

JOnAS 5 : Versioning

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Context

- ➔ **Dynamic yet 24/24 7/7 applications**
 - Short life cycles
 - Redeployment during service times
- ➔ **Service interruption not acceptable**
- ➔ **Loss of user sessions not acceptable**
- ➔ **Having “backup” machines used only during redeployment not acceptable**

➔ JOnAS Versioning: a new JOnAS service

➔ Dynamic redeployment of applications

- Deployment of a new version of an application without undeploying any previous version
- Session started using a previous version continues on that version as long as the session is active
- New versions of the application can be deployed using various strategies

Versioning mechanism



➔ How to use it?

- Enable the Versioning service in JOnAS
- Specify the application version by setting the **Implementation-Version** attribute (this attribute is part of the JAR File Specification standard) of the archive's (EAR, WAR or JAR) MANIFEST file

➔ The versioning service manages virtual contexts of all services that support the versioning:

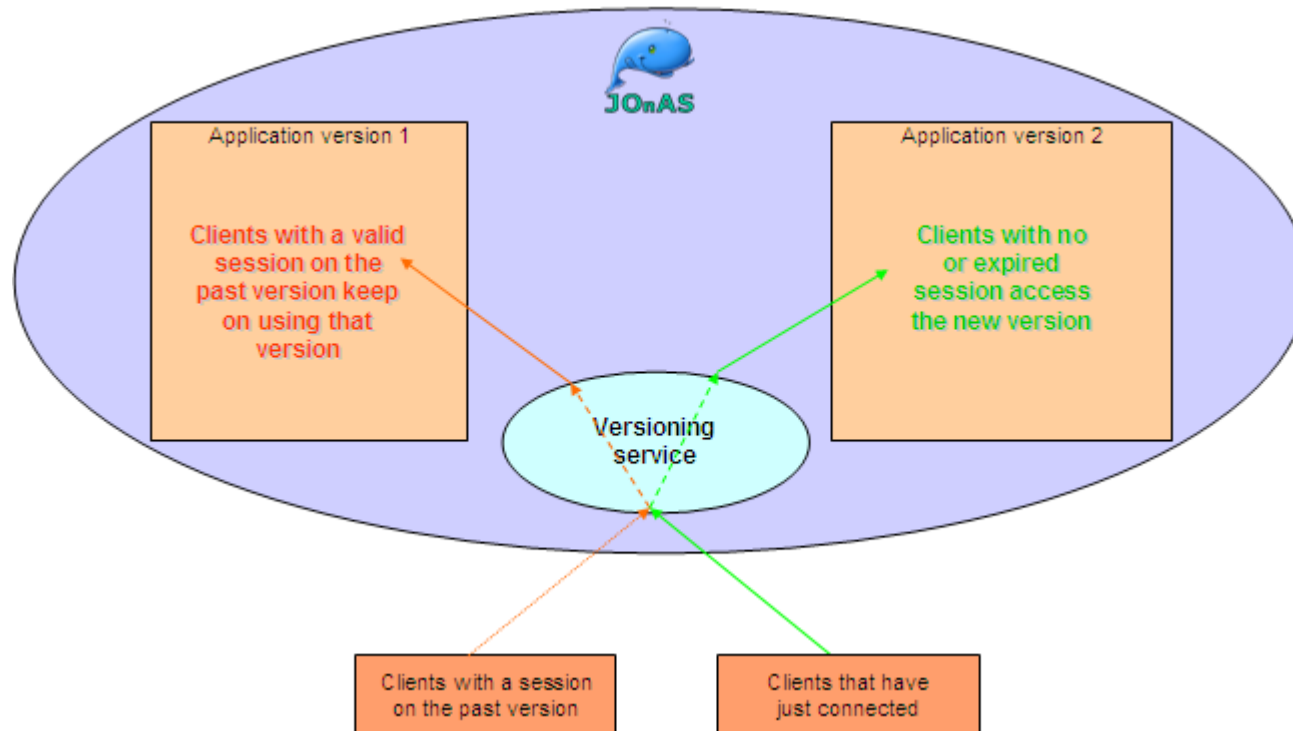
- EJB2 and EJB3 services
- Tomcat Web Container service
- Web service (work in progress)
- MBean (work in progress)

