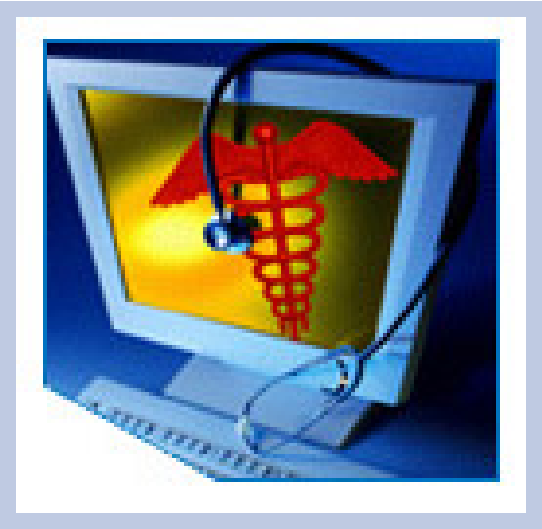
August 27, 2008
Version 1.2

HITSP Secured Communication Channel Transaction

HITSP/T17



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DOCUMENT CHANGE HISTORY

Version Number	Description of Change	Name of Author	Date Published
1.0	Review Copy	Security and Privacy Technical Committee	July 20, 2007
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1.2	Released for Implementation	Security, Privacy and Infrastructure Domain Technical Committee	August 27, 2008

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FIGURES AND TABLES

1.0 INTRODUCTION

As an introduction to the HITSP Secured Communication Channel Transaction, this section provides a high level overview of the information sharing scenario enabled by following this specification, provides a document map of the construct relationships for this specification, acknowledges the copyright protections that pertain, and provides a list of key reference documents and background material. If you are already familiar with this information, proceed to Section 2.0 Transaction Definition.

1.1 OVERVIEW

This section describes the contents of this specification and provides a high level definition of this Transaction and background information about the underlying Components that the Transaction is based on.

The Secured Communication Channel Transaction provides the mechanisms to ensure the authenticity, integrity, and confidentiality of transmissions, and the mutual trust between communicating parties. Its objectives include providing:

- Mutual node authentication to assure each node of the others' identity;
- Transmission integrity to guard against improper information modification or destruction while in transit; and
- Transmission confidentiality to ensure that information in transit is not disclosed to unauthorized individuals, entities, or processes

This Secured Communication Channel Transaction supports both application and machine credentials, and user machines (user nodes). Details of how a user authenticates to a node or application is beyond the scope of this construct.

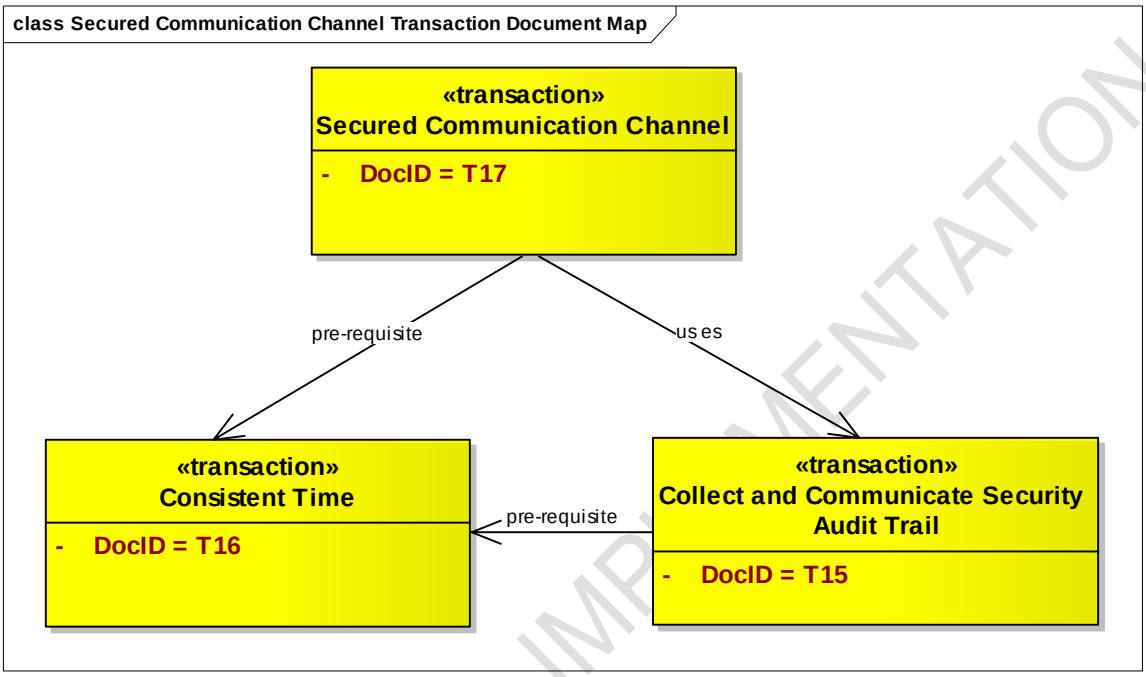
Practical examples of this Transaction are a secured communication channel between a Personal Health Record (PHR) system and an Electronic Health Record (EHR) system, or between an EHR system and a laboratory.

