Agenda Key: 45CF
Session Number: 540194

Integrated Web Application Server for i - Removing Excuses

Tim Rowe
Web Integration for i T/L
timmr@us.ibm.com

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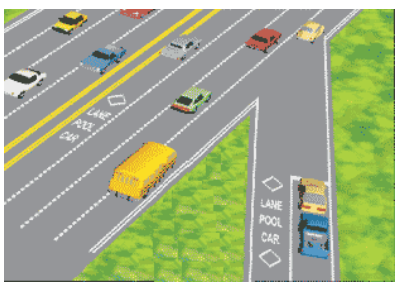
IBM integrated Web application server for i

the 'on-ramp' to the Web



The New Power Equation

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Agenda – Integrated Web Application Server

- Introduction
  - What is ‘it’
  - Why did we add this
  - Why not just use WebSphere Application Server?
- How do I create one
  - Simply of course
- Application deployment
  - What is supported
  - What is not supported
  - How do I get my app deployed
- Database
  - What is supported
  - How do I use the support

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Introduction

- IBM integrated Web application server for i
  - Goals
    - IBM i functional enhancement
    - The Web container is integrated into the operating system
    - Easy to use
    - Simplified access, deployment and management
    - Small, Less resources
    - Positioned as ‘on-ramp’ to the Web
    - Replacement for AFS Tomcat

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Introduction

- Integrated Web application server
  - What is it?
    - Web container
    - Based on the OSGI framework
    - Supports application packaged in a WAR
    - Runs IBM Technology for Java (32 –bit)
    - Supports Java Toolbox and Native DB drivers
    - Web container for ‘simple’ applications

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Why is this important to the IBM i?

- It runs on our smallest boxes
- Simple to use
- Easy to install – part of the operating system (already included!)
- Easy to maintain - PTFs
- Starts very quickly (seconds)
- IBM admin interfaces have a place run
  - No Tomcat
  - No WAS system instance
- Replacement for Tomcat
- Allow us to do things like
  - Web Services Server
  - Web Query
  - IBM Systems Director Navigator for i
  - Generates new excitement for IBM i

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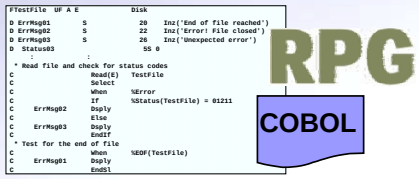
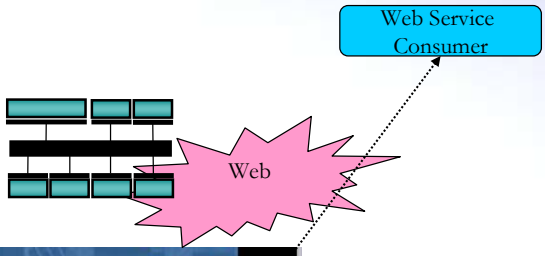
New stuff – Integrated Web Services Server





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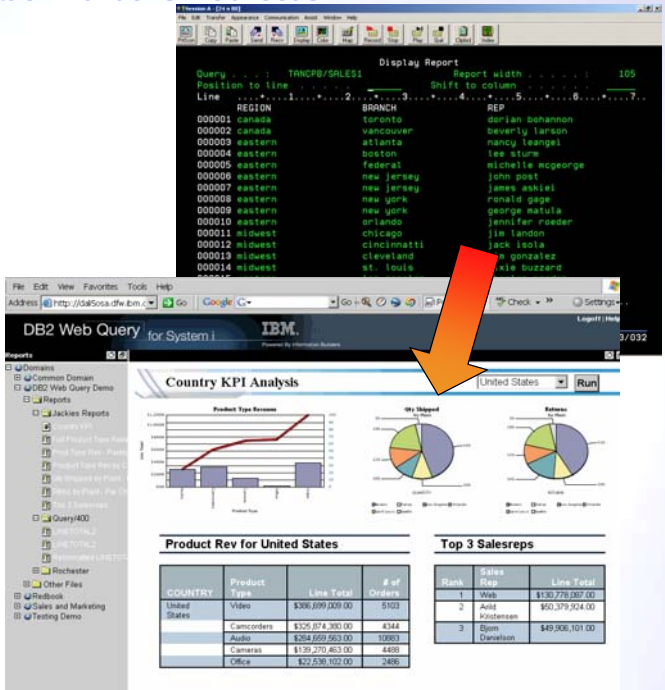
New Stuff – IBM DB2 Web Query for System i

Powered By Information Builder's WebFocus

- **What we had**
  - Query/400 (Query for iSeries)
    - Green screen report builder
    - Not updated (much) in ~10 years
- **NOW we have**
  - Web Enabled Query/400 reports
  - Simple, web based report builders
    - Advanced capabilities in a web based report builder
  - Multiple output formats (pdf, xml, html, etc)
  - Excitement from
    - Business Partners
    - Customers
    - ISVs (well, most of them)
  - 6000+ orders in 5 months



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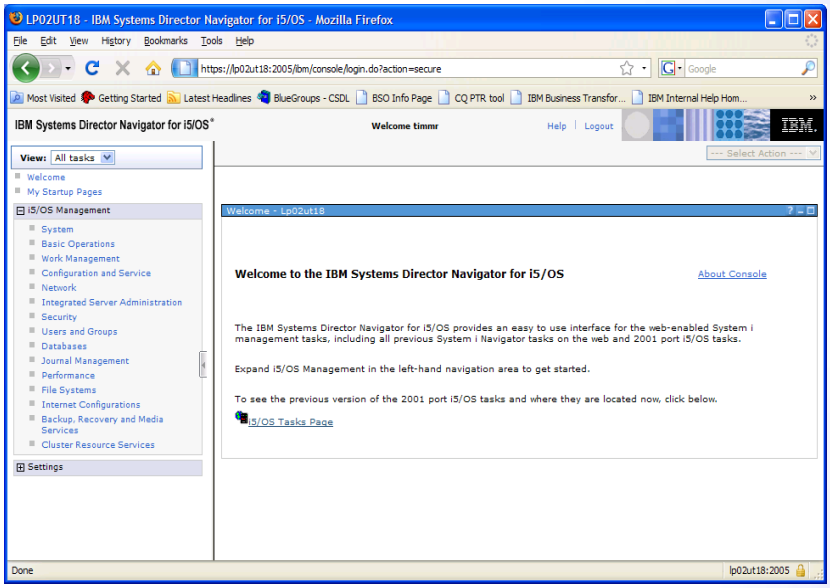
New Stuff – IBM Systems Director Navigator

- New Web Console for the IBM i
- Available in IBM 6.1 on every system
- Over 300 i tasks have been enabled for the Web
- New function only available in Web console
  - BRMS
  - HA
  - Performance
    - Job Watcher
    - Disk Watcher



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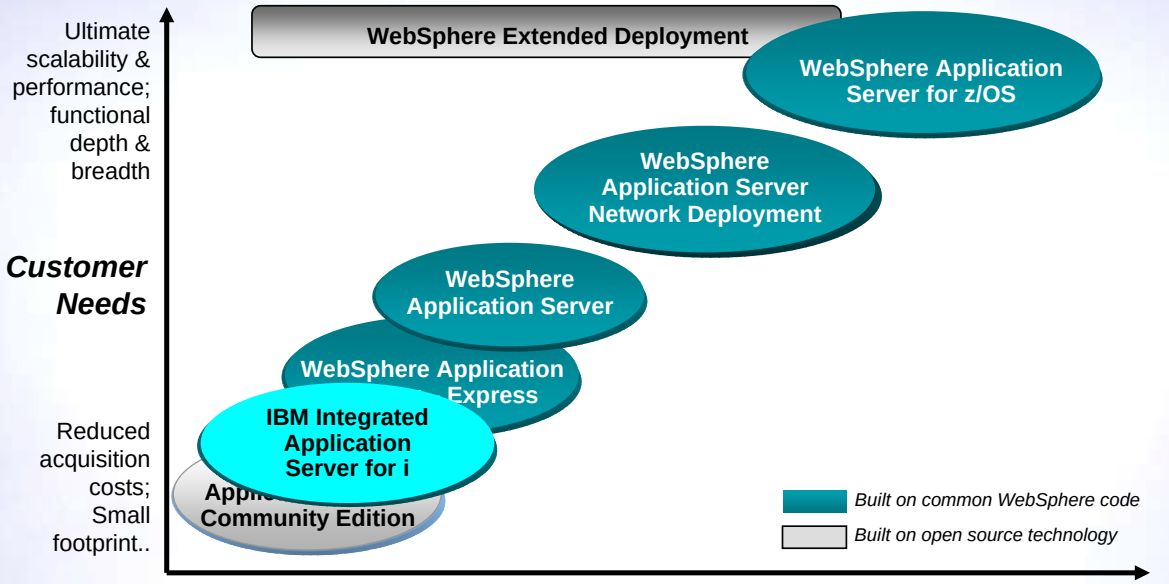
WebSphere Application Server Portfolio



