Upgrade made easy: SAP Tools, Accelerators and Best Practices for migrating from SAP NetWeaver PI to SAP NetWeaver Process Orchestration

Mathias Huber
September 2013
Agenda

• Options for migrating from SAP NetWeaver PI towards Process Orchestration
• SAP Tool for migrating integration content
• Recommendations, best practices and accelerators
• Key take aways
Options for migrating from SAP NetWeaver PI towards Process Orchestration
Which installation options are supported per release version?

1. **PI Dual Stack (all releases)**
   - Functional scope
   - Higher TCO
   - No innovations for ABAP

2. **PI Java only** (since release 7.3)
   - Functional limitations
   - Lower TCO
   - Performance

3. **Process Orchestration** (since release 7.31)
   - Functional scope
   - Lower TCO
   - Performance

*Simplified illustration, excluding SLD, optional decentral adapter engines.
### How to get from PI towards Process Orchestration?

**Migration versus in-place upgrade**

<table>
<thead>
<tr>
<th>Migration (side-by-side deployment)</th>
<th>In-place upgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pros</strong></td>
<td></td>
</tr>
<tr>
<td>Minimized downtime</td>
<td></td>
</tr>
<tr>
<td>Clean up of scenarios</td>
<td></td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td></td>
</tr>
<tr>
<td>Basic setup from scratch</td>
<td></td>
</tr>
<tr>
<td>More hardware needed, higher maintenance and operational costs</td>
<td>Rollback risk</td>
</tr>
<tr>
<td></td>
<td>Not possible for all installation options</td>
</tr>
</tbody>
</table>

**Pros**
- Minimized downtime
- Clean up of scenarios

**Cons**
- Basic setup from scratch
- More hardware needed, higher maintenance and operational costs

**In-place upgrade**
- Less hardware requirements
- Defined end date
- Rollback risk
- Not possible for all installation options

### Source system | Target system | In-place upgrade or adding of new usage type (optionally adding of usage types)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PI Dual Stack 7.1x &amp; 7.3</td>
<td>Process Orchestration 7.31</td>
<td>no</td>
</tr>
<tr>
<td>PI Java only 7.3</td>
<td>Process Orchestration 7.31</td>
<td>yes</td>
</tr>
<tr>
<td>BPM* 7.x</td>
<td>Process Orchestration 7.31</td>
<td>yes</td>
</tr>
<tr>
<td>PI Dual Stack 7.1x &amp; 7.3x</td>
<td>PI Dual Stack 7.31</td>
<td>yes</td>
</tr>
<tr>
<td>PI Dual Stack 7.1x &amp; 7.3x</td>
<td>PI Java only 7.31</td>
<td>no</td>
</tr>
<tr>
<td>PI Java only 7.30</td>
<td>PI Java only 7.31</td>
<td>yes</td>
</tr>
</tbody>
</table>

*Plus optionally further usage types: Adobe Document Services (ADS), Development Infrastructure (DI), Guided Procedures (GP) - only for compatibility reasons.*
SAP Tool for migrating integration content
Directory Content Migration Tool

Objectives

- Enables migration of classical PI scenarios to Integrated Configuration Objects (ICO)
- Provides migration and mass change support for communication channels
- Released with SP7 of SAP Enhancement Package 1 for SAP NetWeaver 7.3

Classical PI Scenario

- Party
  - Business Component
    - CRM_730
      - IBS_BNK_BA_730
  - Business System
    - Process Component
      - Communication Channel
        - IBS_BNK_BA_730 | IBS_BNK_BA_730
        - Receiver Determination
          - [Diagram]
    - Interface Determination
      - CRM_730 | CurrentAccountContractFCreate_V1_Out | IBS_BNK_BA_730
      - [Diagram]

Result: Messages will be processed in ABAP and Java stack.

Integrated Configuration Object

- Configuration: Integration Builder (dh8tdc00_DH8_00)
- [Diagram]

Result: Message processing in PI Java only.

