A Recommended Standard of the Joint Committee on the NTCIP

NTCIP 2301 v03.04

National Transportation Communications for ITS Protocol

Simple Transportation Management Framework Application Profile

August 30, 2024

This is a draft document, which is distributed for review and comment purposes only. You may reproduce and distribute this document within your organization, but only for the purposes of and only to the extent necessary to facilitate review and comment to the NTCIP Coordinator. Please ensure that all copies include this notice. This document contains preliminary information that is subject to change.

Published by

American Association of State Highway and Transportation Officials (AASHTO)
Arlington, VA 22209Washington, DC 20004

Institute of Transportation Engineers (ITE)
1627 I Street, N.W., Suite 550
Washington, DC 20006

National Electrical Manufacturers Association (NEMA)
1300 17th St N #900Arlington, VA 22209

© 2023 AASHTO / ITE / NEMA. All rights reserved.

Minor Version Revision History for NTCIP 2301 v03

Revision	Date	Author	Description (latest on top)
04	08/30/2024	Vaughn	Editorial changes
03	02/13/2023	Vaughn	Updated status to proposed User Comment Draft; updated copyright year to 2023.
02	11/20/2022	Vaughn	Updates to front matter and Section 1 boilerplate.
01	10/26/2022	Vaughn	Initial draft document to incorporate security improvements as recommended by NTCIP 9014 and the Infrastructure Standards Security Assessment (ISSA) Project.

NOTICES

Copyright Notice
© 2001, 2010, and 2023 by the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the National Electrical Manufacturers Association (NEMA). All intellectual property rights, including, but not limited to, the rights of reproduction in whole or in part in any form, translation into other languages and display are reserved by the copyright owners under the laws of the United States of America, the Universal Copyright Convention, the Berne Convention, and the International and Pan American Copyright Conventions. Except for the MIB or the PRL, do not copy without written permission of either AASHTO, ITE, or NEMA.

PDF File License Agreement
To the extent that these materials are distributed by AASHTO / ITE / NEMA in the form of an Adobe® Portable Document Format (PDF) electronic data file (the "PDF file"), AASHTO / ITE / NEMA authorizes each registered PDF file user to view, download, copy, or print the PDF file available from the authorized Web site, subject to the terms and conditions of this license agreement:

a) You may download one copy of each PDF file for personal, noncommercial, and intraorganizational use only.
b) Ownership of the PDF file is not transferred to you; you are licensed to use the PDF file.
c) You may make one more electronic copy of the PDF file, such as to a second hard drive or burn to a CD.
d) You agree not to copy, distribute, or transfer the PDF file from that media to any other electronic media or device.
e) You may print one paper copy of the PDF file.
f) You may make one paper reproduction of the printed copy.
g) Any permitted copies of the PDF file must retain the copyright notice, and any 7other proprietary notices contained in the file.
h) The PDF file license does not include (1) resale of the PDF file or copies, (2) republishing the content in compendiums or anthologies, (3) publishing excerpts in commercial publications or works for hire, (4) editing or modification of the PDF file except those portions as permitted, (5) posting on network servers or distribution by electronic mail or from electronic storage devices, and (6) translation to other languages or conversion to other electronic formats.
i) Other use of the PDF file and printed copy requires express, prior written consent.

PRL and RTM Distribution Permission

To the extent that these materials are distributed by AASHTO / ITE / NEMA in the form of a Protocol Requirements List ("PRL") or a Requirements Traceability Matrix ("RTM"), AASHTO / ITE / NEMA extend the following permission:

a) You may make or distribute unlimited copies, including derivative works of the PRL (then known as a Profile Implementation Conformance Statement ("PICS")) or the RTM, provided that each copy you make or distribute contains the citation "Based on NTCIP 0000 [insert the standard number] PRL or RTM. Used by permission. Original text © AASHTO / ITE / NEMA."
b) You may only modify the PRL or the RTM by adding: 1) Text in the Project Requirements column, which is the only column that may be modified to show a product's implementation or the project-specific requirements; and/or 2) Additional table columns or table rows that are clearly labeled as ADDITIONAL for project-unique or vendor-unique features.
c) If the PRL or RTM excerpt is made from an unapproved draft, add to the citation "PRL (or RTM) excerpted from a draft standard containing preliminary information that is subject to change."

