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1. Introduction

This document lists the procedures for deploying TIBCO BW 5.x projects onto all environments (Development, Staging, Beta and Production). The intended audience for this document is project administrators and Production Control personnel. Developers can also refer to this document to understand the deployment process.

This document covers the initial release and subsequent deployments of projects but not the initial installation or setup of the administration server, domain, or adapters or any application specific deployment procedures (e.g. database changes, application server changes, etc.). This document does not cover the deployment and configuration of other TIBCO Components, such as BusinessConnect, EMS, and Hawk. The reader of this document is suggested to consult the appropriate documentation for the deployment and configuration of other TIBCO components.

The reader of this document is assumed to have a basic familiarity with TIBCO products, including Rendezvous, Administrator, and Business Works. Documentation on setting up the development environment and how the files are maintained within ClearCase is described in the TIBCO development/version control document.

Deployment Overview

Deploying TIBCO projects is similar to deployments of enterprise java applications: a setup process that occurs on the initial release of the project, and a process of deploying newer versions of the project by replacing the binary file(s) with a newer version and restarting the application. However, differences exist on how these processes are actually conducted. In order to understand these processes, it is important to understand TIBCO and how projects configurations are maintained.

2. TIBCO Overview

TIBCO provides a common messaging infrastructure and workflow engine to help integrate applications & partners. It accomplishes these using adapters, BusinessWorks & BusinessConnect. The adapters help convert application specific messages into a common format for transmission through the network using TIBCO's messaging infrastructure, or bus.

BusinessWorks allows a user to configure the adapter and to create/manage processes between applications through a swing-based GUI called Designer.

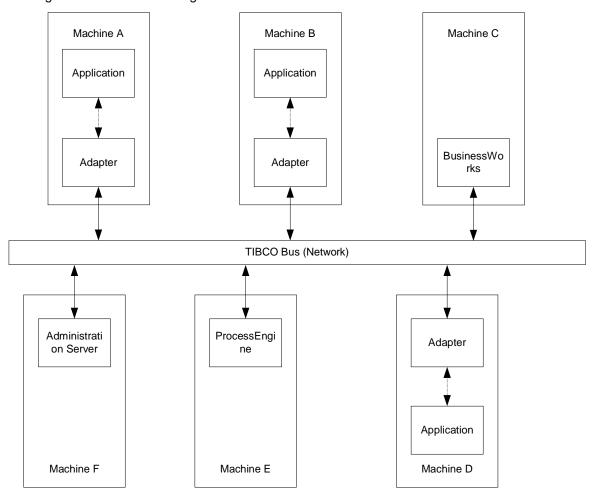


Figure 1: Example BusinessWorks environment

As shown in this example, adapters are individually configured to provide an interface between the application and TIBCO's message bus. A user can then create specific process flows, or process definitions, between the applications. These process definitions are then deployed onto a process engine that is deployed on a machine.

A sample process definition may be to take user input from an application (machine A), update the database (machine B), and then update the mainframe (machine C). Although each application provides specific functionality, it is the process definition that brings the functionality together in either a synchronous or asynchronous fashion.

BusinessWorks

BusinessWorks provides a GUI to allow a user the ability to configure adapters and create/manage process definitions. In addition, BusinessWorks is used to deploy the adapter configurations and process engines onto a specific machine or set of machines.

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The adapter configuration, process definition, and deployment are stored together as a single TIBCO project. This project can then be started and stopped by the Administration Server.

Administrator Server

The Administrator Server helps manage all the projects within its domain. A domain in TIBCO is a logical grouping of machines and projects. Every domain will have one primary Administrator Server & additional secondary servers.

Once the project (adapter configuration, process definition, deployment) is set in BusinessWorks, the information is transmitted to the Administrator Server using Enterprise Archive (EAR) File.

Whenever an adapter or process engine instance starts, it first requests the configuration information from the Administrator Server. This information is then cached on the adapter/process engine's local machine. Currently, the only time the configuration information is re-requested from the Administration Server is when the instance is restarted.

Consequently, whenever changes are made to a configuration or process definition is modified and saved onto the Administration Server, the adapter or process engine instance must be restarted to reflect the changes. Startup scripts are provided locally for each adapter and process engine. In addition, the Administration Server provides a web-based GUI to start and stop projects.

Enterprise Message Service

TIBCO EMS software allows you to send messages from your applications according to the Java Messaging Service (JMS) protocol. The software also extends the JMS protocol with delivery extensions such as reliable message delivery and no-acknowledge message receipt mode.

The EMS 4.1 conforms to Java Message Service 1.1 specification.

Business Connect

TIBCO BusinessConnect is the integration platform that provides connectivity to trading partners over the Internet. TIBCO BusinessConnect has a GUI-based configuration environment for setting up PIPs and trading partners.

Hawk

TIBCO Hawk is used as a tool for monitoring and managing distributed applications and operating systems. In the partner connectivity gateway, Hawk is used for monitoring, alerts, and notifications of the public and private process.

Configuration File

BusinessWorks Projects

The entire project information is stored on file system as a multi-file project. Designer GUI is used to modify this project. Once development is complete, Enterprise Archive (EAR) file is created using designer. Then this EAR files is deployed using Administrator.

TIBCO BW 5.X Deployment Process http://architecture-soa-bpm-eai.blogspot.com

3. Hierarchy & Navigation

Hierarchy

EAR Name (Application)

The Enterprise Archive (EAR) file contains any number of Process Archives (.PAR) and/or Adapter Archives (.AAR). Thus hierarchy of any EAR is similar to below,

	·		
	PAR 1	(Service)	
		Machine 1	(Container)
		Machine n	(Container)
	PAR n		
		Machine 1	(Container)
<u> </u>	AAR 1		
		Machine 1	(Container)
		Machine n	(Container)
	AAR n		
	I	Machine 1	(Container)

In administrator, "Application" needs to be created for any EAR to be deployed. Multiple applications can be created using same EAR. All the PARs & AARs inside EAR needs to be deployed on one or more target machine(s). Same PAR can be deployed on same machine multiple times. Each instance of PAR or AAR deployed on target machine is called "Service Instance". The target machine is also called as "Container".

All the applications reside under "Application Management" folder in the Administrator. Sub-folders can be created under "Application Management" folder and applications can be created under these sub-folders.

Guideline for production,

- One folder will be created under "Application Management" for each protocol.
- One EAR file will be created for each protocol. This EAR file will contain all the PARs/AARs for that protocol.
- Two Applications will be created for each EAR, One for each production server.
- Two Service Instances will be created using same Target Machine for each PAR. One Service instance will be configured as "Primary" whereas other service instance will be configured as "Secondary"
- One Service Instance will be created for each AAR.

