CORBA-based
Enterprise Application Integration

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Introduction

Hitachi is developing full-featured EAI technology which:

• is centered on the business process (workflow)
• is CORBA-based
• achieves ease of use via simple APIs and a component-based approach.
Architectural Overview – Components

- Workflow manager – WCO
- Reliable messaging – AM
- Enterprise Application Manager – HiEM
- Transformation Engine – Data Junction
- Adapters – constructed with user components assembled into provided container
Architectural Overview – Conceptual Model

- Workflow specification (the Business Process) describes business data flow.
- The Business Process is the root-level “application”:
Architectural Overview – Lifecycle

• Three phases:
• Design - define business process (BP), data transformations; configure adapters
• Deployment - automatically create message queues implementing data flow in BP
• Runtime - launch adapters; automatically connect data flow; instantiate BP; monitor
Architectural Overview – Deployment

- WCO Server
- Deployment Tool
- AM Server
- DB
- Deployment Resource File
- Adapters
- HiEM Server

Create channels:
- AM Server

Connect:
- Adapters
- Launch adapters

Launch adapters:
Architectural Overview – Runtime

- WCO Server
  - Activity A
  - Activity B
  - Business Process

- Hi-EM Server

- Adapter
  - Application A

- AM Msg Channel
  - RDB

- Adapter Transform
  - Application B
Use of CORBA in Hitachi’s EAI

- WCO is based on proposed OMG spec (WfMC-sponsored).
- AM is based on OMG Notification Service.
- HiEM is a CORBA service layered on top of the Notification Service.
- Adapters are Java clients to all these services.
Problems Encountered with OMG Specs

- Awkward to implement end-to-end persistent QOS using NS API
- Notification Service and workflow-management redundantly provide control of flow – performance, consistency issues.
End-to-End Persistence with NS API

• NS provides persistent QOS, but need end-to-end persistence throughout business process
• Want to avoid transactions, for performance reasons
• Adapter needs to control when NS can deallocate a message
• Must use the “push” API and thread synchronization – very awkward
Redundant Control Flow with AM, WCO

• Message queues between adapters provide flow of control, along with data flow (block until message received).

• Workflow manager wants to control flow too (so state of BP can be monitored or altered).

• Result: redundant messages between adapters and WCO.

• Could be fixed with specification changes.
APIs with No OMG Specification

• Enterprise Application Management.
• Data Transformation
Enterprise Application Management

HiEM client API includes:

• Application launch, monitor, restart on fail
• User-extensible push and pull metrics, in hierarchical namespace
• Centralized reporting of errors and other events
Data Transformation

Data Junction embedded-engine API includes:

- Load/unload mapping specifications
- Set source, target names
- User-implemented source and target
- Run transformation
- Process exceptions
Summary

• Current OMG Specifications do not cover all APIs needed for EAI.
• A few problems exist with the use of some OMG specifications for EAI.
• CORBA provides a good foundation for integrating an EAI solution into a single coherent product.