This limited permission does not include reuse in works offered by other standards development organizations or publishers and does not include reuse in works-for-hire, compendiums, or electronic storage devices that are not associated with procurement documents, or commercial hardware, or commercial software products intended for field installation.

A PRL is completed to indicate the features that are supported in an implementation. Visit www.ntcip.org for information on electronic copies of the MIBs, PRLs, and RTMs.

Content and Liability Disclaimer

The information in this publication was considered technically sound by the consensus of persons engaged in the development and approval of the document at the time it was developed. Consensus does not necessarily mean that there is unanimous agreement among every person participating in the development of this document.

AASHTO, ITE, and NEMA standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus standards development process. This process brings together volunteers and seeks out the views of persons who have an interest in the topic covered by this publication. While AASHTO, ITE, and NEMA administer the process and establish rules to promote fairness in the development of consensus, they do not write the document and they do not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in their standards and guideline publications.

AASHTO, ITE, and NEMA disclaim liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly, or indirectly resulting from the publication, use of, application, or reliance on this document. AASHTO, ITE, and NEMA disclaim and make no guaranty or warranty, express or implied, as to the accuracy or completeness of any information published herein and disclaims and makes no warranty that the information in this document will fulfill any of your purposes or needs. AASHTO, ITE, and NEMA do not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this standard or guide.

In publishing and making this document available, AASHTO, ITE, and NEMA are not undertaking to render professional or other services for or on behalf of any person or entity, nor are AASHTO, ITE, and NEMA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. Information and other standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

AASHTO, ITE, and NEMA have no power, nor do they undertake to police or enforce compliance with the contents of this document. AASHTO, ITE, and NEMA do not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health or safety-related information in this document shall not be attributable to AASHTO, ITE, or NEMA and is solely the responsibility of the certifier or maker of the statement.

Trademark Notice

NTCIP is a trademark of AASHTO / ITE / NEMA. All other marks mentioned in this standard are the trademarks of their respective owners.

ACKNOWLEDGEMENTS

NTCIP 2301 v03 was prepared by the NTCIP Base Standards and Profiles Working Group (BSP2 WG), which is a subdivision of the Joint Committee on the NTCIP. The Joint Committee on the NTCIP is organized under a Memorandum of Understanding among the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the National Electrical Manufacturers Association (NEMA). The Joint Committee on the NTCIP consists of six representatives from each of the standards organizations, and provides guidance for NTCIP development.

When NTCIP 2301 v03 was prepared, the following individuals were members of BSP2 WG:

- Doug Crawford (Chair)
- Steve Bostrom
- Wolfgang Buckel
- Michael Forbis
- Joe Gorman
- Terry Haukom
- Patrick Leung
- Robert Lopes
- Alex Mousadi
- Satya Muthuswamy
- Bob Rausch
- Rodney Schilling
- Shea Tomsin
- Walt Townsend

Other individuals providing input include:

- Md Ashraf Ahmed
- Justin Anderson
- Kingsley Azubike
- Ralph Boaz
- Russ Brookshire
- Patrick Chan
- Stan Chow
- Deborah Curtis
- Dustin DeVoe
- Brian Doherty
- Edward Fok
- Sai Kiran Golla
- Jacob Grivette
- Mohammad Iraki
- Haydar Issa
- Denver Kruse
- AJ Lahiri
- Stephane Lapierre
- Christopher Lyons
- Gary Molnar
- Keith Patton
- Mahesh Pawar
- Frank Perry
- Nu Rosenbohm
- Jay Schultz
- Kellen Shain
- Douglas Tarico
- Nicola Tavares
- John Thai
- Andrew Valdez
- Kenneth Vaughn
- Sankeer Vulupala
- Robert White

