13

Advanced Topics

Objectives

After completing this lesson, you should be able to:

- List the best practices of using Service Bus
- Improve performance by caching service results
- Define SLA alert rules
- Explain how Oracle MFT works with OSB to handle large message transfers
- Describe message resequencing
- Build and deploy Service Bus projects with Maven

Agenda

- Best practices
- Service result caching
- SLA alerts
- Integrating with MFT
- Message resequencing
- Continuous integration with Maven

Principles and Best Practices of Using Service Bus

- Keeping business logic out of the OSB layer
- Implementing well-defined integration patterns in the OSB, such as message transformation and routing
- Exposing standards-based interfaces from the OSB, wrapping proprietary interfaces with web services or JMS interfaces
- Transforming proprietary message formats to common business objects and hiding proprietary interface behavior
- Always configuring the service-level error handler
- Using Actions like Delete, Insert, Replace for minor update to a document

BPEL Versus Service Bus

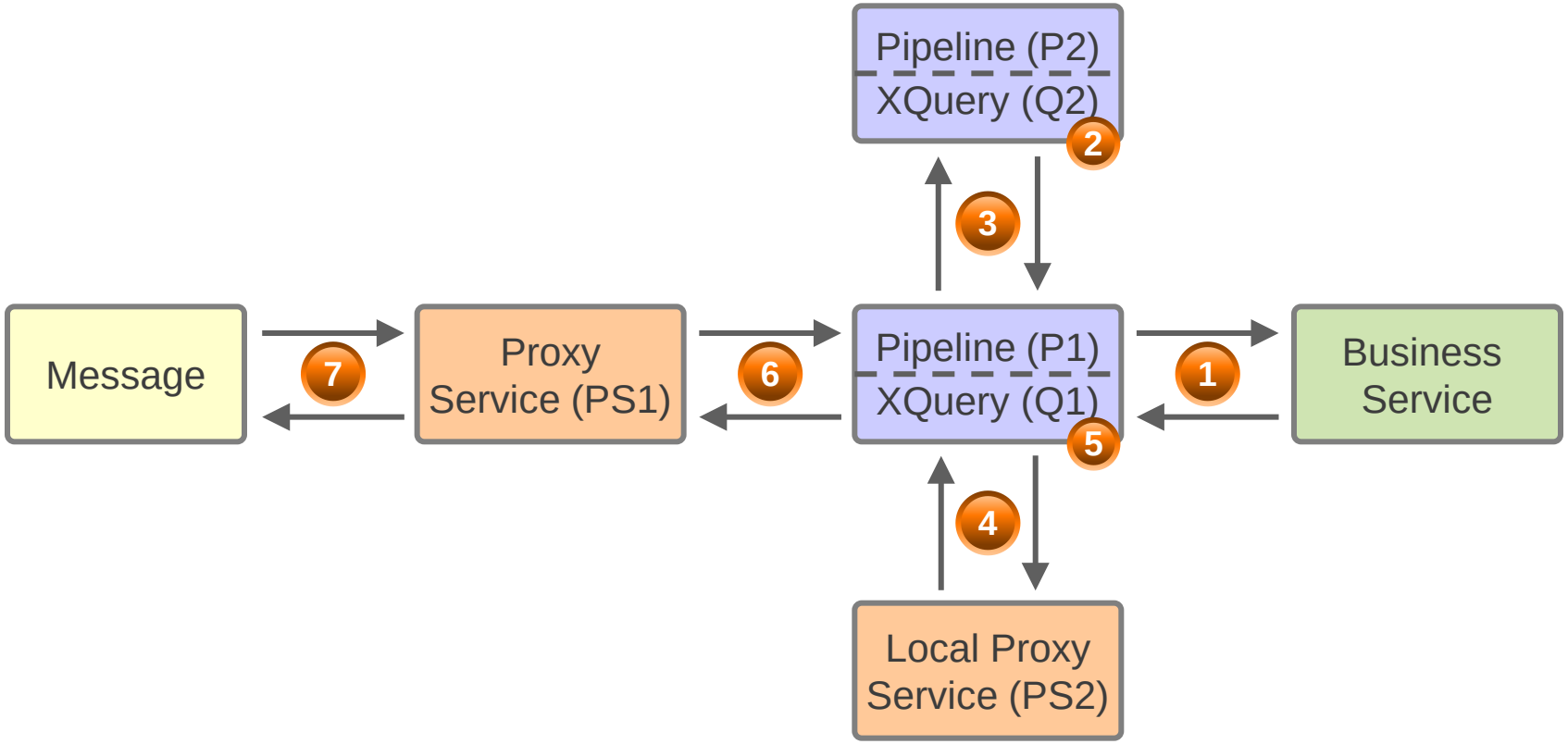
BPEL

- Orchestrating service calls
- Primarily for stateful and long running processes
- Implementing SCA composite services
- Integrating Business Rules and Human Workflow

