

Operating Policy and Procedure

SUBJECT: eHEALTH EXCHANGE DIGITAL CREDENTIALS		
Status: FINAL – Approved by CC	Policy #: OPP-9	
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I. Purpose

eHealth Exchange digital certificates, are issued, managed, held and revoked in accordance with the DURSA and Federal Bridge Certificate Authority (FBCA) policy, under the authority of the eHealth Exchange Coordinating Committee (Coordinating Committee). These certificates serve as the “Digital Credentials” referenced in the DURSA and are used by eHealth Exchange Participants to authenticate to each other prior to the transmission of Message Content, to encrypt the communications channel for the exchange of Message Content, and to digitally sign certain components of the Message Content.

eHealth Exchange Digital Credentials are only intended to be used to exchange Message Content between eHealth Exchange Participants, as governed by the DURSA and Coordinating Committee. This OP&P clarifies several deployment options.

Use of Digital Credentials for other purposes or for exchanging data with organizations who are not eHealth Exchange Participants, increases risk to those Participants. For example, use of Digital Credentials for other uses creates a dependency, putting other uses and applications at risk since the Digital Credentials may be revoked, held, or re-issued in accordance with the DURSA, FBCA and Coordinating Committee.

II. Policy

1. While it is discouraged, eHealth Exchange Participants may, at their own risk, utilize eHealth Exchange Digital Credentials (which are x.509 digital certificates) for purposes other than to secure eHealth Exchange gateway 2-way-TLS connections and signing components of eHealth Exchange transacted messages, with the following conditions:
 - a. Signed public certificate and private key may only be used to facilitate the security of messages transacted for healthcare-related purposes and/or DURSA Permitted Purposes.
 - b. Signed public certificate and private key may only be used to secure only SOAP or REST based transport or for digital signatures creation or validation.
 - c. Private keys may only be installed in a Secure Environment, and must never be duplicated outside of that Secure Environment or shared in any way.
 - d. Private keys may only be installed in a Secure Environment that is also acting as the eHealth Exchange Participant gateway.

eHealth Exchange Participants may:

- a. Install the eHealth Exchange root certificate on any server.
- b. Install the eHealth Exchange intermediate certificate on any server.
- c. Install the eHealth Exchange public key and signed server certificate on any server.

These other uses would not be supported by eHealth Exchange or governed by the Coordinating Committee; however, the eHealth Exchange certificate support processes would still apply.

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Organizations incur risk of a certificate being revoked, held, or re-issued at any time and could thus experience unexpected operational outages for systems using eHealth Exchange x.509 certificates for other purposes.

2. Configure their Secure Environment to only allow eHealth Exchange Participant access

Participants must configure their eHealth Exchange gateway to only accept inbound requests from other eHealth Exchange Participants, other than as allowed in section II(1) above. Configuration of each environment is unique, and thus eHealth Exchange Support Staff are unable to provide authoritative and complete configuration requirements. However, Participants must meet the following requirements, at a minimum, and with the exceptions as permitted in II(1) above:

- a. Require their Subscriber and security staff to read, review, and attest they have mitigated each risk defined in the current version of the eHealth Exchange Security Assessment. This attestation will be required each time a Participant x.509 certificate is issued or re-issued.
- b. Have implemented x.509 certificate filtering to prevent non-eHealth Exchange certificates from being accepted at the 2-way-TLS layer.
- c. Have implemented x.509 certificate revocation checking to prevent “held”, or “revoked” eHealth Exchange certificates from being accepted at the 2-way-TLS layer.
- d. Have implemented x.509 certificate revocation checking to prevent expired, corrupted, or other invalid eHealth Exchange certificates from being accepted at the 2-way-TLS layer.
- e. Have implemented their PRODUCTION Secure Environment so that it does not accept eHealth Exchange VALIDATION certificates, and vice versa.
- f. Allow a monthly, limited scope, security test by eHealth Exchange Support Staff. This test will utilize technical controls designed to prevent Protected Health Information (“PHI”) from being accessed during the test, such controls to be open to inspection by Participants’ Subscribers. THIS SECURITY TEST IS NOT A REPRESENTATION BY THE eHEALTH EXCHANGE COORDINATING COMMITTEE OR ITS DESIGNEE OF PROPER SECURITY CONFIGURATION, nor is it a substitute for a Participant security audit. In the event a deficiency is identified, it will be treated as a business confidential/need to know only disclosure, and eHealth Exchange Support Staff will work privately with Participant to remediate such identified defects using Information Security “Responsible Disclosure” guidelines.