In addition to the many volunteer efforts, recognition is also given to those organizations that supported the efforts of BSP2 WG by providing comments and funding, including:

- U.S. Department of Transportation, Research and Innovative Technology Administration
- U.S. Department of Transportation, Federal Highways Administration
- AECOM
- Applied Information
- City of Anaheim, CA
- ConSysTec
- Caltrans
- Daktronics
- Econolite Control Products, Inc.
- Florida Department of Transportation
- Georgia DOT
- Kapsch
- KLD Engineering
- Michigan DOT
- Minnesota DOT
- Nevada DOT
- Noblis
- Parsons
- Pillar Consulting
- Q-Free

© 2023 AASHTO / ITE / NEMA Do Not Copy Without Written Permission

- Siemens ITS
- Signalisation Ver-Mac, Inc.
- TransCore
- Transport Canada
- Trevilon
- Washington State DOT
- WSP

Do Not Copy Without Written Permission © 2023 AASHTO / ITE / NEMA

FOREWORD

This publication defines an application profile that is a combination of standards intended to meet specific requirements for information management and information transfers to and from transportation devices in a networked environment. As an NTCIP application profile, the scope covers the application, presentation, and session layers of the OSI Reference Model. This publication contains mandatory requirements that are applicable to all devices claiming conformance to this standard. This publication also contains optional and conditional requirements which may be applicable to a specific environment in which a device is used.

This document was separately balloted and approved by AASHTO, ITE, and NEMA after recommendation by the Joint Committee on the NTCIP. Each organization has approved this standard as the following standard type:

AASHTO – Standard Specification
ITE – Software Standard
NEMA – Standard

User Comment Instructions

The term "User Comment" includes any type of written inquiry, comment, question, or proposed revision, from an individual person or organization, about any part of this standards publication's content. A "Request for Interpretation" is also classified as a User Comment. User Comments are solicited at any time. In preparation of this NTCIP standards publication, input of users and other interested parties was sought and evaluated.

All User Comments will be referred to the committee responsible for developing and/or maintaining this standards publication. The committee chairperson, or their designee, may contact the submitter for clarification of the User Comment. When the committee chairperson or designee reports the committee's consensus opinion related to the User Comment, that opinion will be forwarded to the submitter. The committee chairperson may report that action on the User Comment may be deferred to a future committee meeting and/or a future revision of the standards publication. Previous User Comments and their disposition may be available for reference and information at www.ntcip.org.

A User Comment should be submitted to this address:

NTCIP Coordinator
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209-3801
e-mail: ntcip@nema.org

A User Comment should be submitted in the following form:

Standards Publication number and version:
Page:
Section, Paragraph, or Clause:
Comment:
Editorial or Substantive?:
Suggested Alternative Language:

Please include your name, organization, and address in your correspondence.

History

© 2023 AASHTO / ITE / NEMA Do Not Copy Without Written Permission

Version	Date	Description (latest on top)
v03	TBD	Updated to enhance the security of the profile based on recommendations contained in NTCIP 9014, namely by updating to use SNMPv3 with the transport security model, the TLS transport model, and (D)TLS
v02	July 2010	Incorporation of SFMP and along with updated structure of standards with formalization of OER
v01	July 1999	Original version additionally approved by AASHTO and ITE to become NTCIP 2301
v01	August 1998	Original version published as NEMA TS 3.AP-STMF

Do Not Copy Without Written Permission © 2023 AASHTO / ITE / NEMA

INTRODUCTION

This standard defines an application profile that is a combination of base standards intended to meet the requirements for the management of information related to the communications layers. This standard may also be applicable to end-application information management. The objective is to facilitate the specification of ITS systems characterized by a high degree of interoperability and interchangeability of its components.