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Directory Content Migration Tool
Reduce configuration effort for migrating from PI Dual-Stack to PI Java only and PO

Migrate Classical PI Scenarios to Integrated Configuration Objects
- Supporting both Java-only and dual-stack target systems
- Source PI system as of XI 3.0 and newer
- Tool runs in target system

Migration and Mass Change Support for Communication Channels
- Migrate channels between systems and PI releases
- Support for mass channel changes
  - metadata version
  - adapter specific attributes
  - target adapter engine
  - module properties
  - etc.
Directory Content Migration Tool
Migrate classical PI scenarios to Integrated Configuration Objects (1/4)

Source system selection from SLD or manually defined in the tool

Source scenario(s) selection

- By Sender Agreement
- By Configuration Scenario – all sender agreements in the scenario are used
- By Receiver Determination (for IDoc and ABAP Proxy scenarios)
Automatic directory objects matching and migration checks

Scenario Migration

1 scenario out of 1 passed the migration checks and can be further processed.
The following Sender-Receiver combinations were calculated:

<table>
<thead>
<tr>
<th>Sender Interface:</th>
<th>Sender Interface Namespace:</th>
<th>Sender Component:</th>
<th>Sender Party:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BookingOrderRequest_Out</td>
<td><a href="http://sap.com/XW/Maxi/Agency">http://sap.com/XW/Maxi/Agency</a></td>
<td>MT_DS_03</td>
<td></td>
</tr>
<tr>
<td>Scenario: MT_CS_01</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Receiver Interface:</th>
<th>Receiver Interface Namespace:</th>
<th>Receiver Component:</th>
<th>Receiver Party:</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGHTBOOKING_CREATEANDRESP</td>
<td>urn:sap-com:document:ap:doc:messages</td>
<td>MT_BS_02</td>
<td></td>
</tr>
<tr>
<td>FlightBookingOrderRequest_In</td>
<td><a href="http://sap.com/XWMaxi/Agency">http://sap.com/XWMaxi/Agency</a></td>
<td>MT_BS_02</td>
<td></td>
</tr>
<tr>
<td>FlightBookingOrderRequest_In</td>
<td><a href="http://sap.com/XWMaxi/Agency">http://sap.com/XWMaxi/Agency</a></td>
<td>MT_BS_01</td>
<td></td>
</tr>
</tbody>
</table>
Integration configuration preview

- Preview of the integrated configuration and required objects
- Choose target adapter engine and metadata version for channels
Conversion of ABAP based adapter channels to Java channels
- Migration of attributes where possible
- Result channel is not fully configured

Renaming of directory objects
- Renaming of party, service, channel objects via reusable renaming rules
- Business system renaming according to SLD transport targets
- Support for content based routing constant replacement

Objects creation in a new change list per scenario
- Deletion of conflicting sender agreement on the target system

Scenarios for which migration is not supported
- No support for “Receiver Rule” objects in directory
- Scenarios with ABAP mappings cannot be migrated
- Scenarios with ccBPM cannot be migrated
Migration Tools
Migration and mass change support for communication channels

Copy channels from a source system / release to target system / release
• Support for the non-transportable fields
• Migrating passwords is not supported

Mass channel change for specific channel attributes
• Validate properties against target adapter metadata
• Update metadata version
• Change adapter engine for all selected channels
• Change set of common attributes
• Change values for already define module properties
Recommendations, Best Practices and Accelerators
Options for migrating from PI Dual Stack to Process Orchestration
1. Transition through Inplace upgrade

Migration activities
1. Upgrade existing PI dual stack system to release version 7.31 (dual stack)
2. Migrate Integration Directory objects using migration tool within PI dual stack 7.31
3. Redesign of ABAP based artifacts (if applicable)
4. Install new Process Orchestration system
5. Transport of Enterprise Services Repository and Integration Directory content to PO system