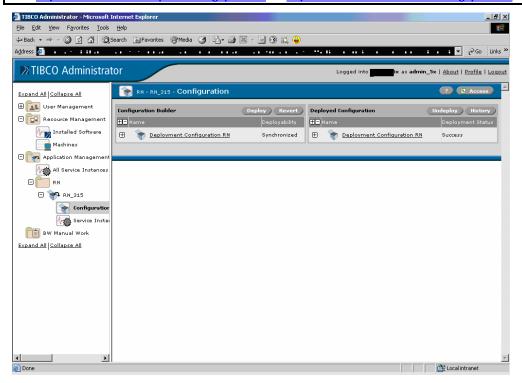
TIBCO BW 5.X Deployment Process		tusjain@yahoo.com
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Naming conventions

Name/Paramter	Convention
Folder Name	Use short names as far as possible.
	Example:
	RN (for RosettaNet)
	CXML
	EDI
	SOAP
	Custom
Application Name	<folder name="">_<target machine="" suffix=""></target></folder>
	Example:
	RN_314
	EDI_600J
Application Repository Name	<domain>-<application name=""></application></domain>
Name of Primary Service Instance of PAR	Use short and yet meaningful names for service.
	Use the suffix for FT Setup
	<par name="">_P for Primary, when setup in FT</par>
	<par name="">_S for Secondary, when setup in FT</par>
Name of Service Instance of AAR	<aar name=""></aar>

Navigating to Application Configuration

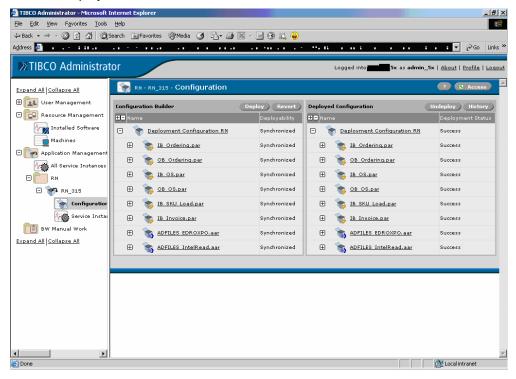
On left side frame of the administrator GUI, Click on the "+" in front of "Application Management" to expand it, then click on "+" in front of folder in which application resides to expand it, and then click on "+" in front of Application. Then click on "Configuration". Screen like below is displayed,



Navigating to Process Archive (.par) / Adapter Archive (.aar) Configuration

Navigate to corresponding Application Configuration using section 0

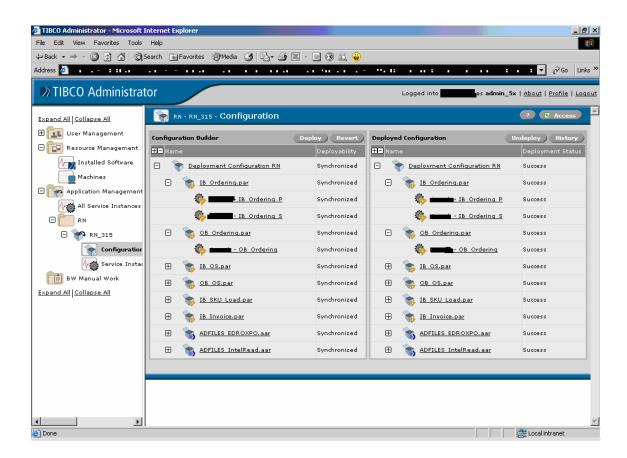
Now on right side frame, click on "+" in front of "<EAR Name>" to expand it if it is not already expanded. Screen like below is displayed,



Navigating to Service Instance Configuration

Navigate to corresponding Process Archive or Adapter Archive using section 0

Now on right side frame, click on "+" in front of "<Process Archive Name>.par" or <Adapter Archive Name>.aar" to expand it. Screen like below is displayed.



4. Deployments - Environment Specific Information

Although most of the project information will be the same between environments, there are two specific components that will be different between environments, from BW Project deployment perspective: global variables, and the target machines the adapter instances or process engines will be deployed upon.

Global Variables

Global variables are used within the deployment process to maintain environment specific values. Initially, this will include values such as port number and subject name but may be expanded based on the project requirements, such as database or mainframe connectivity information. Having different port numbers and subject names based on the environment ensures that messages from a project in one environment are not inadvertently picked up by same project in another environment.

Target Machines (Containers)

When a project is deployed onto a non-development environment, the adapters and process engines will be deployed onto machines that are specific to the environment. For instance, in development, the adapters and process engines may be deployed on machine TIBCODEV, whereas in QA they will be deployed on QA02, and in Production they are deployed on APP01.

5. Deployment Types

TIBCO deployment can be categorized in following manner,

- 1. New Application New EAR Deployment
- 2. Existing Application Revised EAR Deployment
- 3. Existing Application Revised Configuration deployment

6. New Application – New EAR Deployment

When a project is ready to be deployed initially in a new environment, certain steps must occur for deployment. TIBCO Administrator is used for this purpose. All these steps are mentioned below.

TIBCO Enterprise Archive (.ear) File

After development is complete, a Enterprise Archive file (.ear) that contains all the latest project information should be built from Designer tool. This .ear file should be copied to the file system of a machine that can be accessed by the deployment team.

Logon to Administrator

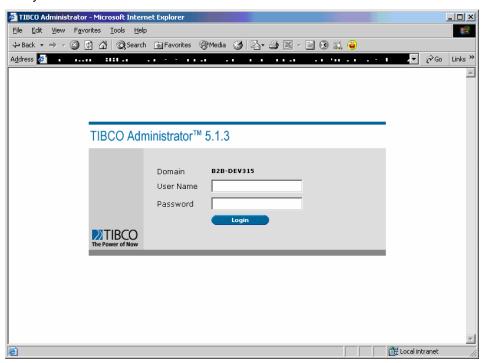
Administrator GUI URL

Once the .ear file has been placed in the proper location, it will be deployed using administrator GUI. Administrator GUI url is http://servlet/tibco-administrator, where Administrator is the machine name of the server, on which Administrator Server is running and <port> is port number on which Administrator server is running. If there are Administrator servers running in FT mode (one primary and the other failover), then primary administrator must be used for the deployments, otherwise the deployment may fail. The Administrator GUI URL will differ based on environment.

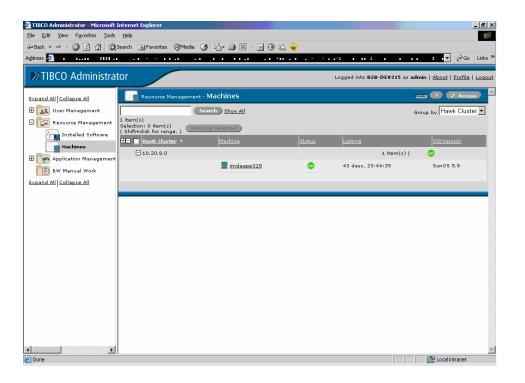
Logon

Open Web browser & go to Administrator GUI URL for given environment/domain. Logon window will be shown as follows.

Verify that Domain is correct.

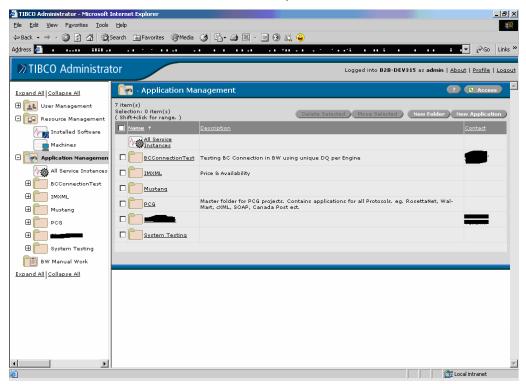


After logging in to the Administrator GUI, with the appropriate credentials, the user is presented with the domain management screen, similar to the one shown below.