Deployment strategy

- ➔ **A versioned application has a unique user (virtual) address and each deployed version has its own policy**
 - **Private**: can only be accessed by clients that satisfy some conditions (IP group, credential) (work in progress)
 - **Reserved**: not accessible using the virtual address, only through the versioned address
 - **Disabled**: accessible by clients that have been using this version in the past (until their session expires).
 - **Default**: version accessed by all clients that don't fit in any other policy
- ➔ **The application can always be accessed directly using the versioned address**

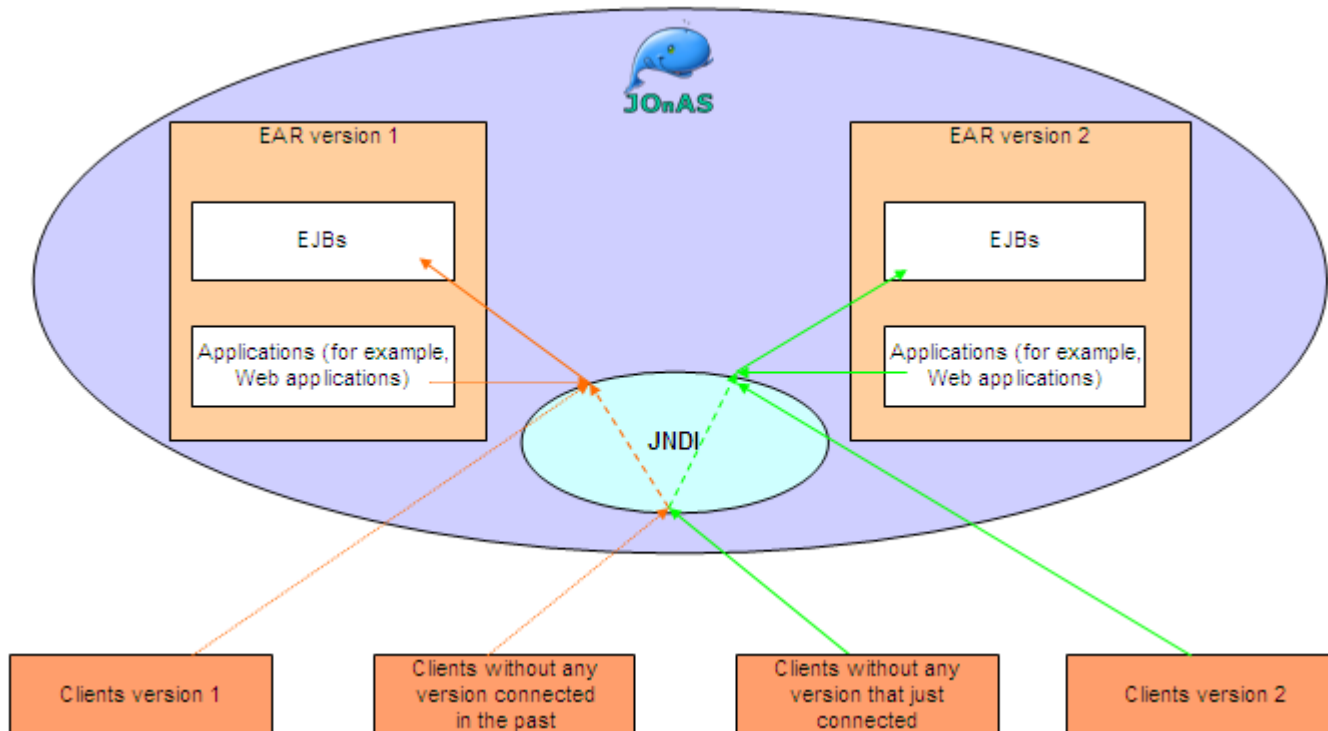
Versioned (Web) Applications

- ➔ A client uses the same version until its session expires
- ➔ New clients access the version of the application as defined by the access policies



Versioned EJBs

- ➔ All past connections remain on the same version as long as the connection is alive
- ➔ All EJB clients in a versioned EAR access the EJBs with the version of the host EAR
- ➔ All external EJB clients access the version of the EJBs as defined by the access policies



Scenario

1. Deploy demo web application v1.0

- ➔ Policy: default (only one version)

