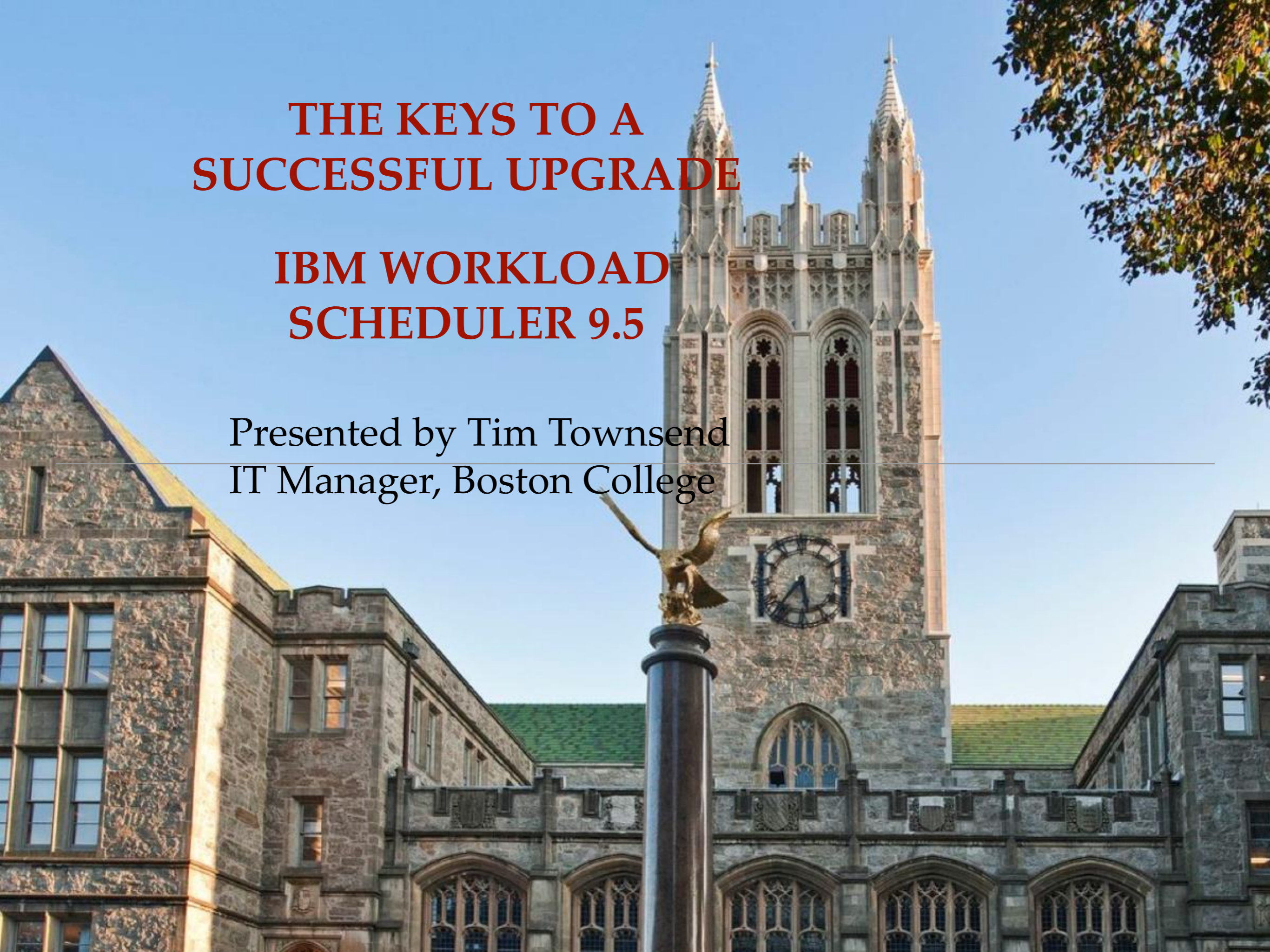


# THE KEYS TO A SUCCESSFUL UPGRADE

## IBM WORKLOAD SCHEDULER 9.5

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# OUR GOAL

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- Upgrade all IWS instances to 9.5.0.1
- Confirm 9.5.0.1 works with PeopleTools 8.57
- Separate the Database from the Application Server
- Minimize interruption of the daily plan during implementation

