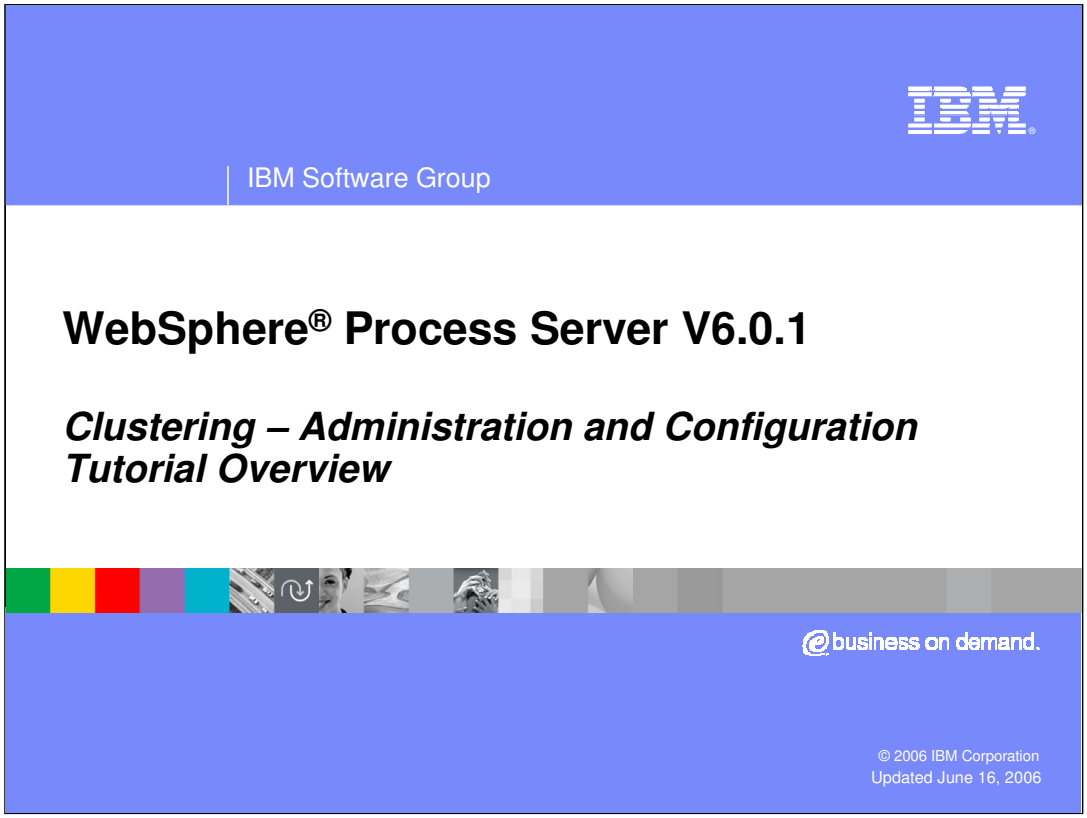
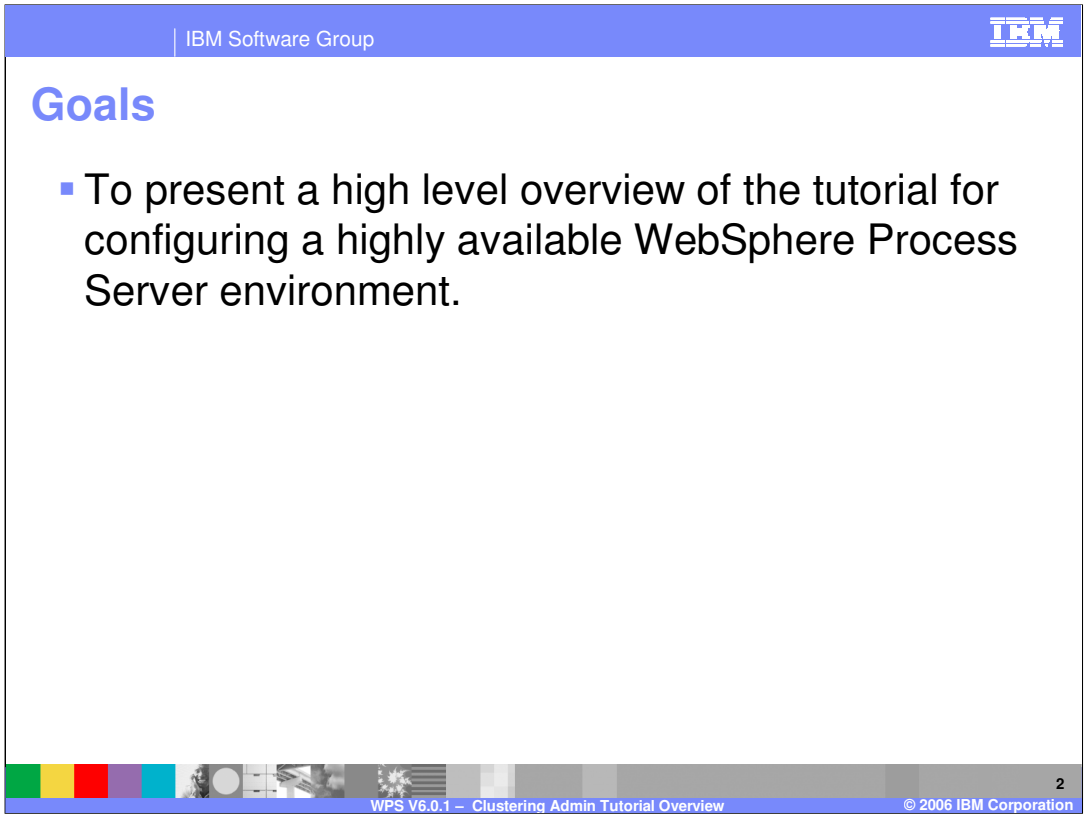
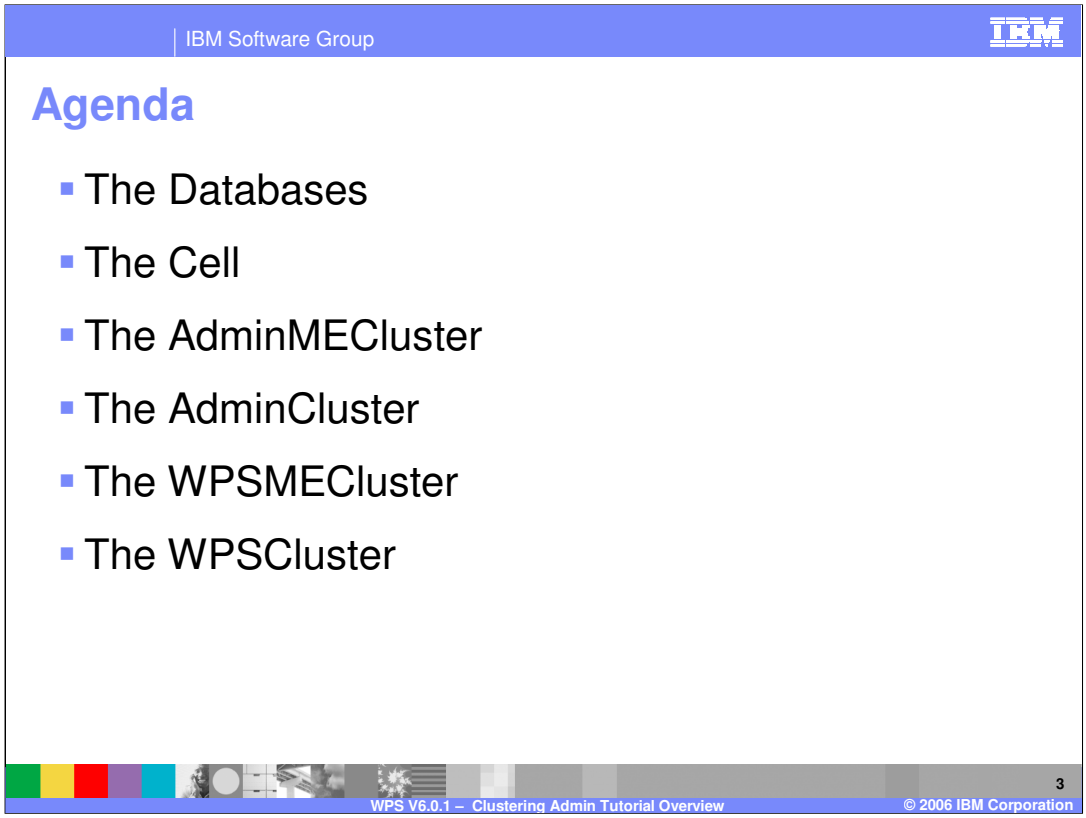