Creating new application

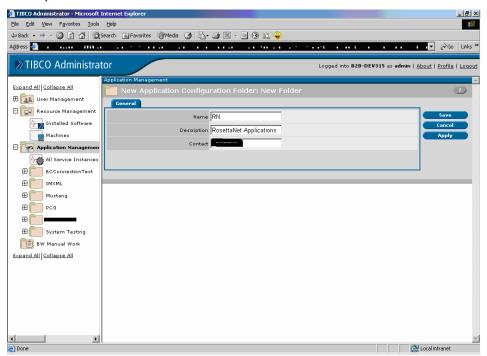
Click on the "Application Management" on the left hand side frame. That will display deployed applications on the right hand side frame. The screen will look as below,



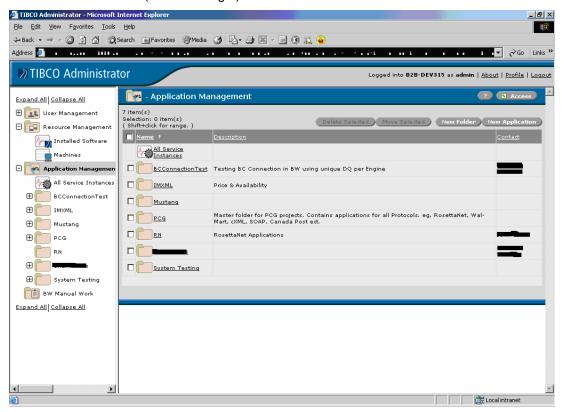
Creating New Folder

Check if folder already exists. Skip this step if folder exists.

Click on "New Folder" button located at top-right, which will display "New Folder" screen as below. Specify Name, Description & Contact.

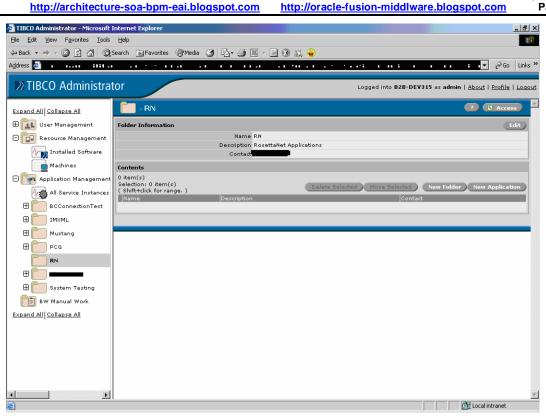


Click on "Save" button (located at right) to create folder. Screen will refreshed & look like below,

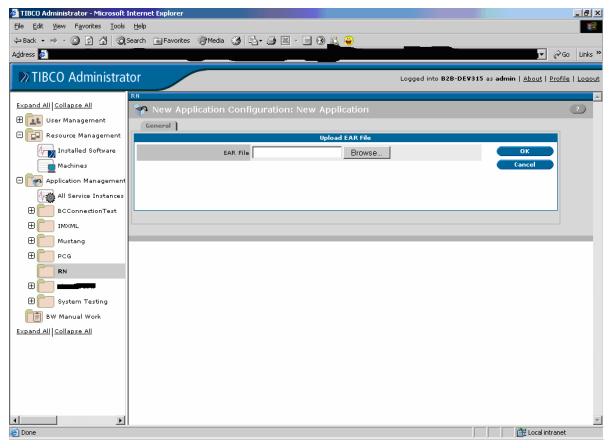


Uploading EAR File

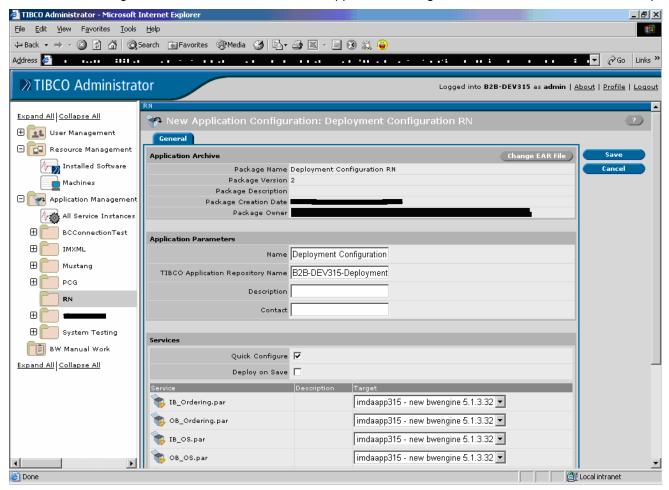
Click on the folder in which application should reside, screen will look like below,



Click on "New Application". Upload EAR screen will be shown as below,



Select the ear using "browse" button & click OK. New Application Configuration screen as shown below is displayed.

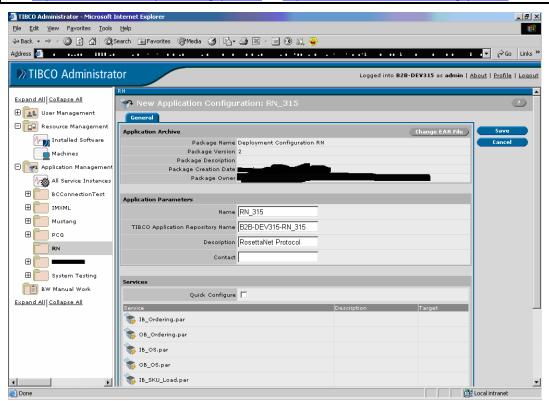


Specify the application parameters.

- Name: Name of the application
- TIBCO Application Repository Name: EAR File Name
- Description: Description of this application
- Contact: Developer(s) responsible for this application deployment

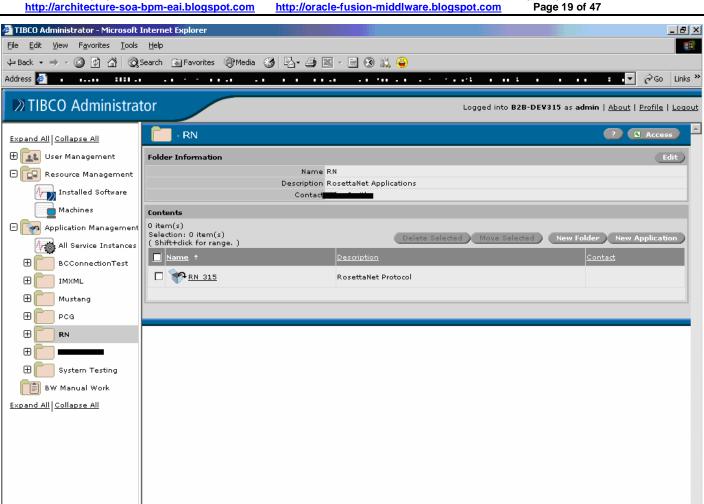
Refer to the <u>naming conventions</u> for naming the application and services in a standard way.

Then "Uncheck" the box "Quick Configure". Screen will look like below,



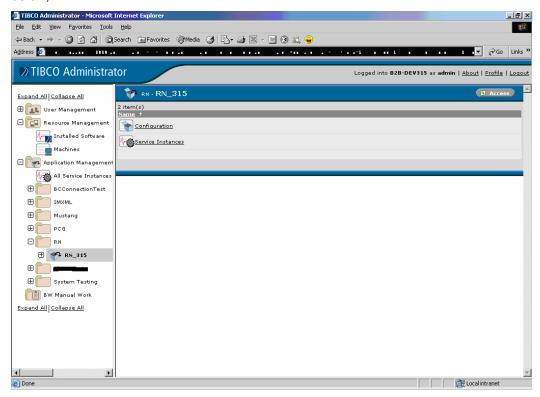
Click on Save. New Application will be created & screen will look like below,

Contains commands for working with the selected items.