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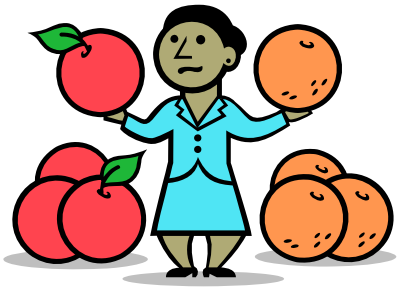
Why WebSphere Application Server vs IAS

- Why use WebSphere Application Server
  - Express V6.1 is still shipped with the operating system on V6R1
  - Express runs on both the 64 bit and 32 bit JVMs
  - Need EJB Support
  - Full J2EE architecture
  - Heavy database usage
  - High Availability



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Web Application Servers on i5/OS

	Integrated Web Application Server	WebSphere Application Server Express	WebSphere Application Server Network Deployment
Cost	Integrated	Entitled	Fee
Packaging	Integrated with IBM i 4.5	Ships with Web Enablement for IBM i	Separate product
Fixes	IBM i PTFs	WebSphere iFix	WebSphere iFix
Access to DB2 for i5/OS	Yes	Yes	Yes
Supports JSF, JSP, & servlets	Yes	Yes	Yes
Multiple Instances	Yes	Yes	Yes
JNDI name space connection	One	Multiple	Multiple
Full J2EE Support	No	Yes	Yes
Java Based Messaging Engine	No	Yes	Yes
Cross Platform	No	Yes	Yes
Advanced performance, management & high-availability	No	No	Yes
Memory requirements	~40% less		

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Web Application Servers on i5/OS

	Integrated Web Application Server	WebSphere Application Server Express	WebSphere Application Server Network Deployment
J2EE application packaging	Partial (WAR or WAB files)	Full (WAR and EAR files)	Full (WAR and EAR files)
Web Service	Yes	Yes	Yes
Web-services engine Axis2 V1.3	Yes	Yes	Yes
Administration and configuration	IBM Web Administration for i, Qshell	IBM Web Administration for i, Qshell, WebSphere Administrative Console	IBM Web Administration for i, Qshell, WebSphere Administrative Console
Horizontal growth and automatic failover for high availability	No	No	Yes
Connection pooling - datasources	Apache commons database-connection pooling	WebSphere connection pooling	WebSphere connection pooling

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Web Application Servers on i5/OS

	Integrated Web Application Server	WebSphere® Application Server Express	WebSphere Application Server Network Deployment
IBM Webfacing Tool	*Yes*	*Yes*	*Yes*
Host Access Transform Service (HATS)	*No*	*Yes*	*Yes*
WebFacing Deployment Tool with HATS Technology	Yes for IBM Webfacing Tool Not for HATs	*Yes*	*Yes*
Rational Business Developer Extension (RBDe/EGL)	*Yes*	*Yes*	*Yes*
WebSphere Development Studio Client & Rational Application Developer	*No*	*Yes*	*Yes*

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How do I get to it

- IBM i 4.5
  - 5722SS1 30 Qshell
  - 5722SS1 33 Portable App Solutions Environnent
  - 5722DG1 *BASE IBM HTTP Server for i5/OS
    - Group PTF SF99114 Level 16
  - 5722JV1 8 J2SE 5.0 32 bit
    - Group PTF SF99291 Level 18
- IBM i 6.1
  - GA Cum
    - Group PTF SF99115 Level 5
    - Group PTF SF99562 Level 6

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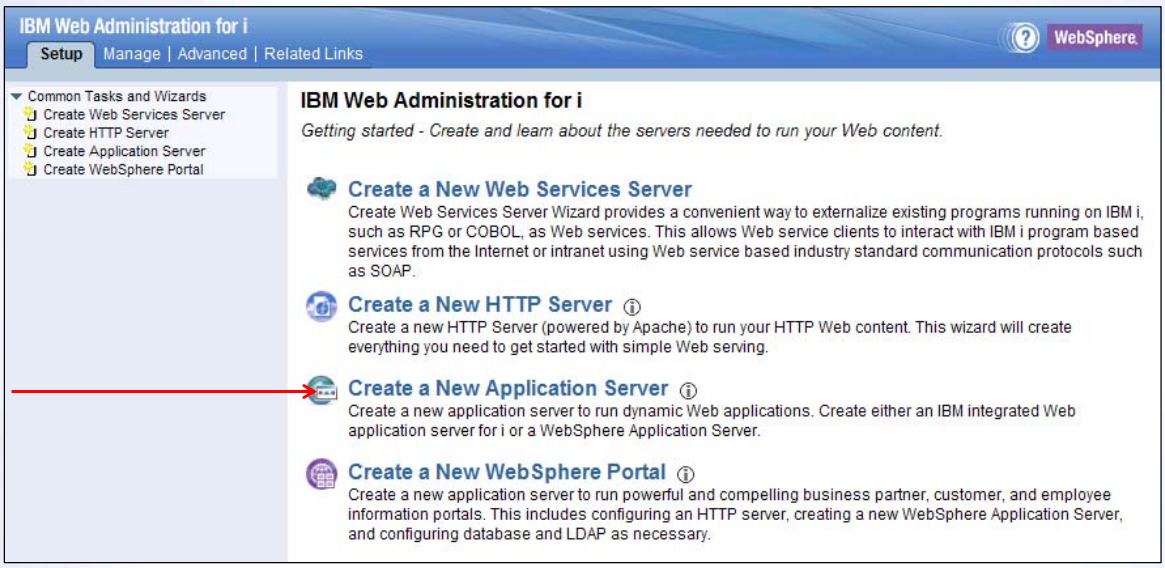
How do I get to it

Port 2001 interface – http://*hostname*:2001/HTTPAdmin



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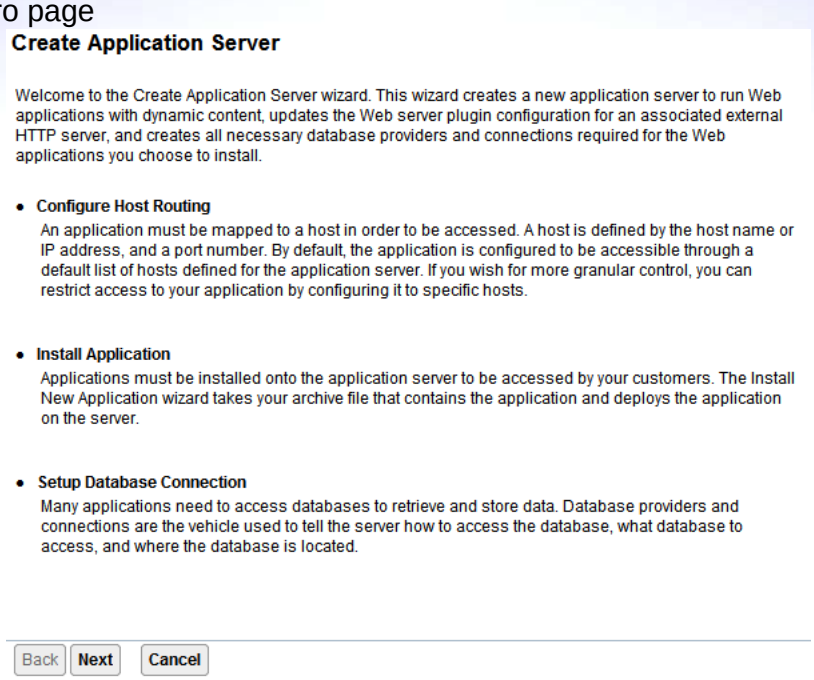
Create Application Server

- Step a: Intro page



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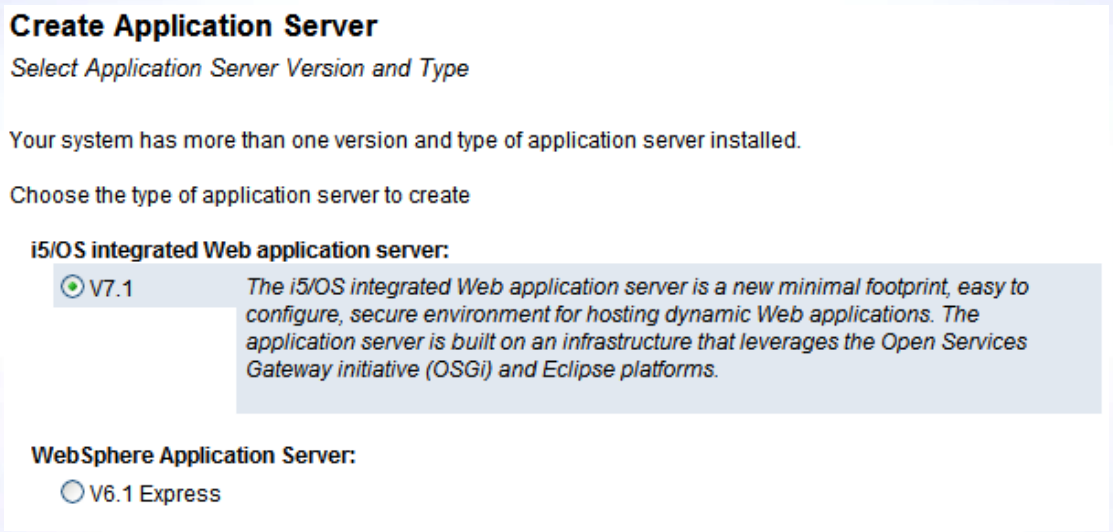
Create Application Server