This presentation will provide an overview of the tutorials for configuring a highly available WebSphere Process Server.

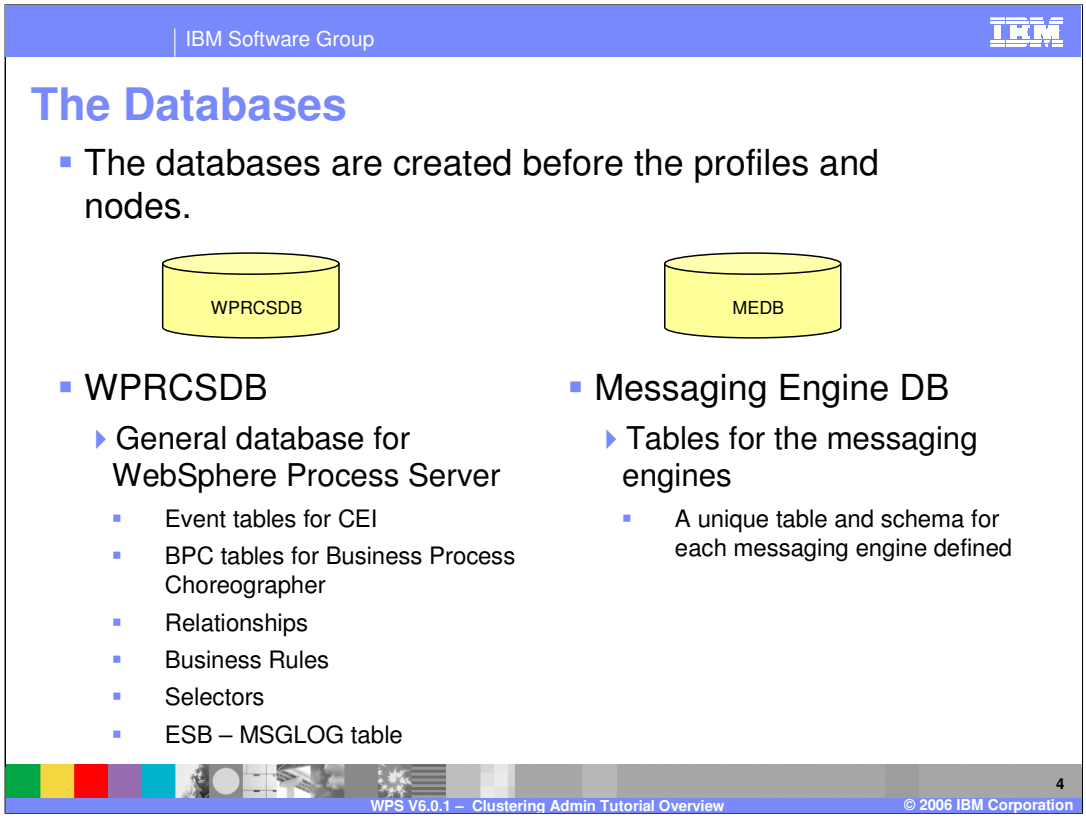


The process of configuring this topology will touch on all of the basic tasks and illustrate administrative issues that may not be readily apparent.



This presentation will briefly discuss the components that need to be installed and configured to create a highly available WebSphere Process Server topology. Note: highly available does not necessarily mean continuously available.

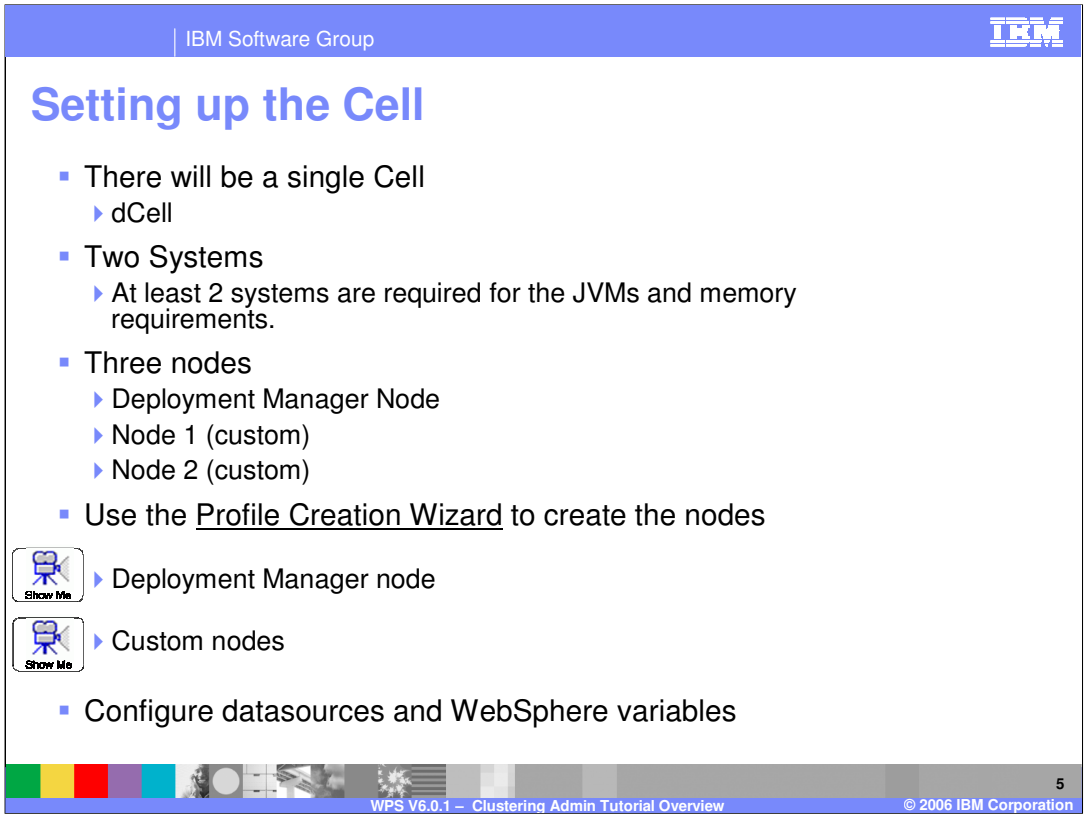
The major components are the databases, the Cell, the Administration cluster pair and the WebSphere Process Server cluster pair.