2. Deploy demo web application v2.0

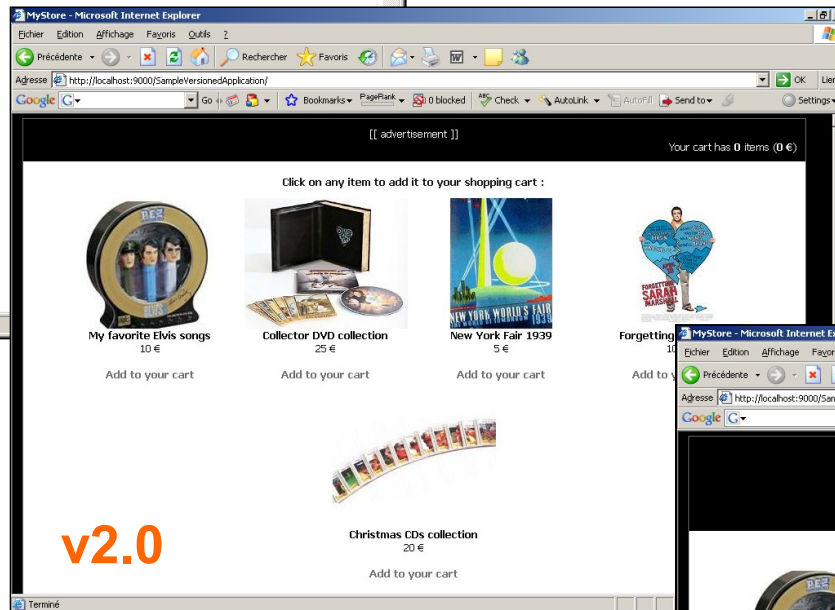
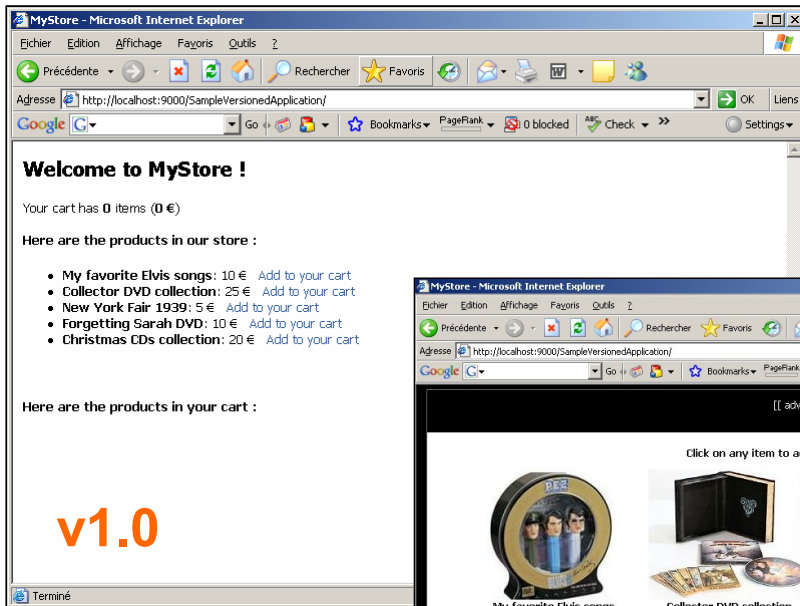
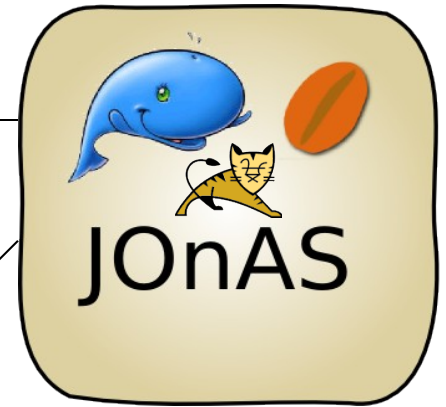
- ➔ By default, the newly application have the reserved policy: only visible through the versioned address

