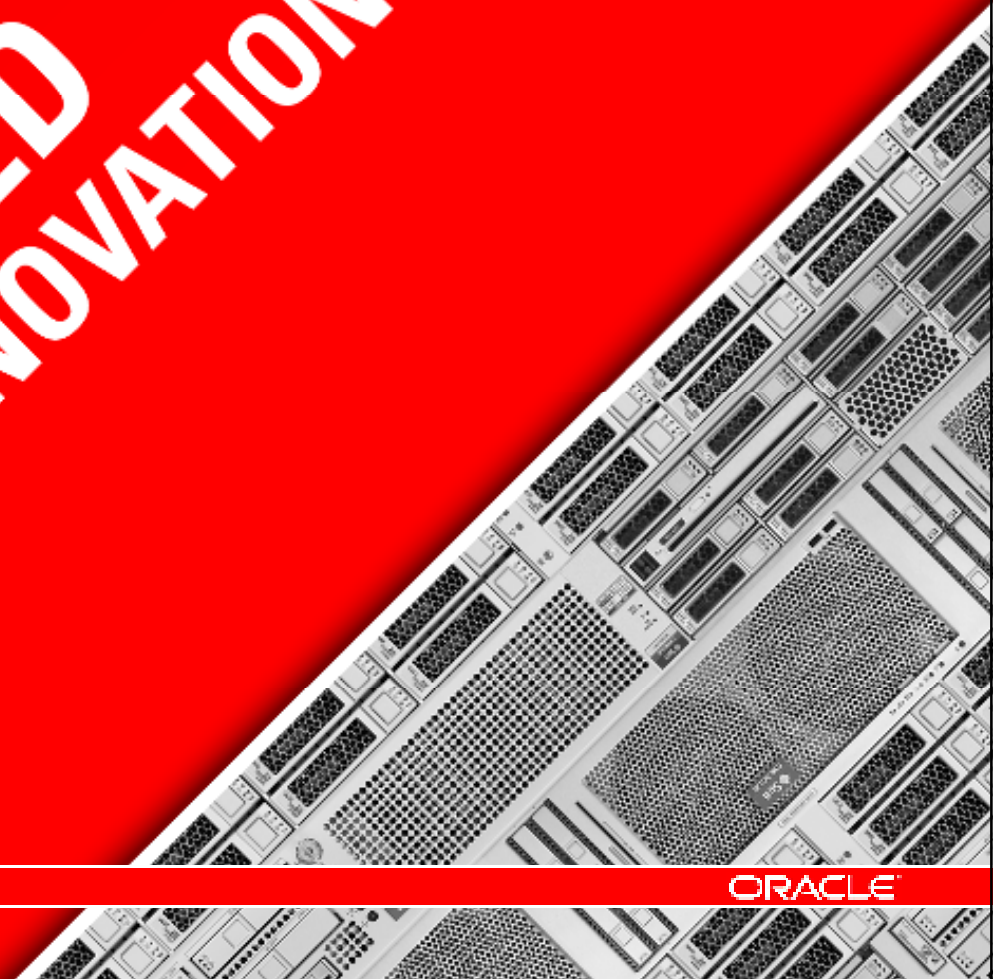





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The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.



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Healthcare Integration Capabilities with Oracle Fusion Middleware

Suresh Sharma, Sr. Principal Product Manager, Oracle Integration Product Management

Sundar Shenbagam, Director of Development, Oracle Integration

Ted Hong, Sr. Development Manager, Oracle Integration

Agenda

- Healthcare Market Opportunities
- Oracle SOA Suite for healthcare integration
- Overview of Core Components and Functionalities
- Demo
- Licensing
- Q&A



Healthcare Market Opportunities

- HITECH* Act – Feb 17, 2009
 - \$36B in Federal funding
 - All providers need to demonstrate “meaningful use” of Electronic Health Records (EHR) by 2015
 - Each hospital will receive between \$3M - \$11M payed out over 4 years with the ‘threat of penalties’ if provider cannot prove ‘meaningful use’ and ‘certified EHR’
- Requirements to upgrade to HIPAA 5010 and ICD 10 by Jan. 2012
- Sun Java CAPS healthcare customer migrations
- Health information exchange
 - HL7 v3 gaining traction
 - HL7 v2 is not going away