Note that you should create the database named WPRCSDB before creating the Deployment Manger node.

The decision to use two databases rather than many simplifies the topology for the purpose of the tutorial.

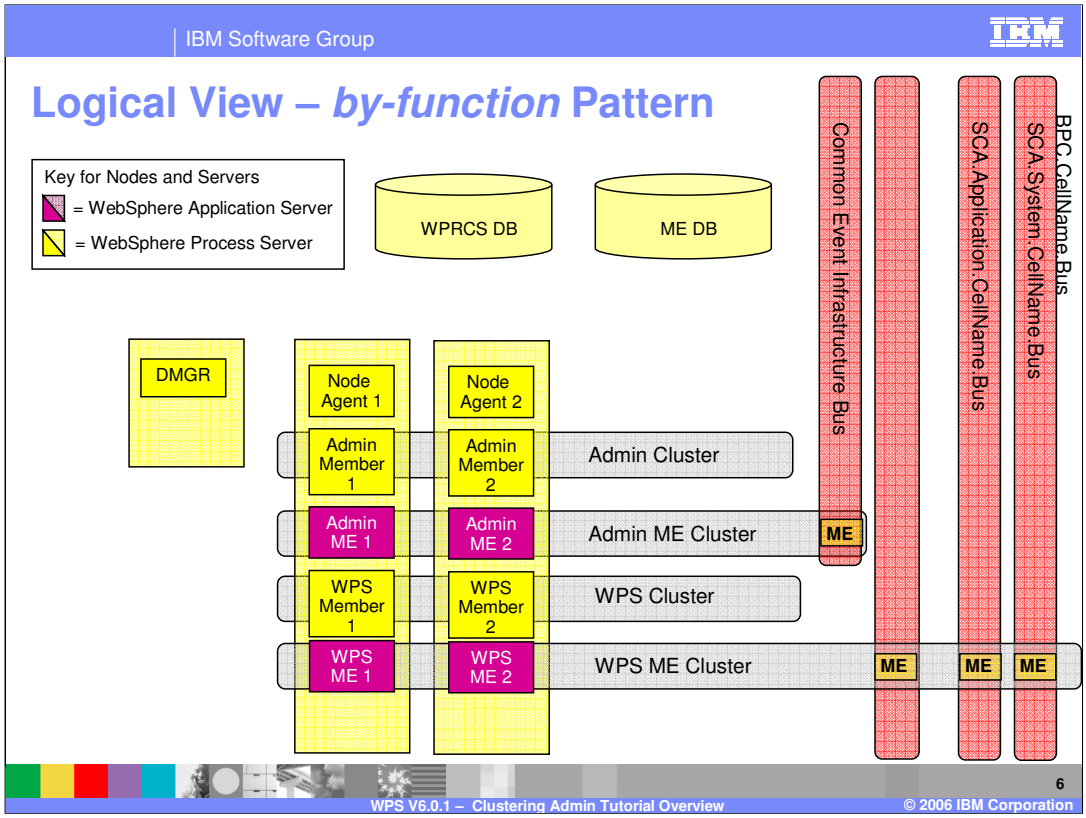
Creation of the databases and tables involves customizing and running scripts that are provided as part of the WebSphere Process Server runtime. Step by step instructions are provided in the tutorial.



The topology being constructed will have eleven JVMs. On a single Windows® XP system, if all the JVMs are started, more that 3GB of ram will be consumed. For this reason it is required or strongly suggested that a minimum of 2 machines be used. The Deployment Manager node can be located on a third system or co-located with a 'custom' node on one of 2 systems.

The Profile Creation Wizard, which is part of the WebSphere Process Server installation, will be used to create the Deployment Manager node and 2 Custom nodes.

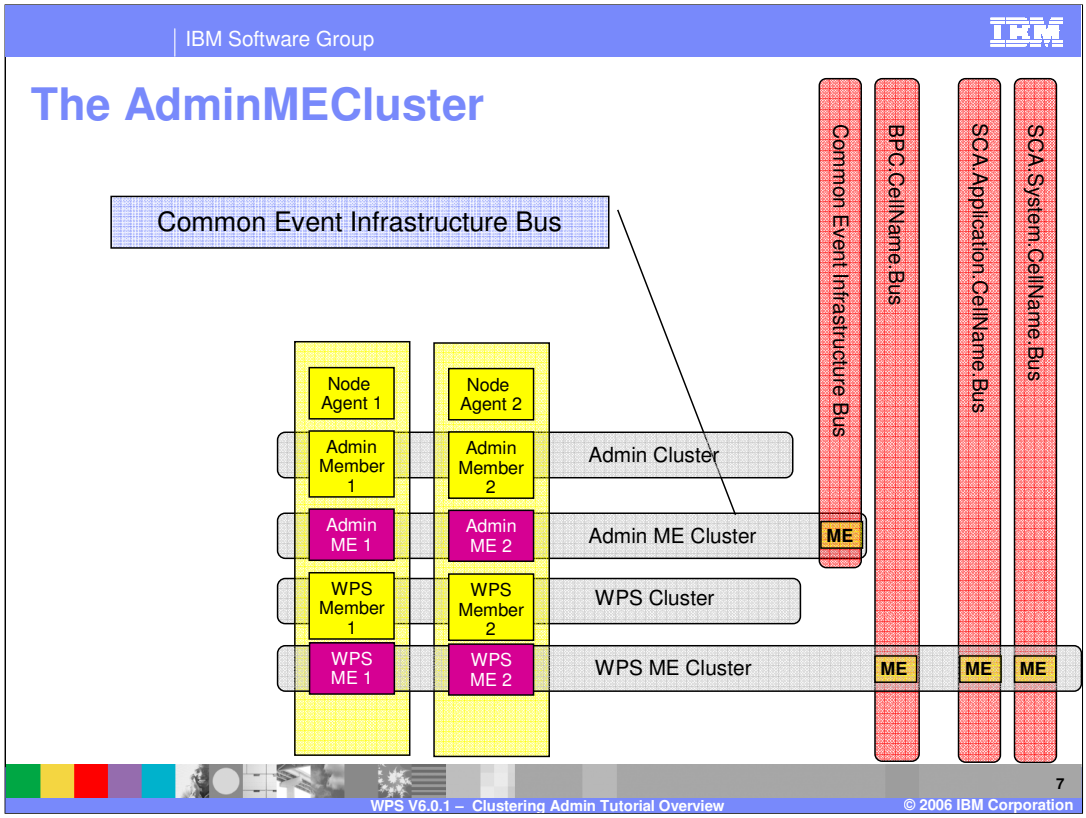
After the creation of the nodes, there will be some global, system level entities that need to be configured before proceeding, such as datasources and WebSphere environment variables.



This is the logical view of the *by-function* pattern, the topological deployment pattern which was presented in the previous *Clustering Concepts* discussion. This is the topology that the tutorial will assist you in configuring.

Each cluster has a specific function within the overall system and therefore the configuration for each must be customized to meet specific functional requirements.

