ATIS-1000007.200

GENERIC SIGNALING AND CONTROL PLANE SECURITY REQUIREMENTS FOR EVOLVING NETWORKS

AMERICAN NATIONAL STANDARD FOR TELECOMMUNICATIONS

The Alliance for Telecommunication Industry Solutions (ATIS) is a technical planning and standards development organization that is committed to rapidly developing and promoting technical and operations standards for the communications and related information technologies industry worldwide using a pragmatic, flexible and open approach. Over 1,100 participants from more than 350 communications companies are active in ATIS' 23 industry committees and its Incubator Solutions Program.

< 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CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time.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.

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.

ATIS-1000007.2006, *Generic Signaling and Control Plane Security Requirements for Evolving Networks*

Is an American National Standard developed by the **Security (SEC)** 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

ATIS-1000007.2006

American National Standard for Telecommunications

GENERIC SIGNALING AND CONTROL PLANE SECURITY REQUIREMENTS FOR EVOLVING NETWORKS

Secretariat

Alliance for Telecommunications Industry Solutions

Approved April 6, 2006

American National Standards Institute, Inc.

Abstract

Many security threats exist to the signaling and control plane of a telecommunications network. In addition, new security threats to the signaling and control plane are being introduced as the network evolves. The purpose of this document is to provide generic signaling and control plane security requirements and a general security framework to mitigate security risks in the evolving telecommunications networks.

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.

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Packet Technologies and Systems Committee (PTSC) -- formerly T1S1 -- develops and recommends standards and technical reports related to services, architectures, and signaling, in addition to related subjects under consideration in other North American and international standards bodies. PTSC coordinates and develops standards and technical reports relevant to telecommunications networks in the U.S., reviews and prepares contributions on such matters for submission to U.S. ITU-T and U.S. ITU-R Study Groups or other standards organizations, and reviews for acceptability or per contra the positions of other countries in related standards development and takes or recommends appropriate actions.

ANSI guidelines specify two categories of requirements: mandatory and recommendation. The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages.

This document provides generic signaling and control plane security requirements for evolving networks. This document is part of a suite of signaling and control security standards as shown in Figure #1 below. As the primary requirements document in this suite of standards, it provides a general security framework and overall security requirements which are used by the other detailed security standards.

This standard is in alignment with ITU-T Recommendation X.805 [ITU X.805].

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

At the time it approved this document, PTSC, which is responsible for the development of this Standard, had the following members:

R. Hall, PTSC Chair
J. Zebarth, PTSC Vice-Chair
S. Carioti, ATIS Disciplines
S. Barclay, ATIS Secretariat
C. Underkoffler, ATIS Chief Editor
M. Lee, PTSC Technical Editor

Organization Represented	Name of Representative
AcmePacket	Kevin Miller
Alcatel USA Inc.	Ken Biholar
AT&T	Martin Dolly George Stanek (Alt.)
BellSouth Telecommunications	David M. Brady
C.S.I Telecommunications	Michael S. Newman Thomas G. Croda (Alt.)
Cingular Wireless LLC	Don Zelmer Marc Grant (Alt.)
Cisco Systems	Rajiv Kapoor Chip Sharp (Alt.)
Defense Info. Systems Agency	Chris Fitzgerald Ryan Kuseski (Alt.)
Ericsson Incorporated	Susana Sabater-Maroto Stephen Hayes (Alt.)
FBI ESTS	Gregory Milonovich Eric Mason (Alt.)

Organization Represented	Name of Representative
Harris Corporation	Marlis Humphrey
Hewlett-Packard	Steve Mills
Intelsat	Mark T. Neibert
Juniper Networks	Rao Cherukuri Kireeti Kompella (Alt.)
Lucent Technologies	Stuart O. Goldman
MCI	J. Martin Carroll Robert Schafer (Alt.)
National Communications System	Nicholas Andre Jean Trakinat (Alt.)
Nokia Telecommunications	Joyabrata Mukherjee Ed Ehrlich (Alt.)
Nortel Networks	Joseph A. Zebarth
Qwest	Steve Showell Michael Fargano (Alt.)
SBC Communications, Inc.	B.S. Sambasivan Bob Hall (Alt.)

Organization Represented	Name of Representative
Siemens Info & Comm Ntwks, Inc.	Ron Franks David E. Francisco (Alt.)
Sprint Corporation	Mark L. Jones
Telcordia Technologies	Wesley Downum Cliff Halevi (Alt.)
Tellabs Operations, Inc.	William A. Walker
Tridea Works	Greg Ratta
Verizon Communications	Dave Morris Wendy Pugh (Alt.)

The Security (SEC) Subcommittee was responsible for the development of this document.

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

American National Standard for Telecommunications –

Generic Signaling and Control Plane Security Requirements for Evolving Networks

1 INTRODUCTION, SCOPE, PURPOSE, & APPLICATION

1.1 Introduction

Many security threats exist to the signaling and control plane of a telecommunications network. In addition, new security threats to the signaling and control plane are being introduced as the network evolves. The purpose of this document is to provide generic signaling and control plane security requirements and a general security framework to mitigate security risks in the evolving telecommunications networks.

In some telecommunications networks, signaling and control traffic is transmitted on a separate network from that carrying the service provider's end-user traffic. In these networks, security threats to the signaling and control plane are isolated from any malicious activity on the end-user plane. However, in an increasing number of evolving telecommunications networks, signaling and control traffic is combined on a single transport network with end user traffic. Combining traffic in this manner minimizes costs by requiring only a single integrated network infrastructure -- but new security challenges are introduced. Threats in the end-user plane now become threats to the signaling and control plane, since the signaling and control plane becomes accessible to the multitude of end-users.

1.2 Scope

This document addresses generic signaling and control plane security aspects of evolving telecommunications networks. Evolving telecommunications networks often combine legacy telecommunication facilities with new technologies such as Wireless, ATM, and Internet Protocol transport mechanisms. The security recommendations given in this document apply to service provider networks and may also be applicable to individual company corporate enterprise networks.

This document is based on Recommendation X.800, *Security Architecture for Open Systems Interconnection for CCITT Applications*, and Recommendation X.805, *Security Architecture for Systems Providing End-to-End Communications*. {Reference [ITU X.800], [ITU X.805]}