- Step b: Select the type and version of application server to create



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Create Application Server

- Step 1: Specify the name of the application server

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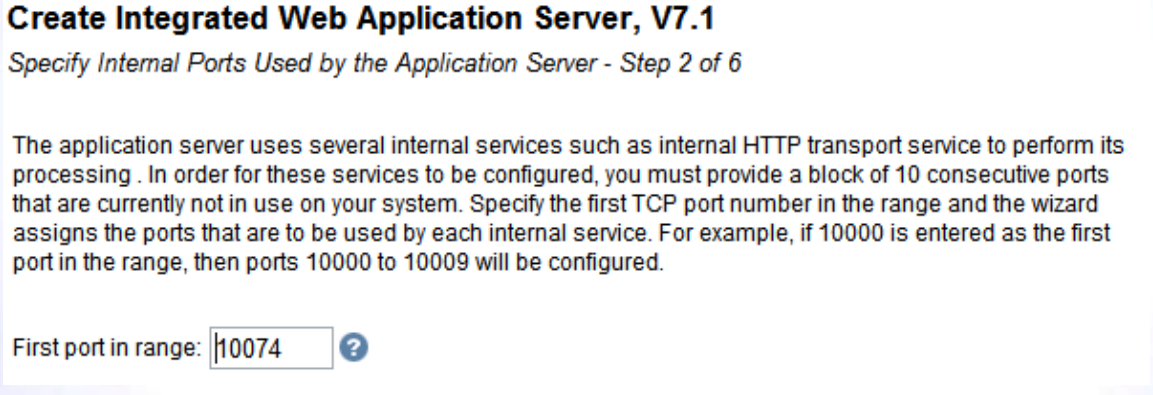
Create Application Server

- Step 2: Specify Port range



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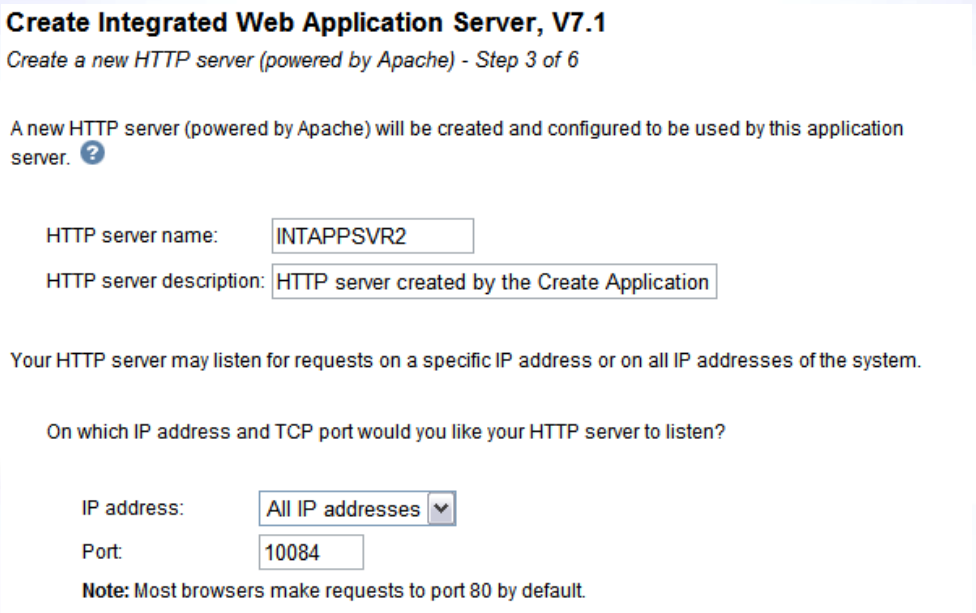
Create Application Server

- Step 3: Specify HTTP Apache server info



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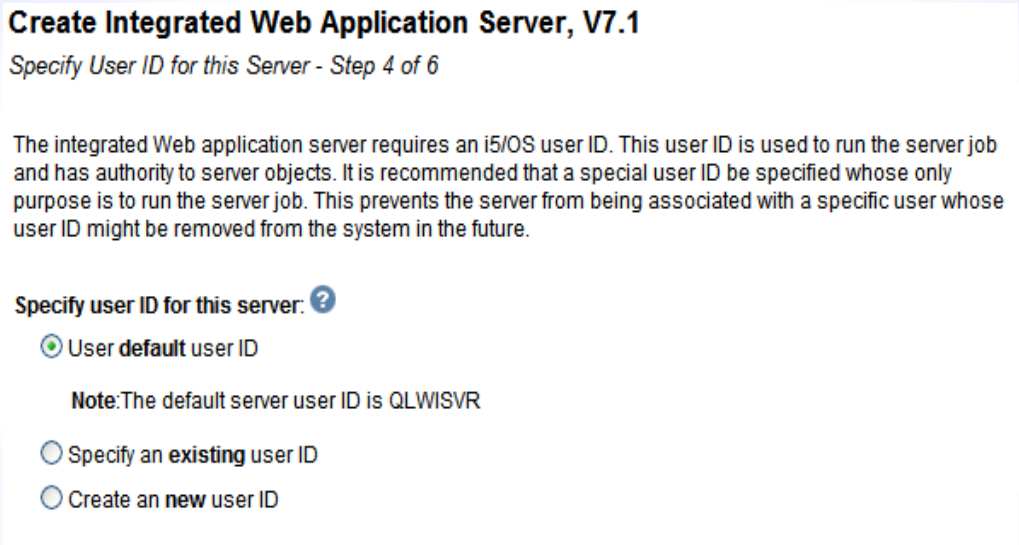
Create Application Server

- Step 4: Specify User server will run under



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Create Application Server

- Step 5: Sample applications

Create Integrated Web Application Server, V7.1

Sample Applications - Step 5 of 6

The i5/OS integrated Web application server ships with sample applications that allow the user to easily verify that the server is running and can be accessed correctly. These applications will automatically be deployed for you.

The following applictions will be installed:

✓ Eclipse Help - The Eclipse help application is a framework that allows you to easily add dynamic help

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Create Application Server

- Step 6: Summary - Application Server tab

Create Integrated Web Application Server, V7.1

Summary - Step 6 of 6

When you click **Finish** this i5/OS integrated Web application server will be created.

Application Server | HTTP Server

Application server version:	7.1
Application server name:	INTAPPSVR2
Server description:	i5/OS integrated Web application server created by the Create Application
Internal port range:	10074 - 10083
Instance root:	/www/intappsvr2
Application server home directory:	/www/intappsvr2/lwi
External HTTP server association:	INTAPPSVR2
Server URL:	http://rchaswg2:10084

Sample applications:

Application name	URL to test the server
Eclipse Help	http://rchaswg2:10084/help

Note: To access the sample application(s), verify that both the application server and HTTP server are started, then enter a URL from the table above.

