



# Change Control Board (CCB)

November 22, 2011  
As Approved



- Review CCB meeting objective (Eric)
- Discuss Metro white paper (Vladi)
- Review Nationwide Health Information Network July 2011 specifications analysis
  - Overview on breaking changes/capabilities (Jennifer/Greg)
  - Technical discussion on break capability (Matt)
- Revisit CONNECT 3.3 priorities (Michael)
  - Added and clarified requirements (Greg)
  - Large message payloads blocker (Matt)
- Set CONNECT 3.3 release timetable (Michael)

## ➔ CCB meeting objective

- To evaluate and potentially reprioritize the CONNECT 3.3 feature backlog based upon recently identified discoveries and clarified partner needs
  - Ensure the CONNECT development team is focused on the latest high priorities
  - Discuss implications associated with the implementation of certain feature backlog items (e.g., Metro and GlassFish upgrades)
  - Discuss CONNECT 3.3 scheduled release date, which is currently Jan. 27, 2012
  - CONNECT development contract assumptions:
    - Base year period of performance ends on March 31, 2012
    - No additional funding is identified to fund option year one

## ➔ Metro white paper: Key takeaways

- **Metro 1.5 is not 100% SAML compliant**
  - See next slide for graphical depiction of the SAML issue in Metro 1.5
  - Recommend we upgrade to Metro 2.1.1
- **Red Hat JBoss dropped support for Metro 2.x**
  - **Note:** Once CONNECT adopts Metro 2.x, any installation that relies on Red Hat JBoss will need to develop a migration strategy to deploy an alternate application server (e.g., Oracle GlassFish).
- **Metro 2.x handling of WS-addressing headers (JAX-WS issue)**
  - CONNECT Development and IV&V teams identified a work around to this issue
- **Interoperability: Apache CXF handling of MTOM/XOP and SOAP attachments may differ from Metro handling**
  - Those using the Apache CXF stack (e.g., Axolotl) may encounter interoperability issues with CONNECT
  - Recommend to non-CONNECT gateway vendors (e.g., Axolotl, InterSystems, Medicity) that each test its MTOM/XOP and SOAP attachments functionality with CONNECT deployed in the DIL



## CONNECT development: Nationwide Health Information Network July 2011 specification compliance

- **Overview**

- Performed an in-depth review of the Nationwide Health Information Network July 2011 specifications to identify impacts to CONNECT and interoperability
- Prepared summary documents of deltas between specification versions
  - Determined if change was editorial in nature, e.g., clarification (no further action needed)
  - Analyzed underlying specs where the version which was referenced changed
- **Analyzed deltas**
  - Created JIRA tickets for those requiring further investigation
  - Categorized by specification, e.g., Patient Discovery, Query for Documents, IHE
  - Characterized by topic area, e.g., SAML, on-demand documents
- **Identified significant findings**
  - Created JIRA tickets for development efforts
  - Determined impact CONNECT LOE (story points)
  - After a thorough review, prepared a detailed delta analysis report of all specifications and underlying specifications



## CONNECT development: Nationwide Health Information Network July 2011 specification compliance

- **Impacts to CONNECT**

- **Currently 17 identified specification deltas will require CONNECT code changes**
  - Estimate ~72 user story points
  - Not all tasks can be accomplished in parallel, meaning ~72 user story points does not easily translate into two sprints
- **Will require technology stack upgrades to Metro (for SAML), GlassFish and JDK**
  - Estimate ~86 user story points
- **Corresponding JIRA tickets for compliance updates to CONNECT**

- GW-838
- GW-839
- GW-840
- GW-745
- GW-841
- GW-842

- GW-843
- GW-844
- GW-845
- GW-846
- GW-847
- GW-849

- GW-848
- GW-850
- GW-851
- GW-852
- GW-853

## ➔ CONNECT development: Nationwide Health Information Network July 2011 specification compliance

- **Impacts to CONNECT (continued)**
  - Identified 7 specification delta changes as potentially “breakable” affecting backwards compatibility and interoperability
    1. Document submission SOAP actions (GW-840)
    2. Added support for new on-demand document retrieve response elements (GW-843)
    3. MTOM support for administrative distribution (GW-844)
    4. Update SAML assertion ID attribute (GW-847)
    5. Support use of SAML 2.0 assertions in the security header (GW-848)
    6. Potential business impact: Requiring all 3 components of the MSH-9 message type (previously required the first two only) (GW-766)
    7. Potential business impact: Impact of ZBE-7 data type change on CONNECT and business impact of this data type change (from CWE to XON) (GW-775)