# THE TEAM

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## Internal Staff:

- Application Administrator
- Schedulers
- Job Owners
- Ops

## External Staff:

- John Ellery, Automatic IT
- Lorenzo Amorosa and Team, Client Advocate
- HCL Support

# WHERE WE STARTED

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## Environment

OS RHEL 7.4

Database: Oracle 12cR2 w/ Data Guard

1 instance running 9.4.0.2

4 instances running 9.3.0.2

2 instances of TWSz 9.2

Agents: 42 Fault-Tolerant / 12 Extended / 170 Dynamic / 10 E2E

# THE METHOD

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How would we perform the upgrades

- Command Line installations
- Parallel Upgrades, implementation of new servers for 4 out of 5 of our tiers
- The last tier we would reuse the current servers
- DWC and MDM will use the same database, different schemas

# THE IMPLEMENTATION

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How did we plan on implementing 9.5

- Leave original environment up and running
- Install and Configure 9.5 Dynamic Workload Console
- Install and Configure new 9.5 Master Domain Manager as the Backup Master
- Switch Manager, to switch the 9.3 Master to a Backup Master, and the 9.5 Backup Master to be the new Master

# THE IMPLEMENTATION - Continued

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How did we plan on implementing 9.5

- Switch to 9.5 Dynamic Workload Console
- Shutdown 9.3 Dynamic Workload Console
- Install and Configure 9.5 Backup Master
- Shutdown 9.3 Backup Masters
- Post Deployment Configurations

# THE PREPARATION

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Steps to prepare:

- Project Charter / Funding / Architecture Review
- Review IBM Documentation
- Upgrade Agents which will no longer be supported
- New VMs Built, with required libraries installed
- Service Accounts created
- IBM Workload Scheduler \ WebSphere Liberty software uploaded to servers
- JDBC Drivers extracted
- Oracle TableSpace created to be used for DWC schema



# THE PREPARATION - Continued

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Steps to prepare:

- Installation Directories created/permissions adjusted
- Firewall Rules in place for new servers
- Review current DWC Roles and Workload Security
- Review current Engines configured
- Identify scripts which may be on the servers being replaced
- Identify if scripts being used may have the master hard coded

# DYNAMIC WORKLOAD CONSOLE

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## DWC Install and Configuration

- Backup DB
- Configure the configureDbOracle.properties file
- Run the configureDB.sh script using -f to identify the properties file and add any additional parameters not configured in the properties file.

Example:

```
./configureDb.sh -f ../TEMPLATES/configureDbOracle.properties.dwc --  
dbpassword ${PASSWORD} --dbadminuserpw ${PASSWORD}
```

Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspitwsinstdbcfg.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspitwsinstdbcfg.htm)

# DYNAMIC WORKLOAD CONSOLE - continued

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## DWC Install and Configuration

- Extract WebSphere Liberty
- Confirm permissions on WLP directories

## Example:

```
./java -jar ../../../../dwc/WLP/wlp-base-all-19.0.0.9.jar --  
acceptLicense /apps/ibm/
```

## Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspiinstallLiberty.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspiinstallLiberty.htm)

# DYNAMIC WORKLOAD CONSOLE - continued

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## DWC Install and Configuration

- Configure the dwcinst.properties file
- Run the dwcinst.sh script using -f to identify the properties file and add any additional parameters not configured in the properties file.