3. Change policies

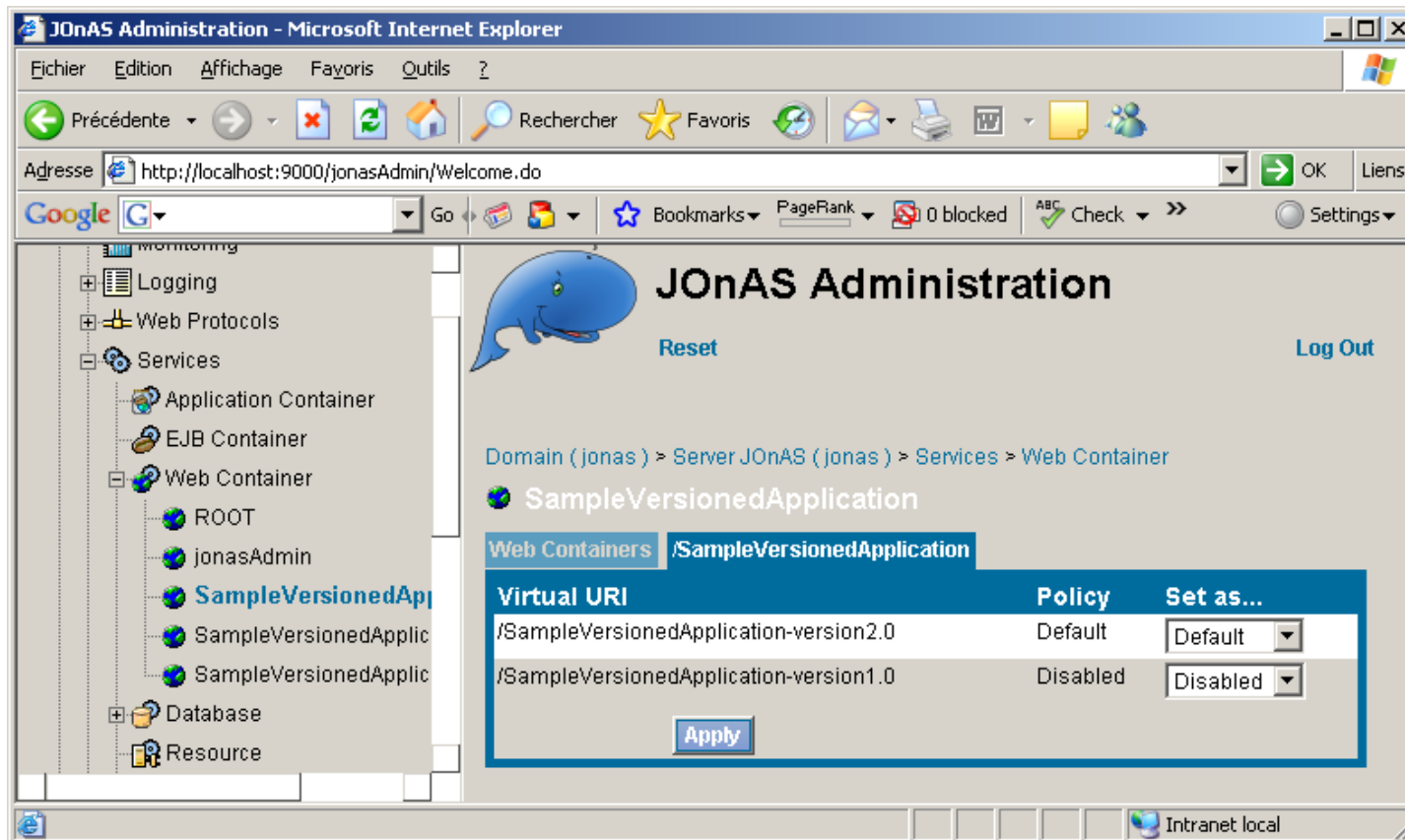
- ➔ Set the policy for demo v1.0 to disabled: only visible for active sessions
- ➔ Set the policy for demo v2.0 to default: new clients see the new application

4. Deploy demo web application v2.1

Demo application



➔ Manage the access policy for each version of a web application



The screenshot shows the JOnAS Administration web interface in Microsoft Internet Explorer. The browser address bar shows `http://localhost:9000/jonasAdmin/Welcome.do`. The interface includes a navigation menu on the left with categories like Logging, Web Protocols, Services, Application Container, EJB Container, Web Container, ROOT, jonasAdmin, SampleVersionedApp, Database, and Resource. The main content area displays the JOnAS Administration header with a whale logo, a "Reset" button, and a "Log Out" link. Below the header, the breadcrumb path is `Domain (jonas) > Server JOnAS (jonas) > Services > Web Container`. The selected application is `SampleVersionedApplication`. A table titled "Web Containers" shows the configuration for `/SampleVersionedApplication`:

Virtual URI	Policy	Set as...
<code>/SampleVersionedApplication-version2.0</code>	Default	Default
<code>/SampleVersionedApplication-version1.0</code>	Disabled	Disabled