After research into how national and international standards organizations combine protocols and standards to address all seven layers of the ISO-OSI Reference Model, the committee adopted the approach defined in the *NTCIP Profile Framework.* Following that approach, a protocol stack is specified by application, transport, and subnetwork profiles. An application profile addresses the application, presentation, and session layers. A transport profile addresses the transport and network layers. A subnetwork profile addresses the data link and physical layers. The *NTCIP Simple Transportation Management Framework- Application Profile* (AP-STMF) is an application profile for use in center-to-roadside and center-to-center communications.

The text includes mandatory requirements in Annex A that are defined as normative.

The following keywords apply to this document: AASHTO, ITE, NEMA, NTCIP, profile, application, SNMP, DTLS, TLS, TLSTM.

This document uses only metric units.

© 2023 AASHTO / ITE / NEMA Do Not Copy Without Written Permission

CONTENTS

 © 2023 AASHTO / ITE / NEMA

Section 1
GENERAL

1.1 SCOPE

This standard is applicable to transportation devices and management systems that must operate in Intelligent Transportation Systems. As an application profile, it specifies a set of protocols and standards applicable to the application, presentation, and session layers of the open systems interconnect (OSI) reference model; it also defines aspects of the management and security entities of the ITS station architecture.

NOTE: This application profile relies upon services of the transport profile to authenticate the peer entity. While in theory this service could be provided by any secure transport profile as of the development of this document, the only two connections to transport services have been defined: transport layer security (TLS) over transmission control protocol (TCP) and datagram transport layer security (DTLS) over user datagram protocol (UDP). As a result, at present, there is an implicit expectation that this application profile will be deployed over one of these two stacks — both of which are formally defined in NTCIP 2202 v02.

NOTE: This document is equivalent to ISO 15784-2.

1.2 REFERENCES

The following documents are referenced by this document. At the time of publication, the editions indicated were valid.

1.2.1 Normative References

Normative references contain provisions that, through reference in this text, constitute provisions of this document. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standard listed.

ISO 15784-2 PRL[1]	*Protocol Requirements List for Intelligent transport systems (ITS) — Data exchange involving roadside modules communication — Part 2: Centre to field device communications using SNMP*, available at https://standards.iso.org/iso/15784/-2/ed-2/en/iso15784-2-PRL.docx

1.2.2 Other References

IAB STD 58

RFC 2578	Structure of Management Information Version 2 (SMIv2), April 1999
RFC 2579	Textual Conventions for SMIv2, April 1999
RFC 2580	Conformance Statements for SMIv2, April 1999

IAB STD 62

RFC 3411	An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks, December 2002
RFC 3412	Message Processing and Dispatching for the Simple Network Management Protocol (SNMP), December 2002
RFC 3413	Simple Network Management Protocol (SNMP) Applications, December 2002

[1] Under development; not yet available on the website

© 2023 AASHTO / ITE / NEMA Do Not Copy Without Written Permission

RFC 3414	User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3), December 2002
RFC 3415	View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP), December 2002
RFC 3416	Version 2 of the Protocol Operations for the Simple Network Management Protocol (SNMP), December 2002
RFC 3417	Transport Mappings for the Simple Network Management Protocol (SNMP), December 2002
RFC 3418	Management Information Base (MIB) for the Simple Network Management Protocol (SNMP), December 2002
IAB STD 78	
RFC 5343	Simple Network Management Protocol (SNMP) Context EngineID Discovery, September 2008
RFC 5590	Transport Subsystem for the Simple Network Management Protocol (SNMP), June 2009
RFC 5591	Transport Security Model for the Simple Network Management Protocol (SNMP), June 2009
RFC 6353	Transport Layer Security (TLS) Transport Model for the Simple Network Management Protocol (SNMP), July 2011
IETF RFC 3826	The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model, June 2004
IETF RFC 7860	HMAC-SHA-2 Authentication Protocols in User-Based Security Model (USM) for SNMPv3, April 2016
IETF RFC 9456	Updates to the TLS Transport Model for SNMP, November 2023.
ISO/IEC 7498-1:1994	Information technology — Open Systems Interconnection — Basic Reference Model: The Basic Model
ISO 26048-1:2024	Intelligent transport systems — Field device Simple Network Management Protocol (SNMP) data interface — Part 1: Global objects
ISO 21217:2020	Intelligent transport systems — Station and communication architecture