3. TLS Version 1.2 Conformance Statements

Prior to the approval of these statements, the baseline for the eHealth Exchange was TLS 1.0. The intent of this document is to establish TLS 1.2 as the new baseline for all eHealth Exchange gateways, and to help ensure that gateways do not establish TLS 1.0/1.1 connections, in production, to other eHealth Exchange gateways, while still allowing TLS 1.0/1.1 to be deployed at the gateway.

The rationale for these changes is to:

- a. Update the TLS connections to utilize the currently available TLS 1.2 enhancements.

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- b. Create precise text that is unambiguous, and testable.
- c. Allow gateways to deploy older versions of TLS, for non-Sequoia purposes, while confirming that such gateways are configured to use TLS 1.2 for eHealth Exchange transactions.
- d. Establish TLS 1.2 as the mandatory baseline for interoperability.
- e. Provide a migration path to allow organizations with existing production deployments to upgrade, in a non-breaking manner, to become conformant with this new document.

This section contains only the normative text. Use of SHOULD, MUST, etc. are as per IETF formal definitions. Each statement is organized in the form of a document unique conformance statement identifier, followed by conformance text, followed by one or more associated test case definitions.

- **CONF001:** Conformance statement: Gateways MUST NOT establish connections using SSL 2.0.
- **CONF002:** Conformance statement: Gateways MUST NOT establish connections using SSL 3.0.
- **CONF003:** Conformance statement: Gateways SHOULD NOT establish connections using TLS 1.0.
- **CONF004:** Conformance statement: Gateways SHOULD NOT establish connections using TLS 1.1.
- **CONF005:** Conformance statement: Gateways MUST establish connections using TLS 1.2.
- **CONF006:** Conformance statement: Gateways that allow establishment of connections with TLS 1.0 and TLS 1.1 MUST only negotiate connections with TLS 1.1.
- **CONF007:** Conformance statement: Gateways that allow establishment of connections with TLS 1.0 and TLS 1.2 MUST only negotiate connections with TLS 1.2.
- **CONF008:** Conformance statement: Gateways that allow establishment of connections with TLS 1.1 and TLS 1.2 MUST only negotiate connections with TLS 1.2.
- **CONF009:** Conformance statement: Gateways that allow establishment of connections with TLS 1.0, TLS 1.1 and TLS 1.2 MUST only negotiate connections with TLS 1.2.

Gateways MUST also exchange using the highest strength cipher suite and key establishment mechanisms available to both Participants. Participants SHOULD use a TLS service listed on the most recently updated FIPS 140-2 Module Validation Lists as being validated, and not revoked, under the Cryptographic Module Validation Program <http://csrc.nist.gov/groups/STM/cmvp/> lists at <http://csrc.nist.gov/groups/STM/cmvp/validation.html>.

Participants using a validated cryptomodule MUST install, configure, and operate the FIPS 140-2 validated cryptomodule in either an approved or an allowed mode including, without limit, approved security requirements <http://csrc.nist.gov/publications/fips/fips140-2/fips1402.pdf>, approved security functions <http://csrc.nist.gov/publications/fips/fips140-2/fips1402annexa.pdf>, approved protection profiles <http://csrc.nist.gov/publications/fips/fips140-2/fips1402annexb.pdf>, random number generation <http://csrc.nist.gov/publications/fips/fips140-2/fips1402annexc.pdf>, and key establishment techniques <http://csrc.nist.gov/publications/fips/fips140-2/fips1402annexd.pdf> as listed in the latest version of <http://csrc.nist.gov/groups/STM/cmvp/documents/fips140-2/FIPS1402IG.pdf>. Participants using an unvalidated cryptomodule must configure their cryptomodule to operate in the same manner as a validated

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cryptomodule and must disable insecure or weak functionality such as 3DES encryption or MD5 hashes.

Ciphersuites Tests

- **CONF010:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as LOW.
- **CONF011:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as eNULL.
- **CONF012:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as aNULL.
- **CONF013:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as EXPORT (which includes EXPORT40 and EXPORT56).
- **CONF014:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as DES.
- **CONF015:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as 3DES.
- **CONF016:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as RC2.
- **CONF017:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as RC4.
- **CONF018:** Conformance statement: Gateways MUST reject a connection when presented with a ciphersuite categorized as MD5.