1.2 TRANSACTION DOCUMENT MAP

Each HITSP specification describes a suite of constructs that, taken as a whole, define how to integrate and constrain existing standards and specifications that will satisfy the requirements for the HITSP construct. There are four types of HITSP constructs called Interoperability Specifications (IS), Transaction Packages (TP), Transactions (T), and Components (C). Interoperability Specifications define the context(s) in which any other HITSP construct may be used. The current Secured Communication Channel Transaction specification is used with other constructs to meet the requirements of one or more ISs. Review Section 1.2 Interoperability Specification Document Map from the relevant IS to better understand the context, dependencies, and relationships between the constructs used to meet the IS requirements. The Document Map in Figure 1.2-1 depicts how this construct integrates and constrains

HITSP constructs to support the information exchange, within the defined context of this document. Implementers should read the documents that describe the constructs depicted in the diagram for their details and specific uses.

Figure 1.2-1 Transaction Document Map



1.3 COPYRIGHT PERMISSIONS

COPYRIGHT NOTICE

IHE materials used in this document have been extracted from relevant copyrighted materials with permission of Integrating the Healthcare Enterprise (IHE) International. Copies of this standard may be retrieved from the IHE Web Site at www.ihe.net.

1.4 REFERENCE DOCUMENTS

This section provides a list of key reference documents and background material. If you are already familiar with this information, proceed to Section 2.

A list of key reference documents and background material is provided in the table below. These documents can be retrieved from the www.hitsp.org Web Site.

Table 1.4-1 Reference Documents

Reference Document	Document Description
HITSP Interoperability Specification Overview	Provides background information about the HITSP and its role in the overall U.S. efforts to realize large scale interoperability of health information. The document also provides a description of the HITSP process for healthcare standards harmonization and explains how to use the Interoperability Specifications and other related documents to inform your health IT product development or product refinement.
HITSP Conventions List	Describes the conventions that are used to convey the full descriptions and usage of standards in the HITSP specifications
HITSP Acronyms List	Lists and defines the acronyms used in this document
HITSP Glossary	Provides definitions for relevant terms used by HITSP documents
HITSP Harmonization Framework	Describes the current framework within which the Interoperability Specifications are built
TN900 - Security and Privacy Technical Note	Developed as a reference document to provide the overall context for use of the HITSP Security and Privacy constructs. It includes the following: • The scope, reference policy background, and Security and Privacy principles used in the development of the constructs • A detailed description and schematics of the conceptual relationship between the Security and Privacy constructs • A mapping of existing standards and constructs to be used in meeting the stated requirements of the AHIC Use Cases • A list of identified gaps and the recommended approaches to resolving those gaps • A roadmap for how the Security and Privacy constructs will evolve and eventually align with other HITSP Interoperability Specifications • A conceptual framework for Security and Privacy management, including reference information on privacy policies, risk assessment, and risk management • A glossary of terms used in all the Security and Privacy construct documents • A description of the application of the Security and Privacy constructs to the HITSP Interoperability Specifications for the three initial AHIC Use Cases – Biosurveillance, Electronic Health Records - Laboratory Results Reporting, and Consumer Empowerment HITSP will periodically update this Technical Note as required by the introduction of new contexts for use.

