

# TECH TALKS

With Frontier  
Customer Support

**Your Topics**

**For Your Success**

## Understanding IBM WebSphere

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DAVID TOLEDO

# IBM (International Business Machines)

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Headquartered in **Armonk, New York**

IBM produces and sells computer hardware, middleware and software holding the record for most U.S. patents generated by a business for 25 consecutive years.

- ATM
- Floppy Disk
- Hard Disk Drives
- Magnetic stripe card
- Relational Database
- SQL Programming Language
- UPC Barcode
- DRAM

# IBM WebSphere Application Server (WAS)

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It is a **software framework** and middleware that hosts Java based web applications.

- **Software framework** software platform for software applications,
- **Middleware** software that provides services to software applications beyond those available from the operating system.
- **Java** Language for developing platform independent apps.
- **Web app** is any application software that runs in a web (JavaScript, HTML and CSS) and relies on a common web browser to render the application.

# WebApps are the future

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Platform independence

Increased use of portables

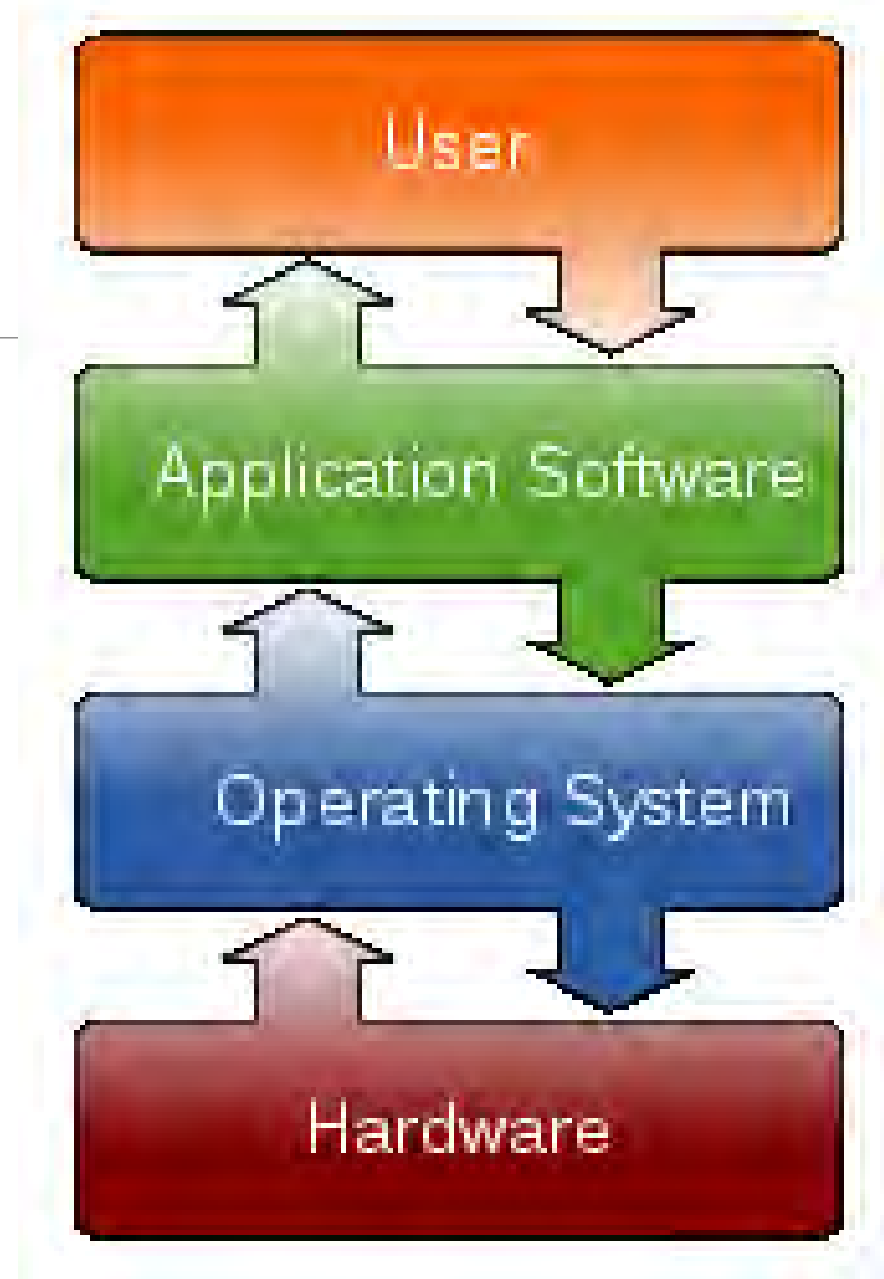
- Phones
- Tablets

Separation of Presentation software and database

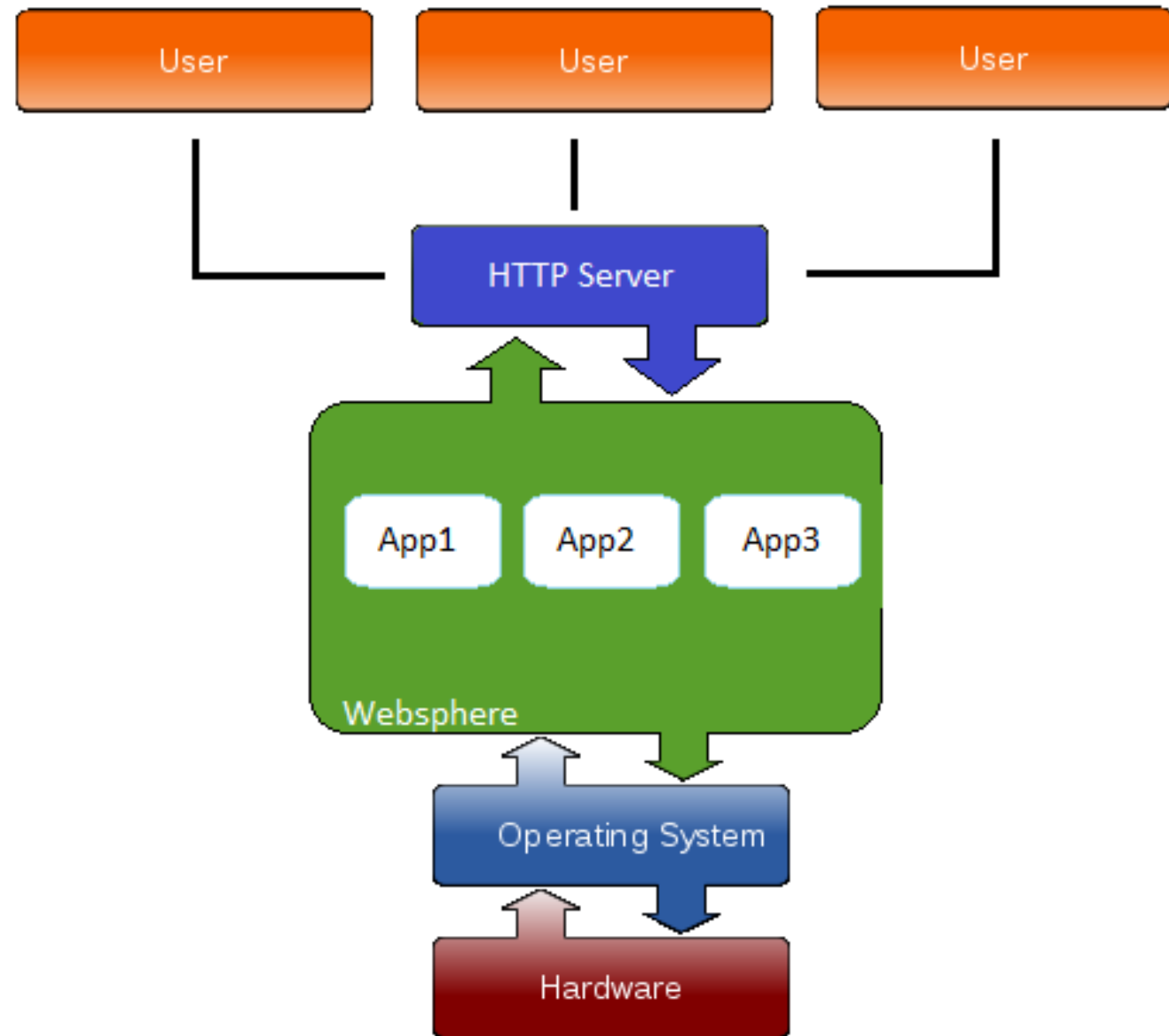
Scalability

Can be updated in real time with sometimes 0 downtime.

