



# Logging Best Practices

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# Overview

1. Iguana logs
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  - b. Log configuration and maintenance
2. Reviewing key Iguana logging workflows
  - a. Notifications using the logs
  - b. Troubleshooting and Reporting
3. Interacting with the Iguana Log API
  - a. What is the Log API
  - b. When and how to use it
4. Logging Exercises
  - a. Troubleshooting Messages
  - b. Using the Log API

## What are the Iguana Logs?

Each Iguana uses a single message queue to log all system and data messages.

- Messages and Acknowledgments
- Server Information
- User Activity
- Channel Status


The screenshot displays the Iguana Logs interface. The main area shows a list of log entries with columns for time, source, and message content. The entries include:


Time	Source	Message
Today 01:07:37.380	Iguana Service	Channel "First Steps: Filtering HL7" imported by user
Today 00:00:01.058	Iguana Service	Executing Log Purge for logs before 2015/09/26 (YYYY/MM/DD). No files were deleted.
Yesterday 14:21:01.030	Iguana Service	User "admin" has logged in from IP 127.0.0.1 with session ID: 1293b9c1e62bcc63d5120504093cf586c4c
Yesterday 14:20:57.749	02-Socket to Database	Channel has started.
Yesterday 14:20:57.749	02-Socket to Database	Listening on port 5160.
Yesterday 14:20:57.748	02-Socket to Database	Fast ACK in effect.
Yesterday	02-Socket to Database	Using commit ID: "1293b9c1e62bcc63d5120504093cf586c4c"


The interface also includes a search panel on the right with the following options:


- Search Criteria: [-] Search Criteria
- TEXT QUERY: Search input field
- CHANNEL: [All Entries] dropdown
- TIME RANGE: Input field
- TYPE: List of message types (All, Messages, ACK Messages, Errors - Marked, Errors - Unmarked, Warnings)
- Show Deleted: Input field
- Bookmark Search: Button
- [+] Export: Button


## Logs Types


 **2021/03/16** **Facility 1 - HL7 Inbound**  
12:10:43.054  
MSH|^~\&|MedPoke|E\T\R|Main HIS|  
EVN||20080313024117|||201903060  
PID||7263777||Kane^Cameron||195

 **2021/03/16** **Facility 1 - HL7 Inbound**  
12:10:23.993  
MSH|^~\&|Main HIS|St. Micheal  
MSA|AA|6ED85060960361A2701BA1


 **2020/11/09** **Facility 2 - Outbound**  
14:08:00.070  
Error encountered while filtering  
Translator error occurred in modu  
The header segment 'MSH' was not

 **2021/02/04** **HL7 ADT Simulator**  
13:57:10.547  
Lost connection to localhost  
Will attempt to reconnect in

 **2021/03/16** **Facility 3 - Outbound**  
12:10:45.239  
ACK message verified. Message

 **2021/03/25** **Iguana Service**  
16:07:08.005  
User "admin" has logged in

 **2021/01/27** **B2. LabVantage Order In**  
17:55:33.386  
Message filter initialized suc

 **Today** **Iguana Service**  
10:50:01.383  
{  
"Action": "Retrieve",  
"Messages": /

## How are Logs Stored?

Queue and Log information are stored as daily log files in a designated log directory.

Settings > Log Settings

### Log Settings

<b>Log Directory</b>	/Users/awiebe/Library/INTERFACEWARE-Iguana/working_dir/logs
<b>Index Directory</b>	/Users/awiebe/Library/INTERFACEWARE-Iguana/working_dir/logs/index
<b>Maximum Log Age</b>	60 days
<b>Log Purge Time</b>	12:00 am Iguana will purge logs every day at this scheduled time. <a href="#">Purge Now</a>
<b>Synchronous Writes</b>	No
<b>Audit Logging</b>	Enabled

[Edit](#)

With Iguana Professional and Enterprise, logs are natively encrypted at rest and ePHI Audit Logs are produced.

## Log Maintenance Best Practices

Modify log configurations to meet your technical and business needs...

Settings > Log Settings

### Log Settings

Log Directory	<input type="text" value="/Users/awiebe/iNTERFACEWARE-Iguana/Logs"/>
Index Directory	<input type="text" value="/Users/awiebe/iNTERFACEWARE-Iguana/Logs/index"/>
Maximum Log Age	<input type="text" value="7 days"/>
Log Purge Time	<input type="text" value="2:00 am"/> Iguana will purge logs every day at this scheduled time. <a href="#">Purge Now</a>
Synchronous Writes	No
Audit Logging	Enabled

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1. Separate logs in individual file directory or on another partition.
2. Don't keep more logs than you need.
3. Purge logs at quietest time of the day.
4. Always monitor storage capacity.

