



U.S. Department of
Transportation



Intelligent Transportation Systems Standards Fact Sheet

NTCIP 2302

April 2002

National Transportation Communications for ITS Protocol (NTCIP) – Application Profile for Trivial File Transfer Protocol

Overview

The National Transportation Communications for Intelligent Transportation System (ITS) Protocol (NTCIP) is a family of standards that provides both the rules for communicating (called protocols) and the vocabulary (called objects) necessary to allow electronic traffic control equipment from different manufacturers to operate with each other as a system. The NTCIP is the first set of standards for the transportation industry that allows traffic control systems to be built using a “mix and match” approach with equipment from different manufacturers. Therefore, NTCIP standards reduce the need for reliance on specific equipment vendors and customized one-of-a-kind software. To assure both manufacturer and user community support, NTCIP is a joint product of the National Electronics Manufacturers Association (NEMA), the American Association of State Highway and Transportation Officials (AASHTO), and the Institute of Transportation Engineers (ITE).

Prior to the establishment of the NTCIP, traffic management centers used a number of proprietary protocols to exchange information with field devices such as traffic signal controllers and dynamic message signs. The goal of all NTCIP standards is to identify a common set of non-proprietary communications protocols that address requirements for center-to-center and center-to-field communications and promote interoperability.

What is this standard for?

This standard, **NTCIP 2302 – Application Profile for Trivial File Transfer Protocol**, defines the rules and procedures for simple file exchange between two entities. It is intended for applications that do not require complex interactions between the entities involved in the transfer. It specifies the requirements for the implementation of a simple file transfer mechanism in a roadside device or traffic management center and adapts an Internet standard (IAB STD 33 – RFC 1350:1992, TFTP Protocol) to transportation. It restricts operations only to transfers and does not provide authentication, thus imposing only minimal implementation requirements.

This standard defines a combination of base standards and protocols used to provide specific functions and services at layers 5, 6, and 7 of the Open Systems Interconnection (OSI) Reference Model. The seven-layered model describes the basic functions and services of a communication protocol.

Who uses it?

This standard should be used by equipment manufacturers, systems integrators, and transportation agency personnel. Manufacturers and integrators should understand the specific implementation and operational requirements that it defines. Specification writers and acceptance testers can also find this standard useful, since it defines a profile implementation conformance specification (PICS). Manufacturers, integrators, and users can use this standard as:

- a. A checklist to reduce the risk of failure to conform to the standard through oversight;
- b. A detailed indication of the capabilities of the implementation;
- c. A basis for initially checking the possibility of inter-operating with another implementation; and
- d. The basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

The NTCIP family of standards is a joint project of the following standards development organizations:

American Association of State Highway and Transportation Officials (AASHTO)

Institute of Transportation Engineers (ITE)

National Electrical Manufacturers Association (NEMA)

(Contact information is shown at the end of this fact sheet)

To obtain a copy of this standard, please contact:

Global Engineering Documents

Web site: <http://global.ihs.com>

Publication Date: March 2002

How is it used?

This profile is used to define the rules and procedures for exchanging large files between two entities and is intended primarily for center-to-field applications. For these applications, where field devices may not support full file and directory services, this standard, **NTCIP 2302 – Application Profile for Trivial File Transfer Protocol** is applicable. Where the field devices support full file and directory service, NTCIP 2303 – Application Profile for File Transfer Protocol, should be considered.

Scope

This standard is applicable to transportation devices and management systems that operate in a variety of transportation applications. As an application profile, it specifies a set of features and a combination of standards and protocols applicable to file exchange in a system. It specifies requirements for the application, presentation, and session layers (layers 7, 6, and 5) of the OSI Reference Model.

Related documents

To accommodate the broad scope of this standardization effort, the NTCIP standard has been divided into numerous individual standards. A detailed list of related documents is available on the **NTCIP 9001 – NTCIP Guide** fact sheet. (The NTCIP Guide is also available on-line at www.ntcip.org).

IAB STD 3 – RFC 1122: 1989, Internet Architecture Board (IAB) Requirements For Internet Hosts - Communication Layers, RFC 1123: 1989, Requirements for Internet Hosts - Application and Support

IAB STD 33 – RFC 1350:1992, IAB TFTP Protocol (Revision 2)

ISO/IEC 7498-1:1994 – Information technology - Open Systems Interconnection, Basic Reference Model: The Basic Model

ISO/IEC TR 10000-1:1995 – Information Technology - Framework and Taxonomy of International Standardized Profiles, Part 1: General principles and documentation framework

[NTCIP 2303 – Application Profile for File Transfer Protocol](#)

[NTCIP 8003 – Profile Framework](#)

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