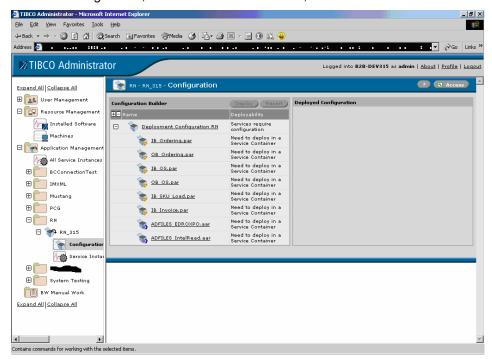


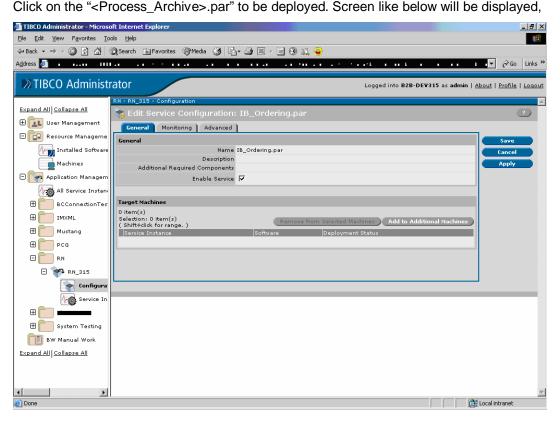
Creating Service Instance for Process Archive (.par)

Navigate to Application Configuration under which Process Archive resides referring section 0. Screen will look like below,

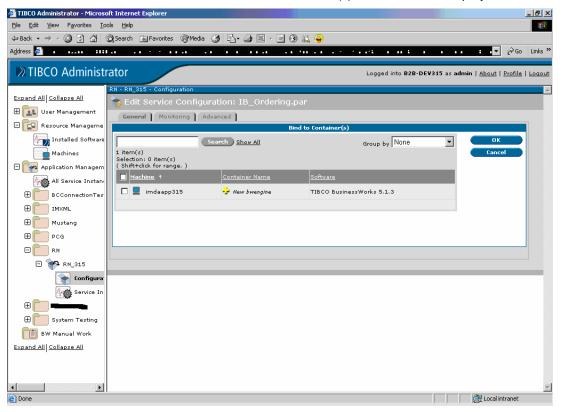


Click on Configuration, Screen will look like below,

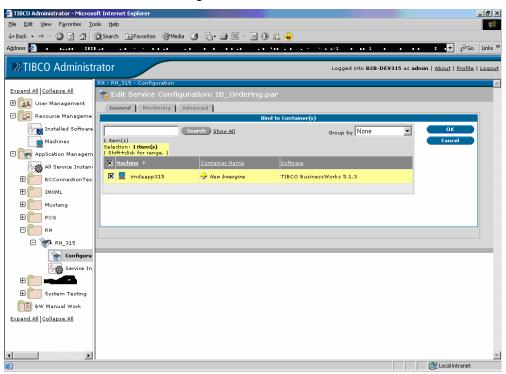




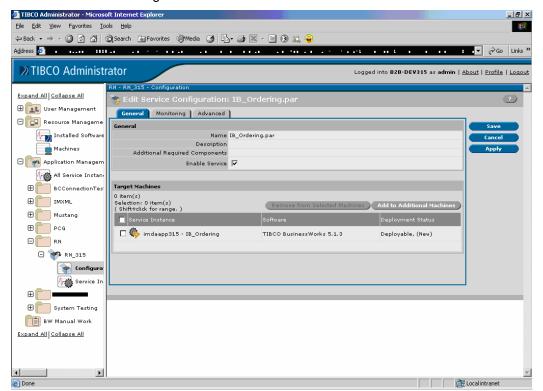
Click on "Add to Addional Machines". "Bind to Container(s)" screen will be displayed like below,

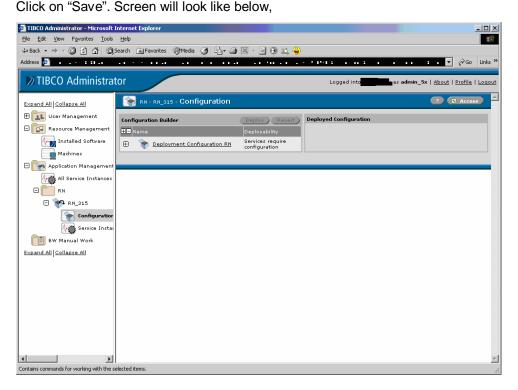


Click "Checkbox" in front of <Target Machine Name> to be selected in "Machine" column. Screen will look like below,

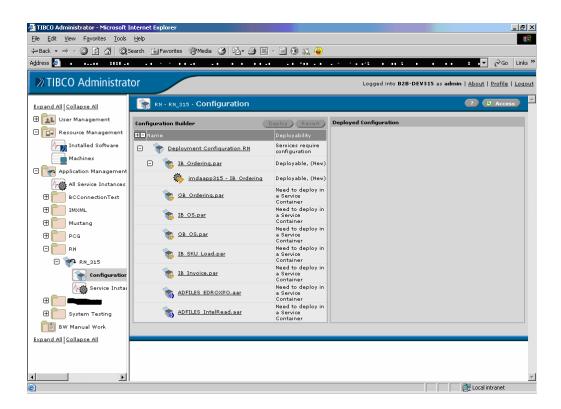


Click OK. Machine <Target Machine Name> will be added & screen will look like below.

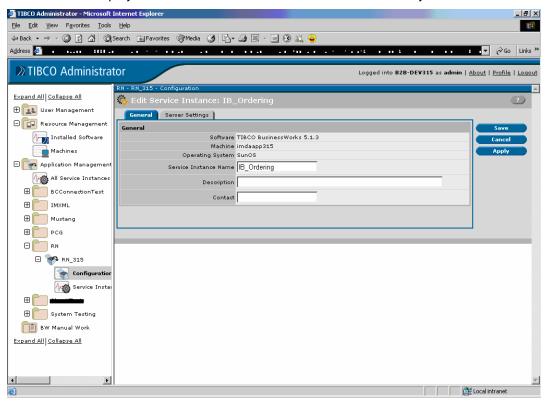




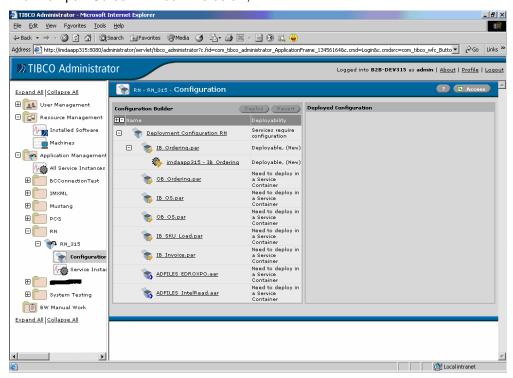
Click on "+" in front of "Deployment Configuration <EAR_Name>" to expand. Then Click on "+" in front of <Process Archive>.par. Screen will look like below,



Click on Service Instance created in previous step under <Process_Archive_Name>.par. "Edit Service Instance" screen will be displayed as below. Set Service Instance name correctly and click on Save.