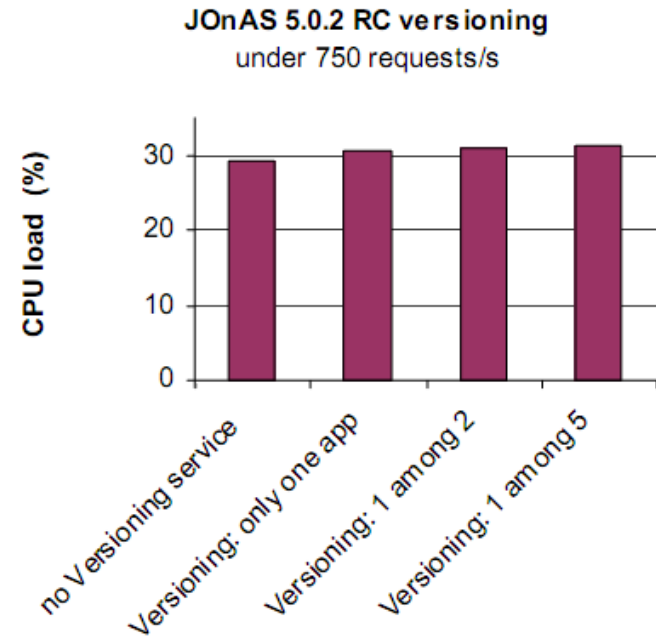
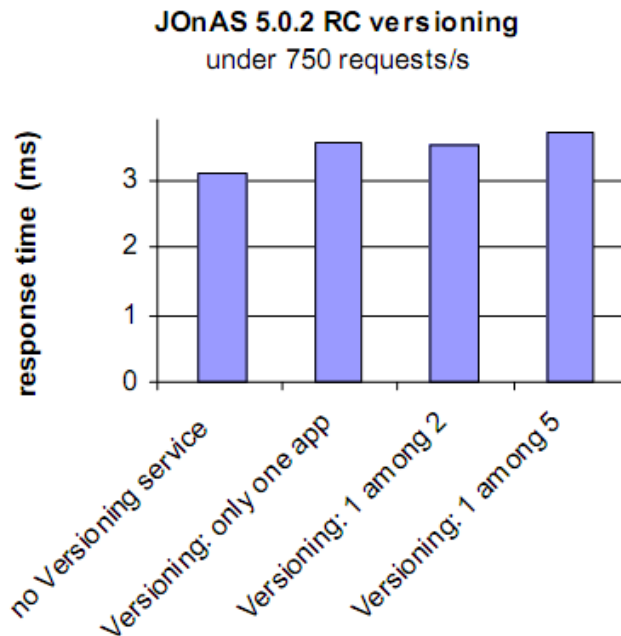
An "Apply" button is located below the table. The status bar at the bottom of the browser window shows "Intranet local".