## Example:

```
./dwcinst.sh -f ../TEMPLATES/dwcinst.properties --dbpassword  
${PASSWORD} --password ${PASSWORD}
```

## Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspidwcinstdbconfig.htm#twsinstdbconfig](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspidwcinstdbconfig.htm#twsinstdbconfig)

# DYNAMIC WORKLOAD CONSOLE - continued

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## DWC Install and Configuration

- Configure AD Authentication by using the authentication templates
- Configure DWC Security Roles

## Known Issues:

With Oracle DB you were unable to have the DWC schema configured prior to the configureDB script, the configureDB script needed to create the user. An RFE was created, and I believe being implemented in FP0002.



# MASTER DOMAIN MANAGER

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## MDM Install and Configuration

- Backup DB
- Configure the configureDbOracle.properties file
- Run the configureDB.sh script using -f to identify the properties file and add any additional parameters not configured in the properties file.

Example:

```
./configureDb.sh -f ../TEMPLATES/configureDbOracle.properties.mdm --dbpassword ${PASSWORD} --  
dbadminuserpw ${PASSWORD}
```

Known Issue: When running the configureDB using Oracle DB, the script would fail with an error Error Msg = ORA-00955: name is already used by an existing object. To get around this issue you would drop the index being referenced and then run the script again. This will be fixed in FP0002.

Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/aw\\_spiupgrddb.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/aw_spiupgrddb.htm)

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/aw\\_spitwsinstdbcfg.htm#twsinstdbcfg](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/aw_spitwsinstdbcfg.htm#twsinstdbcfg)

# MASTER DOMAIN MANAGER - continued

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## MDM Install and Configuration

- Extract WebSphere Liberty
- Confirm permissions on WLP directories

## Example:

```
./java -jar ../../../../dwc/WLP/wlp-base-all-19.0.0.9.jar --  
acceptLicense /apps/ibm/
```

## Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspiinstallLiberty.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspiinstallLiberty.htm)

# MASTER DOMAIN MANAGER - continued

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## MDM Install and Configuration

- Configure the serverinst.properties file
- Run the serverinst.sh script using -f to identify the properties file and add any additional parameters not configured in the properties file.

### Example:

```
Sudo ./serverinst.sh -f ../TEMPLATES/serverinst.properties --dbpassword  
${PASSWORD} --password ${PASSWORD}
```

### Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspitwsinstparams.htm#twsinstparams](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspitwsinstparams.htm#twsinstparams)

# MASTER DOMAIN MANAGER - continued

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## MDM Install and Configuration

- Configure AD Authentication by using the authentication templates
- Configure Single Sign-On between the DWC and MDM
- Configure Dynamic Broker access in the broker\_role\_mapping.xml file.

## Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspiconfigsecy.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspiconfigsecy.htm)

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_ad/awsadtdwcSSOcfg.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_ad/awsadtdwcSSOcfg.htm)

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_ad/awsadsecurolesmap.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_ad/awsadsecurolesmap.htm)

# REPORTING

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## Configure Reporting for Oracle DB

- Grant the Report User access to the tables using the dbgrant.sh,
- Configure the Engine in the DWC for reporting
- Define the oracle jdbc url in the TWSConfig.properties

Known Issue: When running a report within the DWC you will be prompted for credentials even though it is configured within the Engine. This is being addressed in FP0002. Entering the credentials will generate the report.

Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_ad/awsadconfreporacle.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_ad/awsadconfreporacle.htm)



# SWITCH DOMAIN MANAGER

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## Switching the Domain Manager

- Promote the 9.5 Backup Master to be Master Domain Manager
- Reconfigure FINAL and FINALPOSTREPORTS
- Confirm Local and Global Opts
- Source twa\_env.sh

## Documentation:

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspipar2.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspipar2.htm)

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_pi/awspipar3.htm#par3](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_pi/awspipar3.htm#par3)

# Z/OS ENGINE

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Configure Engine to TWSz

- Install APAR on TWSz side to
- Configure connectionFactory.xml

APAR

<http://www-01.ibm.com/support/docview.wss?uid=swg1PI85255>

Documentation:

<https://www.ibm.com/support/pages/node/1170190>

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/distr/src\\_ad/awsadtmpltconnfactory.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/distr/src_ad/awsadtmpltconnfactory.htm)