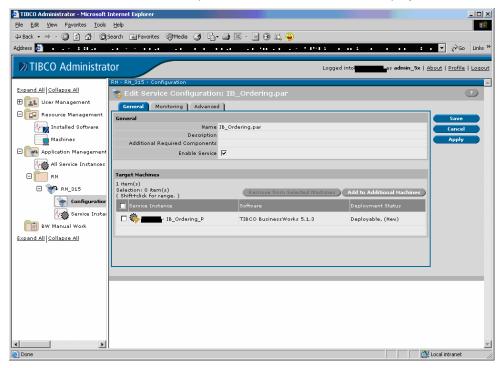


Once saved the configuration for Service, the Application Configuration view will be displayed as shown below. Click on "+" in front of "Deployment Configuration <EAR_Name>" to expand. Then Click on "+" in front of <Process Archive>.par. Screen will look like below,

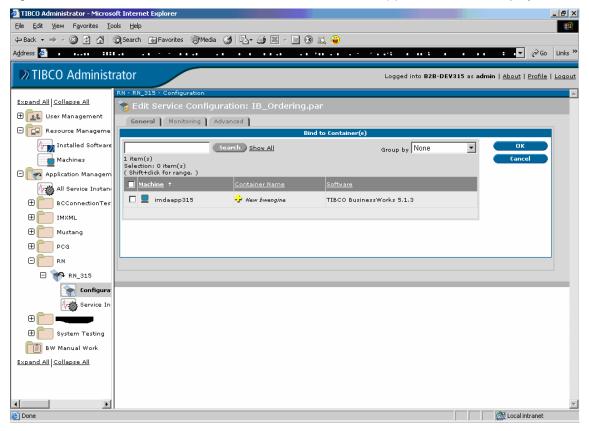


If **MULTIPLE** service instances need to be created for same Process Archive (.par) then refer the following instructions.

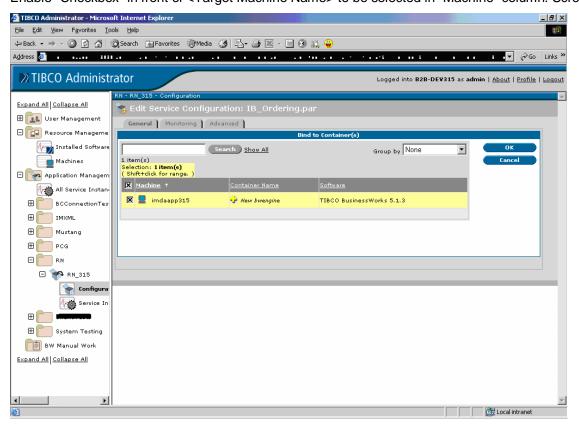
Click on the <Process Archive>.par. Screen like below will be displayed,



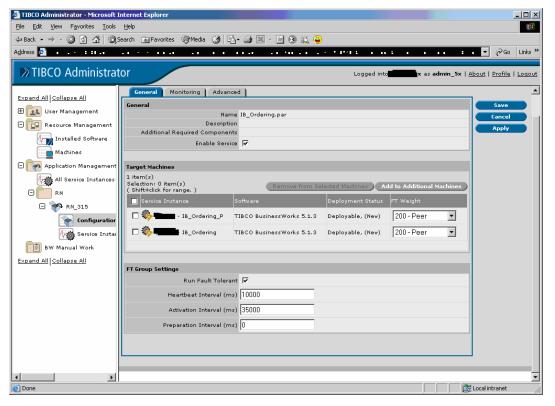
Again click on "Add to Addiotional Machines". Bind to Container(s)" screen will be displayed like below,



Enable "Checkbox" in front of <Target Machine Name> to be selected in "Machine" column. Screen will look like below,



Click "OK". Target <Target Machine Name> will be added and screen will look like below,



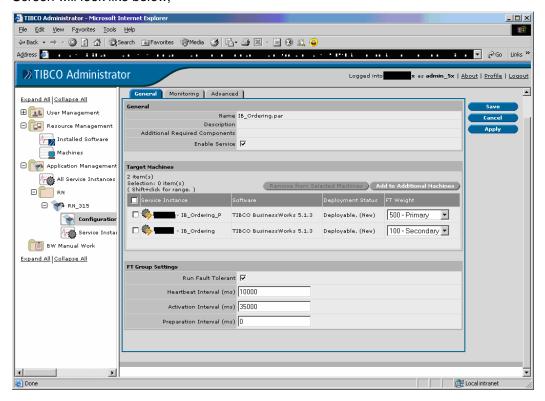
In "General" section, Ensure that "Enable Service" checkbox is "ON"

Note that some deployments may need special requirements for setting FT parameters. Set the FT Parameters as required for this deployment. Deployment Configuration document should correctly identify the settings for FT.

NAMING CONVENTION: When deploying a PAR with Fault tolerant configuration, add suffix "_P" to the "Service Instance Name" denoting the fault tolerant characteristic of that service. Use suffix "_P" for Prmary and "_S" for Secondary services. e.g. For example, ilf Service instance name is "IB_Ordering" change it to "IB_Ordering_P", indicating that this service is a . "P" suffix denotes for "Primary" Service instance. Similarly,

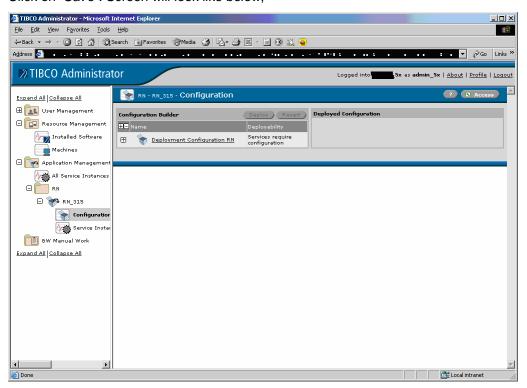
Set Description as "Primary" or "Secondary" accordingly.

Screen will look like below,

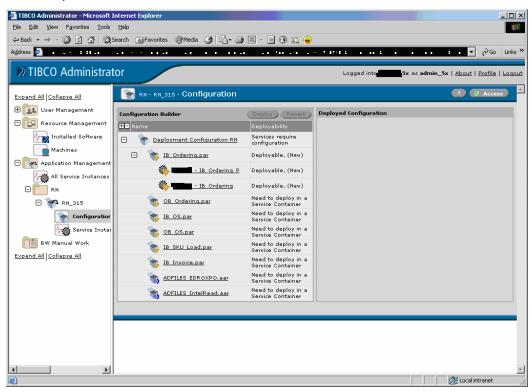


Click on "Save". Screen will look like below,

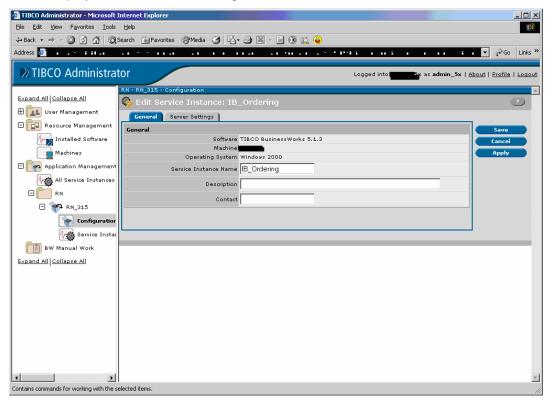
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Click on "+" in front of "Deployment Configuration <EAR_Name>" to expand. Then Click on "+" in front of <Process Archive>.par. Screen will look like below,



To change the name for a Service instance, click on the service instance for the specified archive. Screen like below will be displayed. Name or other configuration for the service instance can be edited and saved by clicking on 'Save'.

