JMS Listener Architecture

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Description** |
| 1.0 | 5/1/2012 | Ted Crane | Release Version |

**Document Approvers & Sign-Off**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Approver** | **Role** | **Document Accept/Reject** |
| 5/1/2012 | Ric Merrifield | Release Manager | Accept |
| 5/11/2012 | John Stiehl | Release Manager | Accept |

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# Introduction

## Purpose

This document provides a description of the system architecture for the xConnect JMS Listener software that reads and messages transmitted from the xBRCs and GxP on a Progress Software Sonic MQ Enterprise Service Bus.

## Scope

This is an early draft of the xConnect JMS Listener software, and it does not cover all functionality that will be provided in the production system.

## Assumptions and Constraints

A Progress Software Sonic MQ Enterprise Service Bus has been installed and configured in a location that can be connected to by the JMS Listener software.

A SQL Server 2008 R2 Server has been installed and configured with the appropriate xBRMS database schema in a location that can be connected to by the JMS Listener software.

Both xBRC and GxP systems are operating and publishing the expected messages on the SonicMQ Enterprise Service Bus.

IDMS is available to retrieve guest information.

## Definitions

For this draft, the following acronyms are used:

|  |  |
| --- | --- |
| **Term** | **Definition** |
| xConnect | Code, scripts, APIs, and database schemas which comprise the unifying messaging, management, and reporting software which ties the hardware together into a coherent solution |
| xBand | RFID device worn by Guests |
| xTP | Experience TouchPoint, a Disney-themed short range RFID reader or “tap” device |
| DAP | Disney Access Portal, an xTP configured with a biometric reader |
| xBR | Long range RFID reader with uni- or omni-directional antennae |
| xBRC | xBand Reader Controller which manages xBRs, xTPs, and DAP devices |
| xBRMS | xBand Reader Management System code and database which stores operational data |
| IDMS | Code and database storing Guest and xBand information |

# The JMS Listener Environment



Figure 1 The JMS Listener Environment

# Prerequisites

This section addresses network, hardware, and software prerequisites to support the JMS Listener. The xConnect system has been installed following the instructions outlined in the *NGE Alpha Lab Installation Guide*.

# Messages

This section documents the messages the JMS Listener processes. All messages are stored in the xBRMS database.

## Database Schema

### GxP Message Schema



Figure 2 GxP Schema

### xBRC Message Schema



Figure 3 xBRC Message Schema

## GxP Messages

### Entitlement Selection Message

Each time a guest selects an entitlement the GxP system sends a message on topic JMS topic GXP.XPASS. The message text is XML, shown in the following example:

<businessEvent>

<location>GXP.XPASS</location>

<eventType>BOOK</eventType>

<subType>x</subType>

<guestIdentifier>ABCD1234</guestIdentifier>

<referenceId>10000</referenceId>

<correlationId>

</correlationId>

<payLoad>

</payLoad>

</businessEvent>

This information is stored in the BusinessEvent table in the xBRMS database (see Figure 2) for details.

The location and eventType elements will always be **GXP.XPASS** and **BOOK**, respective.

The payload and subtype elements will always be empty, and the correlationId element is persisted but never used.

The guestidentifer element represents the IDMS guest ID. A call to IDMS is made to get the first name, last name an e-mail address for the guest. This data is written to the Guest table in the xBRMS database.

The referenceId element is used to make a RESTFul call to the GxP web service API to retrieve the StartTime, EndTime, EntertainmentID, and LocationID values. If this call fails for any reason the values will not be populated.

### Entitlement Redemption Message

Each time a guest redeems an entitlement they have selected, the GxP system sends a JMS message. This message is in the form of a serialized Java Business Object used by the GxP system containing the following fields:

* cacheXpassAppntmtId
* apntmtId
* xbandId
* entertainmentId
* apntmntStatus
* apntmntReason

This data is saved to the EntitlementStatus table.

The cacheXpassApntmtId and apntmtId fields are persisted but not used.

The xbandId represents the secureID of the band or card the guest used to redeem the entitlement and is not persisted, but is used

The entertainmentID, apntmntStatus, and apntmntReason values are persisted as is.

The Timestamp field in the EntitlementStatus table is read from the timestamp of the JMS message itself.