Service Bus

- Implementing VETRO pattern
- Value mapping and cross-reference tables for canonical data models
- Stateless messaging

Testing Approaches



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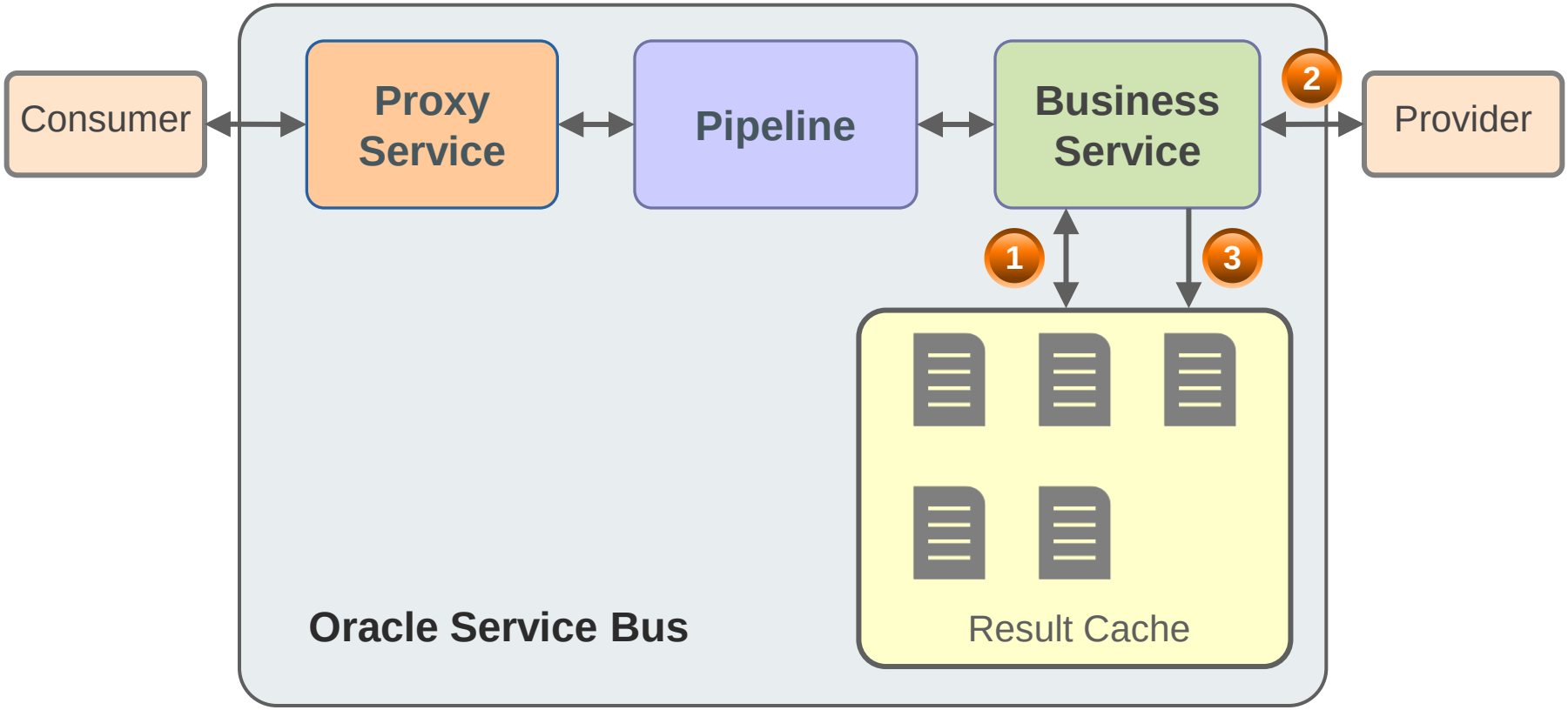
Service Result Caching