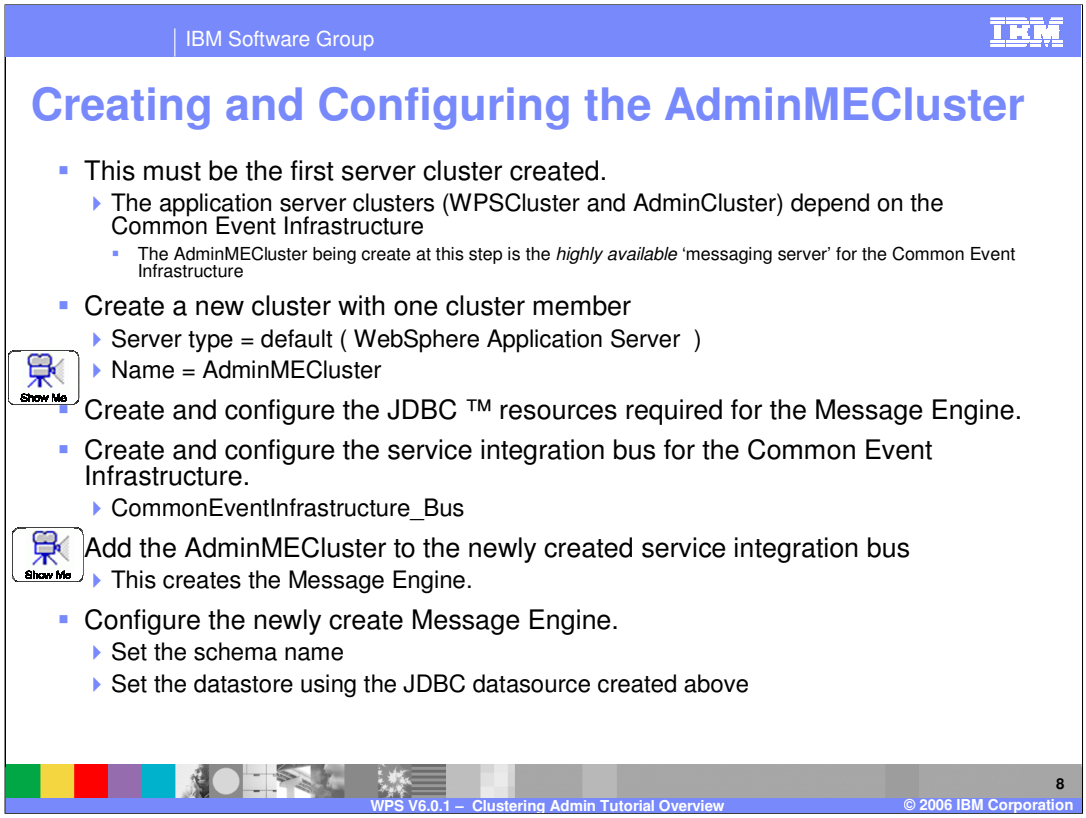
This overview will touch on the key tasks involved in configuring each cluster, the step-by-step details will be in the tutorial.



Focus for a moment on the AdminMECluster.

What are the responsibilities for this server cluster?

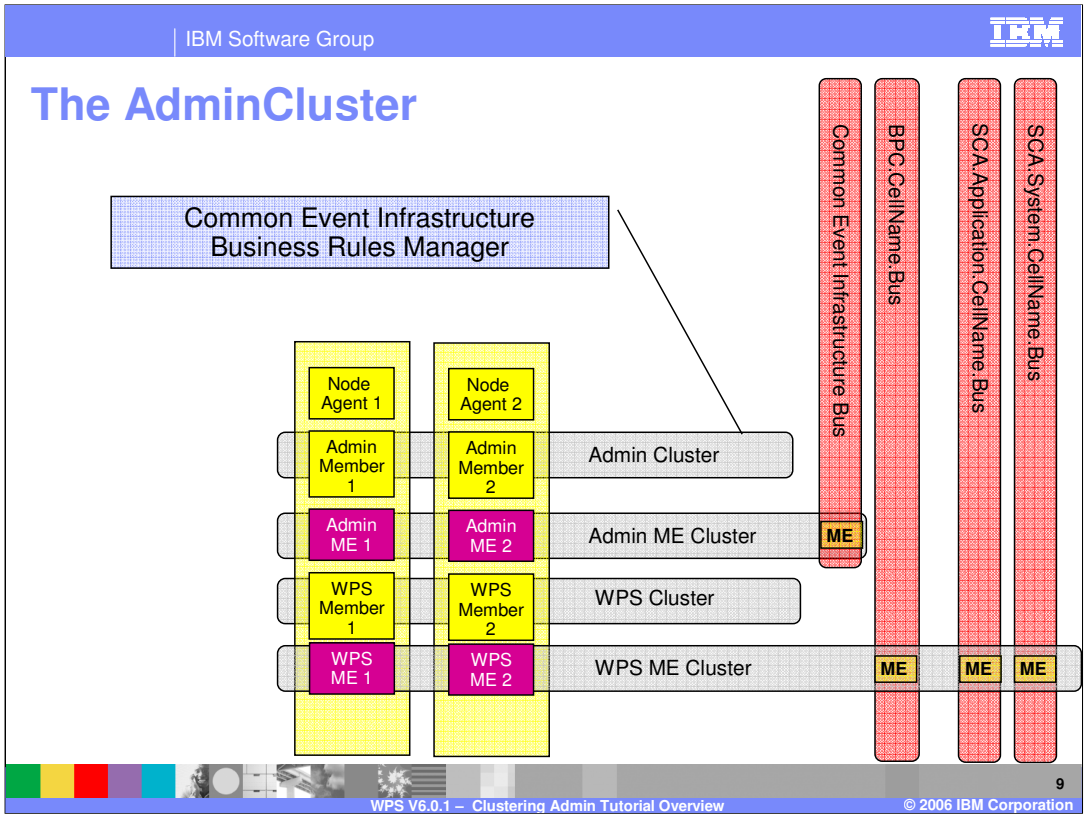
This cluster is the 'highly available messaging server' for the Common Event Infrastructure component.



Shown here are the major steps necessary for creating the Administration Message Engine Cluster.

Notice that the server type is a basic WebSphere Application Server. Since the sole purpose of this cluster is to host the message engines for the Administration Cluster, there will be no WebSphere Process Server application components and the simpler, leaner WebSphere Application Server can be used.

The cluster will be “grown”, or populated with additional severs, after both the AdminMECluster and the AdminCluster have been created and configured. Since all servers in a cluster must be functionally equivalent, the strategy employed here is to create and configure the server completely, then use it as a template for the additional servers.



Next focus on the AdminCluster.