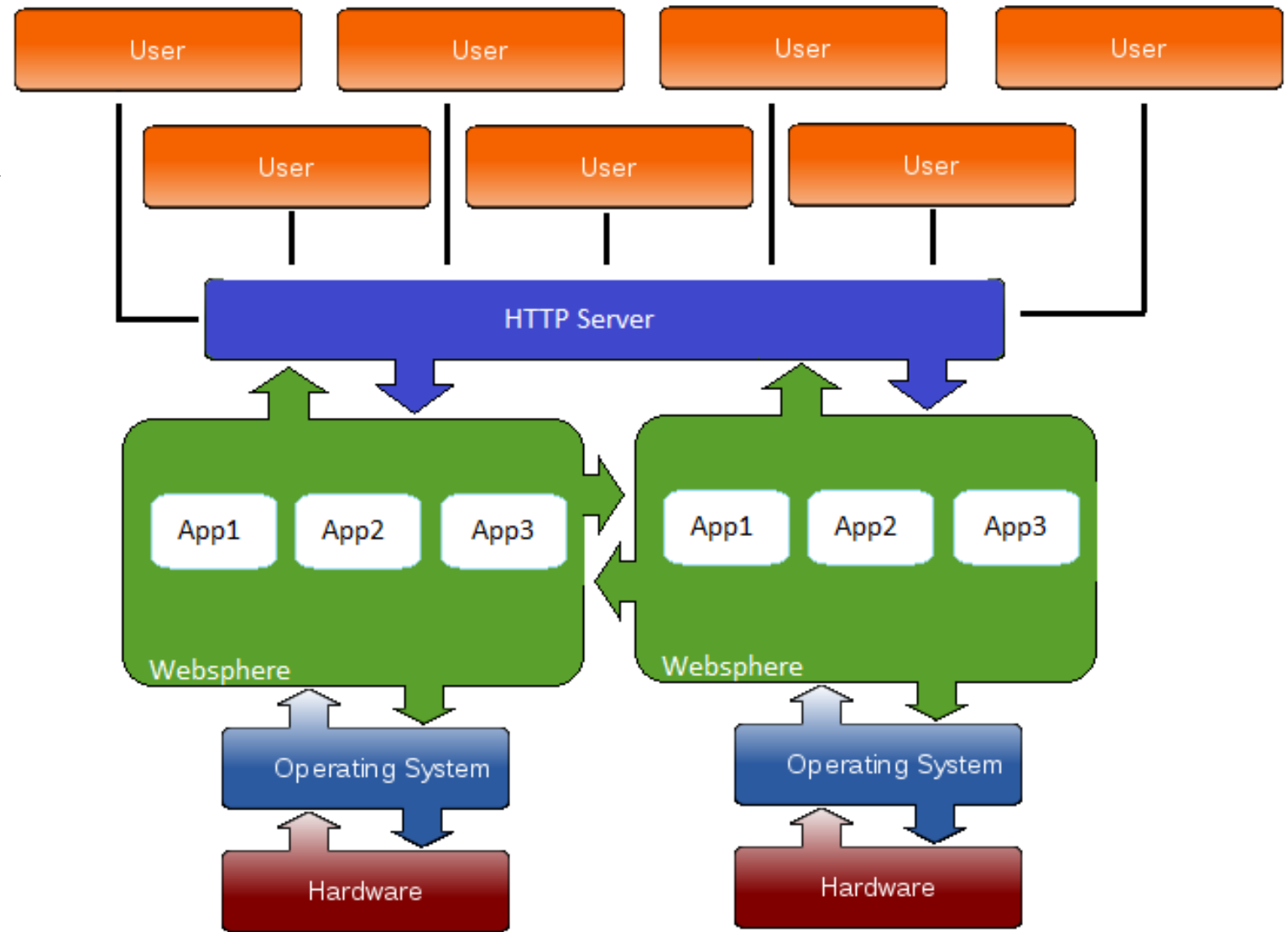
# Platform Design



# Single Sever Setup



# Cluster setup



# Platforms that can run WAS

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# Platform Considerations

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## COST

- Different CPU's have different licensing cost
- IBM has metrics for usage, user count, and hardware specs

## Disaster Recovery

- iSeries recovery
- VM recovery
- Stand Alone

## Performance

- Resource availability VS Concurrent Users
- Apps deployed

# Friedman Recommended Platforms

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- 64 bit Windows Server
  - This includes VM servers



- System i install
  - Can be on the same partition as Frontier
    - Will need a reserved system memory pool

# Friedman Recommended Platforms

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- **Pros**

- Isolates network traffic
- VM deployment is a good backup/restore option
- Best for upgrades to bigger versions of WAS
- Easier hardware scaling

- **Cons:**

- Higher licensing cost



- **Pros:**

- Lower cost to license
- Backup part of full system backup

- **Cons:**

- Will compete with Frontier for system resources

# WAS Variations

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## **The Liberty profile**

- For very light web applications

## **Application Server Express**

- Most widely used

## **Application Server**

- For larger deployments

## **Application Server Network Deployment**

- Clustered support

# WAS Application Server Express

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Limited to 32bit JVM when installed on a Windows server – **not supported by Friedman for Frontier iProducts**

Limited to 480 PVU (Processor Value Units)