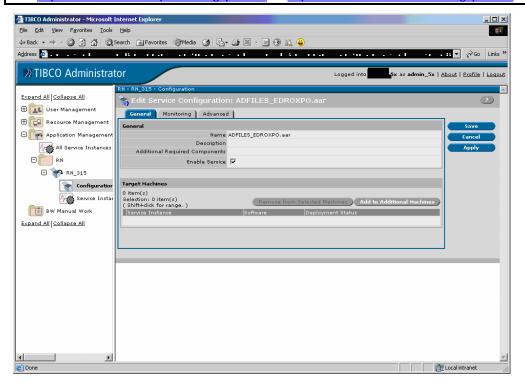


Creating Service Instance for Adapter Archive (.aar)

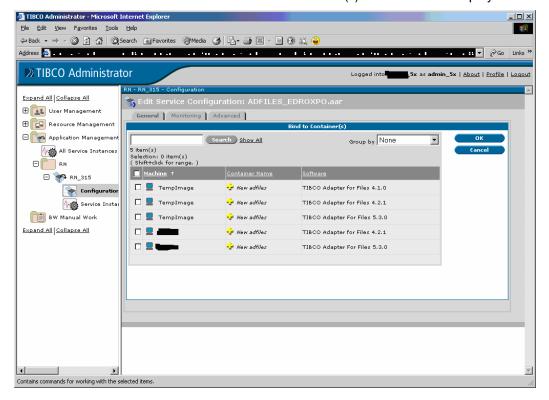
Note: For Adapter Archive there will be only one service instance unlike two service instances (Primary & Secondary) for Process Archive.

Navigate to the Adapter Archive Configuration for which service instances to be created referring section 0.

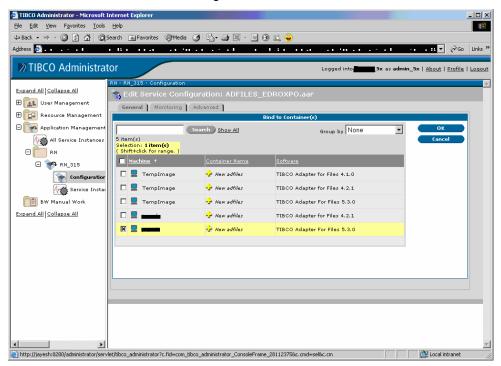
Click on the <Adapter Archive>.aar. Screen will look like below,



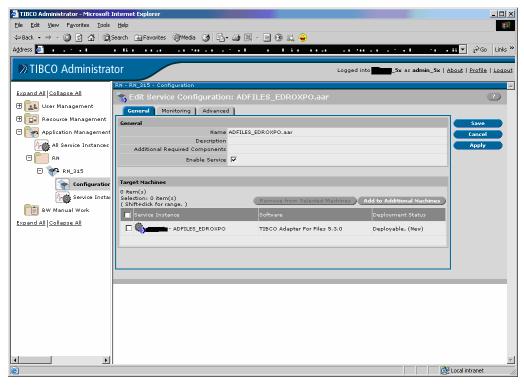
Click on "Add to Addional Machines". "Bind to Container(s)" screen will be displayed like below,



Enable "Checkbox" in front of <Target Machine Name> to be selected in "Machine" column. Screen will look like below,



Click OK. Target <Target Machine Name> will be added & screen will look like below.



Click "Save"

Complete the Deployment Configuration

Follow the steps mentioned in Deployment Configuration to complete the configuration of this deployment.

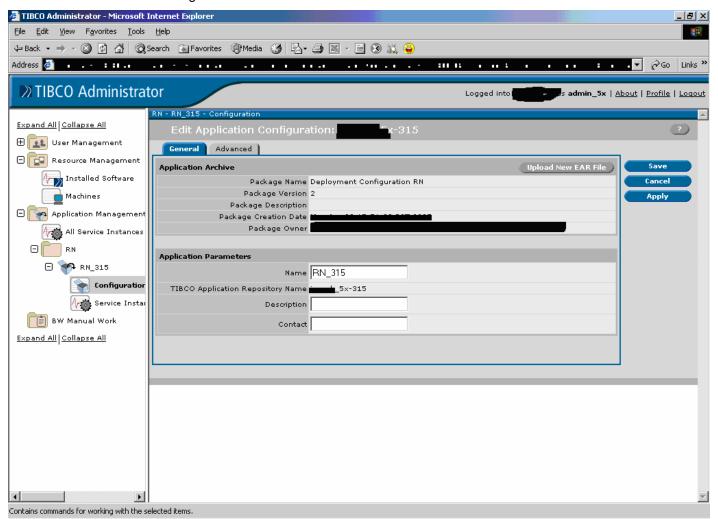
Sometimes project is already deployed in a specific a environment, but new version of Enterprise Archive (EAR) file needs to be deployed because of some changes in the project. In such cases, upload new version of EAR file for existing application, modify environment specific information (see Deployments - Environment Specific Information) if necessary, and re-deploy the project (BW/Adpater processes).

Refer to Chapter 6 (i.e. New Application – New EAR Deployment) In this case, instead of creating new application as mentioned in section 0(i.e. Creating new application), new version of EAR for existing applications needs to be uploaded. Refer to the following section for uploading new version of the EAR.

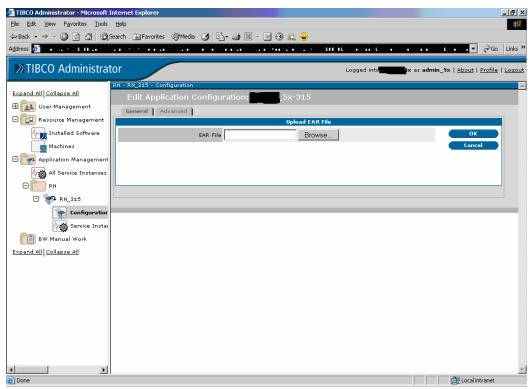
Uploading new version of EAR

Navigate to Application Configuration for which new version EAR needs to be uploaded using section Navigating to Application Configuration

Click on <EAR> name link in right frame. Screen like below will be shown.



Click on "Upload New EAR File" button. Screen like below will be shown,



Using "browse" button select the new ear file & then click "OK".

Creating service instances for newly added PAR/AAR

Based on changes in the new version of EAR, different steps need to be followed. Refer to Chapter 6 (i.e. New Application – New EAR Deployment), which has all the steps. There are three scenarios possible as mentioned below,

- Deployed EAR & newer version of EAR has same PAR/AAR
 In this case, skip the section 0 & 0 as service instances will remain same.
- Newer version of EAR is subset of deployed EAR
 In this case, skip the section 0 & 0 as obsolete service instances will be automatically removed.
- Newer version of EAR has newly added PAR/AAR
 In this case, follow the steps the section 0 & 0 for newly added PAR(s) & AAR(s) respectively.

Complete the Deployment Configuration

Follow the steps mentioned in Deployment Configuration to complete the configuration of this deployment. Note that some of the steps may not be applicable for this type of deployment.

8. Existing Application - Revised Configuration deployment

Sometimes project is already deployed in a specific a environment, but certain configuration needs to be changed. In such cases modify environment specific information (see Deployments - Environment Specific Information), and redeploy the project (BW/Adpater processes).

Follow the steps mentioned in Deployment Configuration to complete the configuration of this deployment. Note that some of the steps may not be applicable for this type of deployment.