# Key Logging Workflows

# Reprocessing Messages

Common reasons you may need to resubmit messages:

- Received bad data
- External system failure
- Infrastructure changes (ie. system migration)



## Reprocessing Messages

### 1 View all related entries

The screenshot displays a message log window titled "llp\_to\_database" with a timestamp of "Yesterday 11:01:32.548". The log contains the following message details:

```
MSH|^~\&|INTERFACEWARE|Lab|Main|HIS|St. Michaels|20110213144932||ADT^A03|9B38584D9903051F0D2B52CC0148965775D2D23FE4C51BE060B33B6ED27DA820|P|2.6|
EVN|20110213144532|||20110213145902|
PID|4525285^^^ADT1||Smith^Tracy||10-Feb-1998|F||Martian|86 Yonge St.^ST. LOUIS^MO^51460||1185438871|8530031194|||10-346-6|284-517-569|
NK1|1|Smith^Gary|Second Cousin|
PV1|S|||||5101^Garland^Mary^F^^DR|||||||1318095^^^ADT1|||||||20110213144956|
OBX|WT^WEIGHT|102|pounds|
OBX|HT^HEIGHT|32|cm|
ZID|tracy.smith@acnemed.com||
```

Below the log, a list of related entries is shown, all with a timestamp of "Yesterday 11:01:32.548":

- llp\_to\_database**: Message successfully processed by translator. (Status: Success)
- llp\_to\_database**: Sending ACK back to client. (Status: Info)
- llp\_to\_database**: MSH|^~\&|Main|HIS|St. Michaels|INTERFACEWARE|Lab|||ACK|A9B38584D9903051F0D2B52CC0148965775D2D23FE4C51BE060B33B6ED27DA820|P|MSA|AA|9B38584D9903051F0D2B52CC0148965775D2D23FE4C51BE060B33B6ED27DA820| (Status: Success)
- llp\_to\_database**: Message committed to queue. (Status: Info)
- llp\_to\_database**: MSH|^~\&|INTERFACEWARE|Lab|Main|HIS|St. Michaels|20110213144932||ADT^A03|9B38584D9903051F0D2B52CC0148965775D2D23FE4C51BE060B33B6ED27DA820|EVN|20110213144532|||20110213145902|PID|4525285^^^ADT1||Smith^Tracy||10-Feb-1998|F||Martian|86 Yonge St.^ST. LOUIS^MO^51460||1185438871|8530031194|||10-346-6|NK1|1|Smith^Gary|Second Cousin|PV1|S|||||5101^Garland^Mary^F^^DR|||||||1318095^^^ADT1|||||||20110213144956| (Status: Success)

### 2 Reprocess Messages

- Resubmit Single Message
- Resubmit Multiple Messages
- Skip Messages

## Resubmit a Single Message

When viewing a message in the logs you can...

- Modify and resubmit message
- Send to Translator as sample data

Logs

Use this message in the Translator editor.

21 New Ent...

lp\_to\_channel [616 B]  
December 12, 2015 10:59:48.198

PROCESSED

Resubmit or forward this message.

```
MSH|^~\&|INTERFACEWARE|E\T\R\Main HIS|St. Michael's|20110213145949||ADT^A04|9B38584DAD03F1CAC02579FD931649D970E61A9FF57DFFA35DC62FD3BCP40974|P|2.6|
EVN|20110213144625|||20110213145826|
PID|4636372^^^ADT1|Adams^Jim||15-Jan-2000|M||EU|691|Delphi Cres.^Toronto^ON^16035||5574256|7413805641|||65-504-259|222-886-83|
NK1|1|Smith^Fred|Parent|
NK1|2|Adams^Mary|Grandchild|
NK1|3|Garland^Fred|Grandchild|
NK1|4|Fitzgerald^Tracy|Parent|
FV1|E|||5101^Meade^Tracy^F^^DR|||||4781640^^^ADT1|||||20110213145553|
OBX|WT^WEIGHT||105|pounds|
OBX|HT^HEIGHT||48|cm|
ZID|jim.adams@acmemed.com||
```

Resubmit To Channel: lp\_to\_channel

[+] Edit

```
MSH|^~\&|INTERFACEWARE|E\T\R\Main HIS|St. Michael's|20110213145949||ADT^A04|9B38584DAD03F1CAC02579FD931649D970E61A9FF57DFFA35DC62FD3BCP40974|P|2.6|
EVN|20110213144625|||20110213145826|
PID|4636372^^^ADT1|Adams^Jim||15-Jan-2000|M||EU|691|Delphi Cres.^Toronto^ON^16035||5574256|7413805641|||65-504-259|222-886-83|
NK1|1|Smith^Fred|Parent|
NK1|2|Adams^Mary|Grandchild|
NK1|3|Garland^Fred|Grandchild|
NK1|4|Fitzgerald^Tracy|Parent|
FV1|E|||5101^Meade^Tracy^F^^DR|||||4781640^^^ADT1|||||20110213145553|
OBX|WT^WEIGHT||105|pounds|
OBX|HT^HEIGHT||48|cm|
ZID|jim.adams@acmemed.com||
```