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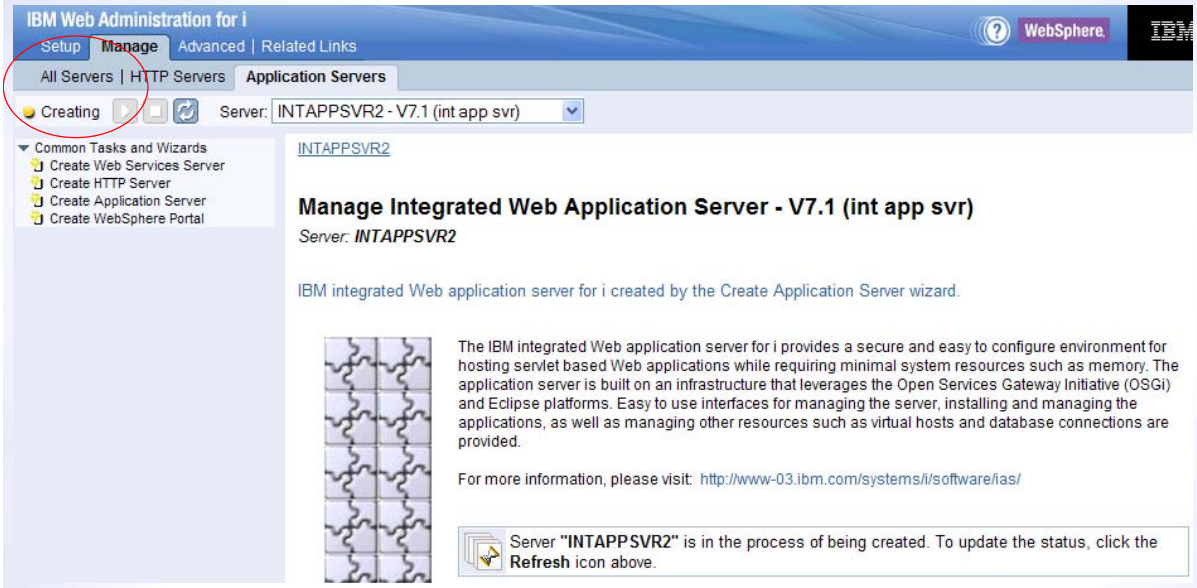
Create Application Server

- Server creating



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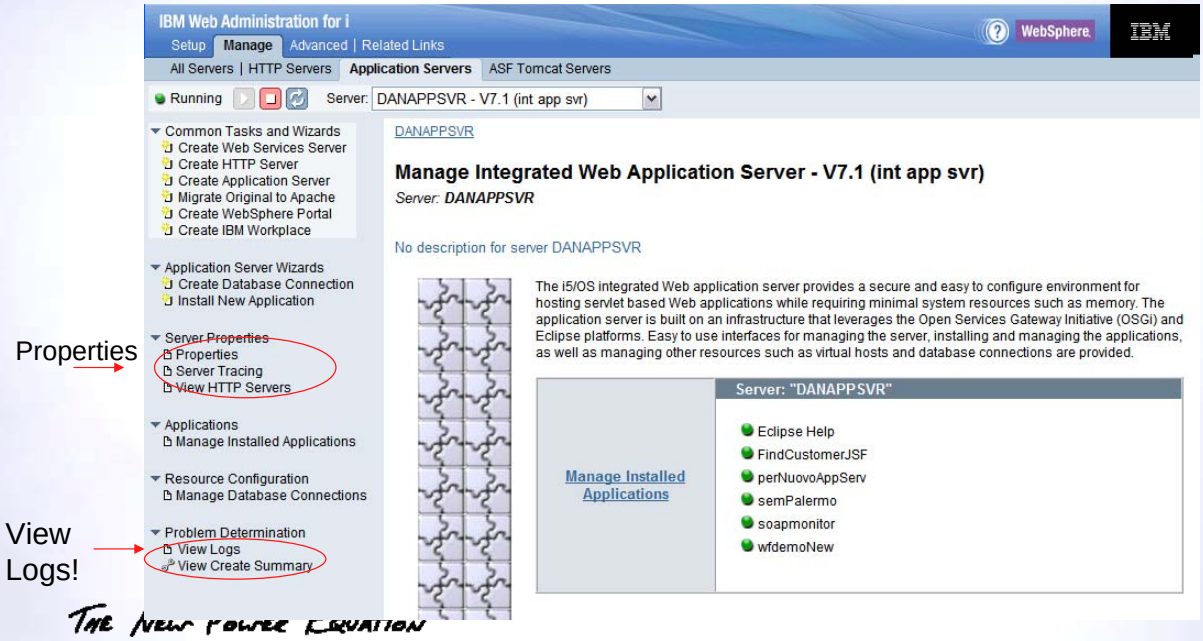
Manage Server

Start, Stop, Properties, Applications, and Database



Properties

View Logs!

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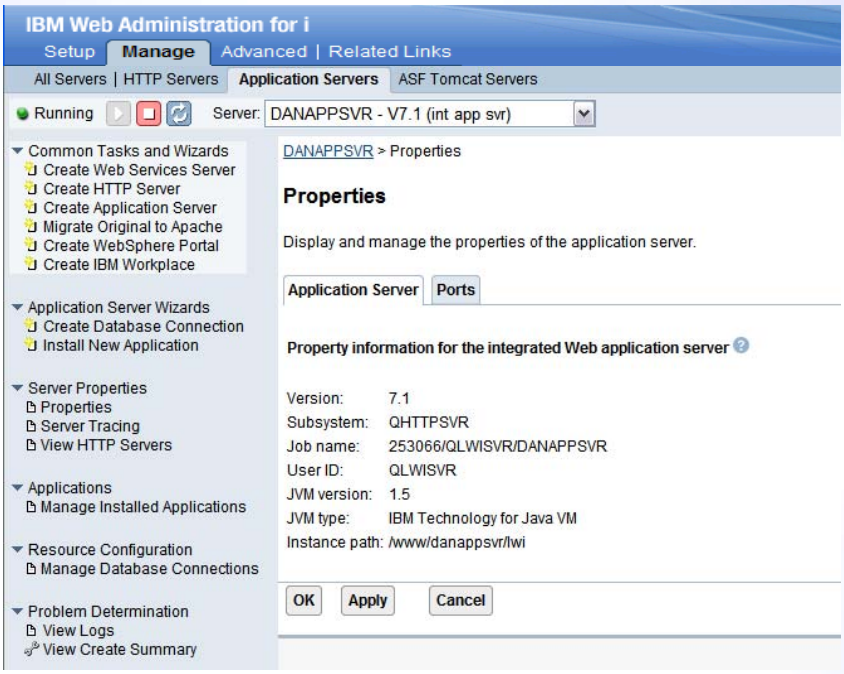
Manage Server - Properties

- Version of server
- IBM i specific info
- Subsystem
- Job Name
- JVM



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Manage Server – Server Tracing

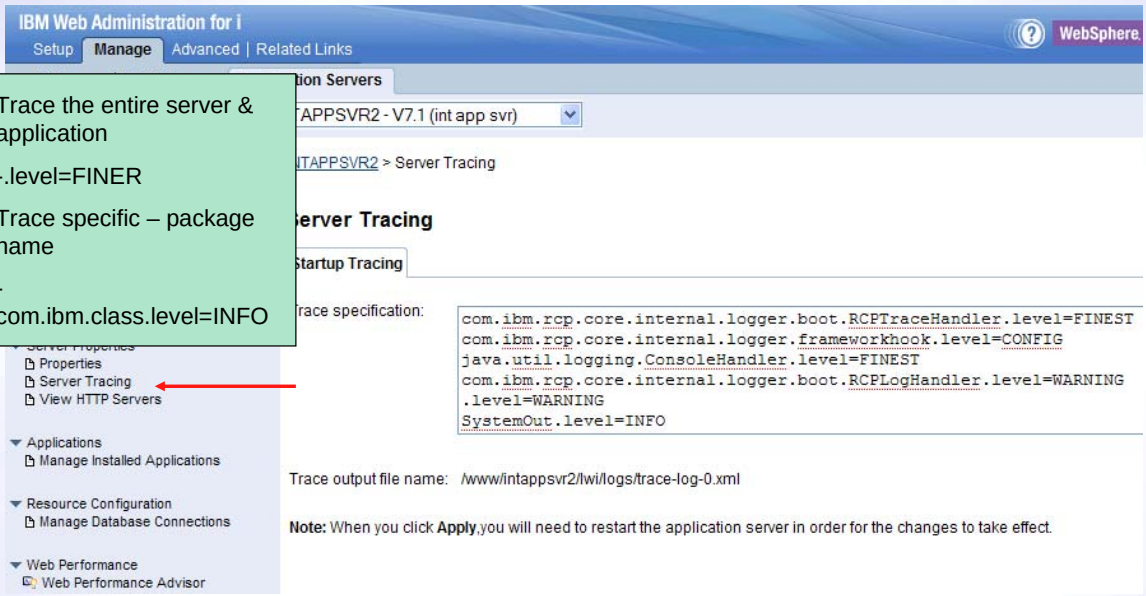
Trace your application using normal Java tracing