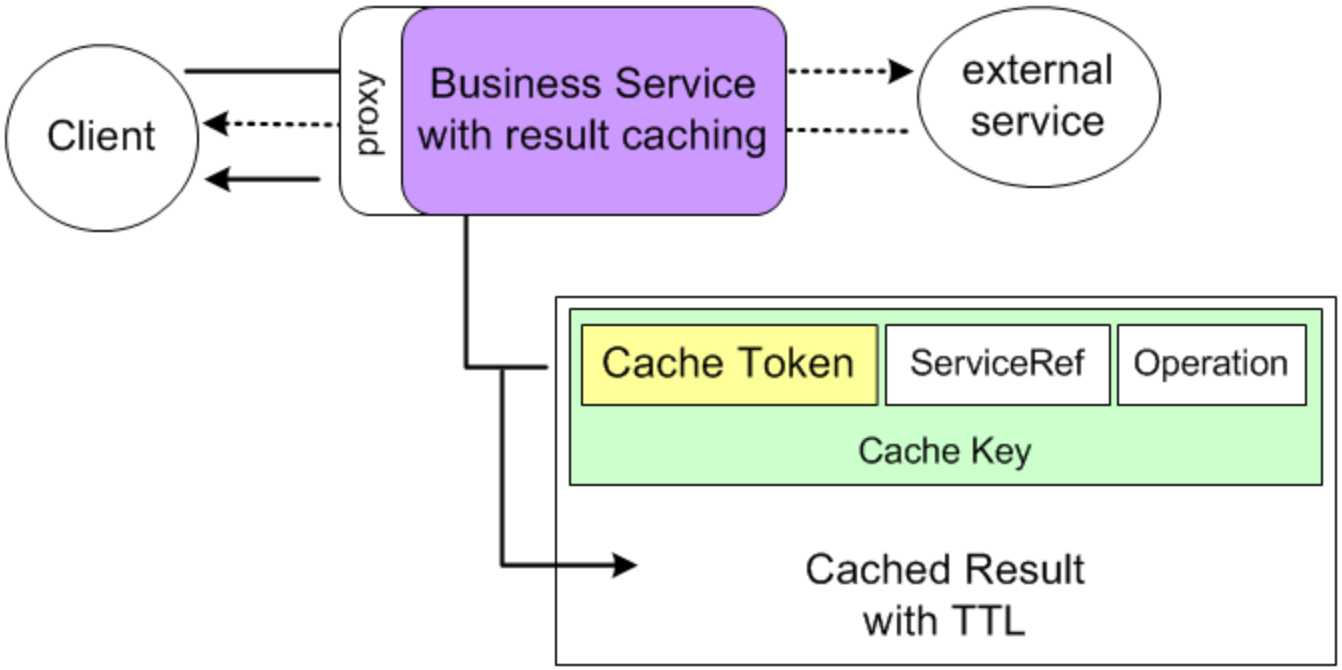
Requirement: Handle a lot of read-only requests to a service with limited capability.



