WebSphere® Business Monitor V6.1

Advanced installation

This presentation introduces the advanced installation capability in WebSphere Business Monitor Version 6.1.

Goals

- Explain what is new in monitor 6.1 for advanced installation scenarios

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This presentation should describe the WebSphere Business Monitor version 6.1 Advanced installation capability, including clustering.

Agenda

- Overview
  - ▶ What is new in monitor V6.1
  - ▶ Monitor components
  - ▶ Installation scenarios
- Event moderator
- Troubleshooting

The agenda includes; an overview of installation, which includes the new features, a look at the Monitor components and typical installation scenarios, details on the event moderator component of the monitor model and then you will review some troubleshooting information.

Section

Overview
Installation type: Advanced

Advanced installation

This section will give you an overview of Monitor Advanced installation.

IBM

What is new

- New installation program consistent with other IBM products
  - ▶ Common Launchpad
    - Serves as a single point of reference
    - Provides initial help
    - Uses common install engine (CIE) to invoke ISMP
  - ▶ InstallShield multiplatform (ISMP)
    - Used to install prerequisites and monitor components
  - ▶ Resembles the WebSphere application server installer
  - ▶ Supports different server installations
    - Monitor server and web-based dashboards including Alphablox® views
    - Portlet-based dashboards including Alphablox views
    - MONITOR database

WebSphere Business Monitor version 6.1 installation provides a "Common Launchpad" similar to that of the other IBM products such as WebSphere Application Server, WebSphere Process Server and WebSphere Enterprise Service Bus. The installation is made possible by using a Common Launchpad that uses Common Install Engine (CIE) to launch the InstallShield Multiplatform (ISMP). The Common Launchpad provides initial help and acts as a launching pad for the InstallShield program. The InstallShield program is used to install the mandatory prerequisites, optional prerequisites and the monitor components.

Advanced installation supports different installation scenarios, for example Monitor Server and Web Dashboard with Alphablox on one machine, Portal Dashboard with Alphablox on the second machine and the MONITOR database on the third machine.

What is new

- Standard profile management for network deployment flexibility
  - Installer uses profile management tool (PMT)
    - Support standard V6.1 profile creation and augmentation
  - Available templates
    - Stand-alone template
    - Deployment manager (Dmgr) template
    - Custom template
    - Federated monitor server profile
- Supports clustering for scalability

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Advanced installation supports Standard Profile Management for Network Deployment flexibility. The installation program uses the Profile Management Tool (PMT) feature in WebSphere Application Server. The InstallShield program installs the WebSphere Application Server version 6.1 and silently uses the Customized Profile Management Tool to create and augment the WebSphere Business Monitor profile.

There are several type PMT templates that are available. The stand-alone template Includes all the components to run monitor on a single stand-alone server. The deployment manager (Dmgr) template creates or augments a Deployment Manager profile with Monitor components and resources. The custom template creates or augments a federated node profile and marks it as Monitor enabled server, and allows for additional WebSphere Application Server environment variables for Monitor such as the JDBC driver path. The federated Monitor Server profile creates a new federated node profile. This profile includes all Monitor components and configured resources to run Monitor server on a single federated server.

New in this release, Monitor also supports a clustering installation topology for both availability and scalability.

Installation components

- Monitor prerequisites
  - WebSphere application server V6.1.0.13(mandatory)
    - Or WebSphere process server V6.1
  - WebSphere portal server V6.0.1.1 (optional)
  - Alphablox V9.5 (optional)
    - New instance created per Java™ virtual machine (JVM)
  - Ability to choose between derby, DB2® or Oracle database environments

- Major monitor components
  - Monitor server
  - MONITOR database
  - Web-based dashboards
  - Portlet-based dashboard (optional)
  - Web-based and portlet-based Alphablox views (optional)

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WebSphere Application Server version V6.1.0.9 is the only mandatory prerequisite for Monitor installation, however WebSphere Process Server and Enterprise Service Bus profiles are also supported. Optionally WebSphere Portal Server V6.0.1 is used for Portal Dashboard and Alphablox V9.5 is used for the Alphablox portlets for the Web and Portal Dashboard. Alphablox V9.5 architecture mandates that a new instance is created per JVM.