Trace the entire server & application

-.level=FINER

Trace specific – package name

-com.ibm.class.level=INFO



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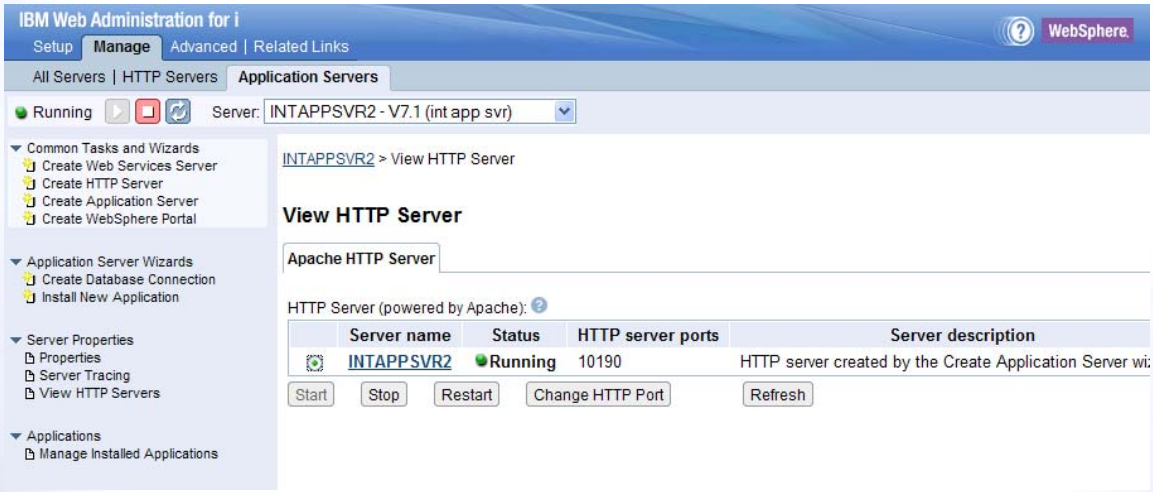
Manage Server – View HTTP Server

- Work with the HTTP server associated with this app server
- Start/Stop
- Direct link to manage the Apache server



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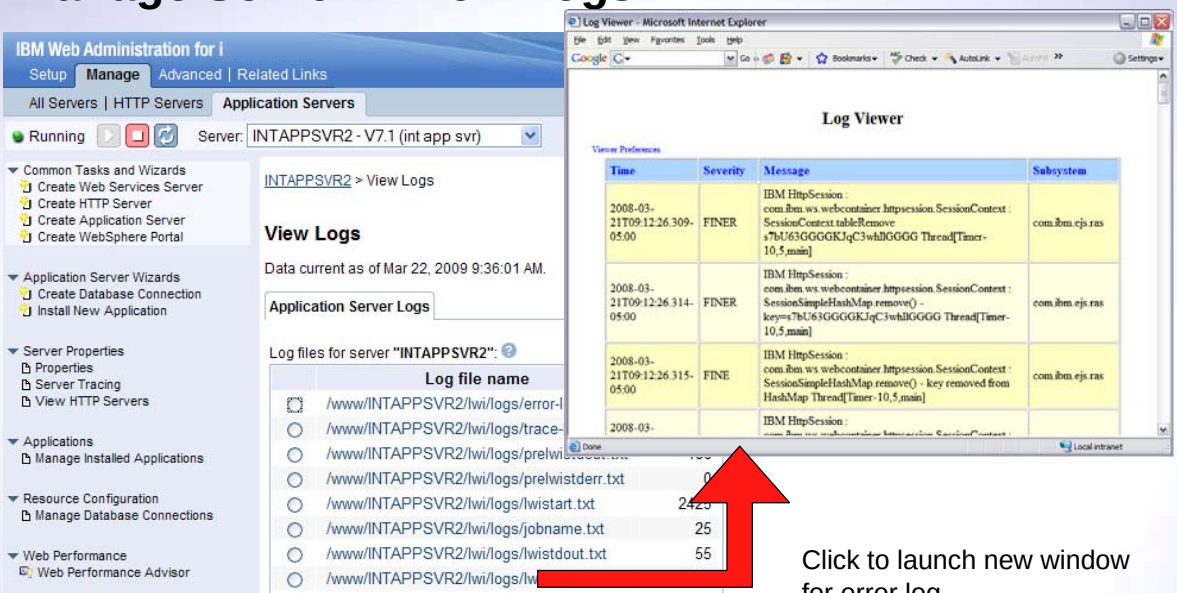
Manage Server – View Logs



Click to launch new window for error log

Notice new format!

Common Base Event - CBE

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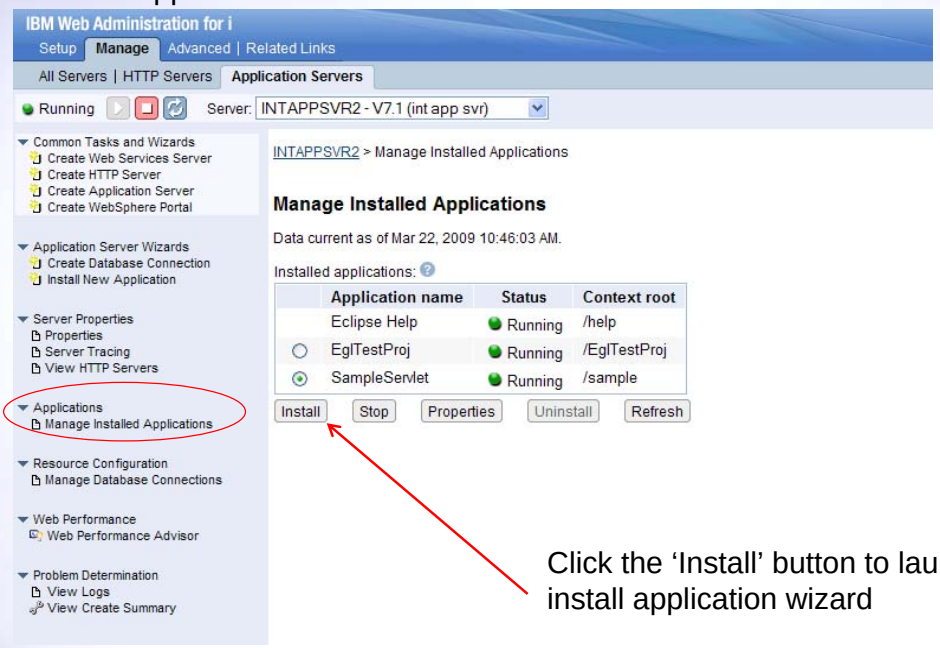
Applications

- Install applications



Click the 'Install' button to launch the install application wizard

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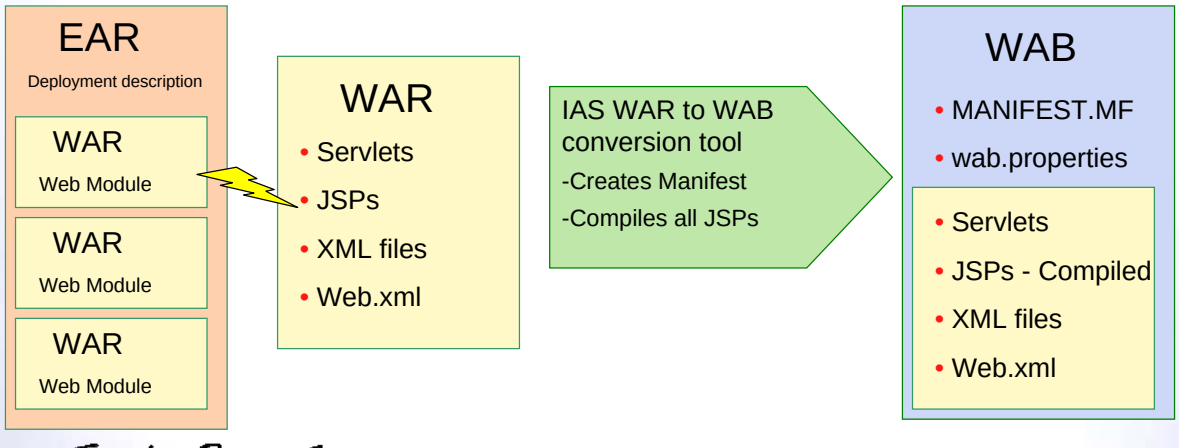
Web Application Bundles

- IAS requires Web Application Bundles (WAB)
  - WAB is
    - Packaged as a .JAR file
    - Contains an OSGI-specific manifest file
    - Pre-compiled JSPs



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Applications

- Must be in a Web Application Bundle (WAB)
- Using the Web Admin GUI, we will support both WAB files and the more common WAR file
- Servlet, JSP & JSF based applications
- Most all ASF Tomcat applications, will run on IAS
- Reasons an application will not run on IAS
  - Some WebSphere based applications use WebSphere specific functions and classes – will not run on IAS
  - WebSphere Host Access Transformation Services (HATS)
  - Full J2EE support
- Note: Application dependencies need to be included in the bundle

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Applications

- When the application is deployed, the WAR file is converted into a WAB – a WAB is basically a WAR with a manifest file

– MANIFEST.MF contains data that the framework needs to correctly install and activate the bundle