2.0 TRANSACTION DEFINITION

Transactions are a logical grouping of actions, including necessary content and context that must all succeed or fail as a group.

2.1 CONTEXT OVERVIEW

This section provides a general description of the Transaction. It includes a detailed definition of the Transaction and the reason for its use. It also provides all the necessary background information that further describes the context in which the Transaction is needed, and the Components or composite standards that the Transaction is based on.

The scope of the Secured Communication Channel Transaction is limited to a session oriented, synchronous, point-to-point communication channel. The focus is on the establishment of a secure path through which data can be transmitted, and not on the content of the data being transmitted. In addition, this Transaction does not include local user authentication in its scope.

The following are the requirements derived from the initial Use Cases for this Transaction:

1. Session used to transmit data has mutual authentication of the nodes involved
2. Data are transmitted with confidentiality and transmission integrity

This construct utilizes the Authenticate Node Transaction from the Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Audit Trail and Node Authentication (ATNA) Integration Profile (IHE-ITI-TF ATNA V4.0).

2.1.1 TRANSACTION CONSTRAINTS

This section describes the constraints that limit the context in which the Transaction construct may be used. A constraint describes a rule that limits the use of the actors, actions or data within the given context, or to which the interactions must conform to be used within the described context. It is a description of the limits and scope of the interactions and can describe actions or events that are not part of the initial definition for the context.

Table 2.1.1-1 Transaction Constraints

Constraint
Only communications requiring the attributes of transmission authenticity, transmission confidentiality, and transmission integrity need utilize this construct for session oriented, synchronous, point-to-point communication channels.

Consistent with this constraint, those communications that require the attributes of transmission authenticity, confidentiality, and integrity shall either be prohibited, or designed and verified to prevent access to protected health information (PHI) if they are not communicated through connections that provide session oriented, synchronous, point-to-point communication channels. Note: When there is a

known security mechanism connecting two secured networks (e.g. physical isolation, or VPN), this construct may be determined by the local security administrators to be unnecessary. The Node shall be configurable to disable the use of this construct.

2.1.2 TECHNICAL ACTORS

This section describes the technical actors that need to be integrated in order to meet the interoperability requirements for this Transaction. A Technical Actor represents an entity internal to a software application, which is engaged in one or more specific Transactions to support a specific aspect of a real world information interchange (e.g. set of message exchanges). The table below lists the technical actors involved, the relevant definition of their roles, and an indication of their requirements for the Transaction.

Table 2.1.2-1 Technical Actors

Actor	Description	Used in Component/ Composite Standard	Required = R Optional = O Conditional = C
Node	The originating or terminating point of information or signal flow in a telecommunications network. This actor is equivalent to the *Secure Node* in the IHE-ITI-TF ATNA Transaction.	IHE-ITI-TF ATNA	R

2.1.3 ACTOR INTERACTIONS

The following sections document the content of the Transaction and the basic process flows that are supported by the Transaction. They describe the underlying events that fulfill the Transaction, the sequence and timing of the events, and the specific actors involved. Process flow diagrams are provided to illustrate the process relationships.