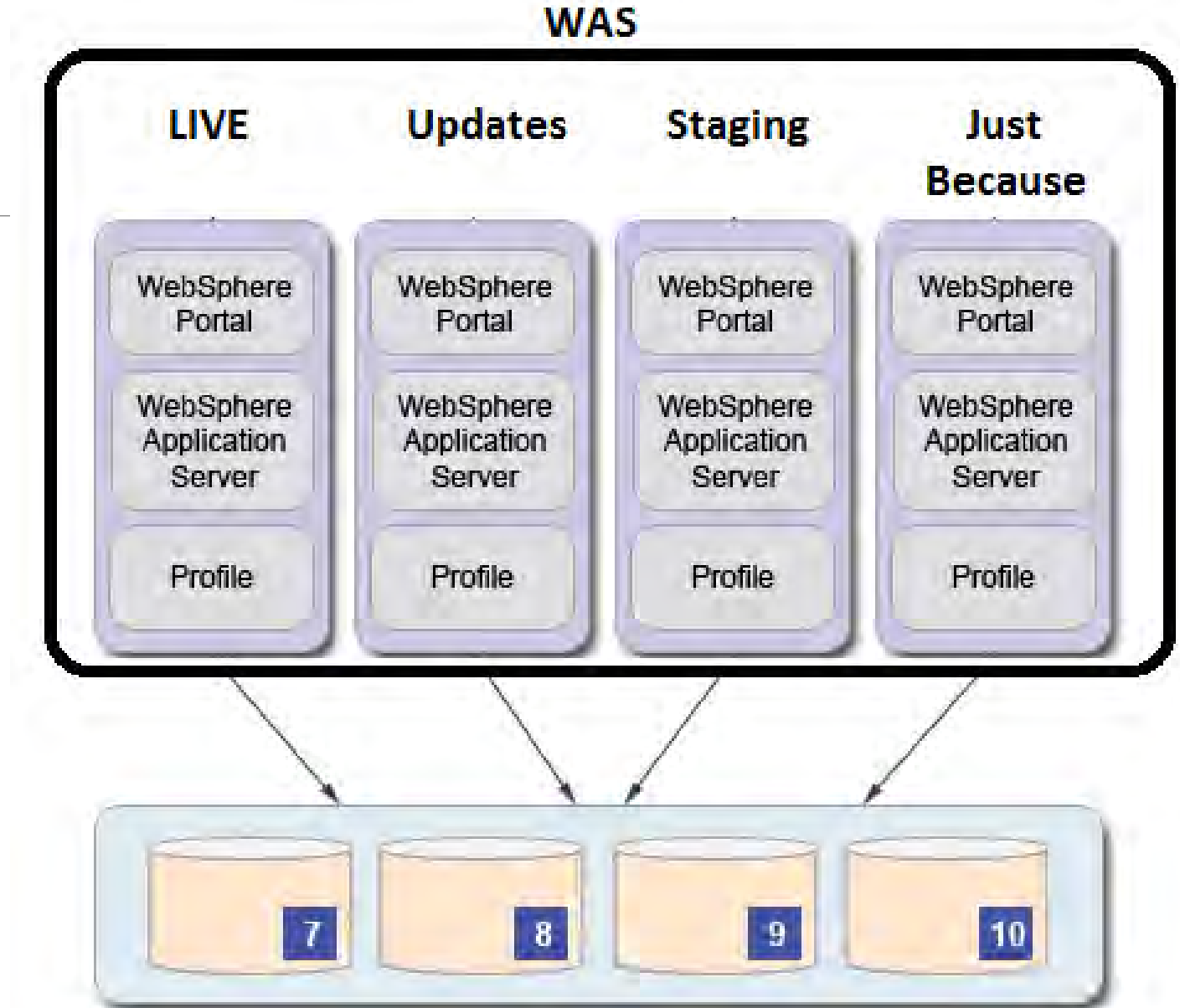
More accessible cost

Otherwise has all the single server functionality most other version have

Allows for multiple profiles to separate testing and production environments

# WAS Profiles

“The good version of a multiple personality disorder”



# WAS Profiles

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- Are separate running instances of the same program
- Each profile has its own instance of the JAVA Virtual Machine
- Each instance uses a different memory page
- Separates testing error logging from live errors
- Each profile can be restarted independent of the other
- When updating WebSphere, all profiles get updated at the same time

# WebSphere Settings Updates

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Edit your Heap Size to correlate with Hardware

## Editing Heap size for JVM

- Servers ->
  - Application servers ->
  - Java and Process Management ->
  - Process definition ->
  - Java Virtual Machine



# Stay Current

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In general, increasing the size of the Java heap improves throughput until the heap no longer resides in physical memory. After the heap begins swapping to disk, Java performance suffers drastically.

The Default value is **64MB**. We suggest setting the minimum value to **512MB** and the maximum value to **1536MB (32 bit WebSphere) or 8096 (64 bit WebSphere)**.

# Data Source Connections

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WebSphere allows you to define a maximum and minimum number of open JDBC connections to a database.

By default this setting is set to 10.

System load can easily overtax these 10 connections as 1 user alone can use all 10 during parallel data requests





Connections are shared among all data requests to a system

# Data Source Connections

Resources

- Schedulers
- Object pool managers
- JMS
- JDBC
  - JDBC providers
  - Data sources
  - Data sources (WebSphere Application 5)
- Resource Adapters
- Asynchronous beans
- Cache instances
- Mail
- URL
- Resource Environment

New...
Delete
Test connection
Manage state...

Select	Name	JNDI name	Scope
You can administer the following resources:			
<input type="checkbox"/>	<a href="#">Default Datasource</a>	DefaultDatasource	Node=ritescr_FRONTIERSVR,Server=FRONTIERSVR
<input type="checkbox"/>	<a href="#">frontier</a>	jdbc/frontier	Node=ritescr_FRONTIERSVR,Server=FRONTIERSVR
Total 2			

# Data Source Connections

## General Properties

### ✦ Scope

cells:ritescr\_FRONTIERSVR:nodes:ritescr\_FRONTIERSVR:servers:FRONTIERSVR

### ✦ Provider

400JDBC

### ✦ Name

frontier

### JNDI name

jdbc/frontier

☒ Use this data source in container managed persistence (CMP)

### Description

New JDBC datasource

### Category

## Data store helper class name

☒ Select a data store helper class

Data store helper classes provided by WebSphere Application Server

DB2 for iSeries data store helper

(com.ibm.websphere.rsadapter.DB2AS400DataStoreHelper)

## Additional Properties

- [Connection pool properties](#)
- [WebSphere Application Server data source properties](#)
- [Custom properties](#)

## Related Items

- [JAAS - J2C authentication data](#)

# Data Source Connections

## Configuration

### General Properties

#### Scope

cells:ritescr\_FRONTIERSVR:nodes:ritescr\_FRONTIERSVR:servers:FRONTIERSVR

#### \* Connection timeout

180 seconds

#### \* Maximum connections

300 connections

#### \* Minimum connections

30 connections

#### \* Reap time

180 seconds

#### \* Unused timeout

1800 seconds

#### \* Aged timeout

0 seconds

#### Purge policy

EntirePool

Apply

OK

Reset

Cancel

### Additional Properties

- [Advanced connection pool properties](#)
- [Connection pool custom properties](#)

# Session Timeouts

- + Guided Activities
- Servers
  - Application servers
  - Web servers
  - WebSphere MQ servers
- Applications
  - **Enterprise Applications**
  - Install New Application
- + Resources
- + Security
- + Environment
- + System administration
- + Users and Groups
- + Monitoring and Tuning
- + Troubleshooting
- + Service integration
- + UDDI

Unless checked,  
changes below  
will not apply.