– The MANIFEST.MF is located in the META-INF directory of the bundle project.

```
Browse : /www/EGL011/lwi/apps/eclipse/plugins/MyProj/META-INF/MANIFEST.MF
Record : _____1   of      18 by _18                    Column : ___1
Control : _

....+....1....+....2....+....3....+....4....+....5....+....6....+....7....
 ***********Beginning of data*************
Manifest-Version: 1.0
Bundle-SymbolicName: MyProj; singleton=true
Import-Package: org.osgi.framework,org.osgi.service.webapplication,com
 .ibm.ws.jsp.runtime,javax.servlet,javax.servlet.http,javax.servlet.re
 sources,javax.servlet.jsp,javax.servlet.jsp.el,javax.servlet.jsp.reso
 urces,javax.servlet.jsp.tagext,org.apache.jasper,org.apache.jasper.ru
 ntime
Bundle-ManifestVersion: 2
Bundle-Activator: org.osgi.service.webapplication.WebApplicationActiva
 tor
Bundle-Name: Web application MyProj
Class-Path:
Bundle-Version: 1.0.0
Bundle-ClassPath: WEB-INF/classes/,WEB-INF/lib/fda7.jar,WEB-INF/lib/js
 f-ibm.jar
Require-Bundle: com.ibm.pvc.servlet.jsf,org.apache.commons.logging,com
 .ibm.rcp.servlet.jsf.ext,com.ibm.rcp.servlet.jwl;resolution:=optional
```


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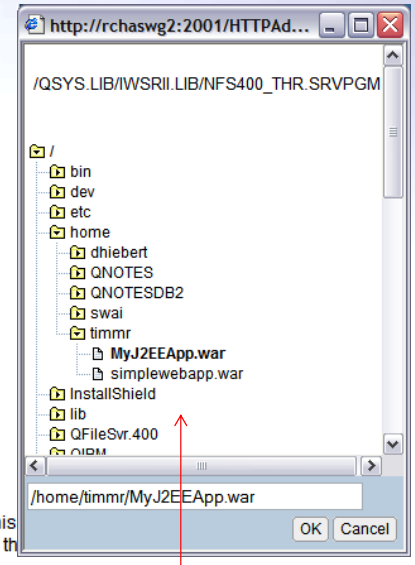
Install Application

- Install application – specify location

Use Browse to navigate to the location of your application!



INTAPPSVR2 > Install New Application

Install New Application

Specify Application Location

Welcome to the Install New Application wizard. This wizard installs an application into this Web application server. The archive file containing the application must already exist on th an integrated file system directory.

Specify the location of the archive file containing the application

Path of application archive file: Browse

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Install Application

- Install application - Specify application options

INTAPPSVR2 > Install New Application

Install New Application

Provide Options to Perform the Install

Specify application deployment options

Application name: MyJ2EEApp

Context root: /MyJ2EEApp e.g. /myContextRoot

Directory application installed to: /www/intappsvr2/lwi/apps/eclipse/plugins

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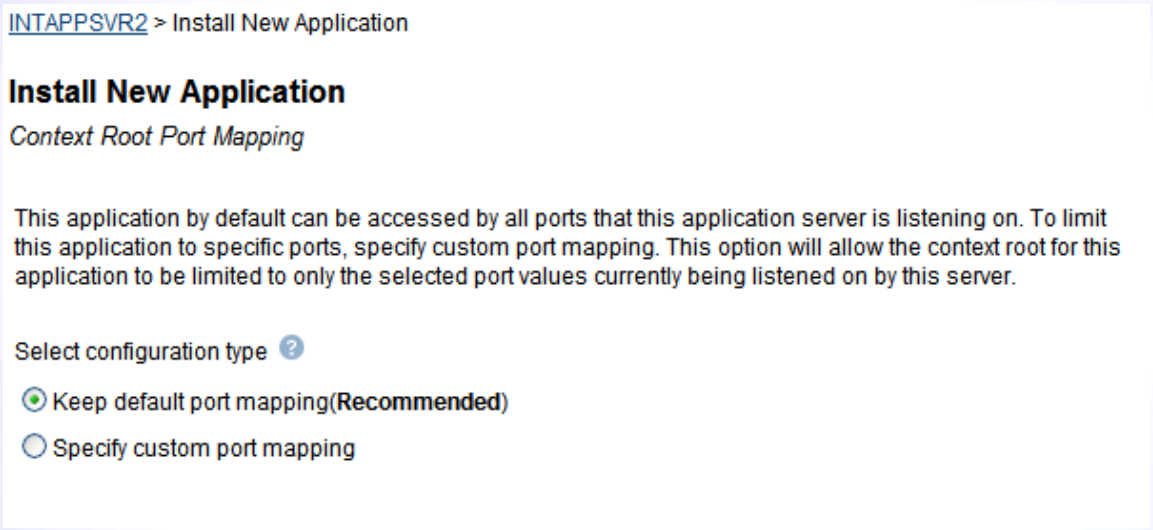
Install Application

- Install application - Port routing information



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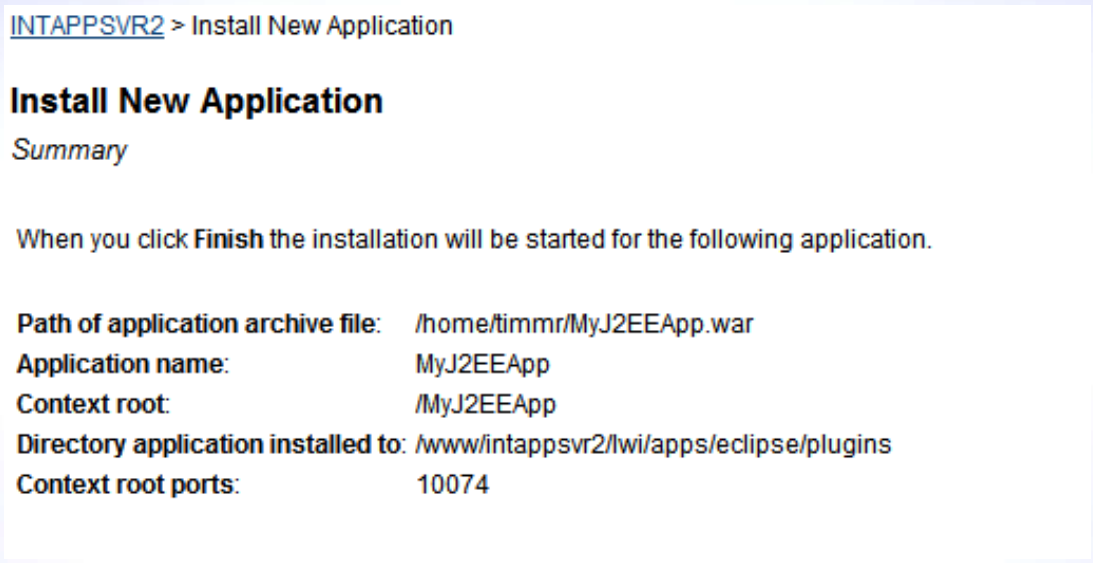
Install Application

- Install application - Summary



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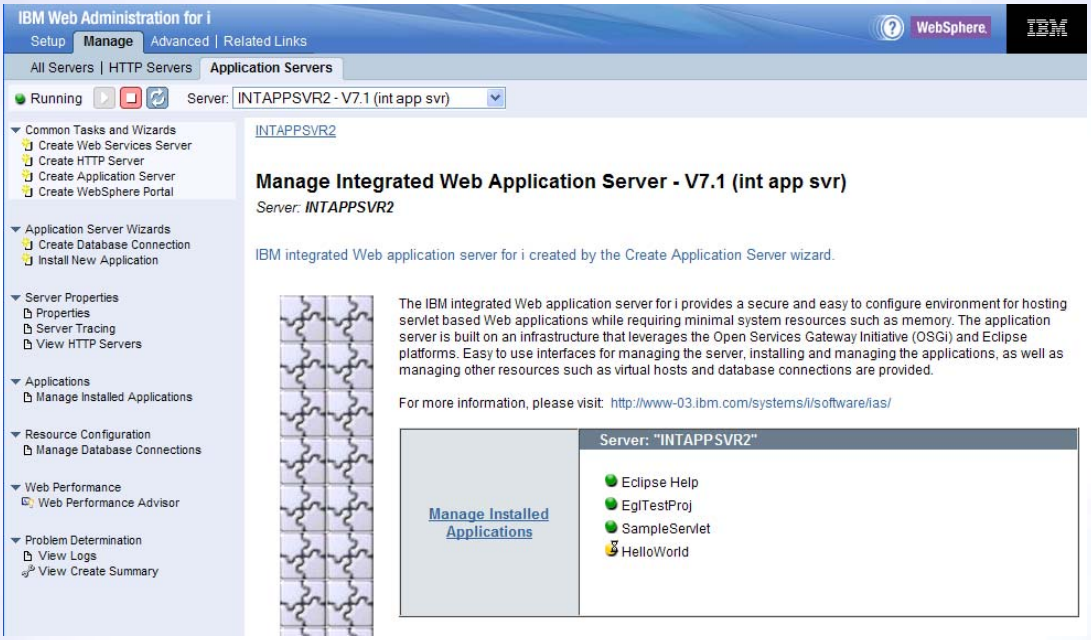
Install Application