Figure 2.1.3-1 Technical Actor Interactions

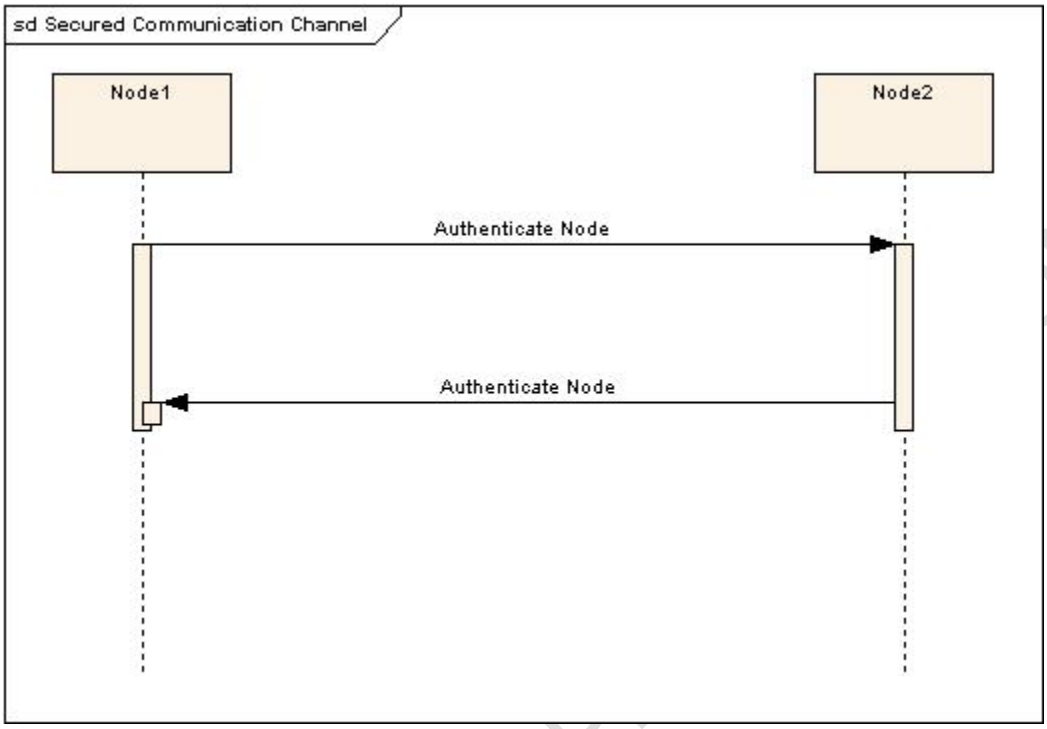


Figure 2.1.3-1 illustrates the mutual authentication of nodes producing a secured communications channel. The detailed actor interactions for authentication are deliberately omitted from the diagram and are incorporated by reference through IHE-ITI-TF ATNA V4.0.

The act of node authentication precedes all Transactions for HITSP interoperability constructs that require a secured communication channel. Once the secured communication channel is established, the HITSP Transactions continue inside the channel according to the Interoperability Specification.

2.1.4 PRE-CONDITIONS

This section describes the necessary conditions that must be in place prior to the start of the workings of the Transaction. The pre-conditions are used to convey any conditions that must be true at the outset of a Transaction. They describe the context that must be established before the Transaction is executed. They are not however the triggers that initiate the Transaction. Where one or more pre-conditions are not met, the behavior of the Transaction should be considered uncertain.

Table 2.1.4-1 Pre-conditions

Pre-condition
There is a mutually agreed upon set of policies and procedures for establishment of mutually acceptable identity credentials.
Existence of active and network accessible nodes.
Consistent Time construct is a pre-requisite for this Transaction

Pre-condition
A policy defining what is to be audited exists
Audit record source is initialized to the audit policy
Audit record repository is active and designated as the destination for recorded audit events
Policy defining the protection of the log and audit exists and is being enforced
Identities are managed

2.1.4.1 Process Triggers

This section describes the triggers, including actors and/or processes, which are necessary to start the Transaction. They can invoke an automatic or manual process or result that in turn starts off the Transaction. A trigger is not the same as a pre-condition that describes a context that needs to be in place at the start of the event.

Table 2.1.4.1-1 Process Triggers

Process Trigger
The Secured Communication Channel Transaction is triggered when a secured information exchange between two nodes is requested. The node actor represented in this Transaction is equivalent to the secure node actor in the IHE-ITI-TF ATNA Transaction. All triggers associated with this Transaction are specified in the IHE-ITI-TF ATNA Transaction.