Oracle SOA Suite for healthcare integration



Released

CY 2011

CY 2012

Oracle SOA Suite for healthcare integration 1.0 (11gR1 PS4FP)

- Healthcare Adapter Wizard in JDeveloper
 - MLLP1.0, 2.0, Generic TCP
 - HL v2.x, Custom; HIPAA 5010, 999
- Monitoring dashboards & reporting
- EM drill down for composite instances
- Message libraries and composite templates
- MLLP HA Support
- HIPAA 4010 to 5010 mapping support
- Auditing for Critical Healthcare event

Oracle SOA Suite for healthcare integration 1.1 (11gR1 PS5)

- Additional protocol and document support
 - File, FTP, HTTP, JMS, HLLP
 - HL v3; HIPPA 5010 TA1, 277/824
- Healthcare test simulator
- Enhanced HL7 Batching Support
- Web Services Support
- Enhance monitoring
 - Sequencing Queue Monitoring, Endpoint Pair, System dashboard, Alerts Configuration

Oracle SOA Suite for healthcare integration 2.0

- UI with additional protocol support
- Healthcare Specific Reports and Monitoring
 - Advanced search within Payload
 - Flexible Reporting Model
- Enhance Security
- User configurable alerts and notifications
- EM error hospital support for all errors

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Core Components and Functionalites

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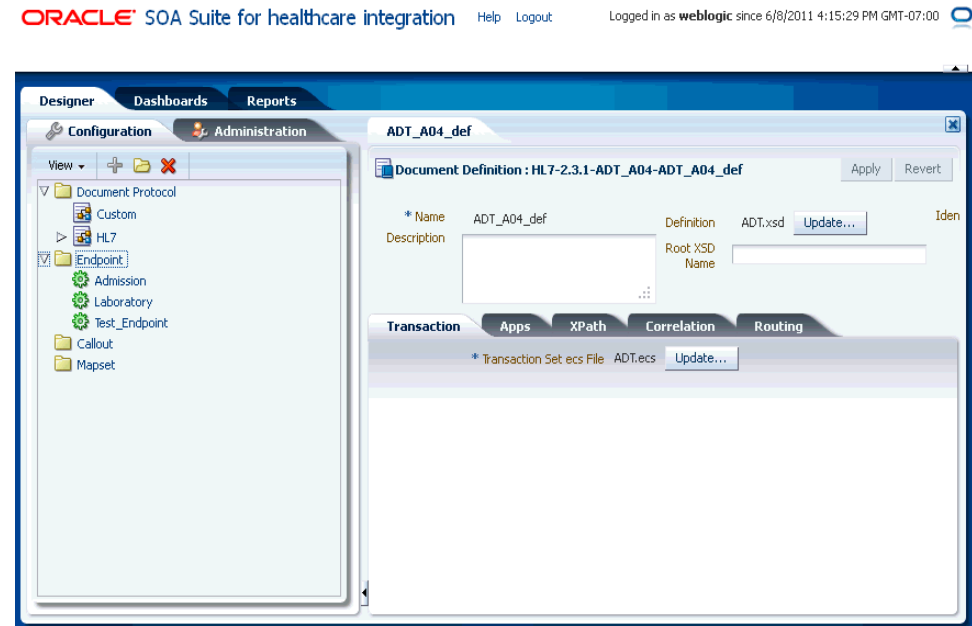
Overview of Core components and Functionality

- Healthcare Adapter Wizard
- Oracle SOA Suite for healthcare integration UI
- Oracle Document Editor
- MLLP HA Solution
- Auditing
- Security

Oracle SOA Suite for healthcare integration UI

Configuration, Management and Monitoring

- **Designer**
 - Configuration
 - Document Protocol, Endpoint Configuration, Callout, Mapset
 - Administration
 - Admin Setting, Internal Delivery Channel, Import/Export
- **Dashboard**
 - Endpoint Status, Message Details
- **Reports**
 - Message Status, Resubmitting