Monitor V6.1 supports the embedded Derby database formerly known as Cloudscape. It also supports DB2 and Oracle database environments.

In Version 6.1 the only mandatory monitor components are the Monitor Server and the MONITOR database. The user has the ability to choose between the optional components such as Web Dashboard, Portal Dashboard, Alphablox views for Web Dashboard and the Alphablox views for the Portal Dashboard.
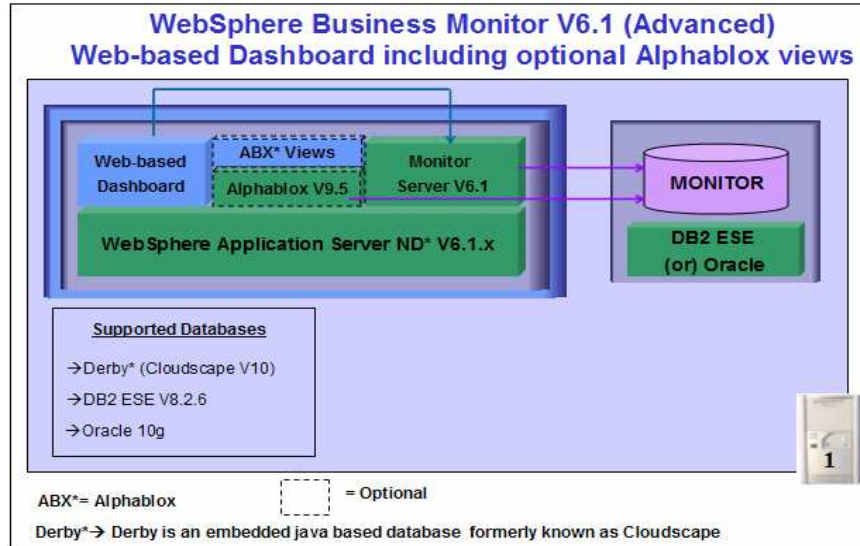
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Section

Installation scenarios

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This section covers some different Monitor Advanced installation scenarios.