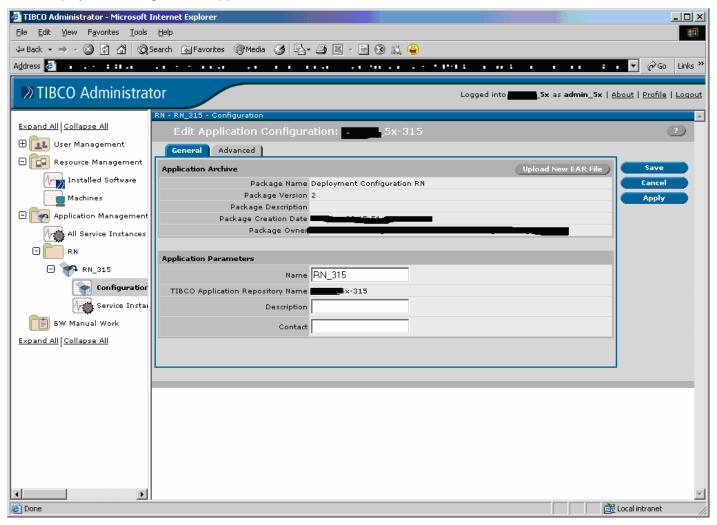
Once configuration is done, re-deploy the application referring Deploying, Stopping/Starting Instances. If needed, the service instances may be stopped and started manually.

9. Deployment Configuration

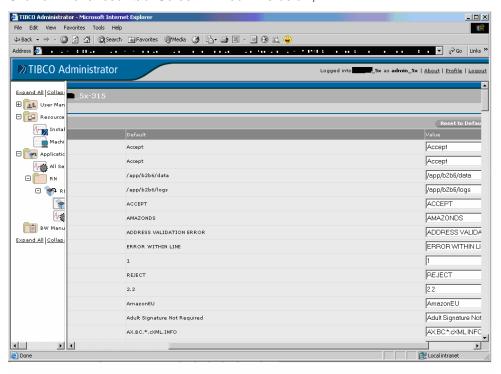
Configuring Application

Navigate to the Application Configuration by referring section 0

Click "Deployment Configuration < Application Name>" link. Screen will look like below,



Click on "Advanced" tab. Screen will look like below,

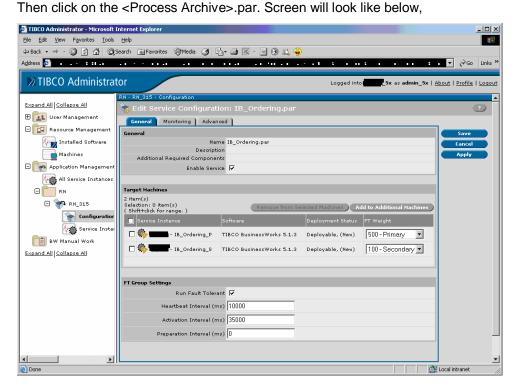


Global Variables

In "Global Variables" section, Change the "Global variables" value.

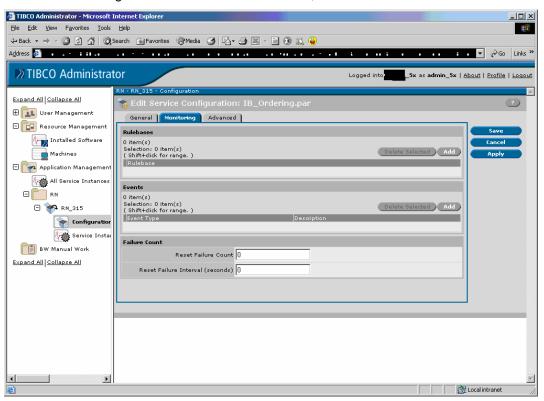
Configuring Process Archive (.par)

Navigate to the Process Archive Configuration by referring section 0



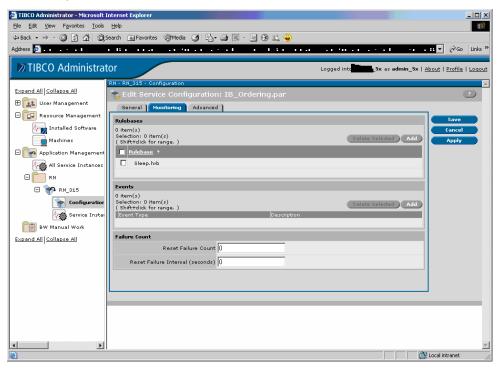
Monitoring

Click on "Monitoring" tab. Screen will look like below,



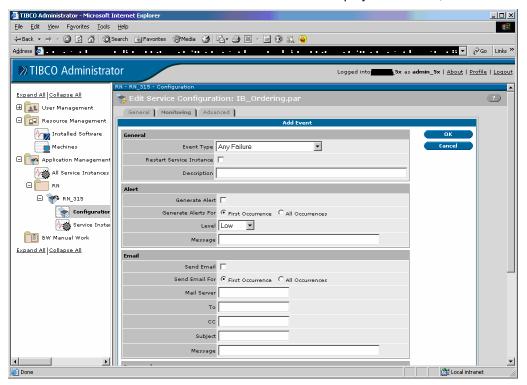
Rulebases

Click on "Add" in Rulebases sections. Select the rulebase to add using "Browse" button. Click "OK". Screen will look like below,

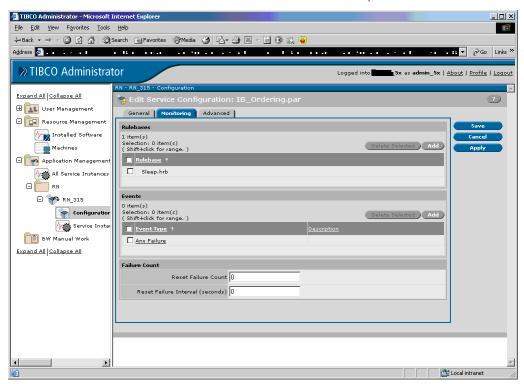


Events

Click on "Add" in event section. "Add Event" screen is displayed as below,



Fill in all the sections & click "OK". Screen will look like below,

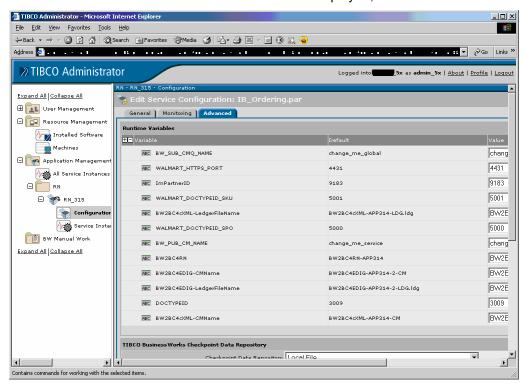


Failure Count

Set the values for "Reset Failure Count" & "Reset Failure Interval" and click "Apply".

Advanced Configuration

Then Click on "Advanced" tab. Screen like below is displayed,



Runtime variables

Set values for the variables in "Runtime variables" section.

TIBCO BusinessWorks Checkpoint Data Repository

Then set the "Checkpoint Data Repository" in "TIBCO BusinessWorks Check Data Repository" section.