Recommended approach for customers who don’t use ccBPM or don’t need NW BPM for replacing ccBPM
Options for migrating from PI Dual Stack to Process Orchestration

2. Side-by-side deployment of Process Orchestration

Source system

PI Dual Stack < 7.31
- ABAP
- Java

PI Dual Stack < 7.31
- ABAP
- Java

Process Orchestration
- PI Java only 7.31
- BPM (incl. BRM) 7.31
- Java
- Java

Target system

Process Orchestration
- PI Java only 7.31
- BPM (incl. BRM) 7.31
- Java
- Java

Migration activities

1. Install new Process Orchestration system running side-by-side to existing PI dual stack system
2. Redesign of ABAP based artifacts (incl. ccBPM)
3. Transport of Enterprise Services Repository objects
4. Migrate Integration Directory objects using migration tool

Recommended approach for customers who need to replace ccBPM processes with NW BPM
## How to replace ABAP based artifacts?

<table>
<thead>
<tr>
<th>PI Dual Stack</th>
<th>Alternative options</th>
</tr>
</thead>
<tbody>
<tr>
<td>ccBPM</td>
<td>NW BPM or in some cases PI Java standard features (see <strong>SAP Process Orchestration Integration Patterns</strong>)</td>
</tr>
<tr>
<td>ABAP mappings</td>
<td>Graphical mappings, Java or XSLT mappings</td>
</tr>
<tr>
<td>ABAP based adapter (IDoc, HTTP, WS-RM)</td>
<td>Java based adapter version (IDoc, HTTP), exception: WS-RM adapter not available*</td>
</tr>
</tbody>
</table>
| Custom ABAP tables (e.g. for more complex routing rules) | 1. Explore using SAP NetWeaver BRM  
2. Use an alternative ABAP based system for maintaining custom ABAP tables and access data through an RFC lookup in message mapping  
3. Create custom SQL table in Java and perform mapping lookup |
| Number range buffer (TA SNRO)      | 1. Use an alternative ABAP based system for number ranges and perform an RFC lookup in message mapping  
2. Create your own number range object handling using SQL database (Java class available)                                      |
| Unified Key Mapping Service (UKMS) | 1. Use an alternative ABAP based system for UKMS and perform an RFC lookup in message mapping or replicate value mappings to value mapping cache of PI.  
2. Use SAP Application Interface Framework (AIF) for value mappings.                                                                 |

*For integrating SAP backends alternatively SAP-RM could be used.
How to determine migration effort and steps to take?

Useful SCN blogs

- Migration Guide to AEX of PI 7.3x for Integration Scenarios
  - Feature comparisons of the different PI releases
  - How to identify which integration scenarios can be migrated, which cannot, and which can be but require additional work.
  - Detailed description of migration process

- NetWeaver BPM for System-to-System Message Orchestration (Including Migration of ccBPM to NW BPM)
  - Basics of stateful system-to-system message orchestration using NetWeaver BPM
  - A simple use-case scenario will be used to demonstrate the design and configuration requirement.

- Moving Integration Directory Artifacts from dual stack to single stack

Migration Guide to AEX of PI 7.3x for Integration Scenarios

Applications:
SAP NetWeaver Process Integration 7.1x, PI 7.30, PI 7.31 SP2.

Summary
PI 7.30 introduced Advance Adapter Engine Extended (AEX), which is the java-only installation of PI. Without the ABAP stack during runtime, the message pipeline processing is handled by the java-only stack. With this new java pipeline processing, PI's Integration Directory configurations will also have to be changed. In the article, we will provide a guideline to help migrate the existing dual-stack integration scenarios to a java-only single-stack engine.