Configuring Endpoint

- Specify Endpoint

- Name
- Transport Protocol
- Connection Mode
- HostName, Port

The 'Create...' dialog box contains the following fields:

- * Name: [Empty text box]
- Transport Protocol: MLLP10 (dropdown menu)
- * Connection Mode: Server (dropdown menu)
- * Host Name: localhost (text box)
- * Port: [Empty text box]

Buttons: OK, Cancel

- Associate End point with Document Definition

The screenshot shows the Oracle SOA Suite configuration interface for a Test Endpoint. The main window is titled 'Test_Endpoint' and shows the configuration for 'Endpoint: Test_Endpoint (Enabled)'. The configuration includes:

- Name: Test_Endpoint
- Transport Protocol: GENERIC TCP
- Connection Mode: None
- Retry Interval: 0
- Reattempt Count: 0
- Transport Callout: [Empty dropdown]

The 'Send' section shows a table with columns: Document, Functional ACK, Validation, Translation, Internal Channel, Document Callout, and Mapset. The row for 'HL7-2.3.1-ADT_A04-ADT_A04_def' has the following values: [Empty], [Checked], [Checked], [Checked], [Empty], [Empty], and Test_Mapset.

The 'Receive' section shows a table with columns: Document, Functional ACK, Validation, Translation, Internal Channel, and Document. The row for 'HL7-2.3.1-ADT_A04-ADT_A04_def' has the following values: [Empty], [Empty], [Empty], [Checked], [Empty], and [Empty].

Dashboards

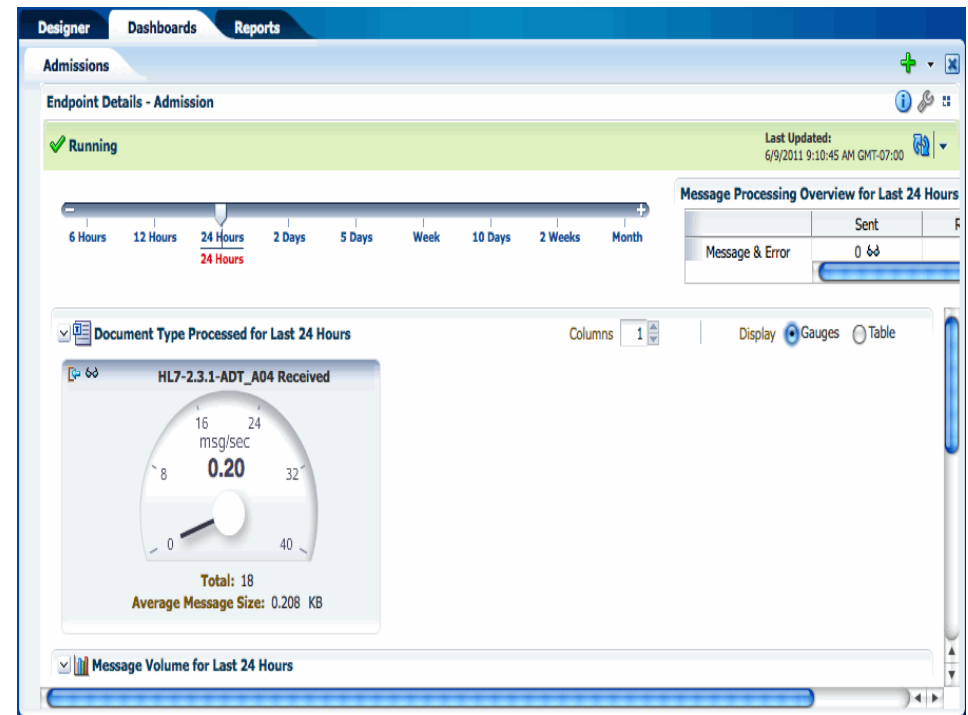
- Endpoint Summary
- Status of Endpoint
 - Running, Idle, Disabled, Errors.
- Rate at which message are being processed
- The average message size
- Number of messages sent /received
- Number of error message