## General Properties

☐ Override session management

### Session tracking mechanism:

☐ Enable SSL ID tracking

☒ [Enable cookies](#)

☐ Enable URL rewriting

☐ Enable protocol switch rewriting

☒ Allow overflow

Maximum in-memory session count:  
 sessions

### Session timeout:

☐ No timeout

☒ Set timeout

minutes

☐ Security integration

### Serialize session access:

☐ Allow serial access

Maximum wait time  
 seconds

☒ Allow access on timeout

## Additional Properties

■ [Distributed environment settings](#)

# Settings Trade-off

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Changing time-outs directly affects performance

- Longer connection timeouts == more memory usage
- More session objects remain in memory
- Connection pool objects also remain in memory longer

## WebSphere Support by IBM

<i><b>Release</b></i> ▼	<i><b>IBM support</b></i>	<i><b>End of IBM support</b></i>
WAS 6.1.x	<b>Not supported</b>	30 September 2013
WAS 7.0.X	<b>Not supported</b>	30 April 2018
WAS 8.0.X	<b>Not supported</b>	30 April 2018
WAS 8.5.X	Supported	To be announced
WAS 9.0.X	Supported	To be announced



# Frontier Version Compatibility

Frontier Release	IBM i 6.1	IBM i 7.1	IBM i 7.2	IBM i 7.3	IBM i 7.4
Frontier 3.0	Supported	With EC 44194	With EC 48804	n/a Untested	n/a Untested
Frontier 3.1	Supported	Supported	With EC 48804	n/a Untested	n/a Untested
Frontier 3.2	Supported	Supported	With EC 48804	n/a Untested	n/a Untested
Frontier 3.3	Supported	Supported	Supported	n/a Untested	n/a Untested
Frontier 4.0	Supported	Supported	Supported	Supported	Untested - To be tested in 2020

\* - Requires some additional changes in websphere to get Java configurator working correctly.

# Frontier Version Compatibility

Frontier Release	Websphere 7.0.x (not supported by IBM)	Websphere 8.0.x (not supported by IBM)	Websphere 8.5.x	Websphere 9/0.x
Frontier 2.1	Supported	n/a Untested	n/a Untested	n/a Untested
Frontier 2.2	Fix Pack 2.2.4.7 or higher	n/a Untested	n/a Untested	n/a Untested
Frontier 3.0	Recommended	n/a Untested	n/a Untested	n/a Untested
Frontier 3.1	Required	Frontier 3.1.2	Supported	n/a Untested
Frontier 3.2	Supported	Supported	Supported	n/a Untested
Frontier 3.3	Not supported	Not supported	Supported <sup>+</sup>	n/a Untested
Frontier 4.0	Not supported	Not supported	Supported <sup>+</sup>	Supported

# Browser support

<b>Frontier Release</b>	<b>IE 7.0</b>	<b>IE 8.0</b>	<b>IE 9.0</b>	<b>IE 10.0</b>	<b>IE 11.0</b>	<b>Chrome</b>	<b>Edge</b>	<b>Firefox</b>
FRONTIER2.1	Supported	Fix Pack 2.1.15.10	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
FRONTIER2.2	Supported	Fix Pack 2.2.4.7	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
FRONTIER3.0	Supported	Supported	Frontier 3.1.3	Not supported	Not supported	Not supported	Not supported	Not supported
FRONTIER3.1	Not supported	Required	Supported	Frontier 3.1.3 EC47251	Not supported	Not supported	Not supported	Not supported
FRONTIER3.2	Not supported	Supported	Supported	Supported	Supported	Not supported	Not supported	Not supported
FRONTIER3.3	Not supported	Supported	Supported	Supported	Supported	Not supported	Not supported	Not supported
FRONTIER4.0	Not supported	Not supported	Not Supported†	Not Supported†	Supported	Supported	Supported	Supported
Frontier 4.1 (unannounced)	Not supported	Not supported	Not supported	Not supported				

# Microsoft Office Compatibility

<b>Frontier Release</b>	<b>Office 2003</b>	<b>Office 2007</b>	<b>Office 2010</b>	<b>Office 2013</b>
Frontier 2.1	Supported	Supported	<b>Not supported</b>	<b>Not supported</b>
Frontier 2.2	Supported	Supported	<b>Not supported</b>	<b>Not supported</b>
Frontier 3.0	Supported	Supported	<b>Not supported</b>	<b>Not supported</b>
Frontier 3.1	Supported	Supported	Frontier 3.1.3	<b>Not supported</b>
Frontier 3.2	Supported	Supported	Supported	Supported*
Frontier 3.3	Supported	Supported	Supported	Supported
Frontier 4.0	Supported	Supported	Supported	Supported

\* PCM Workbench requires EC 47863

# Stay Current

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- Install manager
- WebSphere Application Server files
- Supplements package
- Fix packs - always get the latest
  - For WAS
  - For HTTP



# WebSphere

Install Procedures

# Installing on a Windows Server

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# Windows Pre-Install Activities

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## Download install files

- IBM Installation Manager
- IBM WebSphere Application Server
- IBM HTTP Server
- WebSphere Application Server Supplements
- IBM WebSphere SDK Java Technology
- Latest WebSphere fix pack