[+] Preview

Preview Mode: <=> T

channel-to-db

ADT - ADT Event

- 1 MSH|^~\&|INTERFACEWARE|E\T\R\Main HIS|St. Michael's|20110213145949||ADT^A04|9B38584DAD03F1CAC02579FD931649D970E61A9FF57DFFA35DC62FD3BCP40974|P|2.6|
- 2 EVN|20110213144625|||20110213145826|
- 3 PID|4636372^^^ADT1|Adams^Jim||15-Jan-2000|M||EU|691|Delphi Cres.^Toronto^ON^16035||5574256|7413805641|||65-504-259|222-886-83|

Show Warnings

Resubmit Cancel

## Resubmit Multiple Messages

Reposition a channel queue to **restart** processing from a specific point in time.

The screenshot displays a log processing interface with the following components:

- Logs List:** A table of log entries, each with a document icon, a timestamp, a status (PROCESSED), and a title (LogAPI - HL7 Processor). The fourth entry, dated 10:23:12.146, has a red box around its 'PROCESSED' status.
- Search Criteria Panel:** A sidebar on the right with a search bar and several filter sections:
  - TEXT QUERY:** A search input field with a magnifying glass icon and a search button.
  - CHANNEL:** A dropdown menu currently set to 'LogAPI - HL7 Processor'. A red box highlights this section, and a red arrow points to the 'Last Processed Message' label below it.
  - TIME RANGE:** A checkbox that is currently unchecked.
  - TYPE:** A dropdown menu with 'All (except Audit)' selected. 'Messages' is highlighted with a red box.
  - Show Deleted:** A dropdown menu.
  - Bookmark Search:** A blue button.
  - [+] Export:** A button at the bottom.
- Reposition Channel Dialog:** A modal window titled 'Reposition Channel' with a close button (X). It contains the text: 'Reposition Channel "01-File to Socket" to start with this message?' and 'All messages before this point will be marked as processed.' Below the text are three buttons: 'Cancel', 'After this message', and 'Start here'. The 'Start here' button is highlighted with a red box.

## Skip Messages

Reposition a channel queue to **omit** processing from a specific point in time.

The screenshot displays a logs management interface. On the left, a list of messages is shown, with the first message highlighted in green and a red border. The message details are as follows:

Today	01-File to Socket
15:00:54.619	MSH ^~\& AcmeMed Lab Main HIS St. Micheals 20050115115518  ADT^A01 93CC8B5E
	EVN 20080803110421   20070402071634
	PID 3490353 Garland^Fred  19330913 M  Unknown 582 Miller Lane^^Chicago^
	NK1 1 Fitzgerald^Mary Second Cousin
	NK1 2 Muir^Sabrina Parent

Below this message, two other messages are visible, also with 'PENDING...' buttons. The second message has a time of 15:00:44.554 and the third has 15:00:24.414.

In the center, the 'Search Criteria' panel shows a 'TEXT QUERY' of 'Garland Fred', a 'CHANNEL' dropdown set to '01-File to Socket', and a 'TIME RANGE' section with an unchecked checkbox. The 'TYPE' dropdown is set to 'All'.

On the right, a 'Reposition Channel' dialog box is open, asking to reposition the channel '01-File to Socket' to start with the selected message. It states: 'All messages before this point will be marked as processed.' The dialog has three buttons: 'Cancel', 'After this message', and 'Start here' (which is highlighted with a red border).

## Notifications using the Logs

Use logging commands to customize log messages and trigger alerts

- `iguana.logInfo()`
- `iguana.logWarning()`
- `iguana.logError()`
- `iguana.logDebug()`

```
function Alert()  
  if MSH[6][1]:nodeValue() == '' then  
    iguana.logError('ALERT: Missing Receiving Facility')  
  end  
end
```

The screenshot displays the 'Email Notification' configuration page. It has three tabs: 'STATUS', 'EMAIL SERVER SETTINGS', and 'NOTIFICATION RULES'. The 'NOTIFICATION RULES' tab is active. Below the tabs is a 'Summary' section. There are two notification rules listed:

- Rule 1:**
  - Trigger: Channel '[LogAPI - HL7 Processor](#)' logs an **error** message matching text query: **ALERT** [Find matching log entries]
  - Recipients:
- Rule 2:**
  - Trigger: **Any source** logs an **informational** message matching text query: **channel has stopped** [Find matching log entries]
  - Recipients:

## Searching the Logs

The screenshot displays the 'Logs' interface. On the left, a list of log entries is shown with columns for time and service name. On the right, a 'Search Criteria' panel is visible, containing several filter options: a text query field, a channel dropdown menu, a time range checkbox, a type dropdown menu, a 'Show Deleted' dropdown, a 'Bookmark Search' button, and an 'Export' button.