The screenshot displays the Oracle SOA Suite for healthcare integration dashboard. The interface includes a top navigation bar with 'Designer', 'Dashboards', and 'Reports' tabs. The main content area shows two endpoint status cards: 'Admission' and 'Laboratory'. Both are marked as 'Running'. The 'Admission' card shows 0 sent, 7 received, and 0 errors in the last 24 hours, with the last received message at 2011-06-08 16:37:53.0. The 'Laboratory' card shows 1 sent, 0 received, and 0 errors in the last 24 hours, with the last sent message at 2011-06-08 16:38:02.0. A 'Time Range' selector on the left allows switching between 24 Hours, 12 Hours, 6 Hours, 2 Days, 5 Days, Week, 10 Days, 2 Weeks, and Month. An 'Endpoint Properties - Admission' dialog box is open, showing a table of key-value pairs for the endpoint configuration.

Key	Value
Protocol	MLLP
Connection Mode	Server
Host Name	localhost
Port	9501
Permanent Connection	true
Polling Interval	10
Timeout	300
Sequencing	true

Dashboards

- Volume Metric can be viewed as Gauge / Table
 - The document type
 - The number of messages received per second
 - The total number of message processed in the specified time period
 - The average size of each message



Reports

- Each Report have
 - Report configuration bar
 - The message list
 - A graphical depiction of the message flow
 - Wire Message, Business Message, Application Message
 - Message details for the selected message

The screenshot displays the Oracle SOA Suite Reports interface. At the top, there are tabs for 'Designer', 'Dashboards', and 'Reports'. The 'Reports' tab is active, showing a 'Last 24 Hours' report. The interface includes a navigation bar with '1 - 40 of 2545' messages, a 'Page Size' of 40, and a 'Filter Editor'. A table lists messages with columns for Message ID, Created Date and Time, Direction, Endpoint, and State. Below the table is a graphical message flow diagram showing 'Wire Message', 'Business Message', and 'Application Message' stages. The 'Business Message' stage is highlighted, and its details are shown in a 'Business Message Details' panel. The details include Identification information such as Endpoint (Laboratory), State (MSG_WAIT_FA), Direction (OUTBOUND), and Message Type (REQ). Other details include Message ID, Label, Interchange Control Number, Group Control Number, and Transaction Set Control Number.

Message ID	Created Date and Time	Direction	Endpoint	State	
1	0AE5BA9E1307A903F2E000001467AA7E	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_WAIT_FA
2	0AE5BA9E1307A903F88000001467AA8F	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_WAIT_FA
3	0AE5BA9E1307A903FED000001467AA9C	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_WAIT_FA
4	0AE5BA9E1307A9040C7000001467AAC3	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_COMPLETE
5	0AE5BA9E1307A9043E7000001467AB02	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_WAIT_FA
6	0AE5BA9E1307A9041BB000001467AAE1	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_WAIT_FA
7	0AE5BA9E1307A904281000001467AAE7	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_WAIT_FA
8	0AE5BA9E1307A904385000001467AAF8	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_WAIT_FA
9	0AE5BA9E1307A904174000001467AADB	6/10/2011 10:18:56 AM GMT-07:00	OUTBOUND	Laboratory	MSG_COMPLETE

Business Message Details

Identification

Endpoint: Laboratory
State: MSG_WAIT_FA
Direction: OUTBOUND
Message Type: REQ
ID: 0AE5BA9E1307A90505C000001467AC35

Message ID: 0AE5BA9E1307A903F2E000001467AA7E
Label: soa_b2b_-_Fri Jun 10 09:53:26 PDT 2011 - 10
Interchange Control Number
Group Control Number
Transaction Set Control Number: 853246818333403

Communication and Protocol

Reports

Viewing Wire Message

- **Wire Message**
 - Native data sent to or out from an endpoint
 - Contains Payload Attachment
- **Details of Transport Protocols**
 - Transport Protocol Version
 - Protocol Message Identification
 - State

The screenshot displays the 'Wire Message Details' window, which is organized into several sections:

- Identification:** Shows the ID (0AE5BA9E1307B25D74A000001467AC8C), Message ID (0AE5BA9E130777D36370000014671813), and Protocol Message ID (0AE5BA9E130777D36370000014671813). It also includes fields for 'Refer to Protocol Message ID' and 'Protocol Collaboration ID'.
- Communication and Protocol:** Displays Transport Protocol (TCP), Transport Protocol Version (1.0), URL (TCP://localhost:9901), State (COMPLETE), Transport Retry Interval (0), Transport Remaining Retry (0), and Resubmit Count (0).
- Protocol Transport Binding:** A table with the following data:

Key	Value
ChannelName	Laboratory
SequencingMode	OneToOne
dcID	dc_0AE5BA9E1307045A47E0000015751CCE
Date	Fri_10_Jun_2011_20:02:08_GMT
- Transport Headers:** A table with columns for Key and Value, currently empty.
- Content:** Shows Message Size (213) and a 'Packed Message' section containing a 'Data' field with a 'Download' button. The data is: MSH|^~&|Admission APP|Admission FAC|My Company APP|My Company FAC|20110609195911||ADT^A04|801675871352137|P|2.3.1||AL|ER|US|ASCII|ENGPID|1||A0000010||TEST, Patient 01_10||20001001|FPV1*1|||||||||||||||||10010|
- Payload:** A section at the bottom, currently empty.

Reports

Viewing Business Message

- Business messages include instance information for a document protocol, including the sending and receiving Endpoints
- Details of exchange protocol and document protocol, and message details

Business Message Details

Identification

Endpoint	Laboratory	Message ID	OAE5BA9E130777D36370000014671813
State	MSG_ERROR	Label	soa_b2b_ - Thu Jun 09 19:54:51 PDT 2011 - 8
Direction	OUTBOUND	Interchange Control Number	
Message Type	REQ	Group Control Number	
ID	OAE5BA9E130777D3A8B0000014671818	Transaction Set Control Number	801675871352137

Communication and Protocol

Document Protocol	HL7	Sent Date	6/9/2011 7:59:13 PM GMT-07:00
Protocol Version	2.3.1	Received Date	6/9/2011 7:59:13 PM GMT-07:00
Document Type	ADT_A04	Acknowledgement Mode	NONE
Document Definition	ADT_A04_def	Response Mode	NONE
Document Retry Interval	0	Transport Protocol Name	MLLP
Document Remaining Retry	0	Transport Protocol Version	1.0

Content

Native Message Size 213 Translated Message Size 8090

Payload Key Fields

Name	Value
1 XPathName1	

Reports

Viewing Application Message

- Provide information related to SOA Composite
- Details on whether Back-end SOA Composite Sent or Received the message
- Detailed Out
 - Composite Name, Version, Service Name, Instance ID