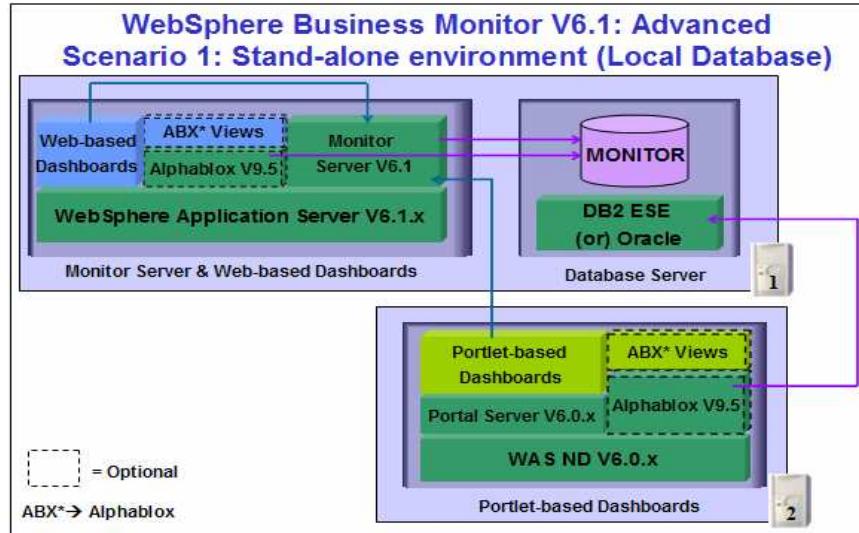This slide shows an advanced monitor installation where the Monitor server and the Web dashboard are installed on a single machine, along with Alphablox and the database. This might be useful for a technology demonstration or proof of concept. This is similar to the capability using a basic installation, however, for advanced installation you can take advantage of existing prerequisite installations.
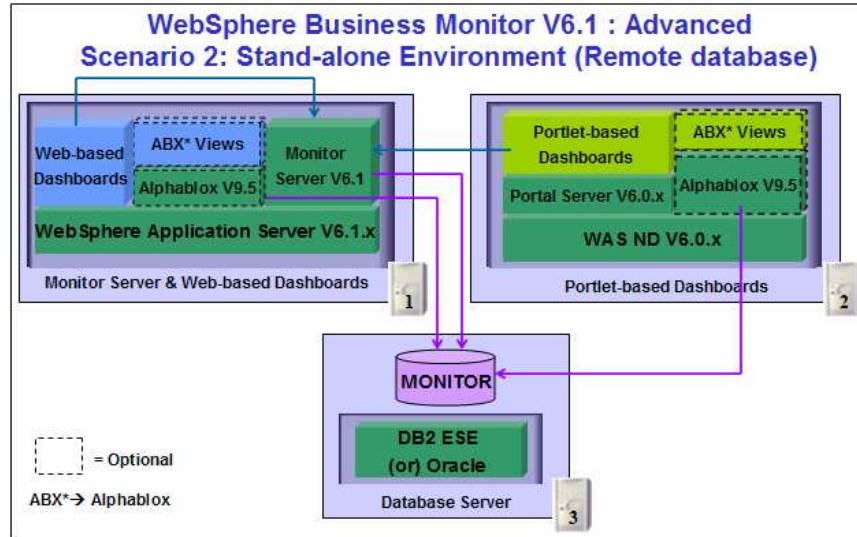
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This slide shows an advanced installation in a two machine scenario. On machine 1 is the Monitor Server, Web Dashboard, Alphablox and the MONITOR database. On machine 2 is the Portal Dashboard including Alphablox. A lab denoted as scenario 1 is available to show you the steps for installation of this configuration.

This shows you an advanced installation in a three machine scenario. On machine 1 is Monitor Server and the Web Dashboard. On machine 2 is the Portal Dashboard including Alphablox views. On machine 3 is the MONITOR database. A lab denoted as scenario 2 is available to show you the steps for installation of this configuration.
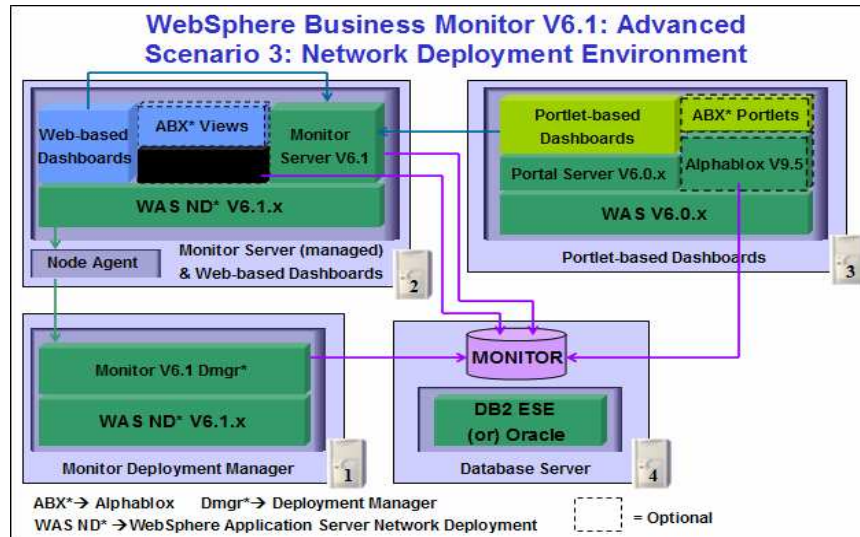
Advanced installation: Network Deployment

- Deployment manager and federated server environment (Lab scenario 3)

**WebSphere Business Monitor V6.1: Advanced
Scenario 3: Network Deployment Environment**

ABX*→ Alphablox   Dmgr*→ Deployment Manager
WAS ND* →WebSphere Application Server Network Deployment   ☐ = Optional

This shows you an advanced installation in a network deployment configuration. Machine one is the deployment manager and machine two is a managed node containing the monitor server installation. On machine three is the Portal dashboard with Alphablox views. Machine 4 contains the Monitor database. A lab denoted as scenario 3 is available to show you the steps for installation of this configuration. You can easily extend this scenario to add clusters to managed nodes in the cell.