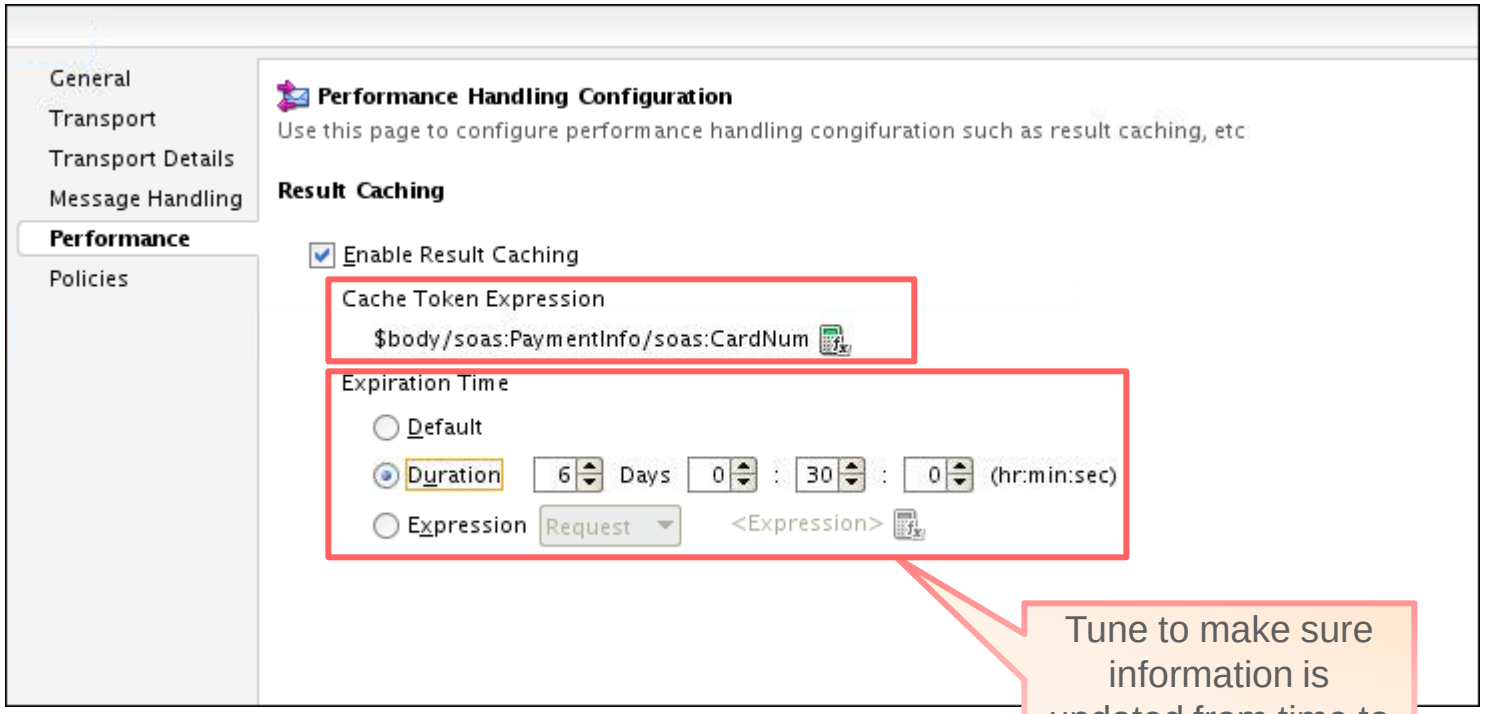
Use Cases of Result Caching

- Synchronous services that return results that do not change often
- Handle a lot of read-only calls to a system with limited scalability

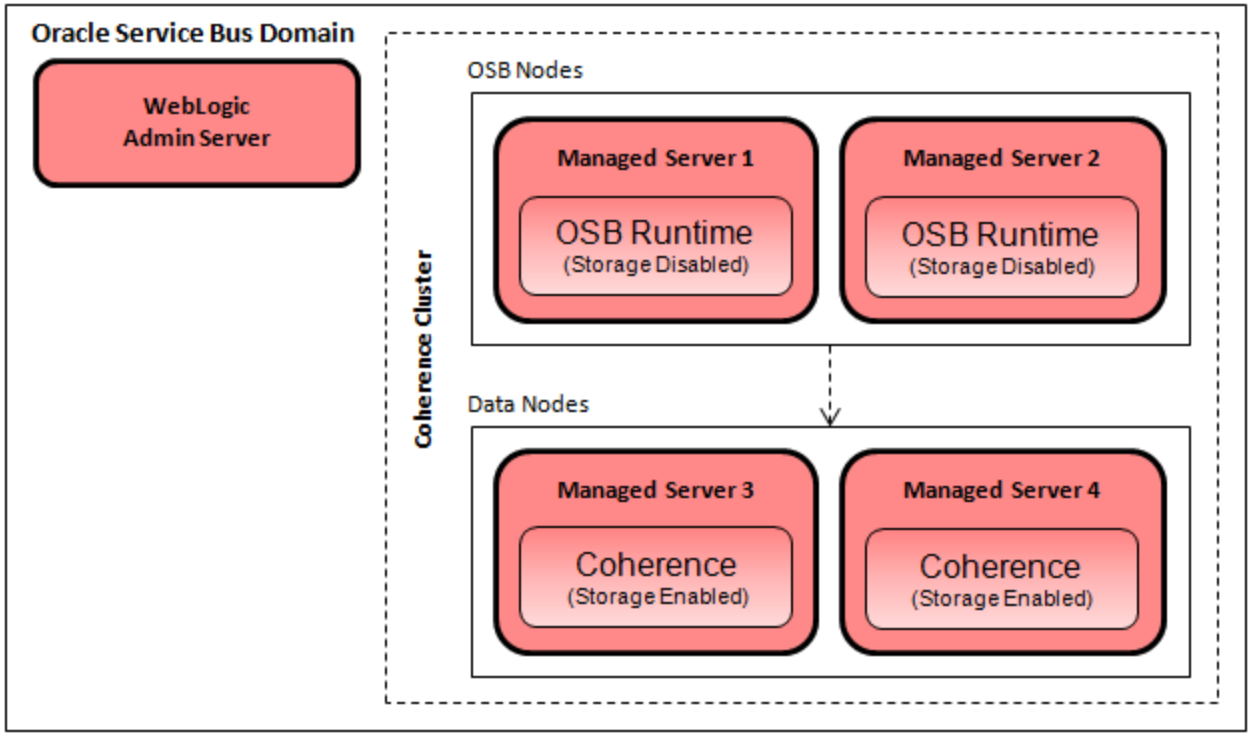
How Does Result Catching Work?