1.2.3 Contact Information

1.2.3.1 Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT)

The Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT) may be viewed online at the following webpage:

www.arc-it.net

ARC-IT is the US ITS reference architecture and includes all content from the (now deprecated) National ITS Architecture v7.1 and the Connected Vehicle Reference Implementation Architecture (CVRIA) v2.2.

1.2.3.2 Internet Documents

Obtain Request for Comment (RFC) electronic documents from several repositories online at:

www.rfc-editor.org

1.2.3.3 ISO, IEC, and ISO/IEC Standards

ISO, IEC, and ISO/IEC Standards can be purchased online in electronic format or printed copy from:

Techstreet
Ann Arbor, MI 48108
(800) 699-9277
www.techstreet.com

 © 2023 AASHTO / ITE / NEMA

1.2.3.4 NTCIP Standards

Copies of NTCIP Standards may be obtained from:

NTCIP Coordinator
National Electrical Manufacturers Association
Rosslyn, Virginia 22209-3801
www.ntcip.org
e-mail: ntcip@nema.org

Draft amendments, which are under discussion by the relevant NTCIP Working Group, and amendments recommended by the NTCIP Joint Committee are available.

1.3 GENERAL STATEMENTS

This application profile specifies the Simple Transportation Management Framework Application Profile (AP-STMF). In addition to specifying the standards to be used for the application, presentation, and session layers of the OSI reference model, as defined in ISO/IEC 7498-1, it also addresses aspects of management (e.g., managing the operation of these protocols) and security (e.g., access control). The ITS station architecture, as defined in ISO 21217, enhances the traditional OSI reference model and provides a more complete picture of how these features relate to one another. The ITS station architecture combines the OSI application, presentation, and session layers into a single "facilities layer," combines the OSI transport and network layers into a “networking and transport” (a.k.a., "transnet") layer, and combines the OSI data link and physical layers into a "subnet layer." It also adds a management entity and a security entity that can interact with any of the layers and an application entity that can interact with the facilities layer, the management entity, and the security entity.

Figure 1 depicts the ITS station architecture and identifies the standards used by this application profile within each relevant portion of the ITS station architecture. The application entity, transnet layer, and subnet layer are subjects of other NTCIP standards.

At the facilities layer, this profile uses the Simple Network Management Protocol version 3 (SNMPv3), as defined by RFCs 3411 through 3416.[2] The protocol services are managed using management information defined in the ISO 26048-1 and the SNMP MIB bundle, which includes the MIBs defined in RFC 3411-3413, RFC 3415-3416, RFC 3418, RFC 4807, RFC 5591, RFC 6353). All of this data is defined according to the rules in the second version of the structure and identification of management information (SMIv2), which is defined in RFC 2578-2580. Finally, the security entity provides access control to the managed information by using the transport layer security transport model (TLSTM, RFC 6353), which relies upon the advanced encryption standard (AES, RFC 3826) and the secure hash algorithm 2 (SHA-2, RFC 7860). As a backup, deployments are also required to support the user-based security model (USM, RFC 3414), which also uses AES and SHA-2; but access using the USM should be configured to provide limited access as it is less secure than the TLSTM.

Previous versions of this document specified the use of SNMPv1 and the Simple Transportation Management Protocol (STMP). SNMPv1 and STMP do not provide adequate security for modern ITS deployments and they are no longer supported by this version of AP-STMF.