Time	Service	Message
Today 01:07:37.380	Iguana Service	Channel "First Steps: Filtering HL7" imported by user
Today 00:00:01.058	Iguana Service	Executing Log Purge for logs before 2015/09/26 (YYYY/MM/DD). No files were deleted.
Yesterday 14:21:01.030	Iguana Service	User "admin" has logged in from IP 127.0.0.1 with session ID: "1293b9c1e62bcc63d512050d093cf586c4c"
Yesterday 14:20:57.749	02-Socket to Database	Channel has started.
Yesterday 14:20:57.749	02-Socket to Database	Listening on port 5160.
Yesterday 14:20:57.748	02-Socket to Database	Fast ACK in effect.
Yesterday 14:20:57.748	02-Socket to Database	Listening on port 5160.

LOG USAGE:

Search keywords, phrases, regex

Filter results by:

- Source
- Date/time range
- Log type

Bookmark common searches

Export search results

# Using the Log API

## What is the Log API?

RESTful API to query and aggregate logs from an Iguana server

GET/api\_query returns a table of matching log entries as XML

Results can be used in Iguana or exported to a file/system/database



```
Document
  Document
    <export>
      success="true"
      <message>
        source_name="Facility 1 - HL7 Inbound"
        time_stamp="2021-03-16 12:10:43.054"
        reference_id=""
        type="Message"
        data="MSH|^~\&|MedPoke|E\T\R|Main HIS|St. Michaels|20100519073713||ADT^A05|
        message_id="20210316-1347094"
        deleted="N"
        marked="N"
        resubmitted="N"
        is_resubmission="N"
      </message>
    </export>
  </Document>
```



## When to use the Log API



### Troubleshooting

Automate reprocessing of messages



### Auditing

Query for audit logs to send to external tracing system



### Reporting & Analytics

Aggregate logs for monitoring or analytical insights



### Archiving

Regularly archive log messages

#### *Key Considerations:*

- **Security** - Exposing ePHI outside of Iguana
- **Performance** - High volume queries increase load on Iguana

## How to use the Log API

```
function main()
  local logQuery = net.http.get{url='http://localhost:6540/api_query',
    parameters={
      username='admin',
      password='password',
      limit = 50, -- show only 50 entries
      type = 'messages', -- of type message
      source = 'Facility 2 - Outbound', -- from this source channel
      reverse = 'true', -- with newest entries at the top

      -- some other useful parameters
      -- after = '2012/07/01 12:00:00', -- after date
      -- before = '2012/06/01 12:00:00', -- before date
      -- refmsgid = 'messageId', -- unique log message ID
      -- filter = 'VIP', -- only messages containing "VIP"
      -- deleted = 'false', -- exclude deleted messages
      -- debugmode = 'false' -- exclude debug messages
    },live=true}

  xml.parse{data=logQuery}
end
```

GET /api\_query endpoint

Input parameters for query

Parse returned table

Iguana 

Logging Exercises

# Today's Logging Workflows

### 1 Troubleshooting Messages

Resubmitting messages and repositioning the queue

### 2 Using the Log API

Query the Log API to retrieve log messages hourly for archiving

# References

# References

- <https://help.interfaceware.com/v6/log-features>
- <https://help.interfaceware.com/v6/audit-logs>
- <https://help.interfaceware.com/v6/log-encryption-works>
- <https://help.interfaceware.com/v6/log-configuration-and-performance>
- <https://help.interfaceware.com/v6/reprocessing-and-resubmitting-log-messages#single>
- <https://help.interfaceware.com/v6/reprocessing-and-resubmitting-log-messages#multiple>
- <https://help.interfaceware.com/v6/reprocessing-and-resubmitting-log-messages#skip>
- <https://help.interfaceware.com/v6/monitoring#notification>
- <https://help.interfaceware.com/v6/using-the-logs#search>
- <https://help.interfaceware.com/v6/accessing-the-logs-from-other-applications#export>
- <https://help.interfaceware.com/v6/http-api-reference#log>
- <https://help.interfaceware.com/v6/accessing-the-logs-from-other-applications>