Configuring a Business Service for Result Caching



Using an Out-of-Process Coherence Cache Server



Coherence Configuration Files

- The configuration files are:
  - `osb-coherence-override.xml`:
    - Defines the operational settings for Coherence
    - Enables configuring Coherence clusters
  - `osb-coherence-cache-config.xml`:
    - Defines the cache configuration
- Both files are located in the *DOMAIN_HOME*`/config/osb/coherence` directory.

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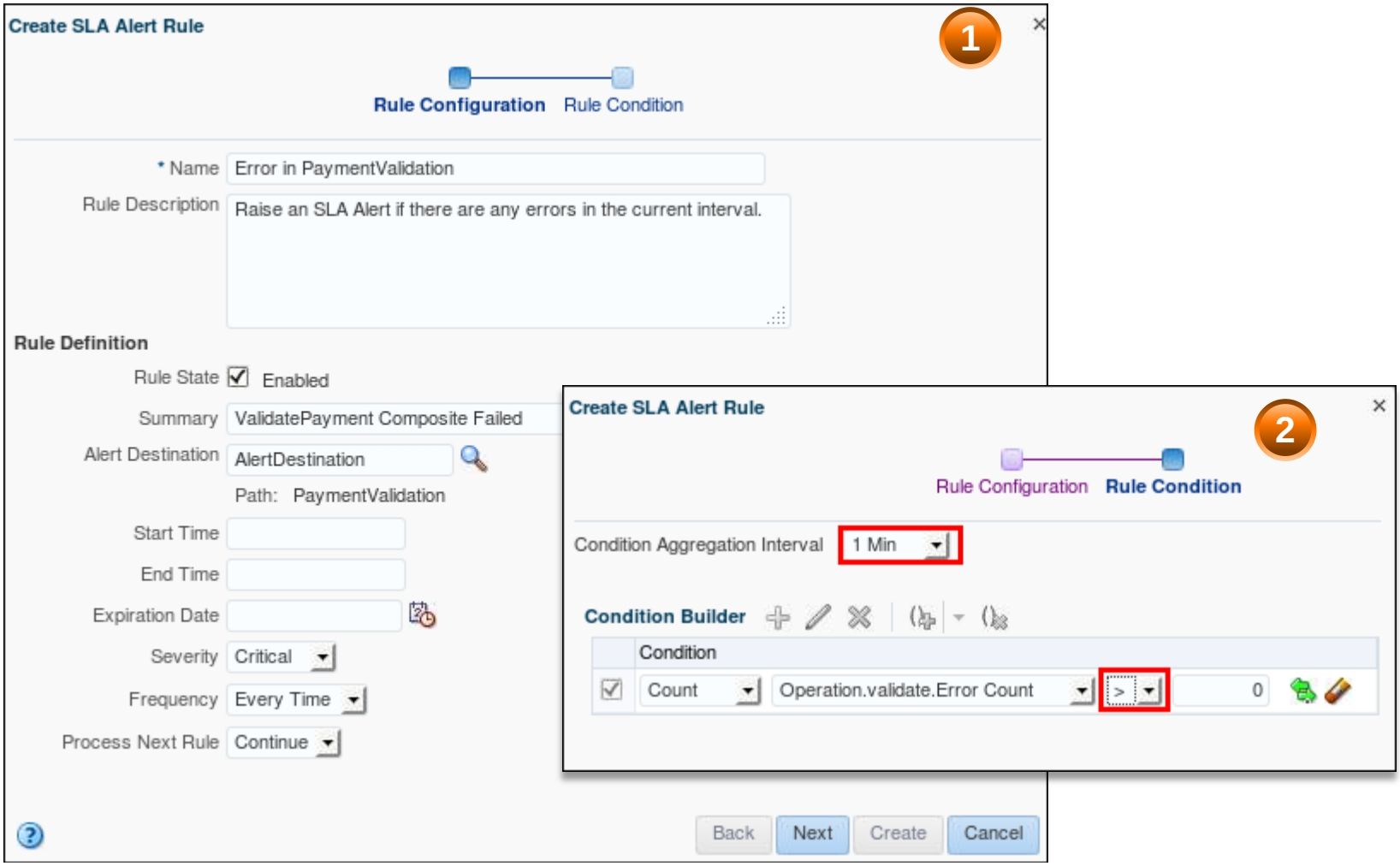
SLA Alert in OSB