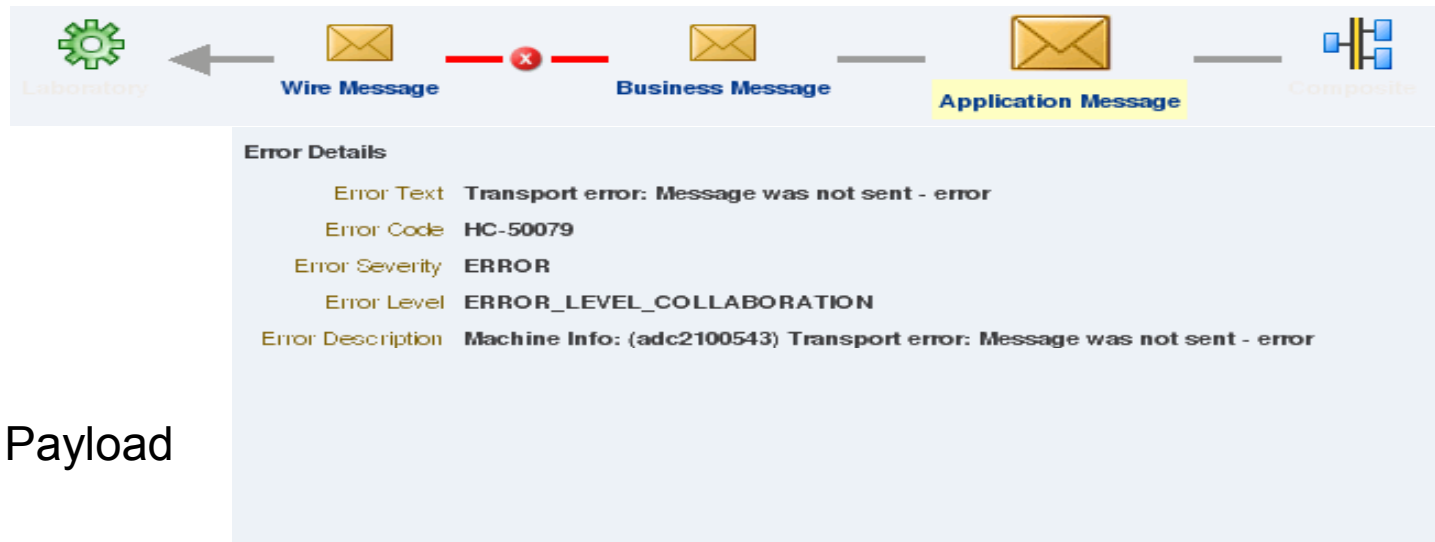
The screenshot displays the 'Application Message Details' report, organized into several sections:

- General:** ID: 0AE5BA9E130777D36380000014671814; Internal Delivery Channel: FPScenario1Composite[1.0]; Created Date and Time: 6/9/2011 7:59:12 PM GMT-07:00; Modified Date: 6/10/2011 1:02:15 PM GMT-07:00; Document Protocol: HL7; Protocol Version: 2.3.1; Document Type: ADT_A04; Direction: OUTBOUND; State: MSG_COMPLETE; Resubmit Count: 1; Application Conversation ID; Reference to Application Message ID.
- Content:** Message Size: 8090.
- Message Properties:** A table with the following data:

Key	Value
tracking.conversationId	0AE5BA9E130777D361F0000014671811
MESH_METRICS	null
tracking.compositeInstanceCreatedTime	Thu Jun 09 19:59:12 PDT 2011
tracking.parentReferenceId	mediator:9F95CBE0930D11F09F5C3DB8A10D4926:9F961A10930D11F09F5C3DB8A10D4926
- Composite:** Retry: 0; Interval; Remaining: 0; Retry; ECID: 0AE5BA9E130777D361F0000014671812; Domain Name: default; Composite Name: FPScenario1Composite; Composite Version: 1.0; Reference Name: sen_ADT_A04; Service Name.