2.1.5 POST-CONDITIONS

This section provides an overview of the conditions or results that must occur at the end of the Transaction in order for the Transaction to be deemed successfully completed. This includes any required outputs from the Transaction, or specific actor states.

Table 2.1.5-1 Post-conditions

Post-condition
A secured communication channel providing transmission confidentiality, transmission integrity, and session authenticity is established between the two nodes. This secured communication channel will be used for all future secure transmissions between the two nodes.

2.1.5.1 Required Outputs

This section identifies the required outputs that must be produced at the end of the Transaction in order for the Transaction to be deemed successfully completed. This includes the format and usage of the required output.

Table 2.1.5.1-1 Required Output

Required Output	Format/Usage
Require node to record an audit event to indicate attempted connections from nodes that are not mutually authenticated.	See HITSP/T15 - Collect and Communicate Security Audit Trail
Enable node to record an audit event to indicate successful connection from nodes that are mutually authenticated.	See HITSP/T15 - Collect and Communicate Security Audit Trail

2.1.6 DATA FLOWS

This section describes the basic data flows that are supported by this Transaction. It also describes the format of the data, the data sources, and the relevant actors involved in the successful flow of data for the Transaction. Any prevailing pre and post-conditions are identified, as well as the purpose of each data post-condition associated with each Transaction. Any data that need to be made available to particular actors are highlighted, as well as the conditions and processes that will use the data to achieve the stated post-conditions.

This is an IHE ATNA Node Authentication Transaction, which in turn calls on various standards, such as TLS and RSA certificates. Please refer to IHE-ITI-TF ATNA *Authenticate Node Transaction* for details on data flow.

2.2 LIST OF HITSP CONSTRUCTS

The following list of constructs and their definitions are used by the Transaction specification.

Table 2.2-1 List of HITSP Constructs

Construct Name	Description	Event/Action Code	Content
HITSP/T15 - Collect and Communicate Security Audit Trail	Provides a means to ensure that security policies are being enforced and that risks are being mitigated	Various (HITSP Use Case dependent)	Identification and management of audit trigger events and audit event outputs.

2.2.1 CONSTRUCT DEPENDENCIES

The following table shows a list of Components with their existing dependencies. Dependencies usually exist when there are some additional pre-requisites for a specific construct:

Table 2.2.1-1 Construct Dependencies

Construct	Depends On (Name of Component that it depends on)	Dependency Type (Pre-condition, post-condition, general)	Purpose (Reason for this dependency)
HITSP/T17 - Secured Communication Channel	HITSP/T15 - Collect and Communicate Security Audit Trail	General	Identification and management of audit trigger events and audit event outputs

2.2.2 ADDITIONAL CONSTRAINTS ON REQUIRED CONSTRUCTS

This section describes the constraints that further limit the constructs that are used by this Transaction.

Table 2.2.2-1 Additional Constraints on Required Constructs

Data Element	Construct	Constraint	Constraint Type (Pre-condition, post-condition, general)	Purpose (Reason for this constraint)
No applicable constraints				

2.3 STANDARDS

It is important to understand that the standards selected here are within the context of the specific requirements and do not necessarily reflect selection in other contexts. The standards used by this Transaction specification fall into the following categories:

- Regulatory guidance is a legal or other authoritative declaration that HITSP must abide by in standards selection (see Section 2.3.1)
- Selected standards are necessary for interoperability. These are standards that are used to meet information exchange requirements of associated constructs. For example, they are used to realize direct information exchange, to provide the transport mechanism, to specify the content, or to address security (see Section 2.3.2)
- Informative reference standards provide additional background information or guidance, and are not required for interoperability. These standards are not required to implement the Transaction specification (see Section 2.3.3)

2.3.1 REGULATORY GUIDANCE

The following table provides a list of legal or other authoritative guidelines that HITSP must abide by, or has agreed to use as guidance in the selection of standards. Note that only the referenced sections of the regulations are relevant to the Transaction specification.