- A service-level agreement (SLA) is a contract between a service provider and a service consumer:
  - Min/max response time
  - Message count
  - Error count
- SLA alert provides insight to health metrics of services, such as response time, errors, or even load.

SLA Alert Rules

- SLA alerts:
  - Consist of a set of conditions, or “rules”
  - Are automatically evaluated after each service’s aggregation interval
- Define SLA alert rule to measure service health metrics:
  - Min/max response time
  - Message count
  - Error count

Creating SLA Alert Rules



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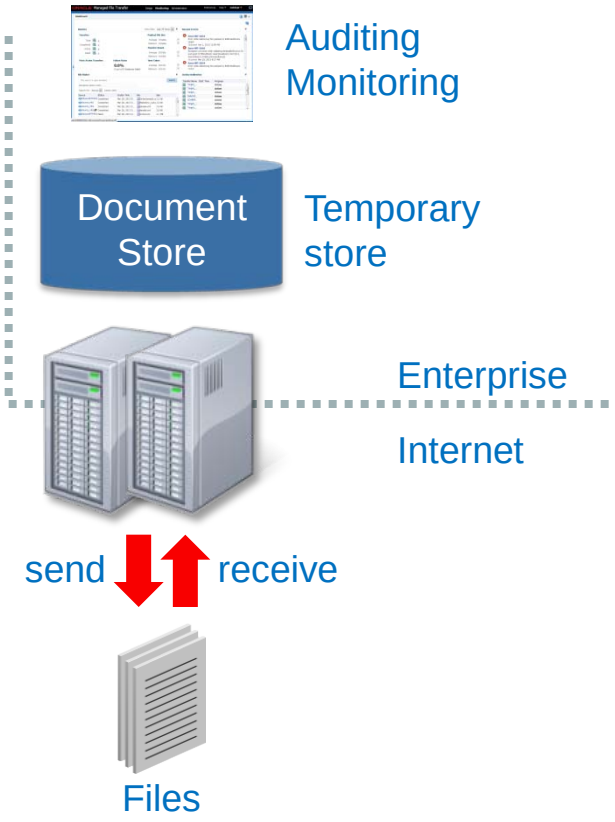
Managed File Transfer (MFT)