# **CONNECT development: Nationwide Health Information Network July 2011 specification compliance**

Specification <sup>1</sup>	Version		Investigation tasks (JIRA tickets) <sup>2</sup>				Story points <sup>3</sup>
	July 2011	Jan 2010	Gaps identified	Potentially not implementable	Potentially breaking	Require development	
Nationwide Health Information Network							
Patient Discovery	2.0 [p]	1.0.0.7 [6, e]	5	1		2	13
Document Submission	2.0 [p]	1.1.0	4		1	2	5
Query for Documents	3.0 [p]	2.0 [p]	5			4	21
Retrieve Documents	3.0 [p]	2.0 [p]	4		1	1	7
Administrative Distribution	2.0	N/A	3		1	1	3
Authorization Framework	3.0 [p]	2.0 PLUS CONNECT Version 2.5 Fix for PurposeForUse [6]	18		2	4	8
Messaging Platform	3.0 [p]	2.0 [4, 5, p]	4				
Services Registry	3.0 [p]	3.0 [p]	5			4	15
IHE	V7 (2010)	V6 (2009)	57	TBD	TBD	TBD	TBD

<sup>1</sup> [http://healthit.hhs.gov/portal/server.pt/community/healthit\\_hhs\\_gov\\_NwHIN\\_resources/1194](http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_NwHIN_resources/1194)

<sup>2</sup> Counts are as of 11/10/2011

<sup>3</sup> Total = 72 story points. Story points do not include required technology stack upgrades.

## **CONNECT development: Nationwide Health Information Network July 2011 specification compliance**

Potential Impact (High level – requires further design analysis)	CONNECT gateway	Adaptor (and/ or data content)	Big?	Breaking?
Cross-enterprise document reliable interchange (XDR)	X	X		
On-demand documents (not implemented - may be adaptor only)	X	X	Y	
SAML 2.0 (handles 'required' portions but not the 'may' portions)	X	X	Y	Potentially
Changes related to action tags due to the "asynch web service to deferred" renaming	X	X		Y
Access control, patient privacy acknowledgements, consents, audit message		X		
Changes to attributes and parameters (optionality and value constraint)	X	X		Y
Data content changes, e.g., data type change for ZBE-7 (not backward compatible; v2.x), MSH-9.3 change to required)		X		Potentially
Error reporting/handling	X	X		Potentially
SOAP message transmission optimization mechanism (MTOM)	X	X		Y
UDDI changes	X	X		



## CONNECT 3.3 priorities

*As set by the CCB in August 2011*

- Aug2011-#1)** Establish and report CONNECT performance benchmarks ([GW-437](#))
- Aug2011-#2)** Support higher message volumes (based on clustering) ([GW-438](#))
- Aug2011-#3)** Perform Nationwide Health Information Network January 2010 specifications-CONNECT 3.2 gap analysis ([GW-439](#))
- Aug2011-#4)** Perform Nationwide Health Information Network January 2010-July 2011 specifications delta analysis ([GW-440](#))
- Aug2011-#5)** Implement backwards compatibility gateway-to-gateway and gateway-to-adapter ([GW-441](#))
- Aug2011-#6)** Create ability for parallel message initiation and processing with Patient Discovery, Query for Documents and Retrieve Documents transactions (a/k/a fan out) ([GW-442](#))
- Aug2011-#7)** Provide performance-related configurable parameters ([GW-450](#))
- Aug2011-#8)** Provide additional log data points for the ability to group across transactions and provide performance metric data ([GW-472](#))
- Aug2011-#9)** Provide ability for CONNECT to interface with monitoring tools ([GW-452](#))
- Aug2011-#10)** Increase the message payload size that CONNECT is able to process currently ([GW-473](#))
- Aug2011-#11)** Enable the selection of certain services to be deployed at installation-time ([GW-474](#))
- Aug2011-#12)** Design functionality to increase message throughput for CONNECT services ([GW-451](#))