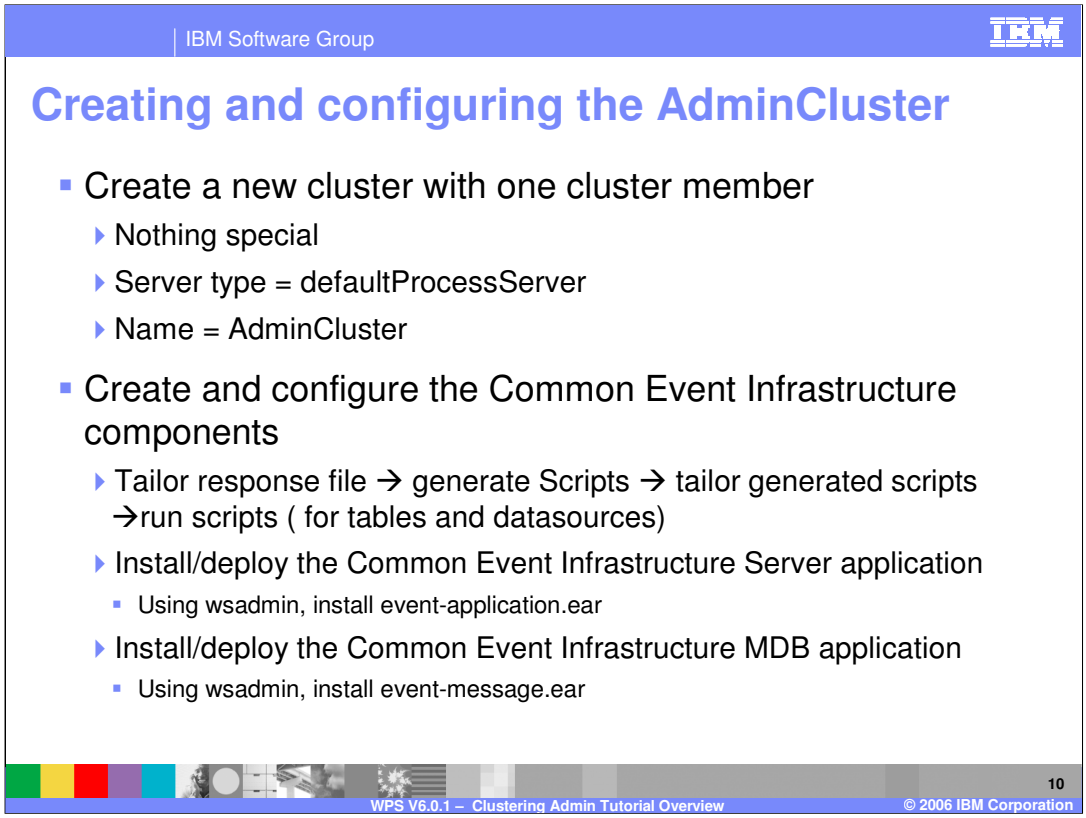
What are the responsibilities for this server cluster?

This cluster will host the applications used by the Common Event Infrastructure and the Business Rules Manager components. It is the 'administrative' cluster, which is also available to host other administrative applications that may be needed for the system.

Since the AdminCluster depends on the AminMECluster, it must be created and configured after the AdminMECluster.

Notice that there will be no service integration bus or message engine to configure and the server type will be WebSphere Process Server.

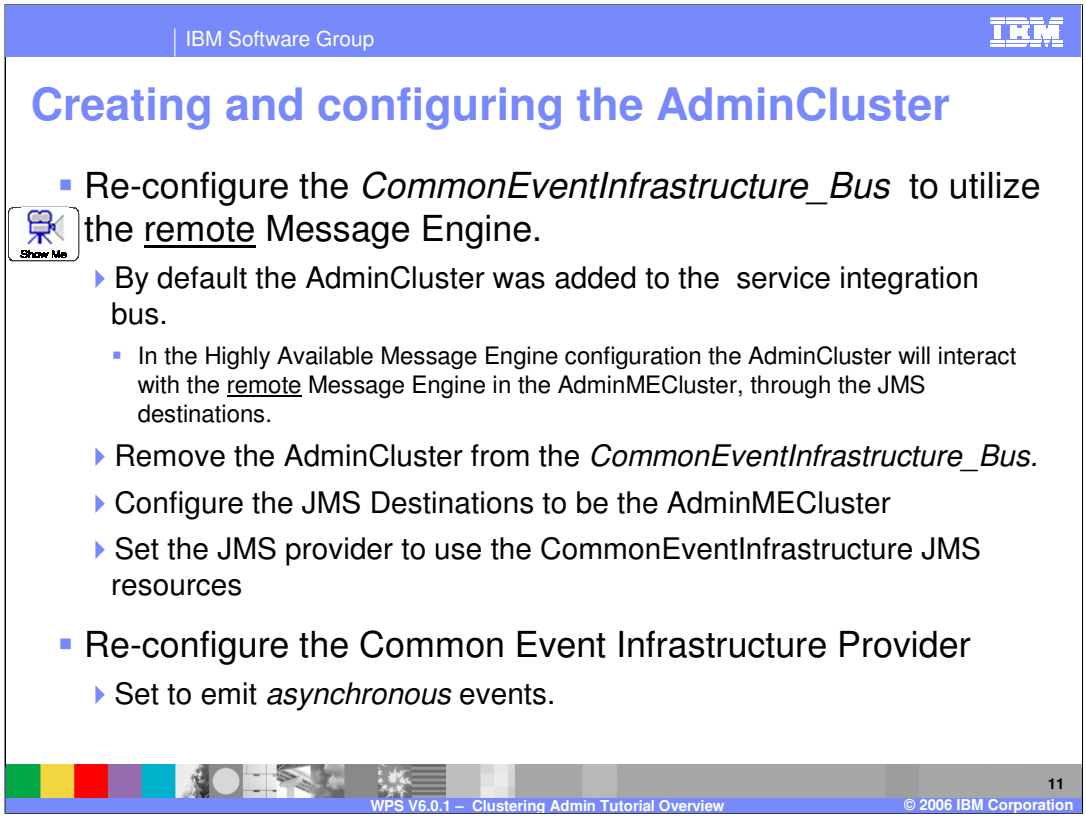
Also notice that there will be application components for the Common Event Infrastructure and Business Rules Manager to install.



Setting up the AdminCluster entails setting up the Common Event Infrastructure applications that will be running in this cluster.

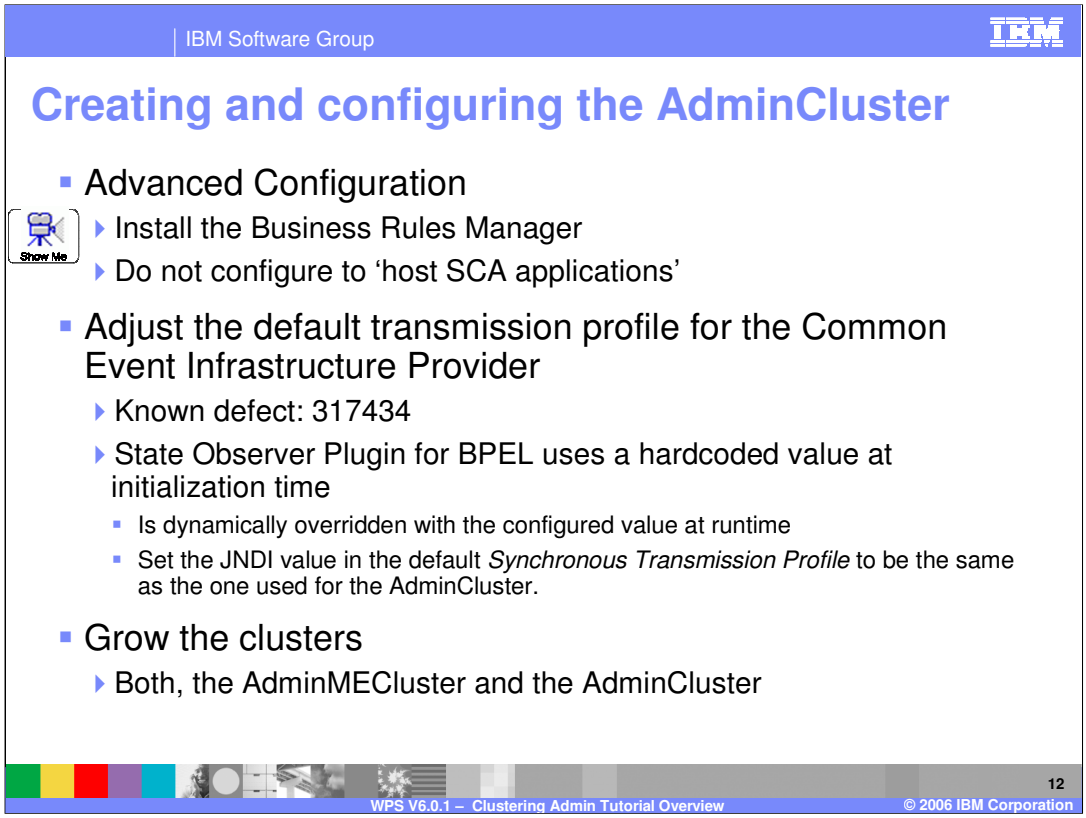
The Common Event Infrastructure has requirements for a database and datasources, fortunately the tools to create the scripts and the instructions for using them are available as part of the WebSphere Process Server installation.