[2] SNMPv3 is formally defined by RFCs 3411-3418, but within the NTCIP, RFC 3417 is considered to be a part of the transnet layer and RFC 3418 is considered to be part of the management entity.

© 2023 AASHTO / ITE / NEMA Do Not Copy Without Written Permission

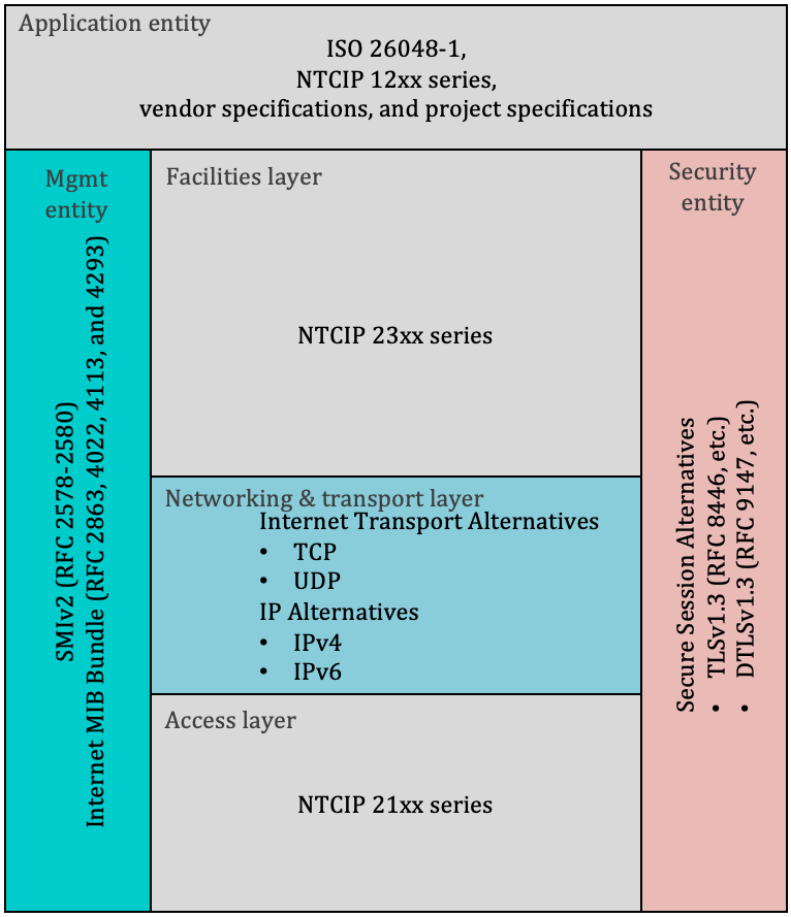

Figure 1. STMF - Application Profile Relationship.

1.4 TERMS

For the purposes of this standard, the following definitions apply:

Application entity	A portion of the ITS station architecture that resides above the OSI reference model and represents the end application.
Application layer	That portion of the OSI Reference Model (Layer 7) that provides access to the communications services.
Data link layer	That portion of the OSI Reference Model (Layer 2) responsible for flow control, framing, synchronization, and error control over a communications link.
Facilities layer	A portion of the ITS station architecture that is equivalent to the Session, Presentation, and Application Layers of the OSI reference model
Intelligent transportation systems	A major national initiative to apply information, communication, and control technologies in order to improve the efficiency of surface transportation.
Management entity	A portion of the ITS station architecture that provides management functionality of the communications stack and the application entity.
Network layer	That portion of an OSI Reference Model (Layer 3) responsible for data transfer across the network, independent of both the media comprising the underlying subnetworks and the topology of those subnetworks.
Open systems interconnection	An international effort to facilitate communications among computers of different manufacture and technology.