## CONNECT 3.3 priorities

*As recommended based on November 2011 CCB discussions*

- Nov2011-#1)** Implement Nationwide Health Information Network July 2011 specifications, including required technology stack upgrades (Metro, GlassFish and JDK) ([GW-635](#))
- Nov2011-#2)** Implement UDDI-based Nationwide Health Information Network specifications backwards compatibility ([GW-933](#))
- Nov2011-#3)** Enable implementer to select services to install at installation-time in lieu of having to install all services ([GW-474](#))



**Recommended new priorities as of November 2011, based on CCB discussions.**

- Nov2011-#4)** Establish and report CONNECT performance benchmarks ([GW-437](#))
- Nov2011-#5)** Support higher message volumes (based on clustering) ([GW-438](#))
- Nov2011-#6)** Perform Nationwide Health Information Network January 2010 specifications-CONNECT 3.2 gap analysis ([GW-439](#))
- Nov2011-#7)** Perform Nationwide Health Information Network January 2010-July 2011 specifications delta analysis ([GW-440](#))
- Nov2011-#8)** Implement backwards compatibility gateway-to-gateway and gateway-to-adapter ([GW-441](#)) *During the November 2011 CCB Meeting, the CCB and development team identified a gap in the understanding of this feature. As a result, we created feature [GW-933](#) (see above) to implement the clarified functionality: Backwards compatibility using the UDDI-based approach.*
- Nov2011-#9)** Create ability for parallel message initiation and processing with Patient Discovery, Query for Documents and Retrieve Documents transactions (a/k/a fan out) ([GW-442](#))
- Nov2011-#10)** Provide performance-related configurable parameters ([GW-450](#))



## CONNECT 3.3 priorities

*As recommended based on November 2011 CCB discussions*

- **Lower priority of remaining CONNECT 3.3 features**
  - **Three features less than 50 percent complete as of November 2011**
    - Aug2011-#8: Provide additional log data points for the ability to group across transactions and provide performance metric data (GW-472)
    - Aug2011-#9: Provide ability for CONNECT to interface with monitoring tools (GW-452)
    - Aug2011-#12: Design functionality to increase message throughput for CONNECT services (GW-451)
  - **One feature blocked by a Metro bug**
    - Aug2011-#10: Increase the message payload size that CONNECT is able to process currently (GW-473)
    - **Note:** We expect Metro 2.2 will resolve the identified bug, and we anticipate Metro 2.2 being released in January 2012 before the CONNECT 3.3 release date. However, incorporating Metro 2.2 at that stage of the development lifecycle adds significant risk and is not a recommended approach.
  - **If velocity runs higher than anticipated based on historical metrics, the development team may have bandwidth to implement one or more features in CONNECT 3.3**
  - **For features not implemented in CONNECT 3.3, we will submit to CCB in 2012 for possible inclusion in future CONNECT releases**

## ➔ Existing feature (part 2): Implement Nationwide Health Information Network July 2011 specifications

- **GW-635 - Implement Nationwide Health Information Network July 2011 specifications**

- **Build functionality to implement the Nationwide Health Information Network July 2011 specifications**

Patient Discovery 2.0

Document Submission 2.0

Query for Documents 3.0

Retrieve Documents 3.0

Administrative Distribution 2.0

Authorization Framework 3.0

Messaging Platform 3.0

Services Registry 3.0

- **Build functionality to implement IHE specification modifications, if there is a direct CONNECT impact**

- **Implement technology stack upgrades required to support the Nationwide Health Information Network July 2011 specifications**

- Nationwide Health Information Network July 2011 specifications => upgrade to Metro 2.1.1 required
- Metro 2.1.1 => upgrade to GlassFish 3.1.1 required
- GlassFish 3.1.1 => upgrade to JDK 1.7 required
- GlassFish 3.1.1 => modify CONNECT security architecture to comply with Open Services Gateway initiative (OSGi) framework
- GlassFish 3.1.1 => migrate away from network security services (NSS) to a different TBD FIPS technology
- Metro 2.1.1, GlassFish 3.1.1 and JDK 1.7 are released versions (i.e., we are not dependent on a future or unreleased version of these components)