Because the scenario being developed is not the default, there is some 'post installation' configuration required. These post Common Event Infrastructure configuration steps are covered at a high level here and the details are incorporated into the tutorial.



The CommonEventInfrastructure_Bus is the Service Integration Bus for the Common Event Infrastructure.

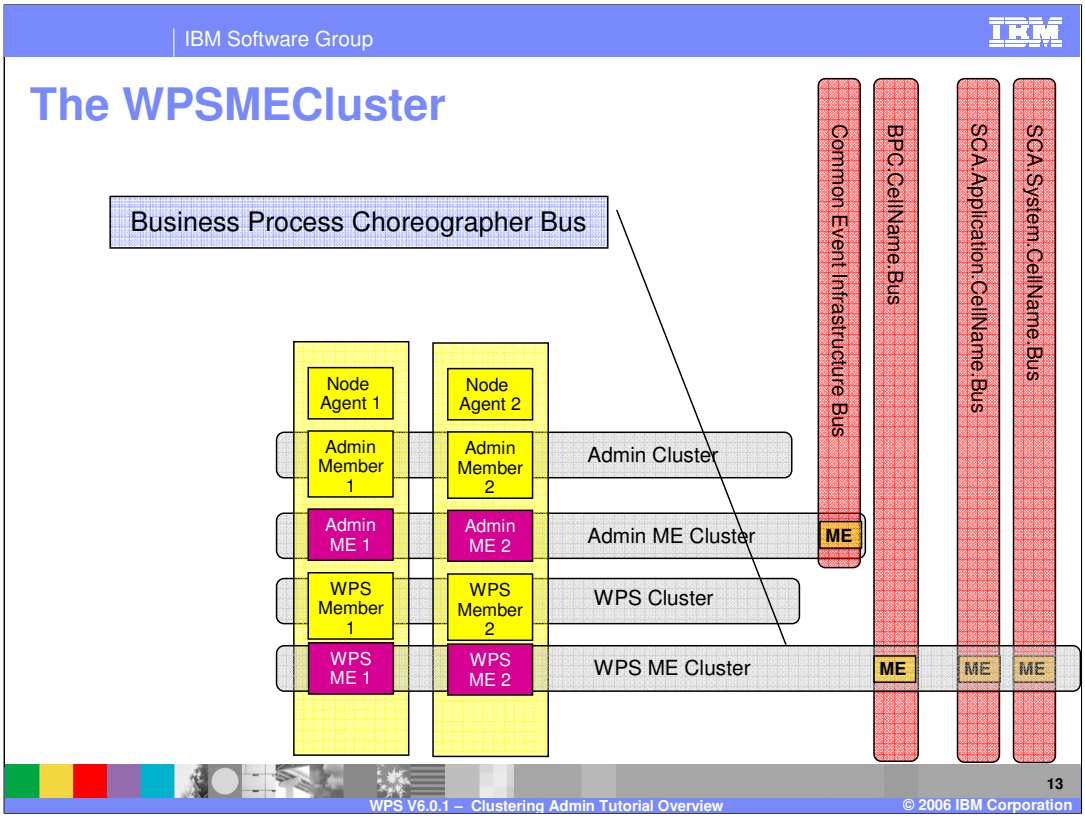
The default configuration provided by the Common Event Infrastructure installation scripts, assume that the message engine will be local to the cluster being configured. Recall the discussion previously about remote vs. default (local). With this configuration the message engine will not be local, therefore the AdminCluster must be removed from the Common Event Infrastructure service integration bus and configured for remote access. The Common Event Infrastructure provider must also be set to emit events asynchronously.



The Advanced Configuration Wizard provides the mechanism for configuring WebSphere Process Server features on WebSphere Process Server servers or server clusters.

The adjustment to the default transmission profile is to accommodate a minor bug.

Once the server clusters are configured, additional servers can be added to the other nodes in the cell. The number of servers per node per machine will be limited by the disk and memory resources on the physical box.

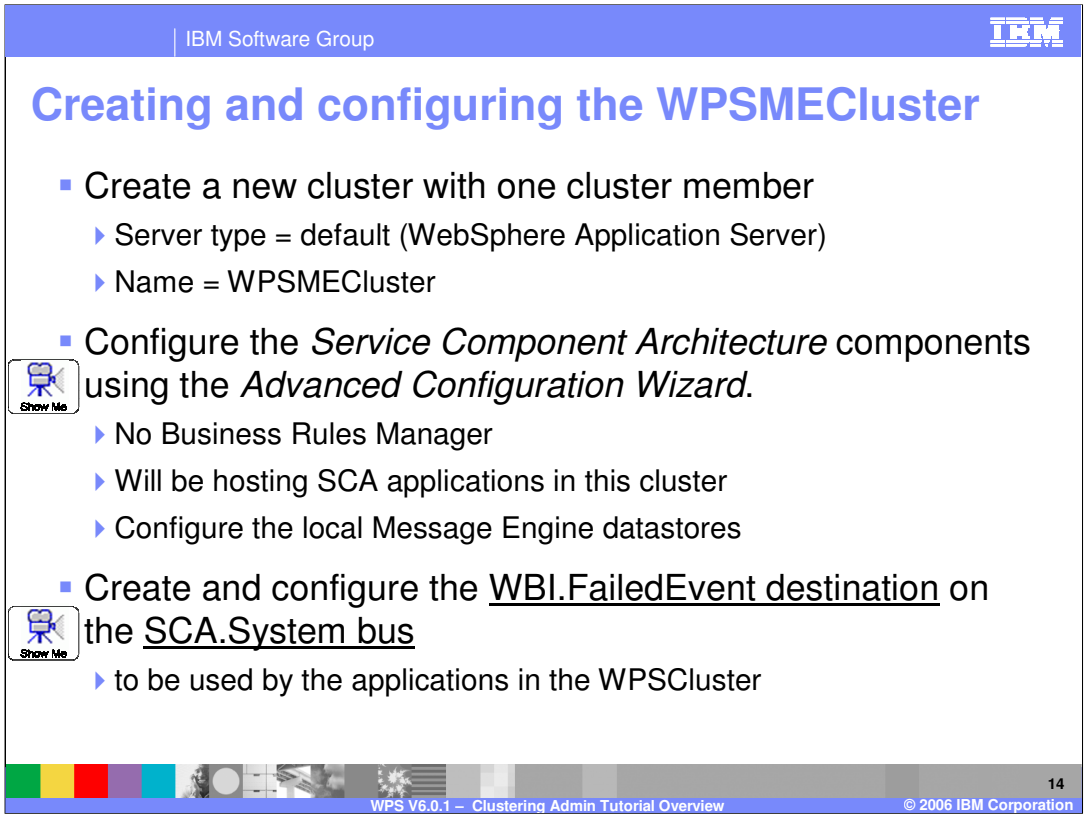


Next Focus on the WPSMECluster.

What are the responsibilities for this server cluster?