 © 2023 AASHTO / ITE / NEMA

OSI reference model	A widely-accepted structuring technique that provides an abstract representation of the communication process that is divided into seven basic functional layers.
Physical layer	That portion of an OSI Reference Model (Layer 1) responsible for the electrical and mechanical interface between communicating systems.
Presentation layer	That portion of an OSI Reference Model (Layer 6) responsible for converting and organizing data from one format to another.
Proforma	A guide provided in advance to prescribe form or describe items.
Security entity	A portion of the ITS station architecture that provides security services to the communication stack and the application entity.
Session layer	That portion of an OSI Reference Model (Layer 5) which manages a series of data exchanges between end-system applications.
Subnet layer	A portion of the ITS station architecture and logically represents a physical network within a network. All devices on a subnet share a common physical and data link layer.
Transnet layer	A portion of the ITS station architecture that resides above the subnet and provides equivalent functionality to the Network and Transport layers of the OSI reference model.
Transport layer	That portion of an OSI Reference Model (Layer 4) which attempts to guarantee reliable data transfer between two end-systems, using flow control and error recovery, and may provide multiplexing.

1.5 ABBREVIATIONS AND ACRONYMS

The abbreviations used in this Standard Publication are defined as follows:

AASHTO American Association of State Highway and Transportation Officials
AP Application Profile
ISO International Organization for Standardization
ITE Institute of Transportation Engineers
ITS Intelligent Transportation Systems
NEMA National Electrical Manufacturers Association
NTCIP National Transportation Communications for ITS Protocol
OSI Open Systems Interconnection
PICS Protocol Implementation Conformance Statement
RFC (Internet) Request for Comments
SNMP Simple Network Management Protocol
STD (Internet) Standard
STMF Simple Transportation Management Framework

© 2023 AASHTO / ITE / NEMA Do Not Copy Without Written Permission

Section 2
CONFORMANCE

2.1.1 Generation of Profile Implementation Conformance Statement (PICS)

All implementations of this standard shall be supplied with a PICS generated by the implementer or supplier by using the protocol requirements list available at https://standards.iso.org/iso/15784/-2/ed-2/en/ using the file named ISO_15784-2_PRL.docx to indicate the appropriate level of support provided by the implementation.

2.1.2 Evolution of Standards

Within many standards organizations, updates are achieved by issuing an amendment or creating a new edition of the standard, which is assigned the same document identifier with a new version and/or date. While the Internet Architecture Board (IAB) follows this approach with standards (i.e., those with STD designations), the Internet Engineering Task Force (IETF) assigns a new (typically sequential) number to each RFC published, even when it replaces an existing RFC. While updates and revisions of RFCs are listed at the top of an official RFC, there are many secondary sites from which RFCs can be downloaded. For the more recent update and revision information, RFCs should be downloaded from the https://www.rfc-editor.org/ website.

The STDs and RFCs referenced by this document define a baseline definition of conformance based on the standards published at the time that this document was developed. This document is intended to promote interoperability and unambiguously defining the scope of RFCs covered; it is not intended to restrict the implementation of updates or revisions to these RFCs. Parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent updates and revisions in a manner that will promote secure interoperability of ITS equipment.

2.2 TRANSPORT LAYER REQUIREMENTS

2.2.1 User Datagram Protocol (UDP)

2.3 GENERAL REQUIREMENTS

Implementations claiming conformance to the Simple Transportation Management Framework Application Profile shall conform to ISO 15784-2. The protocol requirements list (PRL) for ISO 15784-2 is provided at https://standards.iso.org/iso/15784/-2/ed-2/en/. At the time that this document was published, the file had the name ISO_15784-2_PRL.docx

NOTE — Deployments should disable access via prior versions of SNMPv3 and should provide minimal access via the user-based security model (USM) as might be needed during times of network stress, which can limit the access via the transport security model (TSM).

§

© 2023 AASHTO / ITE / NEMA Do Not Copy Without Written Permission