Reports

- Error Message



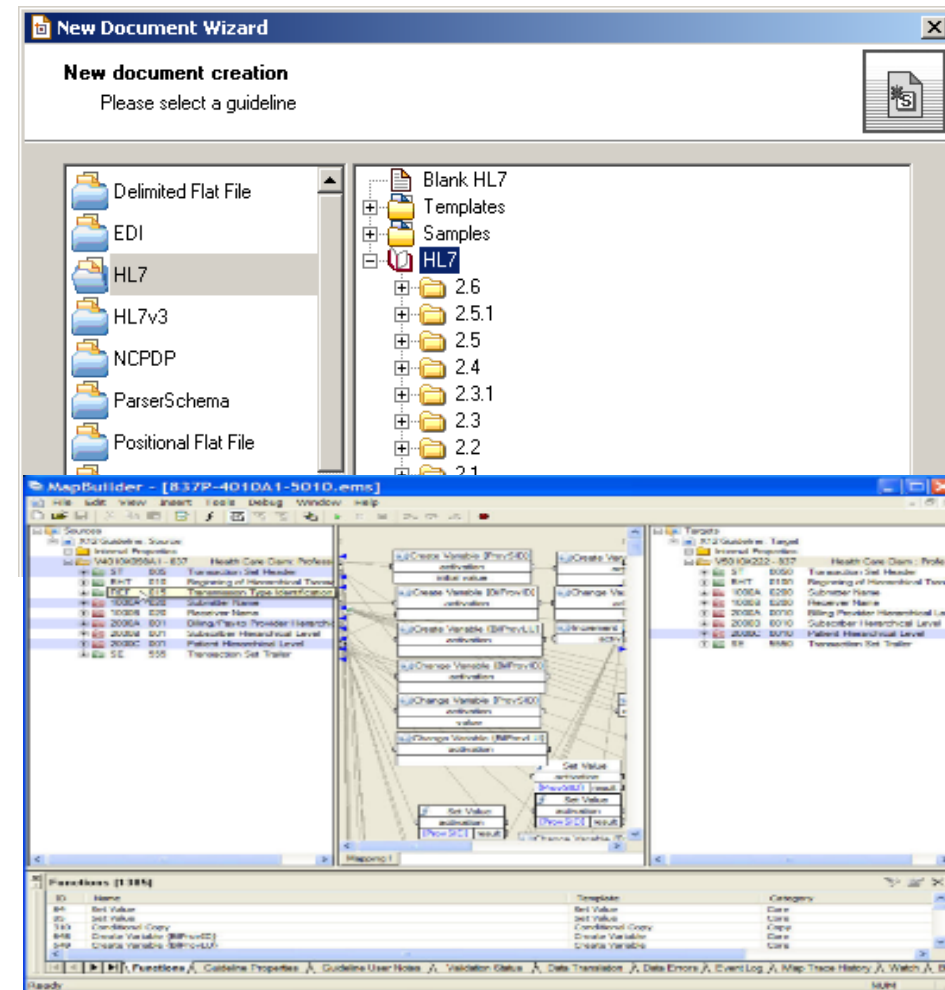
The screenshot shows a message flow diagram with four stages: Laboratory, Wire Message, Business Message, and Application Message. The Application Message stage is highlighted in yellow. Below the diagram, the 'Error Details' section provides the following information:

Error Text	Transport error: Message was not sent - error
Error Code	HC-50079
Error Severity	ERROR
Error Level	ERROR_LEVEL_COLLABORATION
Error Description	Machine Info: (adc2100543) Transport error: Message was not sent - error

- Filter
 - Search with in Payload
- Resubmit
- Purge

Oracle Document Editor

- Editor to build healthcare message structures
 - HL7, X12, HIPAA, ...
- Create a guideline from the supplied standards
 - Customize guideline; Add Z-Segment
- Export Guidelines in XSD form
- Analyzer Wizard to review data for errors
- Validate structures against sample data



Viewing the Healthcare User Audit Trail

- Uses Audit Policy in EM
- Audit Events
 - User Session (Login, Logout)
 - Endpoint Mgmt (Enable, Disable)
 - Document Management
 - Read Payload
- Audit Level
 - Low
 - Medium
 - Custom – Recommended
- Logs available in audit_log file in managed server

The screenshot shows the Oracle SOA Suite Audit Policy configuration page. The page title is "soainfra" and the user is logged in as "weblogic". The page was refreshed on Sep 1, 2011 9:30:19 AM PDT. An information message states: "All changes made in this page require a server restart to take effect." The "Audit Policy" section includes an "Apply" button and a "Revert" button. Below this, there is a description: "Use this page to view and set the audit policies for the Java EE applications deployed on this domain. To set the policies for System Components, such as Oracle HTTP Server, refer to the component's home page." The "Audit Level" is set to "Custom". There are buttons for "Select Failures Only", "Export...", and "Import...". A table lists the audit policies for "Oracle SOA Suite for healthcare integration". The table has columns for "Name", "Enable Audit", "Filter", and "Edit Filter". The "Enable Audit" column has checkboxes for each policy. The "Filter" column is empty. The "Edit Filter" column has an "Edit Filter" button for each row. Below the table, there is a section for "Users to Always Audit" with a text input field for entering a comma-delimited list of user accounts.

soainfra
WebLogic Domain

Logged in as weblogic
Page Refreshed Sep 1, 2011 9:30:19 AM PDT

Information
All changes made in this page require a server restart to take effect.

