



Building trust
in eHealth
interoperability

Configuration sharing & Use of Gazelle Proxy

Anne-Gaëlle BERGE

- Sharing of Configurations
 - The concept of “Configuration” in Gazelle
 - Editing and approving your configurations
 - Retrieving configurations for partners
 - OIDs
- Gazelle Proxy
 - Purposes and benefits
 - How does it work ?
 - How to send messages through the Proxy
 - How to retrieve messages in the Proxy
 - How to validate the messages stored in the Proxy
 - How to attach Proxy logs to test instances

SHARING OF CONFIGURATIONS

A dedicated private network

- Connectathon is exchanging data between peers sit in a same room
- To ease the set-up
 - Dedicated private network
 - Static IP addresses for the systems under test
 - Each system has a well-known IP address
 - Hostnames are assigned
 - Local DNS fed with the data from Gazelle
 - DHCP available for other devices
 - WiFi also available

Concept of “configuration”

- For each IHE actor, the domain technical manager defines what are the interfaces the system should offer
 - Which standard (HTTP WS, HL7v3 on SOAP, HL7v2, DICOM...)
 - How many interfaces
 - As responder or initiator
 - Default port
 - What are the needed information to allow the systems to communicate smoothly (AETitle, Application/Facility names etc)

Default configurations

- In advance of the Connectathon
 - The project manager asks the tool to generate the default configurations for each system
 - No IP address is assigned at that time (only hostname)
 - All configuration are said “not approved”
 - The SUT operator
 - Reviews the generated entries and update them to match the actual configuration of his system
 - Marks the configurations “approved” when they are ready to be used by others

All the information in one place

- **Gazelle Test Management allows**
 - Publication of the network configuration (DNS, gateway, netmask...)
 - Configurations > Network Configuration Overview
 - Listing of all the endpoints of each system under test
 - Configurations > All configurations
 - By default, list is filtered to show only entries for your company
 - Download of the host file
 - “Download hosts file” button at the bottom of the Network Configuration Overview page
 - Retrieval of the systems’ endpoints as CSV file
 - Link “URL for downloading configurations as CSV” on top of the “all configurations” table.

Review the generated configurations for your system

- Once the Connectathon project manager announces it, review the configurations generated for your system and adapt them
 - From Configurations > MY COMPANY: Systems Configuration
- For each entry, you can
 - Edit
 - Approve
 - Delete
- There might be duplicates: TLS and non-TLS
 - Although your system is an ATNA/Secure Node or Secure application, not all test cases require to use TLS
 - Gazelle Proxy is not yet able to decode TLS encrypted exchanges

Retrieve your partners' configurations

- From Configurations > All configurations
 - By default, only configurations for your company are displayed, remove the filter

Organization Keyword  [Click here](#)

- From the test instance page
 - When a test is started, in the **Test Participants** section

PACS_MEDWEB  [Click here](#)

- As a CSV file
 - Parametric URL is given in the **All configurations** page

[URL for downloading configurations as CSV](#)

- [User manual](#)

Which details are shared ? (1)

DICOM

Sys	Table	Actor	Host name	IP	Port	is Secured ?	AE Title	SOP class	Approved
PACS_AGFA_1 / AGFA	J3	CHANGE_REQUESTER - Change Requester	agfa68	172.16.0.206	104(13024)	<input type="checkbox"/>	AGFA_PACS	STORAGE	yes

Hostname, IP address and port when you DO NOT use the proxy

Port to use in conjunction with the IP address of the Proxy for the messages to be captured

HL7v2

Sys	Table	Actor	Host name	IP	Port	is Secured ?	Receiving application / facility	Namespace	Approved
OF_RDI_LTW / RDI	A2	AM - Automation Manager	rdi5	172.16.1.18	20468(12412)	<input type="checkbox"/>	OF_RDI_LTW / RDI	RDO2	yes

Assigning authority to be used by this system

HL7V3

Sys	Table	Actor	Host name	IP	Port	is Secured ?	WSType	URL	Namespace	Approved
OTHER_InterSystems_HS17 / InterSystems	K4	DOC_REGISTRY - Document Registry	intersy	172.16.0.108	80(12391)	<input type="checkbox"/>	ITI-44:Patient Identity Feed HL7 V3	http://intersystems12/csp/connect/HS.IHE.XDSb.Registry.Services.cls	INO2	yes