Author: William Li
Company: SAP Labs LLC
Created on: 12 January 2012

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- Required sender configuration for NW BPM to NW PI: 7
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### Migration Scoping Tool

Helps to better plan your migration project

- Small java program which reads out configuration objects from PI system
- Lists all scenarios and identifies objects requiring some migration effort (e.g. ABAP based adapters, ccBPM)
- Classifies scenarios according to migration complexity
- Summarized view on scenarios ranked by migration complexity

*Included in Migration Guide to AEX of PI 7.3x for Integration Scenarios*

#### Detail View

<table>
<thead>
<tr>
<th>No</th>
<th>No</th>
<th>Name</th>
<th>Adapter</th>
<th>Comm Path Interface</th>
<th>NameSpace</th>
<th>On Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>X</td>
<td>EPR_EH4_300</td>
<td>M_L_Documentation</td>
<td>EPR_EH4_300</td>
<td>EPR_EH4_300</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>X</td>
<td>TestSender</td>
<td>HTTP/HTTPS:VS系统,SetContainer,OutPath,<a href="http://test.com">http://test.com</a></td>
<td>EPR_EH4_300</td>
<td>EPR_EH4_300</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>X</td>
<td>M_IP_310</td>
<td>M_OEM</td>
<td>M_OEM,ccBPM,ccBPM,ccBPM,ccBPM</td>
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<td>4</td>
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<td>7</td>
<td>5</td>
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<td>EPR_EH4_300</td>
<td>EPR_EH4_300</td>
</tr>
</tbody>
</table>

#### Summarized View

<table>
<thead>
<tr>
<th>Rank</th>
<th>Total</th>
<th>Easy</th>
<th>Channel Configured</th>
<th>Alternative Method Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32</td>
<td>Yes</td>
<td>Can be done using the migration tool</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>Yes</td>
<td>Java-Idoc communication channel needs to be configured</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>Yes</td>
<td>ccBPM used (ccBPM to BPM migration required)</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>Yes</td>
<td>WS adapter used (alternative method needed to be explored)</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>18</td>
<td>Yes</td>
<td>Normally means there is no receivers configured or mapping is used to determine receivers...analysis is required</td>
<td>No</td>
</tr>
<tr>
<td>111</td>
<td>Total</td>
<td>32</td>
<td>Can be done using the migration tool</td>
<td>No</td>
</tr>
</tbody>
</table>

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Service offerings for PI to PO migration
From SAP Consulting & SAP Partners

SAP Consulting: Upgrade Planning for SAP NetWeaver Process Orchestration

- Project Management
- As-Is analysis (ABAP artifacts like ccBPM)
- Advise on new features and infrastructure related topics (e.g. content transport, business continuity)

Optional: Migration initiative with special support from SAP Development

- Active support for the design of the BPM integration scenarios to replace ccBPM
- Project advisory (regular status calls)
- Advisor role for the TCO/TCD assessment
- Limited number of seats

Services for migrating from PI towards SAP NetWeaver Process Orchestration are also delivered by various SAP partners.
How to get started with SAP NetWeaver Process Orchestration?
Introduction to SAP NetWeaver Process Orchestration (BIT800)

SAP Training Course: Introduction to SAP NetWeaver Process Orchestration (BIT 800)*

• Modeling and implementing of integration processes using SAP NetWeaver Developer Studio (integration flows, system centric process orchestration)
• Using SAP NetWeaver BRM
• End-to-end process monitoring and error analysis

SAP NetWeaver Process Orchestration community at SAP SCN
http://scn.sap.com/community/process-orchestration

*For details see https://training.sap.com/v2/course/bit800-sap-netweaver-process-orchestration---introduction-classroom-010-g-en/
Key Take Aways
Upgrade made easy: SAP Tools, Accelerators and Best Practices for migrating from SAP NetWeaver PI to SAP NetWeaver Process Orchestration

- Directory Content Migration Tool helps to automate content migration from PI Dual Stack to SAP NetWeaver Process Orchestration

- Best practices help in redesigning developments (e.g. ccBPM) which cannot be migrated

- Accelerators, consulting services and trainings help to master migration and to exploit the benefits of SAP NetWeaver Process Orchestration
Thank you