Datacomm Inc.	Mike McLoughlin

Organization Represented	Name of Representative
GTE Telephone Operations	Michael Collision John Rollins (Alt.)
Harris Corporation	Marlis Humphrey Tony Harb (Alt.)
Hekimian Laboratories	William H. Duncan
Hewlett-Packard	James G. Baker
Illuminet	Kenn Moisey Susan Stack (Alt.)
LG Sansys, Inc.	Hee Joung Lee Mark Hosford (Alt.)
Lucent Technologies	Robert B. Waller Greg Ratta (Alt.)
Mayan Networks	Farooq Raza Santu Muller (Alt.)
MCI Worldcom	Yatendra Pathak Bernard Ku (Alt.)
MediaOne Labs	Sohan Grewal Jim Dahl (Alt.)
Megaxess, Inc.	John Boal Mihnea Nemes (Alt.)
National Communications System	Nicholas Andre Dale Barr (Alt.)
NEC America Incorporated	Kuei Y. Kou Donovan Nak (Alt.)

**T1.116-2000(S2020)**

<b>Organization Represented</b>	<b>Name of Representative</b>
Nokia Telecommunications Inc.	Jean-Luc Bouthemy Walt Tamminen (Alt.)
Nortel Networks	Mel N. Woinsky Lewis C. Robart (Alt.)
OKI America Incorporated	Henri Suyderhoud Hisao Fujikawa (Alt.)
Oresis Communications, Inc.	Michael R. Zeug George Shenoda (Alt.)
Paradyne Corporation	Richard K. Smith Phil Keyes (Alt.)
Rhythms	Rand Kennedy David Reilly (Alt.)
SBC Communications, Inc.	B.S. Sambasivan Clifton Campbell (Alt.)
Siemens Information and Communication Networks, Inc.	David LaMaster Ron Franks (Alt.)

<b>Organization Represented</b>	<b>Name of Representative</b>
Sprint – Long Distance Division	James Lord Albert D. Du Ree (Alt.)
Tekelec Inc.	Virgil Long Dan Bantukul (Alt.)
Telcordia Technologies	Selvan Rengasami Wesley Downum (Alt.)
Tellabs Operations, Inc.	Jim Orme Mike Wurst (Alt.)
Tellium, Inc.	Krishna Bala, PhD Siegfried Giebl (Alt.)
U S West	Steve Showell James L. Eitel (Alt.)
US Telecom Association (USTA)	Vern Junkmann Donald G. Bender (Alt.)
Voicestream Wireless Corp.	Albert H. Yuhan, Ph.D. Gary K. Jones (Alt.)

T1S1.3, Working Group on U.S. Standards for Common Channel Signalling which developed this standard had the following active participants:

Wesley Downum, T1S1.3Chair  
 Brian Foster, T1S1.3Chair  
 Dana Shillingburg, T1S1.3Vice-Chair  
 Stuart Goldman, T1S1.3Vice-Chair  
 Doris Lebovits, T1S1.3Vice-Chair  
 Anne Marie Livingstone, T1S1.3Vice-Chair  
 M. A. McGrew, T1S1.3Convener and Editor

Bjorn Ahle	Eric Johnson	Don Mickel
Nicholas Andre	Brian Foster	John Roquet
Ron Bell	Doug Hedger	John Schantz
Dick Bobilin	Andrew Jacob	Greg Sidebottom
Jim Calme	Jim LaFave	Ray Singh
Janey Cheu	Ceyhan Lennon	Karl Stanek
Koan Chong	Virgil Long	Carlos Urrutia-Valdez
Jeff Copley	Jim Lord	Volnie Whyte

## T1.116-2000(S2020)

### Master Abbreviations & Acronyms List for T1.116-2000(S2020)

AE	Application Entity	NEMF	Network Element Management Function
AMI	Application Management Interface	NMF	Network Management Function
APDU	Application Protocol Data Unit	NSAP	Network Service Access Point
ASE	Application Service Element	OM	OMAP Management
ASN.1	Abstract Syntax Notation 1	OMAP	Operations, Maintenance and Administration Part
CIC	Circuit Identification Code	OMASE	OMAP Management ASE
CMIP	Common Management Information Protocol	OMC	Operations and Maintenance Center
CMIS	Common Management Information Service	OPC	Originating Point Code
CR	Connection Request	OS	Operations System
CVT	Circuit Validation Test	OSF	Operations System Functions
DPC	Destination Point Code	OSI	Operations System Interconnection
DTSP	Duplex Translation Signalling Point	PC	Point Code
FTA	Facility Test Acknowledgement	PPC	Primary Point Code
FTL	Facility Test Loopback	RPOA	Recognized Public Operating Agency
FTPC	Final Translation Point Code	SCCP	Signalling Connection Control Part
FTR	Facility Test Results	SDH	Synchronous Digital Hierarchy
FTSP	Final Translation Signalling Point	SDL	Specification and Description Language
FTU	Facility Test Underway	SIB	Status Indication Busy
GT	Global Title	SIF	Signalling Information Field
GTI	Global Title Indicator	SIO	Service Information Octet
GTT	Global Title Translation	SL	SubLayer
ITPC	Intermediate Translation Point Code	SLC	Signalling Link Code
ISDN-UP	Integrated Services Digital Network User Part	SMSI	Systems Management Service Interface
ISUP	ISDN User Part	SP	Signalling Point
ITSP	Initial Translation Signalling Point	SPC	Secondary Point Code
ITU-T	International Telecommunications Union	SRVA	SCCP Routing Verification Acknowledgment
LEA	Link Equipment Available	SRVR	SCCP Routing Verification Result
LEF	Link Equipment Failure	SRVT	SCCP Routing Verification Test
LEU	Link Equipment Unavailable	SS7	Signalling System Number 7
LFS	Link Fault Sectionalization	SSN	SubSystem Number
LME	Layer Management Entity	ST	SCCP Tester
LMI	Level Management Interface	STP	Signalling Transfer Point
LSSU	Link Status Signal Unit	SU	Signal Unit
MIB	Management Information Base	TC	Transaction Capabilities
MIS	Management Information Service	TCAP	Transaction Capabilities Application Part
MML	Man-Machine Language	TFA	Transfer Allowed
MRVA	MTP Routing Verification Acknowledgment	TFP	Transfer Prohibited
MRVR	MTP Routing Verification Result	TID	Transaction Identification
MRVT	MTP Routing Verification Test	TMN	Telecommunications Management Network
MT	MTP Tester	TPC	Tested Point Code
MTBF	Mean Time Before Failure	TrVT	Transaction Verification Test
MTP	Message Transfer Part	TSP	Translation Signalling Point
MTTR	Mean Time to Repair	TUP	Telephony User Part
NE	Network Element	UDTS	UnitData Service Message
NEF	Network Element Functions	UP	User Part
NEF	Network Element Function		