- Application installing



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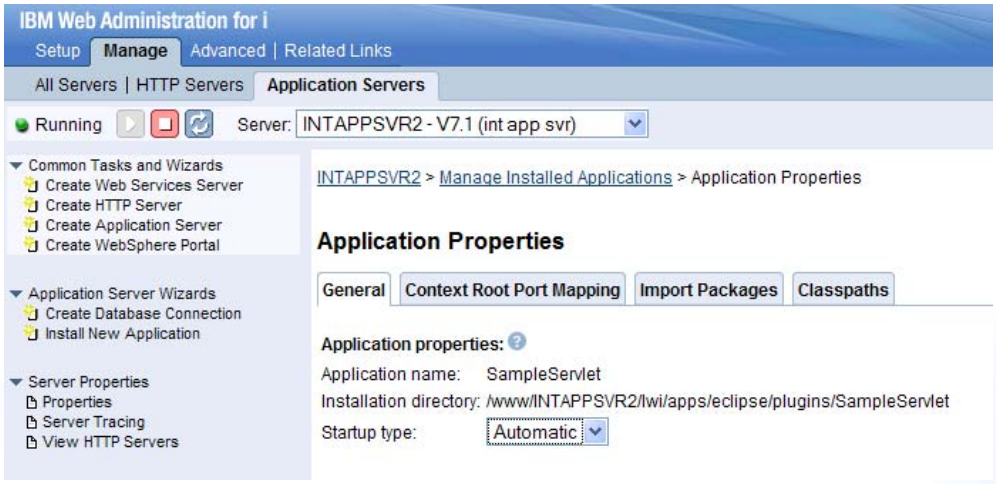
Manage Installed Application

General information about the application

- Name
- Install directory
- Start options



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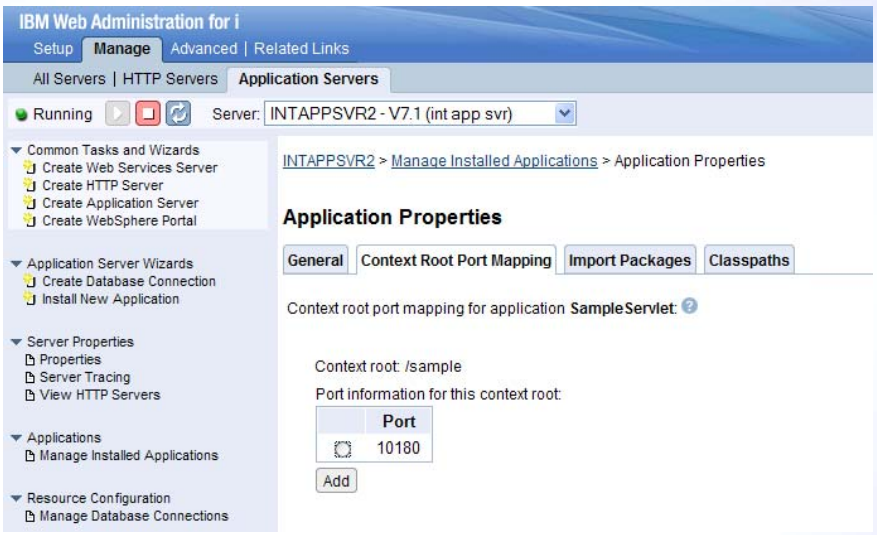
Manage Installed Applications

Specify specific port for the application to listen on

Note: Application ports; subset of server ports



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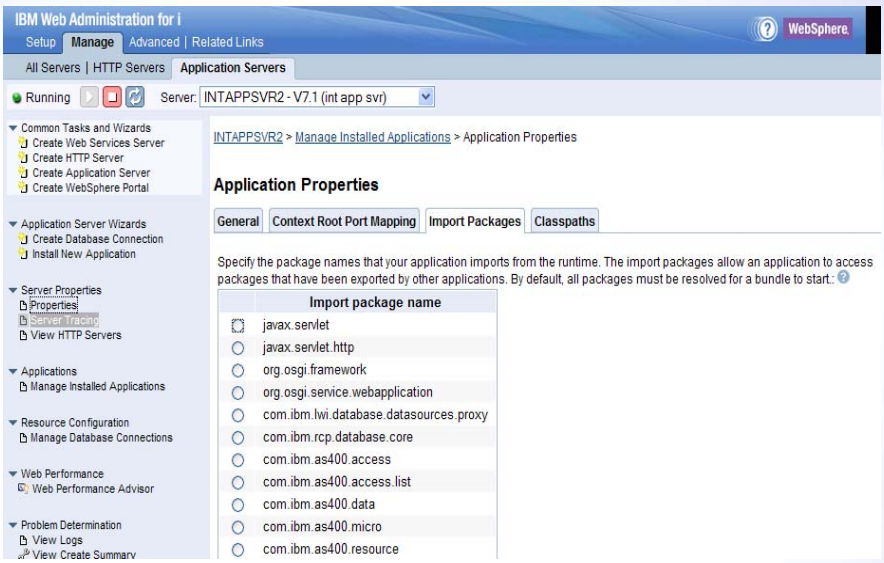
Manage Installed Applications

Imports Packages

Specify any additional resources needed by the application



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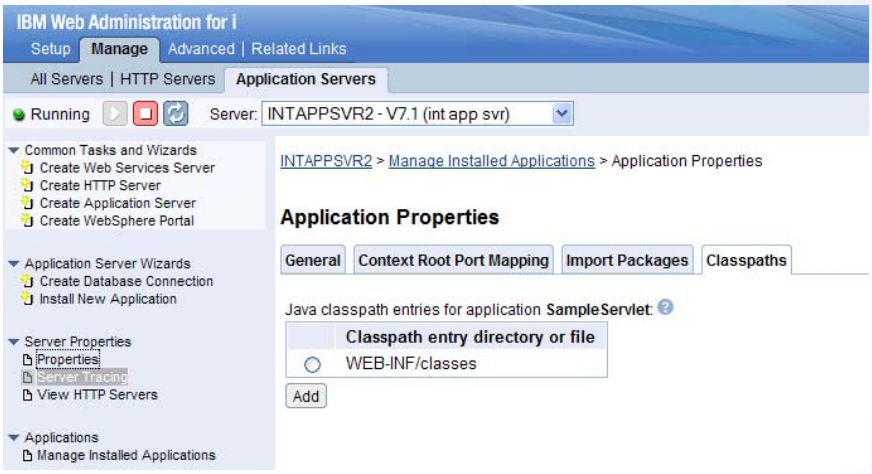
Manage Installed Applications

Specify additional classpaths for the application



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Database Connections

- Terminology – Database connection = data source/JDBC
  - **Data source**: A data source represents a specific database that is used by one or more applications installed in your application server. Data sources provide connection pooling and a JNDI name which can be used by applications to access the data source
  - **Database connection:** Database providers and connections are the vehicles used to tell the server how to access the database, what database to access, and where the database is located. It supports the native JDBC driver, IBM Toolbox for Java and JTOpen JDBC drivers.
- IAS Limitation
  - Only 1 JNDI name
  - JNDI name must be: jdbc/ProxyDS
  - Applications must be modified to use this name

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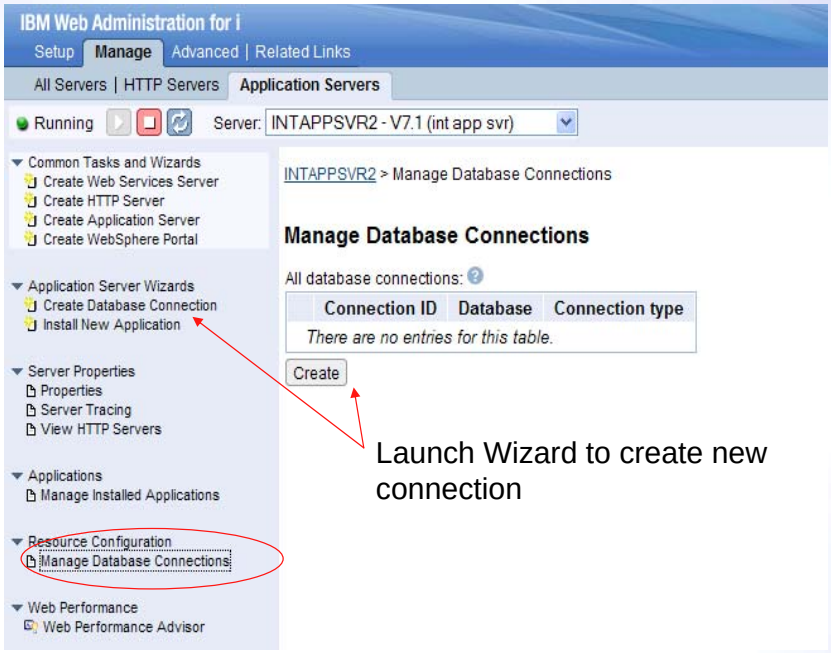
Database Connections – Create connection