## ➔ Clarified feature: Backwards compatibility

- **GW-441 - Implement backwards compatibility gateway-to-gateway and gateway-to-adapter**
  - **Gateway-to-gateway**
    - Remain backwards compatible/interoperable gateway-to-gateway with the three most recent CONNECT gateway versions, as defined in the SLA
    - Differs from “specification backwards compatibility”: For “gateway backwards compatibility,” we maintain interoperability if a newer CONNECT version resolves a bug that existed in a prior CONNECT version, even if the resolution of that bug would otherwise have resulted in breaking interoperability
    - For two Nationwide Health Information Network gateways to communicate, we assume both sending and receiving gateways support the same version of a given specification (i.e., if gateway  $x_1$  supports only version 2.0 of a given specification while gateway  $x_2$  supports only version 1.0 of a given specification, backwards compatibility is not possible between  $x_1$  and  $x_2$ )
    - Unless otherwise stated, backwards compatibility also extends to versions of the CONNECT gateway in production by the federal partners, as defined in the SLA
  - **Gateway-to-adapter**
    - Backwards compatibility ensures the CONNECT gateway and CONNECT reference adapters remain compatible
    - Supports the three most recent CONNECT gateway versions, as defined in the SLA



## Clarified feature: UDDI-based backwards compatibility

- **GW-933 - Implement UDDI-based Nationwide Health Information Network specifications backwards compatibility**
  - **CONNECT gateway will remain compatible/interoperable with other Nationwide Health Information Network gateways**
    - For two Nationwide Health Information Network gateways to communicate, we assume both sending and receiving gateways support the same version of a given specification (i.e., if gateway  $x_1$  supports only version 2.0 of a given specification while gateway  $x_2$  supports only version 1.0 of a given specification, backwards compatibility is not possible between  $x_1$  and  $x_2$ )
    - Build functionality in a “generic” manner such that when future specification versions are published, CONNECT will leverage this backwards compatibility approach
    - **Risk:** There remains some question how existing Nationwide Health Information Network gateways (both CONNECT and non-CONNECT) will handle the UDDI-based backwards compatibility capability (i.e., how will an older gateway know which endpoint to use for a given receiver who is supporting multiple versions of a given Nationwide Health Information Network specification?). We will coordinate with the Nationwide Health Information Network coordinating committee to clarify expectations and use cases.



## Clarified feature: UDDI-based backwards compatibility

- **GW-933 - Implement UDDI-based Nationwide Health Information Network specifications backwards compatibility (continued)**
  - **Compatibility will be based on version-specific Nationwide Health Information Network specification endpoints maintained in the Nationwide Health Information Network UDDI**
    - **Risk:** The UDDI-based backwards compatibility approach has not yet been leveraged in the production Nationwide Health Information Network Exchange. We will coordinate with the Nationwide Health Information Network Exchange teams to develop, test and release this functionality. However, the CONNECT team is dependent on multiple teams to clarify requirements and use cases, implement actual UDDI functionality and configurations and update applicable testing assets.