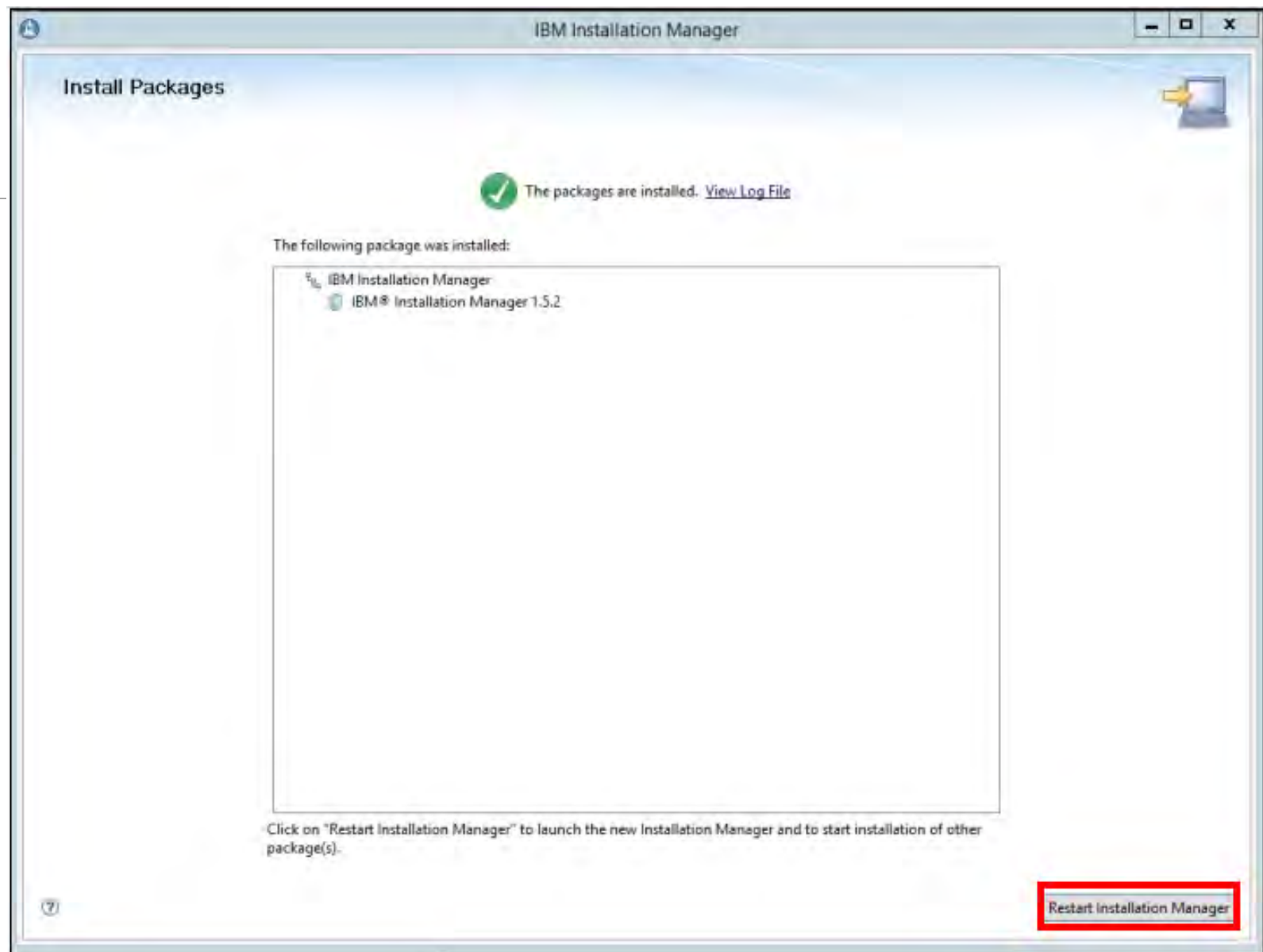


# Pre-Install Setup

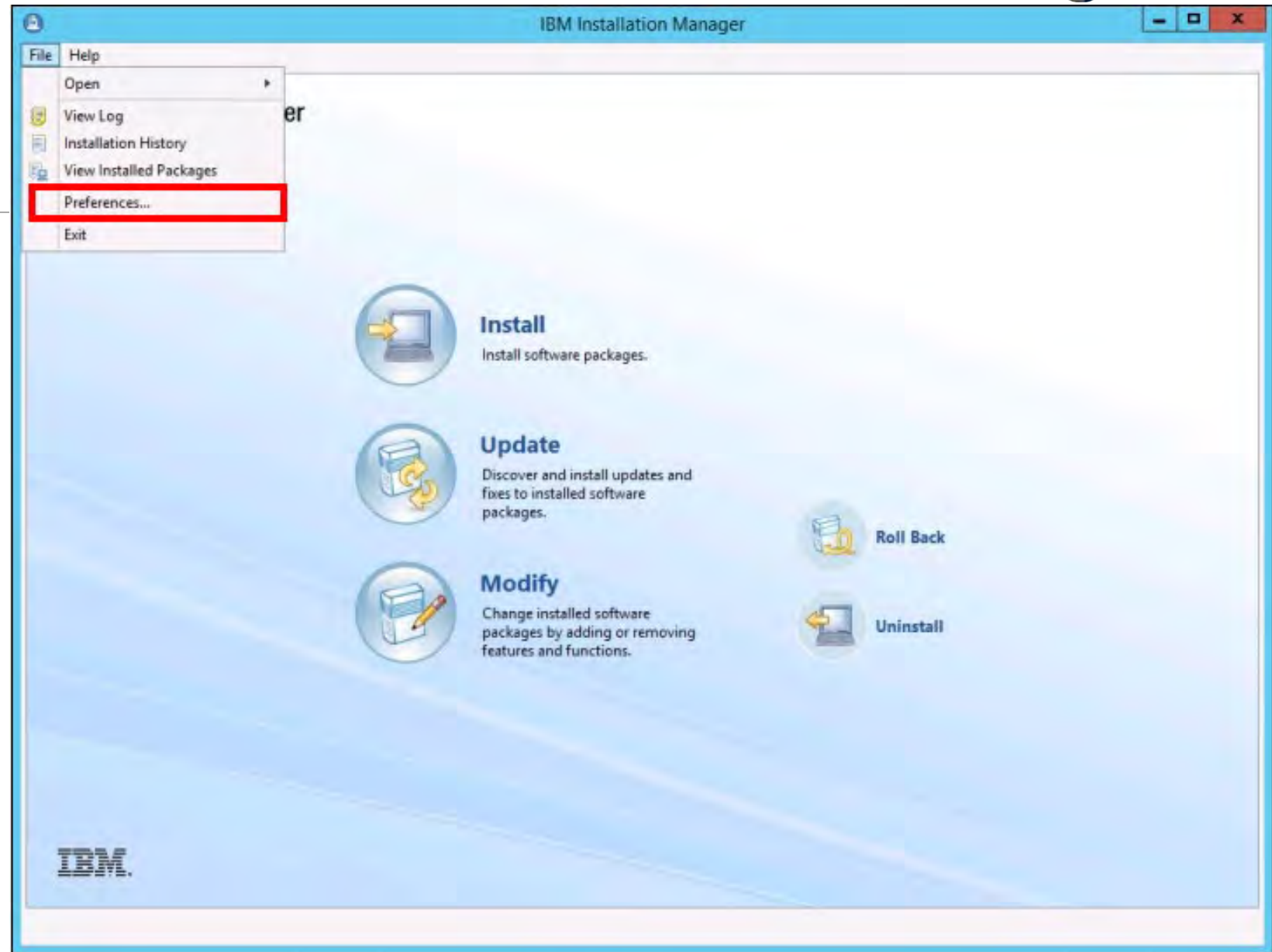
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1. Unzip all of the files
2. Install the “Install Manager”
3. Setup up install files repositories
4. Run WebSphere Install