Table 2.3.1-1 Regulatory Guidance

Standard	Description
No applicable regulatory standards	

2.3.2 SELECTED STANDARDS

The following table provides a list of standards that are used to meet information exchange requirements of this Transaction specification, and a detailed description of each standard.

Table 2.3.2-1 Selected Standards

Standard	Description
Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0, Audit Trail and Node Authentication (ATNA) Integration Profile	Audit Trail and Node Authentication (ATNA) establishes the characteristics of a Basic Secure Node. It describes the security environment (user identification, authentication, authorization, access control, etc.) assumed for the node so that security reviewers may decide whether this matches their environments. It defines basic auditing requirements for the node. It defines basic security requirements for the communications of the node using TLS or equivalent functionality. It establishes the characteristics of the communication of audit messages between the Basic Secure Nodes and Audit Repository nodes that collect audit information. This integration profile has been designed so that specific domain frameworks may extend it through an option defined in the domain specific technical framework. Extensions are used to define additional audit event reporting requirements, especially actor specific requirements. The latest version of the IHE Technical Framework is available at www.ihe.net

2.3.3 INFORMATIVE REFERENCE STANDARDS

The following table lists standards that provide additional background information or guidance; however, they are not required for the implementation of the Transaction specification.

Table 2.3.3-1 Informative Reference Standards

Standard Name	Description/Usage
No applicable informative standard references	

3.0 TECHNICAL IMPLEMENTATION

3.1 CONFORMANCE

This section describes the conformance criteria, which are objective statements of requirements that can be used to determine if a specific behavior, function, interface, or code set has been implemented correctly.

3.1.1 CONFORMANCE CRITERIA

In order to claim conformance to this construct specification, an implementation must satisfy all the requirements and mandatory statements listed in this specification, the associated HITSP Interoperability Specification, its associated construct specifications, as well as conformance criteria from the selected base and composite standards. A conformant system must also be constrained as specified in table 2.1.1-1, and implement all of the required actors from table 2.1.2-1, within the scope, subset or implementation option that is selected from the associated Interoperability Specification.

Claims of conformance may only be made for the overall HITSP Interoperability Specification with which this construct is associated.

3.1.2 CONFORMANCE SCOPING, SUBSETTING AND OPTIONS

A HITSP Interoperability Specification must be implemented in its entirety for an implementation to claim conformance to the specification. HITSP may define the permissibility for actor scoping, subsetting or implementation options by which the specification may be implemented in a limited manner. Such scoping, subsetting and options may extend to associated constructs, such as this construct. This construct must implement all requirements within the selected scope, subset or options as defined in the associated Interoperability Specification to claim conformance.

4.0 APPENDIX

The following sections include relevant materials referenced throughout this document.

No additional information at this time.

5.0 CHANGE HISTORY

The following sections provide the history of all changes made to this document since the last publication.

5.1 OCTOBER 5, 2007

The changes in this cycle address the following comments received during the Public Comment and Inspection Testing period (July 23, 2006 - August 17, 2007):

1205, 1239, 1240, 1261

The full text of the comments along with the Technical Committee's disposition can be reviewed on the HITSP Public Web Site.

5.2 OCTOBER 15, 2007

Upon approval by the HITSP Panel on October 15, 2007, this document has been moved to Version 1.1. This document is now Released for Implementation.

5.3 JULY 11, 2008

Updated to place standards into 3 categories: Regulatory, Selected, and Informative References. Also provided clarifications for VPN use

5.4 AUGUST 20, 2008

This document has been modified to reflect the updated HITSP approach to categorizing standards as Regulatory Guidance, Selected Standards, and Informative References.

The following standard was added as selected, as a more specific standard reference to ATNA Profile:

- Integrating the Healthcare Enterprise (IHE) IT Infrastructure Technical Framework (ITI-TF) Revision 4.0, Audit Trail and Node Authentication (ATNA) Integration Profile

5.5 AUGUST 27, 2008

Upon approval by the HITSP Panel on August 27, 2008, this document is now Released for Implementation.