Simple and secure end-to-end managed file gateway

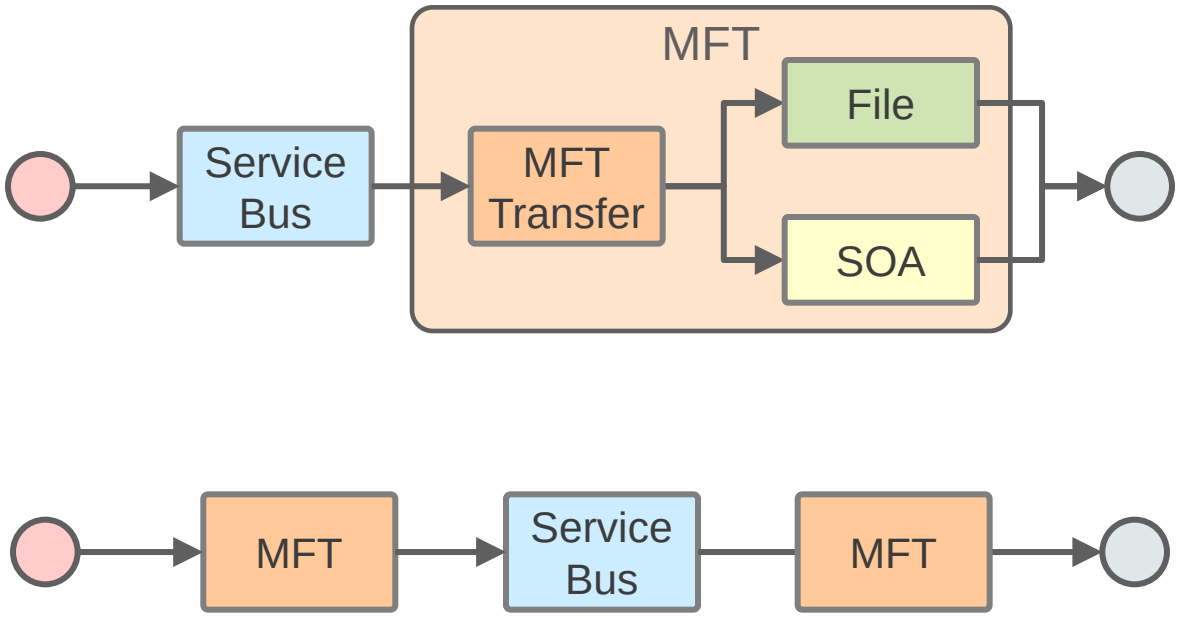


- Centralized file transfer infrastructure
- Supports:
  - Large file transfer
  - Pass-by-reference
  - Encryption
  - Auditing and monitoring
  - Scheduling
- Standard-based integration with SOA, OSB, B2B
- Highly-available/clusterable

OSB and MFT Integration

Oracle Service Bus interface can be:

- The source or target of a transfer
- The common endpoint for the target of one transfer and the source of another



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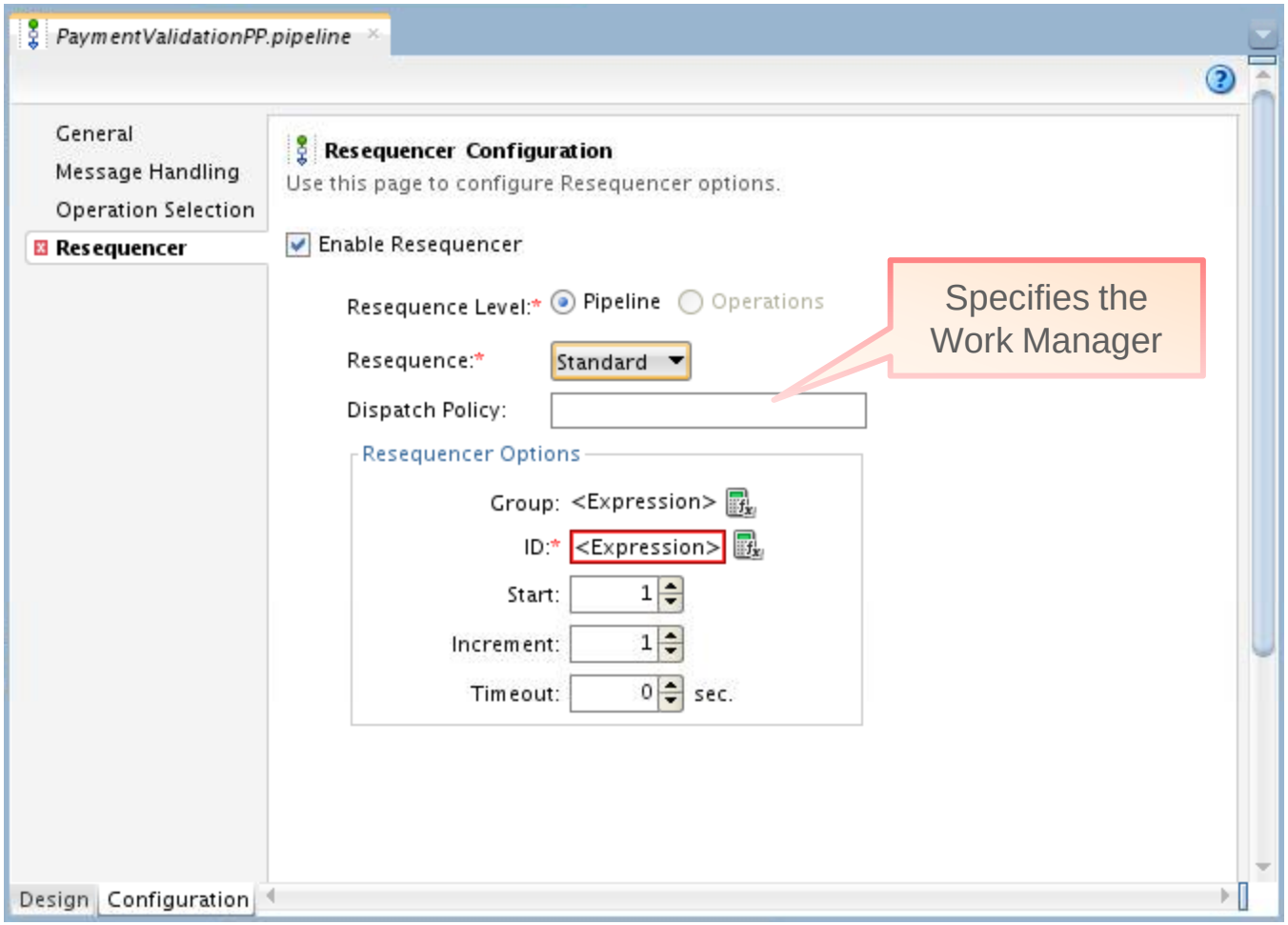
Resequencing Message