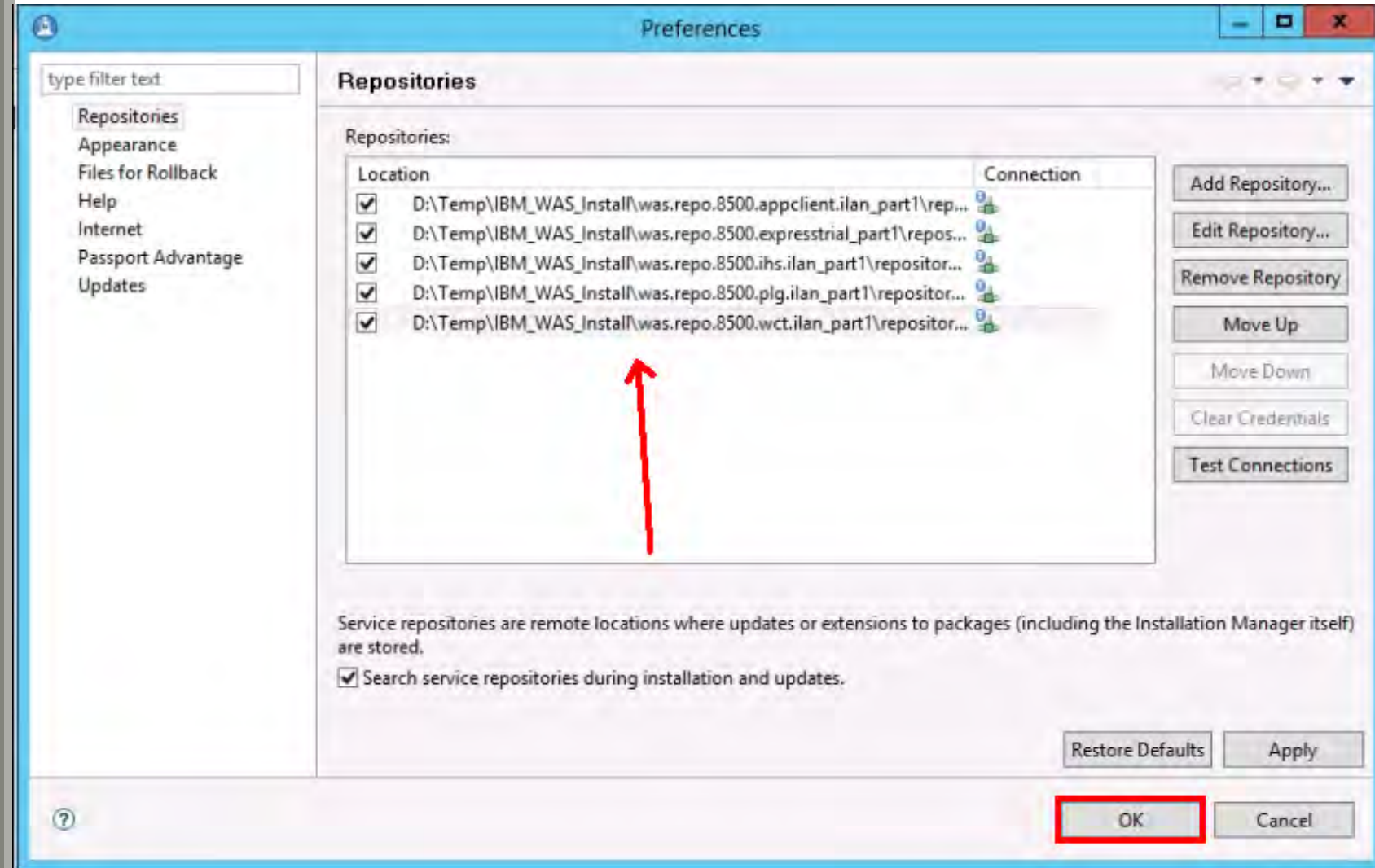
# Installation Manager



# Installation Manager



# Installation Manager



# Windows Installation Tips

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Run install.exe from the installation manager folder as Administrator

If unsure or to standardize keep all defaults

Add all repository files

- Select the repository.config file
- Once installation has completed you have the option to launch the profile manager

# Installing on a System I (iSeries)

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# WebSphere on AS400

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Make sure all binaries are installed on the AS400