### Blue Lane Message

Each time an unsuccessful attempt to redeem an entitlement (also called a Blue Lane) occurs, the GxP system sends a JMS message on the GXP.BLUELANE topic. The message has the following XML format:

<businessEvent>

<location>GXP.BLUELANE</location>

<eventType>Entitlement</eventType>

<subType>BlueLane</subType>

<referenceId>0776810827978534</referenceId>

<guestIdentifier>0776810827978534</guestIdentifier>

<timeStamp>2011-11-18T15:19:11Z</timeStamp>

<payload>

<![CDATA[<blueLane>

<xbandId>0776810827978534</xbandId>

<gxpEntertainmentId>80010110</gxpEntertainmentId>

<reason>{No Valid Park Admission || No Xpass || Early || Late || Different Entertainment}</reason>

<tapTime>Fri Nov 18 15:19:11 EST 2011</tapTime>

<facilityId>80007944</facilityId>

</blueLane>]]>

</payload>

<correlationId>074321ff-5af5-44a5-85dd-fb8bf2b8980c</correlationId>

</businessEvent>

As with the Entitlement Selection message, the data in the Business Event object is stored in the Business Event table.

The location, eventType, and subtype elements will always contain “GXP.BLUELANE”, “Entitlement”, and “BlueLane”, respectively.

The referenceID element is not persisted.

The guestIdentifer represents the secureID of the card or band the guest attempted to redeem the entitlement with and is used to lookup the guest. The guestID is then persisted, along with the guest first name, last name and email address.

The payload element contains the information persisted to the BlueLaneEvent table. The facilityId and Reason are normalized and are represented by the ReasonCode in the ReasonCode table and the FacilityName in the Facility table.

## xBRC Messages

The xBRC messages are documented in the xBRC Interface Control Document. The messages may change subsequent to the GxP Survey and Test.

### Entry Event

An Entry Event is sent from the xBRC when a guest touches their card to the xTP at the entry of the attraction. The following is an example of the XML received in the body of an Entry Event message:

<venue name="VenueName" time="timestamp">

<message type="ENTRY" time="timestamp">

<guestid>guest id</guestid>

<xpass>[true | false]</xpass>

<readersection>reader section</readersection>

<readerlocation>reader location</readerlocation>

</message>

</venue>

A record is created in the Event Table, and the EventTypeID is set to refer to the value in the type attribute of the message element. All other elements are passed through as is, with the exception of readersection which is not used at this time.

### Merge Event

A Merge Event is sent from the xBRC when a guest touches their card to the xTP at the merge point of the attraction.

<venue name="VenueName" time="timestamp">

<message type="MERGE" time="timestamp">

<guestid>guest id</guestid>

<xpass>true</xpass>

<readersection>reader section</readersection>

<readerlocation>reader location</readerlocation>

</message>

</venue>

A record is created in the Event table and the Event Type ID is set to the value that represents a Merge Event in the EventType table. Values are mapped in the same manner as an entry event.

### Abandon Event

An Abandon Event is sent from the xBRC when a guest enters the attraction (Entry Event), but is not seen at the merge (Merge Event) for a predetermined amount of time.

<venue name="VenueName" time="timestamp">

<message type="ABANDON" time="timestamp">

<guestid>guest id</guestid>

<xpass>[true | false]</xpass>

<readersection>reader section</readersection>

<readerlocation>reader location</readerlocation>

<lastxmit>time</lastxmit>

</message>

</venue>

A record is created in the Event table and the Event Type ID is set to the value that represents an Abandon Event in the EventType table. Values are mapped in the same manner as an entry event. In addition a record is created in the AbandonEvent table and the lastxmit element is written to the LastTransmit field.

### Reader Event

A Reader event is generated by an xBRC configured to generate only events in response to guest touching a specific xTP with their card.

<venue name="VenueName" time="timestamp">

<message type="READEREVENT" time="timestamp">

<guestid>guest id</guestid>

<readersection>reader section</readersection>

<readerlocation>reader location</readerlocation>

<readerlocationid>reader location id</readerlocationid>

<readername>reader name</readername>

<readerid>reader id</readerid>

<rfid>rfid</rfid>

<iswearingprimaryband>true/false</iswearingprimaryband>

</message>

</venue>

A record is created in the Event table and the Event Type ID is set to the value that represents a Reader Event in the EventType table. Values are mapped in the same manner as an entry event.

Elements not contained in the Event table are stored in their corresponding fields in the ReaderEvent table.

### Metrics Event

Processed but not used for the GxP Survey and Test.

### Load Event

The xBRC will not generate Load Events during the GxP Survey and Test.

### Exit Event

The xBRC will not generate Exit Events during the GxP Survey and Test.

# Troubleshooting

Please refer to the *Troubleshooting.docx* for troubleshooting instructions.