This cluster is the 'highly available messaging server' for the Business Process Choreographer and Human Task Manager components and the asynchronous Service Component Architecture invocations.

Here there will be the Business Process Choreographer bus and message engines to create and configure. Note that the server type is the default WebSphere Application Server.



Each cluster being configured in this topological pattern is slightly different.

The question of 'hosting' Service Component Architecture applications is really asking if there is a need to utilize the SCA Application and System buses. In the configuration being presented, the applications are in the WPSCluster and are using the Business Process Choreographer and Human Task Manager containers, which use messaging and use the SCA buses. Therefore the answer to the question presented by the Advanced Configuration Wizard, is yes, this cluster will be hosting SCA applications.

The applications in the WebSphere Process Server cluster pair and the Administration Cluster pair will both be utilizing the Failed Event Manager Service, therefore the queue destinations need to be defined for both clusters but only one cluster needs to be a member of the SCA.System bus.

Creating and configuring the WPSMECluster

- Create the JDBC resources
  - JDBC Provider and datasource for the Message Engine database
- Create and configure the service integration bus for the Business Process Choreographer applications
  - Name = BPC.*yourCellName*.Bus
  - Configure the Message Engine for this cluster-sib
- Create the JMS destinations to be used by the Business Process Choreographer applications
  - BPEApiQueue, BPEHldQueue, BPEIntQueue, BPERetQueue
  - HTMHldQueue, HTMIntQueue
- Done with this cluster for the moment.

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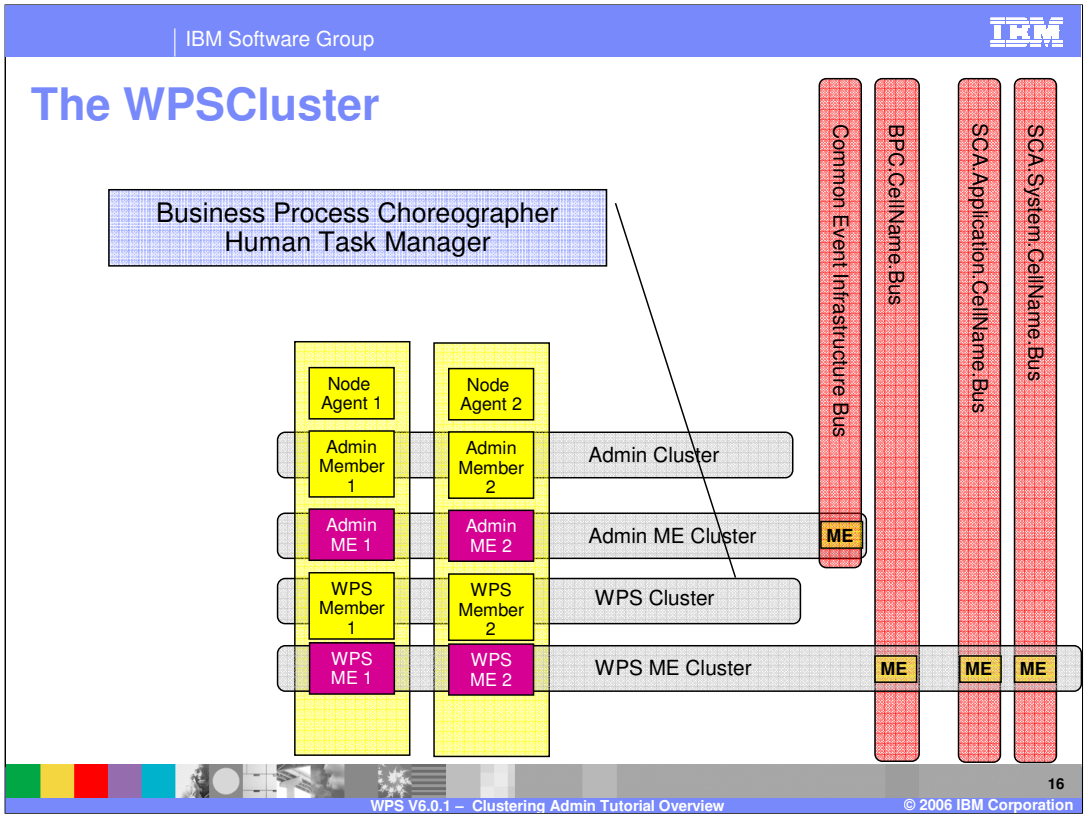
There are several more steps required for setting up the WebSphere Process Server message engine cluster. When everything is all in the same cluster the Business Process Choreographer setup scripts configure everything. Because in this topology the message engine is separated from the WebSphere Process Server applications, the JMS resources needed by the Business Process Choreographer and Human Task Manager need to be manually configured.

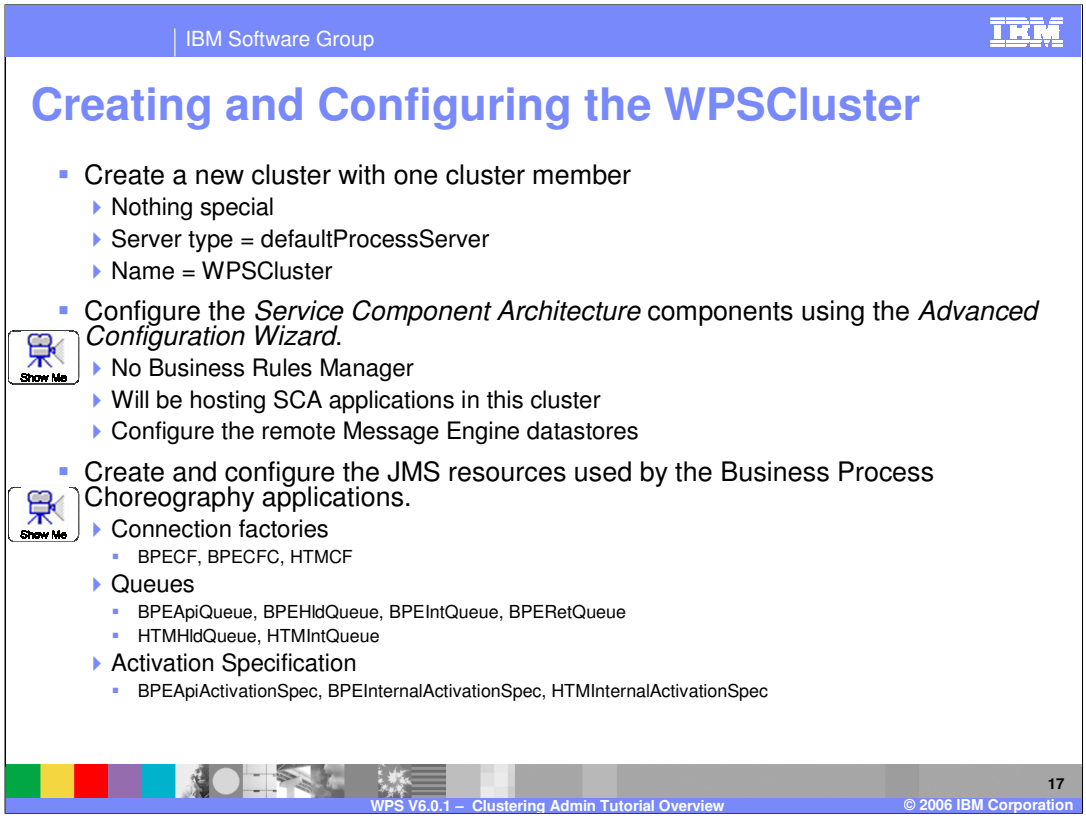


Finally, focus on the WPSCluster.