## T1.116-2000(S2020)

<b>Table of Contents</b>		<b>Page</b>
Foreword .....		ii
T1.116.0	Overview of Signalling System Number 7 (SS7) Management (OMAP) .....	T1.116.0-1
T1.116.1	Network element management information model for the MTP .....	T1.116.1-1
T1.116.2	Monitoring and measurements for Signalling System Number 7 networks .....	T1.116.2-1
T1.116.3	Signalling System Number 7 (SS7) management functions MRVT, SRVT, CVT, and definition of the OMASE-user .....	T1.116.3-1
T1.116.4	Signalling System Number 7 (SS7) management ASE (OMASE) definitions for MRVT, SRVT, and CVT .....	T1.116.4-1
T1.116.5	Signalling System Number 7 protocol testers .....	T1.116.5-1
T1.116.6	Signalling System Number 7 guide book to OMAP .....	T1.116.6-1

**Chapter T1.116.0**  
**Overview of**  
**Signalling System Number 7 (SS7) Management**

**Overview of  
Signalling System Number 7 (SS7) Management**

<b>Table of Contents</b>	<b>Page (T1.116.0-)</b>
1 Introduction.....	1
1.2 Normative References.....	2
2 Requirements upon SS7 Management.....	2
3 Reference Model for SS7 Management.....	6
4 Communication Profiles for Management Interfaces.....	16
5 Methodology.....	17
6 Compatibility and Handling of Unrecognized Information.....	18
Annexes	
A OMAP ITU-T Recommendations and ANSI Standards for the SS7 Network.....	20

**Table of Figures**

Figure 1/T1.116.0 TMN Functional Reference Model as Applied to SS7 Management.....	7
Figure 2/T1.116.0 (1 of 3) Example Physical Realization for SS7 Management.....	9
Figure 3/ T1.116.0 Classical OMAP Managed Objects Model.....	12
Figure 4/T1.116.0 Managed Objects using Internal Communication.....	13
Figure 5/T1.116.0. SS7 Management and Internal Configuration of an SP.....	15
Figure 6/T1.116.0 Short Stack used for Internal SS7 Management Protocol.....	17
Figure A1/T1.116.0 TMN, SS7 Management and OMAP Standards.....	20

American National Standard for Telecommunications —

# Signalling System Number 7 (SS7) – Overview of Signalling System Number 7 (SS7) Management

## 1 Introduction

This series of standards on the Operations, Maintenance, and Administration Part (OMAP) define the functions, procedures, and entities for managing the Signalling System Number 7 (SS7) network.

The management functions of SS7 are divided into three main parts:

- a) management functions located in the Telecommunications Management Network (TMN) (which means the Network Element Functions (NEFs) and the Operations System Functions (OSF) - see Recommendation M.3000). These functions include measurement collection, and cover TMN to TMN interactions;
- b) management functions within the SS7 protocol itself (e.g., changeover, forced rerouting, subsystem management, etc.); and
- c) management functions defined to enable verification and validation of routing tables, Circuit Identification Codes (CICs), etc. These functions may require communication within the signalling network, and for this, a separate protocol is defined. Such management functions are modeled as managed objects at the interface between the network elements and an operations system.

Of the three sets of management functions defined above, OMAP provides a) and c). Set b) can be modeled as existing within the “Layer Management Entities” of SS7, and the functions are defined in the standards pertinent to those layers.

OMAP interacts with all layers (i.e., with all the levels) of SS7 in order to effect control of the network.

This standard comprises six chapters:

- T1.116.0 gives the OMAP overview;
- T1.116.1 defines the SS7 managed objects;
- T1.116.2 defines SS7 monitoring and measurements;
- T1.116.3-2000 defines the SS7 management functions for managed objects that themselves require SS7 communication in the network, and also the OMAP Management Application Service Element (OMASE)-User where the logic of these functions (MRVT, SRVT LEF and LFS) is modeled;
- T1.116.4-2000 defines the Application Service Element (ASE) for those functions defined in T1.116.3-2000, i.e., OMASE;
- T1.116.5-2000 defines the SS7 testers; and
- T1.116.6-2000 is a Guide Book to Operations, Maintenance, and Administration Part (OMAP).