TIBCO BusinessWorks Process

Then go to "TIBCO BusinessWorks Process Configuration" section, expand the process by clicking "+" in front of the process. Then set following parameters,

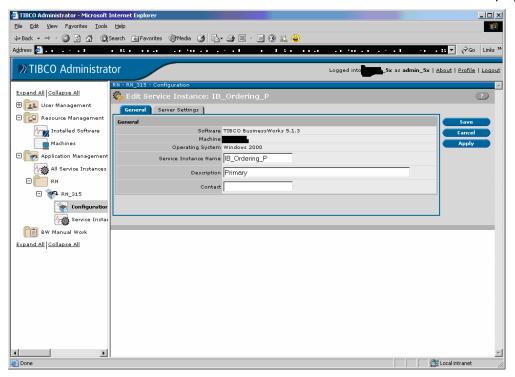
- Enabled Checkbox
- Max Jobs
- Activation Limit checkbox

Click "Save"

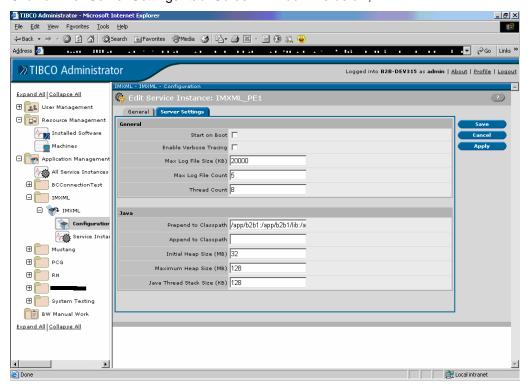
Configuring Service Instance of Process Archive

Navigating to service instance using referring section 0

Now click on the <Service Instance> link. "Edit Service Instance" Screen will be displayed like below,



Click on the "Server Settings" tab. Screen will look like below,



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Set values for Parameters in "Java" section.

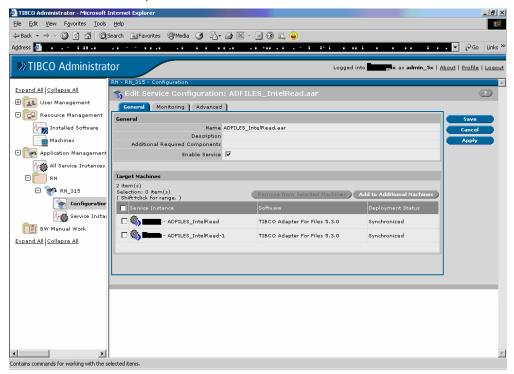
Cot values for i aramotors in cave

Click "Save"

Configuring Adapter Archive (.aar)

Navigate to the Adapter Archive Configuration by referring section 0

Then click on the <Adapter Archive>.aar. Screen will look like below,

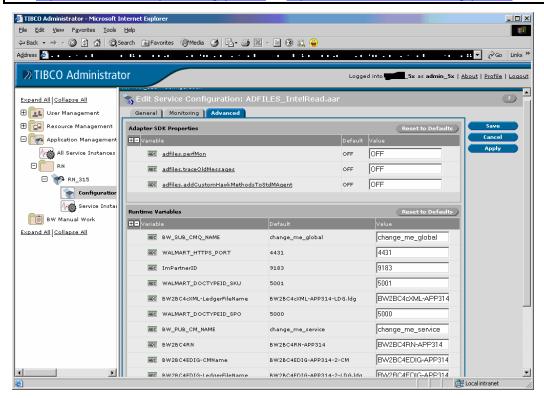


Monitoring

Adapter Archive Monitoring Configuration is similar to Process Archive Monitoring Configuration. Configure monitoring for Adapter Archiving by referring section 0

Advance

Click on the "Advanced" tab. Screen like below is displayed,



Adapter SDK Properties

Set values for the variables in "Adapter SDK Properties" section.

Runtime variables

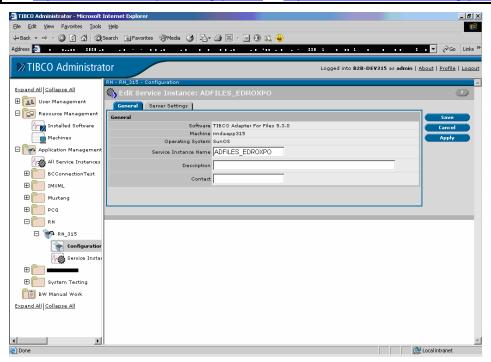
Set values for the variables in "Runtime variables" section.

Click "Save"

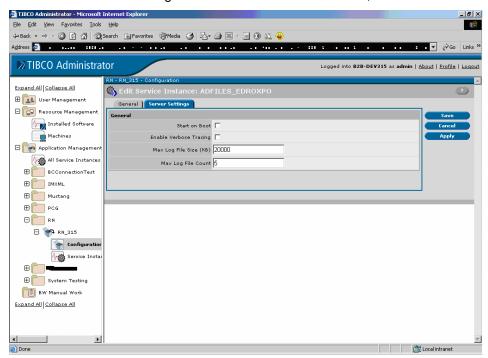
Configuring Service Instance of Adapter Archive

Navigating to service instance using referring section 0

Now click on the <Service Instance> link. "Edit Service Instance" Screen will be displayed like below,



Click on the "Server Settings" tab. Screen will look like below,



Set values for Parameters in "General" section.

Click "Save"

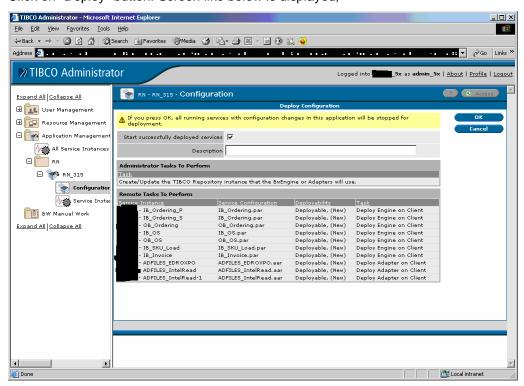
10. Deploying, Stopping/Starting Instances

Deploying Application

Once Application Configuration, Process/Adapter Archive configuration, Service Instance Configuration is complete, Application is deployed.

Navigate to Application Configuration referring section 0

Click on "Deploy" button. Screen like below is displayed,



Uncheck the "Start successfully deployed" services.

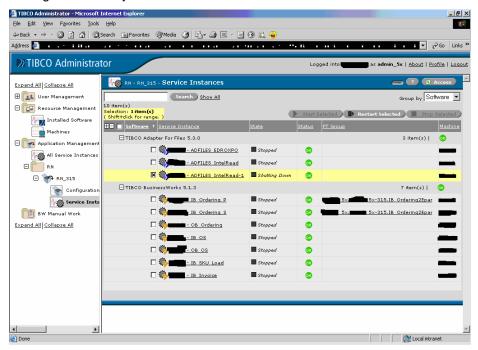
Set the Description.

Click "OK"

Starting / Stopping Service Instances

Stopping Service Instances

Click on the check box to select the engine/adapter service instance that needs to be stopped. You may select more than one service instance at a time and click on the 'Stop Selected' button, on the upper right hand side. Following screenshot displays the highlighted service instance and the 'Stop Selected' button. This button is enabled only when an engine is already started.



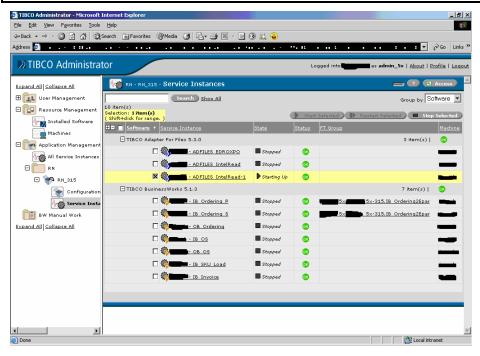
What you must know before stopping

Before stopping service instance as mentioned in Section, you must know the following notes.

1. Be absolutely sure before clicking on the 'Stop Selected' button. This stops the component (engine/adapter) without any warning or "Are you Sure" confirmations.

Starting Service Instances

Click on the check box to select the engine/adapter service instance that needs to be started. You may select more than one service instance at a time and click on the 'Start Selected' button, on the upper right hand side. Following screenshot displays the highlighted service instance and the 'Start Selected' button. This button is enabled only when an service instance is stopped.



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