Launch Wizard to create new connection

Click Manage Database Connections

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Database Connections – Create connection

Specify the database connection type

- IBM Developer Kit for Java JDBC™ driver - Local DB2
- IBM Toolkit for Java JDBC™ driver - Remote DB2
- Derby Database Provider - Local

Specify Connection ID

- application uses this connection ID to access the database

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Database Connections – Using the Connection ID

Note IAS JNDI name

- *DEFAULT

```
InitialContext context = new InitialContext();
DataSource ds = (DataSource) context.lookup("jdbc/ProxyDS");
Connection con = ds.getConnection();
```

No Connection Info passed on Datasouce getConnection()

- Unique Connection ID

```
InitialContext context = new InitialContext();
DataSource ds = (DataSource) context.lookup("jdbc/ProxyDS");
Connection con = ds.getConnection("MyConnectionID", null);
```

Unique Connection ID allow for multiple databases to be specified

Unique Connection ID passed on the Datasouce getConnection()

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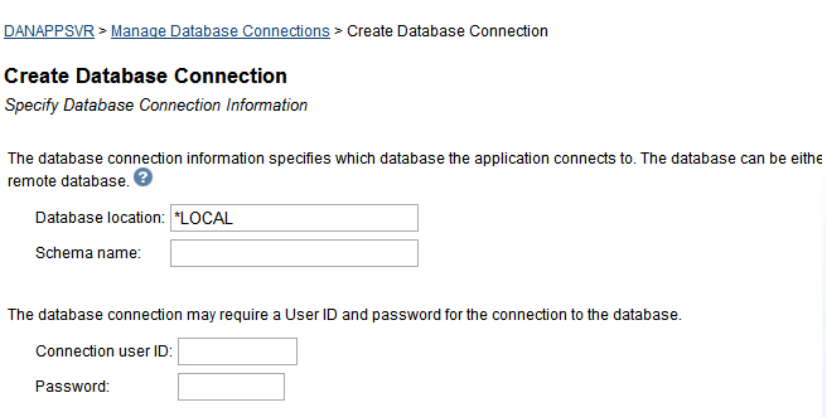
Database Connections – Create Connection

- Database location
  - *LOCAL – database is located on this system
  - hostname of remote system database is located on
- Schema name
  - Same of the schema, collection, or library for the DB2 database
- Connection user ID
  - IBM i User profile
  - User must have authority to the database!



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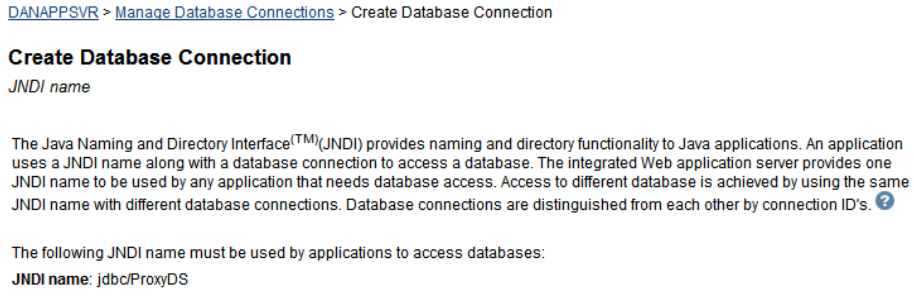
Database Connections – Create Connection

- JNDI name
  - Must be jdbc/ProxyDS



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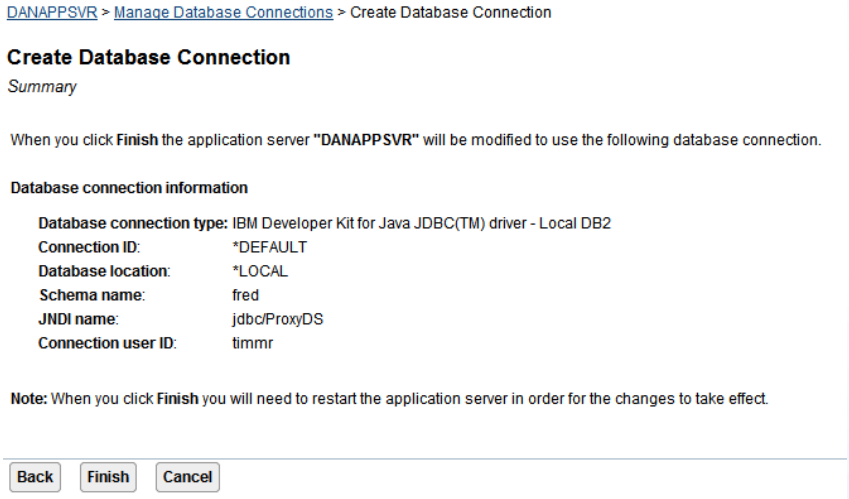
Database Connections – Create Connection

- Click Finish to create this new connection



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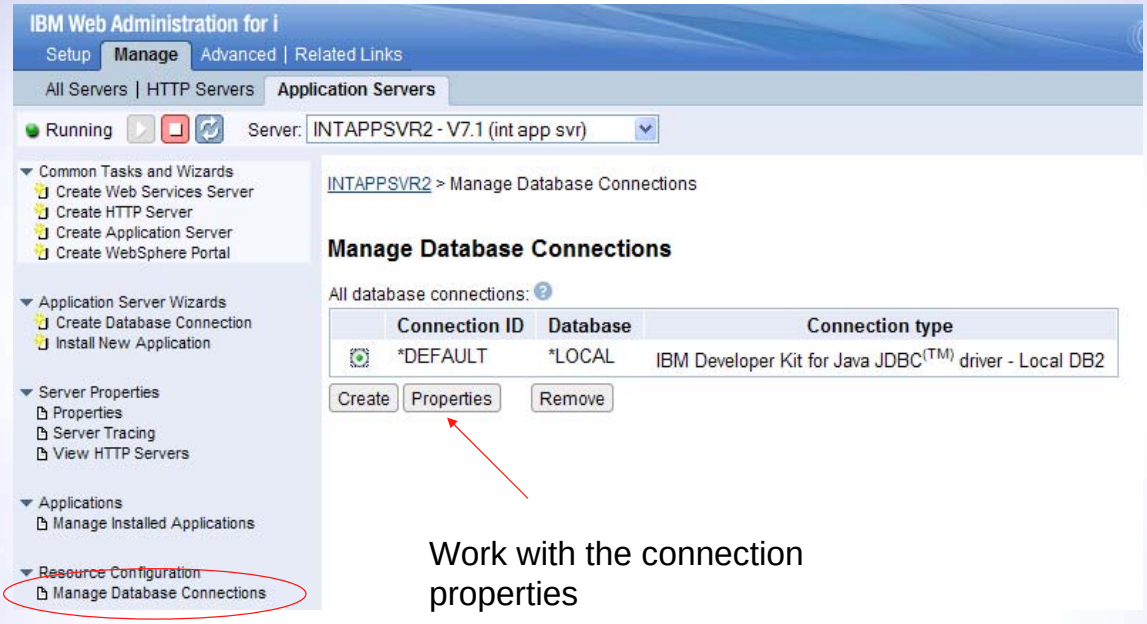
Database Connections - Manage



Work with the connection properties

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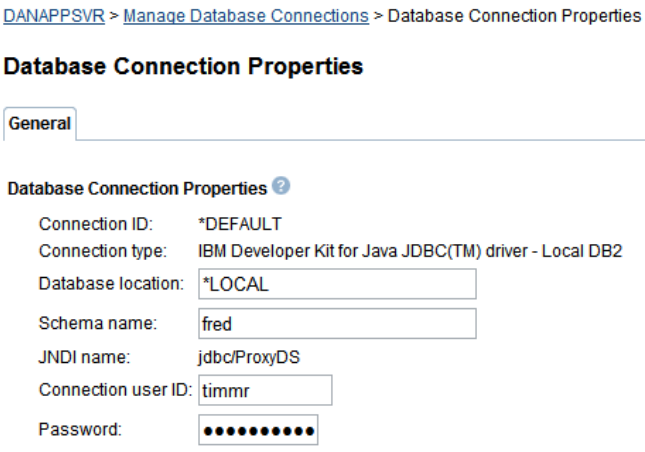
Database Connections – Manage properties

- Modify the properties



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Additional Info

- See Integrated Web Application Server product Web page!!!
  - http://www-03.ibm.com/systems/i/software/ias/

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- Questions

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