Audit Policy Apply Revert

Use this page to view and set the audit policies for the Java EE applications deployed on this domain. To set the policies for System Components, such as Oracle HTTP Server, refer to the component's home page.

Audit Level: Custom | Select Failures Only | Export... | Import...

Name	Enable Audit	Filter	Edit Filter
Oracle SOA Suite for healthcare integration	<input type="checkbox"/>		
User Session	<input type="checkbox"/>		
User Login	<input type="checkbox"/>		
User Logout	<input type="checkbox"/>		
Endpoint Management	<input type="checkbox"/>		
Enable Endpoint	<input type="checkbox"/>		
Disable Endpoint	<input type="checkbox"/>		
Document Management	<input type="checkbox"/>		
Read Payload	<input type="checkbox"/>		
Oracle Identity Federation	<input type="checkbox"/>		

Users to Always Audit

Enter a comma-delimited list of user accounts that will always be audited. This ensures audit of specified user accounts, regardless of the policy settings.

Users

MLLP HA Solution

- Achieved through HA features of WL Server, Oracle Db and SOA Suite for healthcare integration
- New Properties in Oracle B2B Properties in Enterprise Manager
 - To enable high availability for healthcare integration
 - b2b.HAInstance (set value to true)
 - b2b.MLLP_HA_Mode (set value to true)
 - Additional Properties to define timeout, ping intervals for the servers
- Front –Load Balancer
 - Used for failover device in case of active node in cluster fails
- External Dependencies
 - Oracle SOA database for message and message state persistence
 - MDS (Metadata Services) repository for instance metadata

Securing healthcare composites

- **User Level Security (Authentication / Authorization)**
 - Leverages configured auth/policy store
 - Support for different privileges (Admin / Monitor)
 - Specifically for HIPAA customers Trading Partner specific roles are supported
 - Document Type Provisioning (Visibility into only configured document details design/runtime)
 - Payload Obfuscation
- **Message Level Security**
 - Non Repudiation of Origin and Non Repudiation of Receipt
 - Confidentiality (exchange level & transport level)
 - Leverages Oracle Security Infrastructure
 - Key Store Management



DEMO

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Oracle SOA Suite for healthcare integration

New solution – existing SKUs with additional features

- Licensing
 - Oracle SOA Suite
 - WebLogic Suite
 - Healthcare Adapter **
- B2B Adapter
 - Payers : HIPAA 4010, 4010A, 5010, 5010Errata
- Healthcare Adapter
 - Providers : HL7 v2.x, 3.x, CCD, CCR, NCPDP

** pre-built maps sold separately

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Q&A

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Related Sessions

- Large---Scale, High---Volume Business---to---Business Integration with Oracle's B2B
 - Venue / Room: Moscone West – 2020
 - Date and Time : 10/3/11, 2:00 PM – 3:00 PM
- Oracle Fusion Middleware: Modernizing the Healthcare Industry
 - Venue / Room: Moscone West – 2020
 - Date and Time : 10/4/11, 15:30 PM – 16:30 PM
- Fraud Detection/Prevention with Oracle Security Governor and Oracle SOA
 - Venue / Room : Westin San Francisco – Olympic
 - Date and Time : 10/6/11, 13:30 PM– 14:30 PM

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Oracle's Data Integration blog

blogs.oracle.com/fusionmiddleware

Oracle.com/Middleware



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Healthcare Market

- **Healthcare Competition**

- Orion Health (Rhapsody)
- InterSystems (Ensemble)
- Cloverleaf
- Corepoint
- Microsoft BizTalk
- Mirth
- GE Healthcare
- HealthVision (Lawson)
- Initiate Systems
- IBM Websphere Healthcare Pack

- **Oracle Advantage**

- Complete Solution
 - Best of both suites Java CAPS and SOA Suite
- Supports all major Healthcare standards
- Enhanced Enterprise Integration
- Enterprise class reliability, scalability and support
- Web Services Standards – WSDL, SOAP, HTTP, XML

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