4. Dual Trust Support

In order to facilitate normal operational changes with the current eHealth Exchange PKI vendor, and to enable redundant PKI vendors, the following policy is established.

- a. All eHealth Exchange gateways MUST support dual trust chains (using a primary PKI vendor and a secondary PKI vendor) for inbound requests to their gateway.
- b. All eHealth Exchange gateways MUST support dual trust chains from each PKI vendor to facilitate orderly transitions to newer trust chains from the same vendor.
- c. Outbound connections can continue to support a single outbound trust chain for standard operational use, but must be able to switch their outbound trust chain to a secondary trust chain with little notice to enable redundant operations in the even the primary trust chain becomes inoperable for any reason (such as unscheduled down time).
- d. Certificate subject names must be filtered to only allow access from the appropriate trust domains.

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III. Procedure:

Delegation of Rights

The Coordinating Committee has designated Healthway, Inc. (d/b/a/ The Sequoia Project, “Sequoia”) and its staff (“eHealth Exchange Support Staff”) to provide operational support to eHealth Exchange Participants and the Coordinating Committee, including but not limited to the set of responsibilities outlined in OPP #1. In addition, the Coordinating Committee has delegated responsibility to Sequoia and its eHealth Exchange Support Staff to facilitate the security testing necessary to implement the policies in OPP #9 described above.

IV. Definitions:

DURSA: Data Use and Reciprocal Support Agreement

All other capitalized terms, if not defined herein, shall have the same meaning as set forth in the DURSA.

Responsible Disclosure – A practice developed by the Information Security community to ensure that identified vulnerabilities in security-related systems are resolved in a manner that protects the privacy and operational integrity of impacted systems until the vulnerability is remediated. A key component of this process is to only provide the vulnerability information on a need to know basis.

REST – An acronym for Representational State Transfer which is a method of information exchange that uses a web-browser-like approach to contact message content. This method is used by the HL7 FHIR® standard.

Secure Environment – In the context of this OP&P, a secure environment is defined as a single computer, in a data center with appropriate physical and software access controls to prevent inappropriate access by unauthorized people or systems. A secure environment also optionally includes a high availability cluster of computers designed to mimic the cryptographic behavior of a single system, and it also includes a disaster response data center operated to closely mimic the behavior of the primary data center.

SOAP – A method of transacting message content exchange using XML. This method is used by the eHealth Exchange Patient Discovery, Messaging Platform, Access Consent Policies, and other specifications.

Subscriber – The single named individual employed by the Participant responsible for overseeing the following: obtaining, installing, and securely managing the eHealth Exchange x.509 certificate and the associated Secure Environment. The Subscriber must be able to enter into binding legal agreements on behalf of the Participant, and must have sufficient technical and security knowledge in order to manage the eHealth Exchange x.509 certificate securely. The Subscriber is typically a CIO, CTO, Director of IT, or similar individual.

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Public Key Infrastructure (PKI) – The system employed by the eHealth Exchange to manage X.509 certificates used for the purposes of data encipherment, and message signature generation.

Transport Layer Security (TLS) – A method the eHealth Exchange uses to create secure (private, intact, and authentic) communications channels between Participants.

V. References:

- DURSA, Section 14
- DURSA, Section 17.01
- DURSA, Section 19

VI. Related Policies and Procedures:

- OPP #1: Participation – Review and Disposition of Applications for Participation
- OPP #3: Participation – Changes, Suspension, Termination

VII. Version History:

ID	Date	Summary of Changes
1	3/27/14	Drafted policy, based upon recommendations from Policy & Technical Task Group
2	4/1/14	Minor editorial revisions
3	4/1/14	Minor editorial revisions
4	7/20/15	Revised to reflect Healthway name change to Sequoia Project
5	1/10/16	Added section #3, additional definitions, plus a certificate “hold” status text
6	1/11/16	Additional clarifications related to testing and Subscriber responsibilities
7	1/15/16	Additional text related to the DURSA, new definitions, and clarifications on delegated responsibility.
8	9/12/17	Added TLS Version 1.2 requirements and conformance statements and Dual Trust Support requirements to Policy section