- The resequencer in Service Bus rearranges a stream of related but out-of-sequence messages into a sequential order.
- Resequencing is configured inside a pipeline component.
  - Only supports one-way WSDL-based service
- Resequencing order:
  - **Standard:** Is used when incoming message contain numeric identifier
  - **FIFO:** Is based on message arrival time
  - **Best Effort:** Is used for applications that produce a large number of messages in a short period and cannot provide identifier information.

Configuring the Resequencer



Work Manager in Service Bus

- WebLogic Server uses Work Manager to prioritize work and allocate threads for the applications/components.
- In Service Bus (OSB), several transports for proxy and business services provide a configuration option called *Dispatch Policy* that enables a Work Manager to associate a service to prioritize service work.

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About Maven

Maven is essentially a project management and comprehension tool and provides a way to help with managing:

- Builds
- Documentation
- Reporting
- Dependencies
- SCMs
- Releases
- Distribution

Concepts and Terminology

- **Build Life Cycle:** Made up of phases, like validate, compile, test, package, and so on
- **Repositories:** Hold build artifacts and dependencies of varying types
- **Plug-in:** Maven is a plug-in execution framework; all work is done by plug-ins
- **Goals:** A specific task, which can be mapped to one or more phases
- **Artifact** (deployment unit)**:** Library or plug-in, identified by groupID + artifact ID + version + signed (signature)

  Example:

```
mvn com.oracle.maven(groupID):oracle-maven-
sync(artifact ID):push(goal)
-DoracleHome=$ORACLE_HOME
```

Concepts and Terminology

- POM files: Define Maven projects with a description of the project's artifacts:
  - Plug-ins to use
  - Inheritance
  - Dependencies on other artifacts
- Archetypes: A template for creating a specific type of project

OSB Maven Support

- OSB provides:
  - A plug-in for pulling/downloading all requires libraries and plug-ins into local repository
  - A plug-in to package and deploy an OSB project
  - An archetype to create an OSB project
- Service Bus Maven plug-in goals:
  - Package
  - Deploy

Summary

In this lesson, you should have learned how to:

- List best practices of using Service Bus
- Improve performance by caching service results
- Define SLA alert rules
- Explain how Oracle MFT works with OSB to handle large message transfers
- Describe message resequencing
- Build and deploy Service Bus projects with Maven

Practice 13: Overview

- 13-1: Configuring Result Caching to Improve Service Performance
- 13-2: Adding a Service Level Agreement Alert
- 13-3: Building and Deploying Service Bus Projects with Maven (Optional)

Building Service Bus Projects with Maven

- Maven 3.0.5 bundled in JDeveloper 12.1.3: `$FMW_DEV_HOME/oracle_common/modules/org.apache.maven_3.0.5`
- OSB plug-ins: `$FMW_DEV_HOME/oracle_common/plugins/maven/com/oracle/maven/oracle-maven-sync/12.1.3`