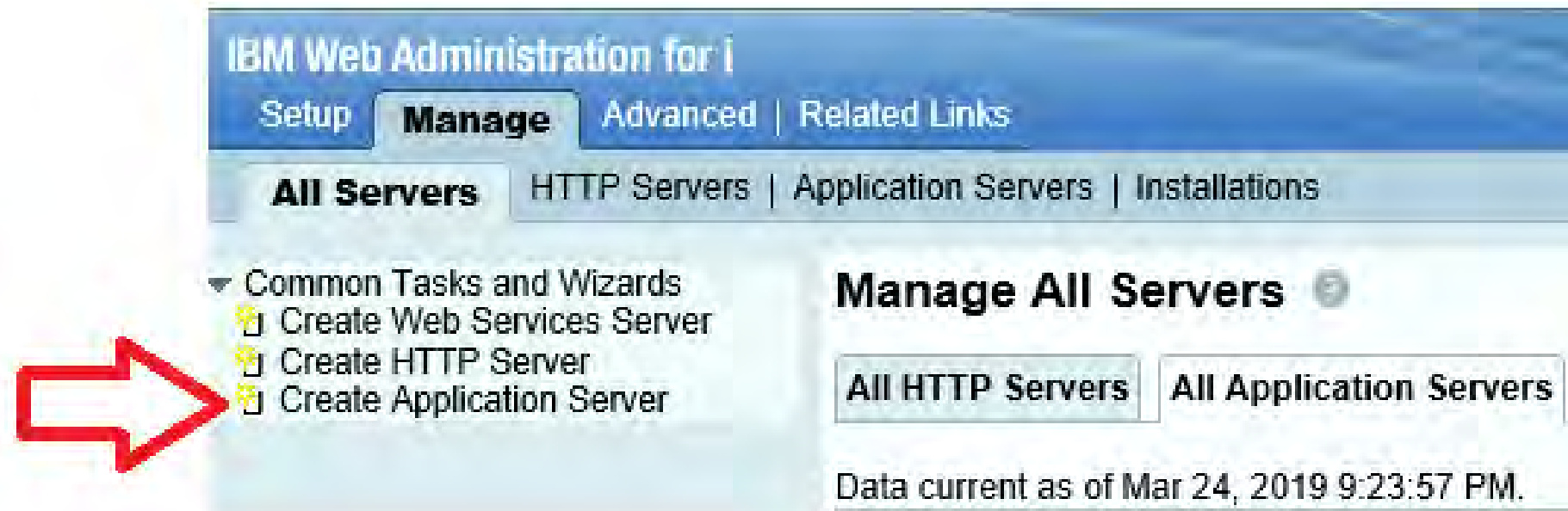
Make sure to check that the HTTP server is running

In a browser navigate to your HTTPAdmin page at  
<iSeries IP>:2001/HTTPAdmin

Login in with a profile that has SECADMIN authority

Select Create Application Server

# WebSphere on AS400





# WebSphere on AS400

## Create Application Server

Welcome to the Create Application Server wizard. This wizard creates a new application server to run Web applications, and creates all necessary database providers and connections required for the Web applications you choose.

- **Install Product and Installation Manager**

The wizard handles the product and Installation Manager install as necessary for WebSphere Application Server. Application Server on a new product installation, the product packages are required. The wizard also installs and configures the product.

- **Configure Host Routing**

An application must be mapped to a host in order to be accessed. A host is defined by the host name or IP address. The wizard defines hosts defined for the application server. If you wish for more granular control, you can restrict access to your application.

- **Install Application**

Applications must be installed onto the application server to be accessible. The Install New Application wizard takes you through the process of installing applications.

- **Setup Database Connection**

Many applications need to access databases to retrieve and store data. Database providers and connections are created and configured. The wizard defines the database is located.



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Cancel

# WebSphere on AS400

## Create Application Server

Select Application Server Version and Type

This system has more than one version and type of application server installed. For WebSphere Application Server version 8.0 WebSphere Application Server installation. This requires the product packages to be located on this local system or a remote s using this new installation.

Choose the type of application server to create

IBM integrated Web application server for i:

☐ V8.5

WebSphere Application Server:

☐ New Installation

WebSphere Application Server V9.0.0.10 Base, allows you to add a wide range of complex busines

☒ V9.0.0.10 Base

WebSphere Application Server V9.0.0.10 Base can be installed in multiple locations on this system for this installation is /QIBM/ProdData/WebSphere/AppServer/V9/Base.

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Cancel

# WebSphere on AS400

## Create WebSphere Application Server V9.0.0.10

*Specify Application Server Name - Step 1 of 4*

Specify a unique name for the application server. ?



Application server name: WAS90SVR x

Server description: WebSphere application server created by the



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Cancel

# WebSphere on AS400

## Create WebSphere Application Server V9.0.0.10

Create a new HTTP server (powered by Apache)

A new HTTP server (powered by Apache) will be created and configured to be used by this application server. ?

HTTP server name:

HTTP server description:

Your HTTP server may listen for requests on a specific IP address or on all IP addresses of the system.

On which IP address and TCP port would you like your HTTP server to listen?

IP address:

Port:

**Note:** Most browsers make requests to port 80 by default.



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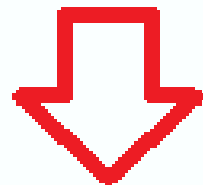
# WebSphere on AS400

## Create WebSphere Application Server V9.0.0.10

*Specify Internal Ports Used by the Application Server*

The application server uses several internal services such as internal HTTP transport service, processing. In order for these services to be configured, you must provide a block of 20 consecutive ports. The wizard will assign the ports that are to be used by each internal service. For example, if 10041

First port in range:  



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Cancel

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## Questions?

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UNDERSTANDING IBM WEBSPHERE