Performance impacts

➔ Tests to benchmark the versioning system

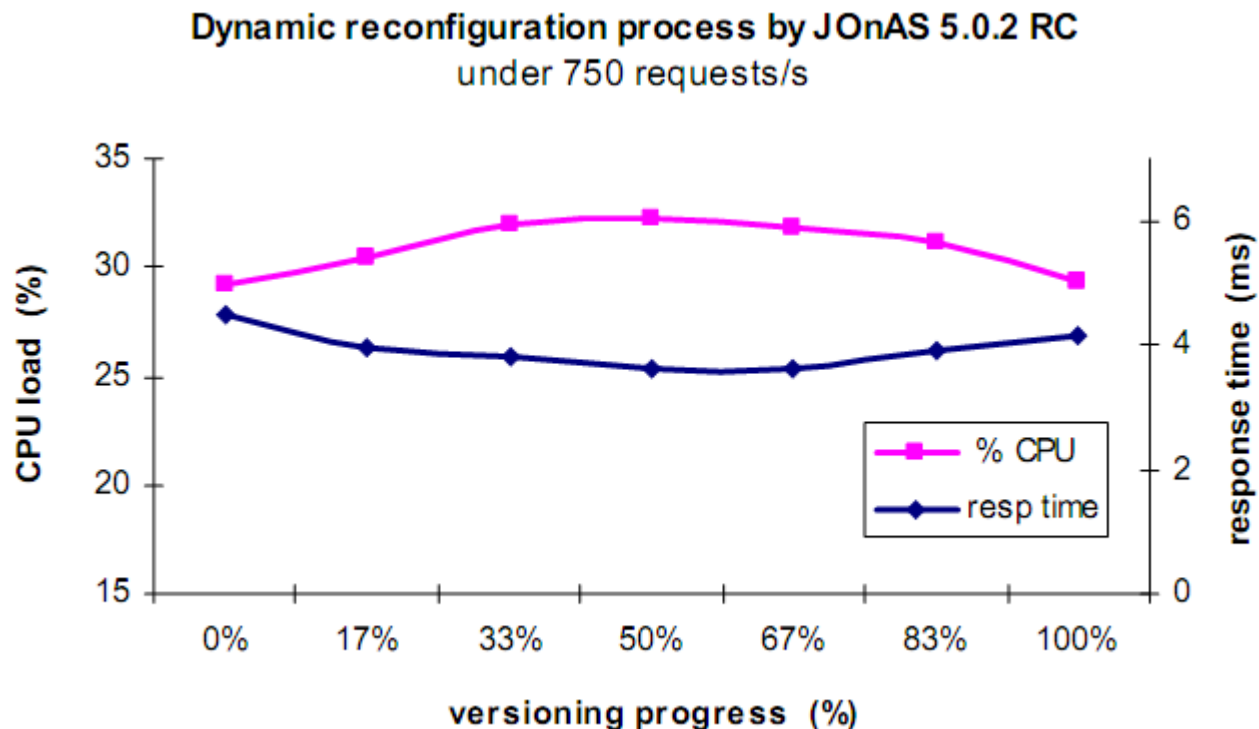
- Web-only application (no EJBs, only JSP)
- Out-of-the-box standalone JOnAS 5.0.2 RC configuration
- More than 70 hours on an average rate of 750 requests / s

➔ Less than 0.5 milliseconds of overhead per request



Performance impacts as the migration progresses

- ➔ Progress: percentage of users on the new version
- ➔ Lower response time and CPU usage as the migration progresses



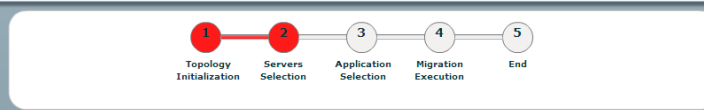
JASMINe integration



- ➔ **JaDOrT (JASmine Deployment ORchestration Tool)**
- ➔ Accessible using the Web 2.0 console (Flex), using a command line or the EJB3 API
- ➔ Centralizes application migration and infrastructure management
 - ➔ Global view on the servers and the applications
 - ➔ Migration or maintenance by groups
- ➔ Can proceed to next step or undo at any time
- ➔ Error management: view log, retry or ignore
- ➔ Complete traceability: all progress logs (failures but also information messages) are persisted and can be accessed at any time

JaDOrT Web 2.0 console

Versioning Migration System



Step 2 - Servers Selection

Select Group :

Cluster Name	Type	Frontal	Server	Application	Action
Cluster 1	Cluster	A1jb1 A2jb1	jonas1 jonas2 jonas3 jonas4 jonas5	application1 (version V2) application2	Migrate Application Maintenance
Cluster 2	Cluster	A1jb2	jonas6 jonas7 jonas8	application7 application8 (version V1)	Migrate Application Maintenance
Ferme 1	Ferme		jonas9 jonas10	application5 (version V2)	Migrate Application Maintenance

Undo Next



Versioning Migration System



Step 3 - Application Selection

Select an application to upload:

Browse Upload Cancel

Progress: Complete.

Selected Application: application1 (version 3)

Applications currently deployed on this group of servers :

Application Name	Version	Policy
application1	V2	Default
application2		

the selected application is a new version of the application "application1"

Undo Next

Step 4 - Migration Execution

4.1 Download New Version 4.2 Deploy New Version 4.3 Deactivate Old Version

Server Name	Status	Progress	Action
jonas1	Waiting	LOADING 66%	
jonas2	Waiting	LOADING 66%	
jonas3	Waiting	LOADING 66%	
jonas4	Waiting	LOADING 66%	
jonas5	Waiting	LOADING 66%	

Undo Next

Impacts

- ➔ **Support more types of archives SCA, JBI, BPM**
- ➔ **Extend migration to the persistence tier**
- ➔ **Migration scheduling**
- ➔ **Integration with JASMINe autonomous : dynamic redeployment for resource optimization**
- ➔ **Integration with JASMINe monitoring : statistics, reporting**