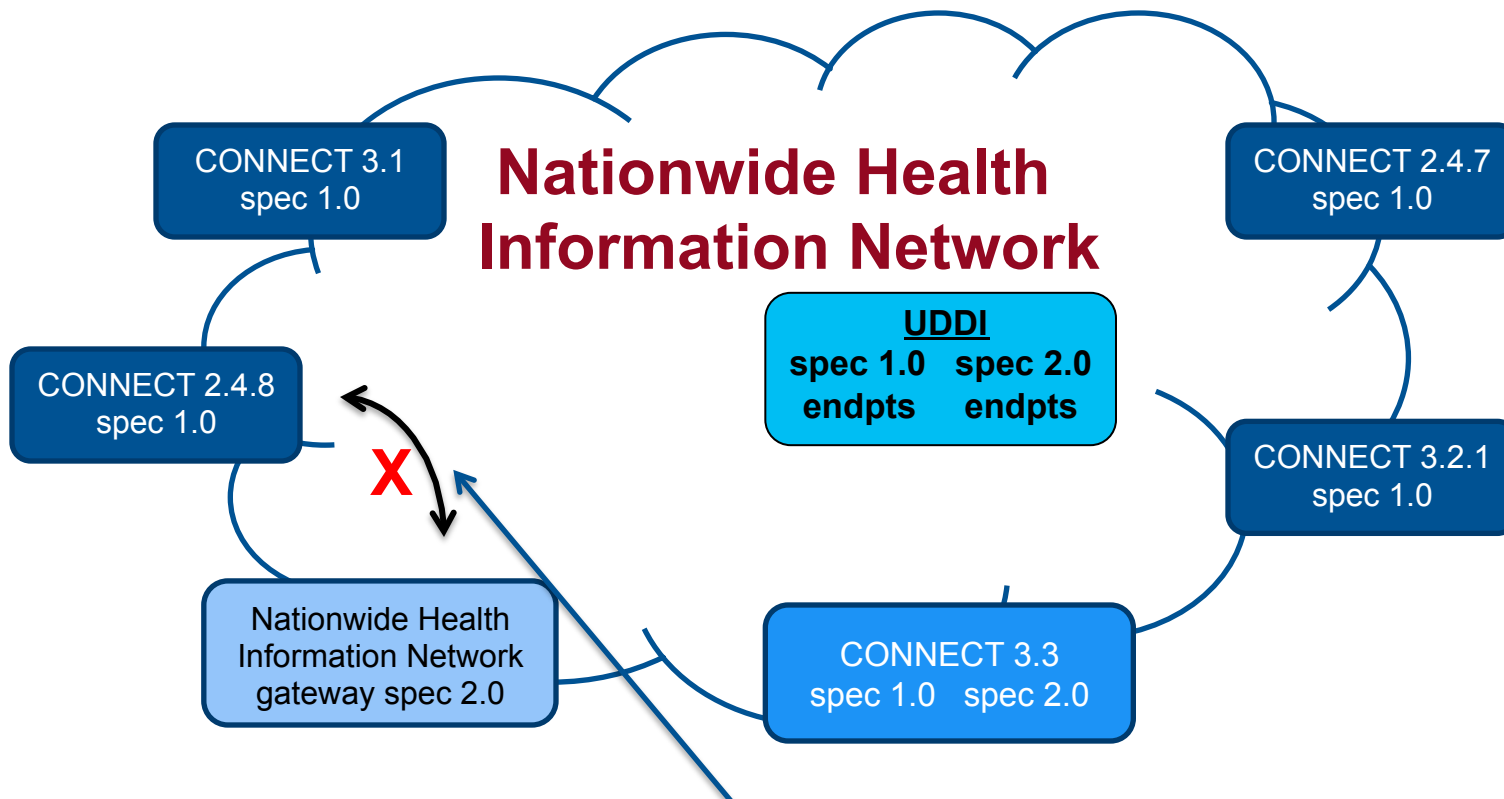
At a minimum, we anticipate calling upon the following teams during the development lifecycle:

- Nationwide Health Information Network operations
- Nationwide Health Information Network testing
- Nationwide Health Information Network spec factory
- VLER support team (for DIL support)
- Nationwide Health Information Network coordinating committee
- Non-CONNECT gateway vendors

## ➤ Clarified feature: UDDI-based backwards compatibility

- **GW-933 - Implement UDDI-based Nationwide Health Information Network specifications backwards compatibility (continued)**
  - **CONNECT gateway services needed to support both specification versions will be within a single CONNECT gateway**
    - **Risk:** The development team remains concerned about the memory consumption that will be required to support multiple versions of multiple specifications on a single instance of a CONNECT gateway. We will perform rigorous performance testing and analysis during development to provide better clarity on the hardware requirements to support this functionality. In addition, to mitigate this risk further, we increased the CONNECT 3.3 priority of the following feature: Enable implementer to select services to install at installation time in lieu of having to install all services (GW-474)

## Clarified feature: UDDI-based backwards compatibility



An example of two Nationwide Health Information Network participants that will not be able to communicate even with the UDDI-based backwards compatibility.