[https://www.ibm.com/support/knowledgecenter/SSGSPN\\_9.5.0/com.ibm.tivoli.itws.doc\\_9.5/zos/src\\_inst/eqqi1verifying.htm](https://www.ibm.com/support/knowledgecenter/SSGSPN_9.5.0/com.ibm.tivoli.itws.doc_9.5/zos/src_inst/eqqi1verifying.htm)

# BACKUP MASTER DOMAIN MANAGER

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## Install and Configure Backup Master

- Follow the same steps as we did with the Master to setup the 9.5 Backup Master
- Use the same property files editing any parameters as needed
- Use the same Templates to configure the Backup Master as we did the 9.5 Master

# POST DEPLOYMENT

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## Post Deployment Steps

- Adjust the Workload Security to include Folders
- Power down Backup Masters

# TESTING

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## Testing Functionality

- Schedulers work with the Job Owners to test the various jobs to confirm we are not seeing issues.
- Schedulers testing all features and functionality

Known Issue: Windows Extended Agent, the psagent.cmd would not execute, would fail with error The IBM Workload Automation root directory "" you specified is not a directory. Will be fixed in FP0002

## WorkAround:

Open the file .../methods/psagent.cmd

At the end of the file you should have a row like this:

```
@ "%JAVA_DIR%\java" -Dtwsw.dir="%UNISON_DIR%\methods\\" -classpath "%CPATH%"  
com.ibm.tivoli.PeopleSoft.Agent.PSAgent %*
```

Add the following part: -Dtwsw.data.dir="%UNISON\_DIR%\"

```
@ "%JAVA_DIR%\java" -Dtwsw.dir="%UNISON_DIR%\methods\\" -Dtwsw.data.dir="%UNISON_DIR%\"  
-classpath "%CPATH%" com.ibm.tivoli.PeopleSoft.Agent.PSAgent %*
```



# TESTING - Continued

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## Testing Functionality

Known Issue: Event Rules action plug-ins Send Mail, and Run Command are not working. Fixed FP0002. We implemented a work around, to use Submit Ad-Hoc Job which would run the command required, or send email using mail

NOTE: Make sure you are running the latest FP for Agents. In our case we had 9.3.0.0 Dynamic Agents, which are not compatible with 9.5, it has to be 9.3.0.3. We did not find this out until our QA implementation, as we did not have 9.3.0.0 in our lower tiers.

# DO THE SAME

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## Implementing to the remaining Environments

- Once receive sign off on testing, we then started to implement the same process across the other tiers.
- We used the same templates, making any edits needed which would be specific to the environment, such as credentials.

# REUSING SERVERS

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Implementation when reusing the servers

- Switch the current Master to the backup Master
- Remove 9.3 from server
- Install and Configure new 9.5 Backup Master on the same server
- Remove 9.3 DWC
- Install and Configure new 9.5 DWC on the same server
- Switch Manager to new 9.5 Master
- Remove 9.3 from the now Backup Master
- Install and Configure 9.5 on Backup Master

# TROUBLESHOOTING

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## Troubleshooting Logs:

- DWC Installation Logs found in Application Data Directory  
`${DWC_HOME}/DWC_DATA/installation/logs`
- TWS Installation logs found in Application Data Directory  
`$TWS_HOME}/TWS_DATA/installation/logs`
- DWC Application Logs found in the Application Data Directory  
`${DWC_HOME}/DWC_DATA/stdlist/appserver/dwcServer/logs`
- TWS Application Logs found in the Application Data Directory  
`${TWS_HOME}/TWS_DATA/stdlist/appserver/engineServer/logs`
- Trace.xml configure and drop in overrides

# WHATS NEXT

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## Our Next Steps

- Utilize new features such as Folders
- Revisit External File Transfers
- Maximize new plug-ins
- Move off Extended Agents to use Access Method job types

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# QUESTIONS