What are the responsibilities for this server cluster?

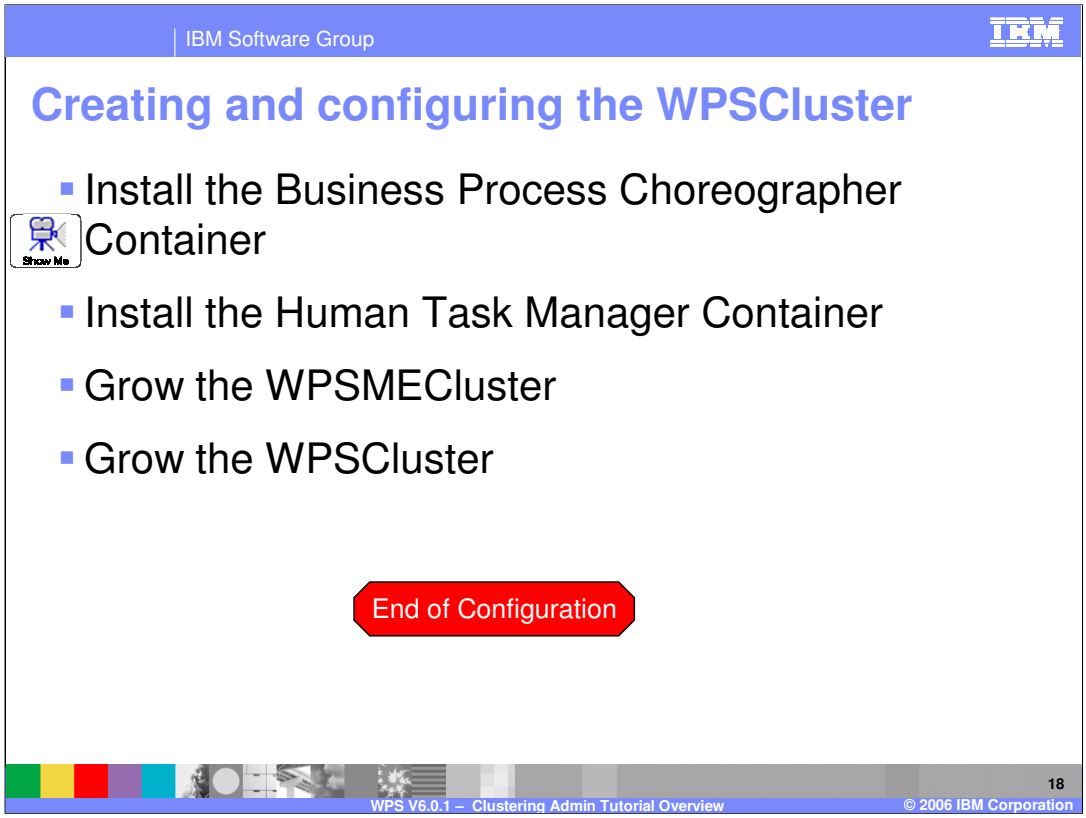
This cluster hosts the Business Process Choreographer and Human Task Manager containers and the applications that use them, plus other WebSphere Process Server components such as the Business State Machine, Business Rules, and so on.

There will be no messaging engines or service integration buses to configure.



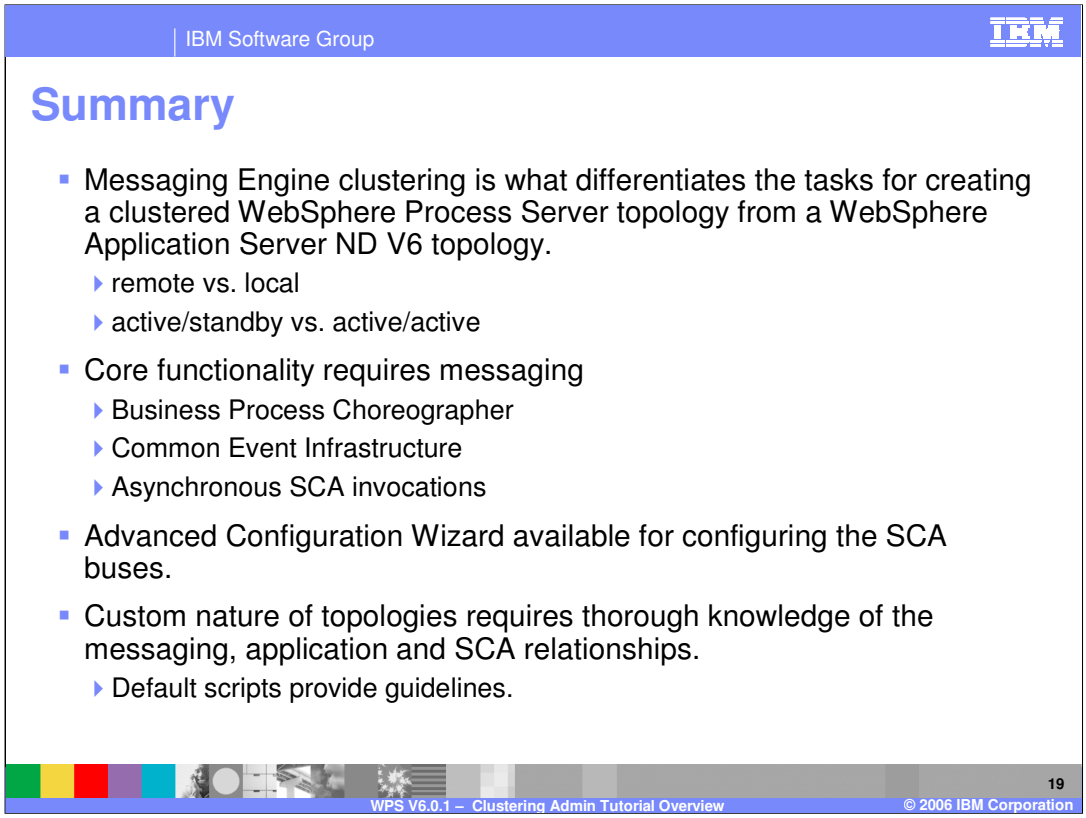
Notice the differences with the options for the Advanced Configuration Wizard. This cluster will be using WebSphere Process Server components but the messaging engine is hosted remotely in the WPSMECluster.

Additional work is required to setup the JMS resources used by the Business Process Choreographer and Human Task Manager containers.



The installation of the Business Process Choreographer and Human Task Manager containers is straightforward and wizards are provided from the WebSphere Process Server Administrative Console. There are scripts which are also available in the WebSphere Process Server installation which can be modified to meet specific requirements for silent installations and configurations.

The configuration of the containers on the WPSCluster completes the basic installation and configuration of the WebSphere Process Server environment. Additional servers can now be added to both clusters to fill out the needs of the system, keeping in mind the limitations of the physical resources available.



When creating a clustered WebSphere Process Server environment that utilizes Business Process Choreographer the key factor to consider is the messaging engine.

Messaging is at the heart of the core functionality provided by WebSphere Process Server. Business Process Choreographer, Common Event Infrastructure and Asynchronous SCA invocations all utilize the default WebSphere messaging.

There are Administrative Console tools, such as the Advanced Configuration wizard, the Business Process Choreographer Container and Human Task Manager Container wizards and the default scripts, which are provided to guide and aid in the installation and configuration process.

Working through the tutorial will provide the additional reinforcement necessary to become comfortable with all the parts and relationships discussed in this module on WebSphere Process Server clustering.

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