## ➔ Blocked feature: GW-473 – large message payloads

- **Accomplishments**

- Successfully streaming 1GB and larger payloads bi-directionally between gateway and adapter
- Large payload is retained only temporarily at the server file system during processing
- Optimization where large payloads are only retrieved when policy check passes
- Conforms to Nationwide Health Information Network standards

- **Blockers**

- When streaming large payloads gateway to gateway, the team encountered an issue with Metro 1.5 not allowing the streaming of web service transactions across secured interfaces
- This is an existing issue filed with Metro (WSIT) bug tracker  
<http://java.net/jira/browse/WSIT-1081>

## **Blocked feature: GW-473 – large message payloads**

- **Action Items**

- Added comments to the Metro ticket on behalf of the CONNECT team and will continue monitoring the issue with Oracle
- Will purchase an Oracle support contract for Metro and GlassFish to provide the development team with additional support options
- Once we have the Metro bug resolved (likely in Metro 2.2), recommend to non-CONNECT gateway vendors (e.g., Axolotl, InterSystems, Medicity) that each test its streaming functionality with a CONNECT beta version deployed in the DIL

## ➔ CONNECT 3.3 release timetable: Options and recommendation

- **Option 1: Retain existing backlog priorities**
  - **Option 1a**
    - Remove lower priority items from CONNECT 3.3 scope
      - Aug2011-#10: *Large payload transfer enhancements* – blocked by Metro bug
      - Aug2011-#12: *Enhanced performance design work* – need additional time
    - Move CONNECT 3.3 release date from Jan. 27, 2012 to Feb. 3, 2012 due to schedule impacts (e.g., SEI meetings, Code-a-Thon, holiday PTO)
    - Continue working on designs for Aug2011-#12 post Feb. 3, 2012, but limited to no implementation work due to March 31, 2012 funding end date
  - **Option 1b**
    - Remove Aug2011-#10 *Large payload transfer enhancements* blocked by Metro bug
    - Move release date to Feb. 24, 2012 to implement priorities Aug2011-#11 and Aug2011-#12
  - **Neither option 1a nor 1b includes implementation of the Nationwide Health Information Network July 2011 specifications**

## ➤ CONNECT 3.3 release timetable: Options and recommendation

- **Option 2: Adopt recommended priorities**
  - Implement Nationwide Health Information Network July 2011 specifications, including required technology stack upgrades (Metro, GlassFish and JDK) (GW-635)
  - Implement UDDI-based Nationwide Health Information Network specifications backwards compatibility (GW-933)
  - Remove features from CONNECT 3.3 less than 50 percent complete or blocked
  - Move release date to March 16, 2012

## ➔ CONNECT 3.3 release timetable: Options and recommendation

- **Based on November 2011 CCB discussions, we recommend to proceed with Option 2**
  - **Pro**
    - Avoids CONNECT being a blocker to broader Nationwide Health Information Network implementation of the Nationwide Health Information Network July 2011 specifications
    - Ensures CONNECT adopters are able to communicate with organizations that only support the Nationwide Health Information Network July 2011 specifications
  - **Cons**
    - Will require development team to realign work efforts halfway through development of CONNECT 3.3
    - Upgrading the technology stack, while needed and in some cases long overdue, adds additional development risk, especially as it relates to the timeline
    - Support for large message payloads will likely be pushed to a future CONNECT release, unless the CCB and development team agree to assume the additional risk associated with upgrading to Metro 2.2 near the end of the development lifecycle

## ➤ CONNECT 3.3 priorities, scope and timeline: CCB approval

- **On Nov. 22, 2011, the CONNECT CCB took the following actions:**
  - Approved the CONNECT 3.3 priorities and scope as detailed on slide 13
  - Removed from CONNECT 3.3 scope the features detailed on slide 14
  - Reviewed and confirmed the requirements for the following features, as detailed on slides 15-19:
    - GW-635 - implement Nationwide Health Information Network July 2011 specifications
    - GW-441 - implement backwards compatibility Gateway-to-Gateway and Gateway-to-Adapter
    - GW-933 - implement UDDI-based Nationwide Health Information Network Specifications backwards compatibility
  - Adopted a CONNECT 3.3 release date of March 16, 2012, identified as option 2 on slide 23
  - Acknowledged the risks detailed in this slide deck and requested risk management updates during the bi-weekly product managers meetings
- **Voting CCB members:**
  - James Delle Bovi, Centers for Medicare & Medicaid Services – approval granted
  - Naomi Escoffery, Department of Defense – approval granted
  - Kitt Winter, Social Security Administration – approval granted
  - Brian Morgan, Veterans Administration – approval granted
  - Adrian Ball, IPO – Approval granted