Which details are shared ? (2)

- Webservices

Sys	Table	Actor	Host name	IP	Port	is Secured ?	WSType	URL	Approved
OTHER_InterSystems_HS17 / InterSystems	K4	DOC_REGISTRY - Document Registry	intersystem	172.16.0.108	443	<input checked="" type="checkbox"/>	ITI-18:Stored Query:sq.b	https://intersystems12/csp/connect/HS.IHE.XDSb.Registry.Services.cls	● yes

This port is protected by TLS

- Syslog

Sys	Table	Actor	Host name	IP	Port	is Secured ?	Transport	Protocol	Approved
PACS_synedra_2017 / synedra	K7	ARR - Audit Record Repository	synedra22	172.16.0.69	11641(12643)	<input type="checkbox"/>	TCP		● yes

TCP or UDP

Tips

- You can ask for additional hostnames Add a network config.
 - This action does not assign an IP address, it will be done later on by the technical management team
- You can add additional endpoints Add a config.
- You can approve a batch of entries
 - Use ✓ button from the table header
- You can use the same hostname for different systems in your organization
 - It might be useful if several systems are hosted on the same device
- When a non-TLS endpoint is marked approved, a port appears in red between bracket
 - This is the port to be used on the proxy (see later)

OIDs

- For some profiles, OIDs are used to identify the system
- For each testing event, Gazelle generates OIDs for a list of given actors
- Find the OIDs assigned to your system
 - From Configurations > OIDs for current session
 - Filter on your system System ×
 - A label gives the purpose of use of each OID
- Find the OIDs assigned to your partners
 - On this same page
 - Remove the filter on your system
 - Filter on a given company or system
 - From the “Test Participants” section on a test instance page
 - Using the parametric URL to download the CSV file (see previous slide)

GAZELLE PROXY

Why do we need a Proxy ?

- Connectathon is about testing interoperability
 - Thousands of messages are exchanged during the whole week
 - Monitors need evidences to grade the tests
 - Conformance is the key to achieve interoperability
- ➔ There is a need to capture evidences and to verify the conformance of the exchanged messages

Purposes and Benefits

- What is it ?
 - Works like a “man-in-the-middle”
 - Keeps a copy of each message exchanged through it
- Benefits
 - No need for participants to struggle with logging incoming/outgoing messages in their system
 - All the logs have the same format
 - Easier for monitors to find the information of interest
 - Is integrated with Gazelle EVS Client (front-end to conformance checkers)

In practice

- For each non-TLS endpoint, Gazelle Test Management assigns a **Proxy port**
- Upon request of Gazelle Test Management, the Proxy opens a **channel**
 - It associates the **Proxy port** with the host (hostname or IP address) of the final recipient and a port (the port your system listens on)
 - Listens for incoming messages on the **Proxy port**
- Upon receipt of a message, it keeps a copy and forwards it to the associated remote system

Channel type ▾	Proxy port ▾	Proxy Consumer Host ▾	Proxy Consumer Port ▾
DICOM	11000	gazelle-tools.ihe-europe.net	10003

Administrative user interface

How does it work ?

- Without Proxy

Partner A



Partner B



Hostname: part-b
Port: XXX

- With Proxy

Partner A



Proxy



Hostname: proxy
Proxy Port: YYYY



Partner B



Hostname: part-b
Port: XXX

How and when are the channels open on Proxy ?

- Before the testing event starts, the technical management team requests the Proxy to open all the channel
- When you start a new test in Gazelle Test Management
 - Gazelle Test Management sends the list of channels for all test participants to the Proxy
 - If some are not opened yet, Proxy starts those new channels
- In case of troubles, the technical management team is able to manually open/stop channels


How to retrieve messages in the Proxy ?

- A user interface is available
 - <https://gazelle.ihe.net/proxy> (Europe)
 - <https://gazelle.iheusa.org/proxy> (North America)
- From **Message lists**
 - Use the different filters to restrict your search
 - By default only the HTTP messages are shown
 - Change the Type from the drop-down menu
- From the test execution page
 - Filters are set based on the information fed from the Participants

Step	Trans: Trans. - Message Type	Opt.	Sending Actor	Receiving Actor	Status	Validation Status				
40	ITI-9 - QBP^Q23^QBP_Q21	R	EHR_Tiani - Cisco_- - PIX_CONSUMER	EHR_ICW_2017 - PIX_MANAGER	✓	✓				
<p>Desc: FOR NA CONNECTATHONS: PIX Consumer queries PIX Manager with a local ID for patient Farnsworth (IHEFACILITY-997^^IHEFACILITY&1.3.6.1.4.1.21367.3000.1.6&ISO^PI). It may do an open query for all other IDs for that patient, or it may query for one of the global IDs: IHERED-997 or IHEGREEN-997 or IHEBLUE-997. Note that the assigning authority values will be the 3 Master Assigning Authority OIDs. (1.3.6.1.4.1.21367.13.20.1000&ISO, 1.3.6.1.4.1.21367.13.20.2000&ISO, or 1.3.6.1.4.1.21367.13.20.3000&ISO) . See Special Instructions section on Test Description tab. (Note that other IDs may also be returned, depending on what other local IDs are cross-referenced in the PIX Mgr.)</p> <p>Logs: No comment, file or URL</p> <p>Upload a file (click or drop)</p> <p>Proxy messages</p>						✗	✓	▶▶	✗	✓

Click here




Make the filtering more relevant

- First of all, create the test BEFORE you start exchanging messages with your partners
- When you use the link in test steps, the following filters are set
 - Message origin
 - Takes all the IP addresses defined and approved for the initiating system
 - Proxy port
 - Takes all the proxy port assigned to the receiving system
 - Date range 
 - To have the most relevant date range, use the status icons as you run your test
 - Start date for the first step = Timestamp of the creation of the test
 - End date = Timestamp when the step status has been changed
 - Start date for subsequent steps = End date of the previous step

What is stored by the proxy ?

- Details on initiating and receiving systems
- Timestamp
- Payload
- All messages in a same “connection” are stored together
 - For example if you keep your MLLP socket opened all the messages are stored in the same connection until the socket is closed
- A permanent link is created for each message, it is to be used to point out the messages of interest to the monitors

Verify the conformance of the messages

- Gazelle Proxy is bound to the EVS Client (Front-End for the conformance checker tools)
- For each entry in the proxy, in the Message content section, you have three icons   
 - Download the content
 - See the content inline
 - **Send to EVS Client**

Attaching Proxy logs in your test execution

- Once you have verified the conformance of the message
- Copy the permanent link of the message of interest

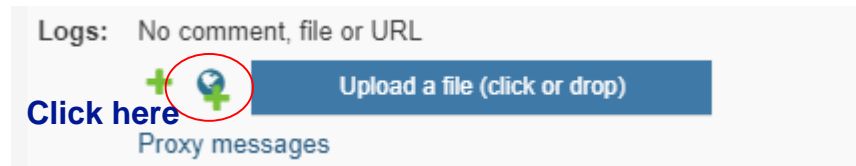
Permanent link

<https://gazelle.ihe.net/proxy/messages/http.seam?id=1764319>






Click here

- Access your test instance and, in the relevant step, paste the permanent link



- You should see it along with an icon indicating the status of the conformance verification

Date	User	Type	Data	Actions
4/3/17 11:10:54 AM	[redacted]	Proxy	/messages/h17.seam?id=1717985	   Validation status

Common errors to avoid

- Gazelle Proxy is not yet able to decrypt TLS fluxes
- Try to use the Gazelle Proxy for a non-approved configuration
 - Since Rennes 2019, Proxy port should not be displayed when it cannot be used (TLS endpoints/unapproved configuration)
- The IP address to use when communicating through the proxy is **ALWAYS** the one of the **PROXY** tool
 - You will find it
 - On the home page of the Proxy GUI
 - On the room screen during the testing event
 - On the Network Configuration Overview page in TM
 - When you configure a URL (SOAP/FHIR), replace the hostname and port given on the configuration page by the IP address of the proxy and the Proxy port
 - Example: <http://gazelle-tools/pdqm> shall be <http://172.10.0.2:12334/pdqm>
 - No port means port 80, you cannot omit the port when using the proxy !
- If you change your configuration (port or hostname) during the event, notify the Technical Management team they will stop the channel in the Proxy so that a new one can be opened to your new configuration