Installation scenario : clustering

- Clustering possibilities

Cell 1

MM Cluster 1

MM1

MM1

Monitor Server

Monitor Server

DMgr

Monitored Apps Can be Clustered

MM Cluster 2 .. N

MM 2 .. N

MM 2 .. N

Monitor Server

Monitor Server

Dashboard Server

CEI (Can be clustered)

Database Server

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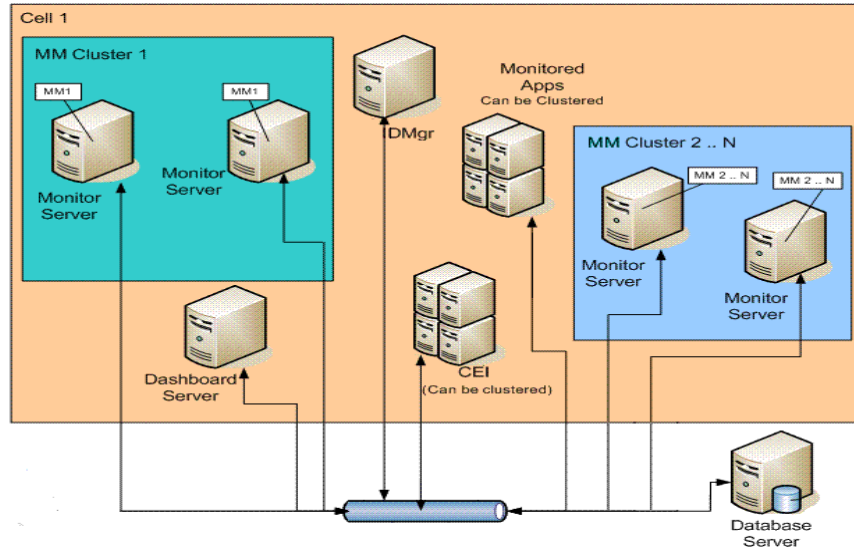
This diagram depicts the clustering possibilities with Monitor V6.1. Now you can create clusters for your monitored applications, for CEI, for the monitor models, and for the dashboard servers. This is a fully scalable environment with redundancy for failover.

Simple cluster for availability

- Cluster 1
  - ▶ CEI server
- Cluster 2
  - ▶ Model ear (moderator and model logic) installed to same server cluster
  - ▶ Automatic failover if active cluster member fails
- Cluster 3
  - ▶ Dashboards (portal server/ABX optional)
- DB machine
  - ▶ Database (DB2 or oracle)
- For highly available production
  - ▶ Does not offer scalability

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This chart depicts a simple network deployment cluster which is designed around availability which is similar to the capability in the previous release. You see three clusters, one each for the CEI server, monitor model moderator with monitor model logic, and dashboards. In this configuration, you have the maximum availability because the monitor model moderator must run with a singleton policy in the cluster so you get automatic failover if a cluster member fails. The singleton policy prevents you from achieving scalability.

Advanced cluster for scalability

- Cluster 1
  - ▶ CEI server
- Cluster 2
  - ▶ Model ear (moderator) installed to server cluster
  - ▶ Automatic failover if active cluster member fails (singleton)
- Cluster 3
  - ▶ Model ear (model logic) installed to different server cluster
  - ▶ All cluster members concurrently active (processing in parallel)
- Cluster 4
  - ▶ Dashboards (portal server/ABX optional)
- DB machine
  - ▶ Database (DB2 or oracle)
- For heavily loaded production environment

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To achieve full scalability, you will need four clusters, one each for the CEI server, monitor model moderator, monitor model logic, and dashboards. In this configuration, you have the maximum scalability because the monitor model moderator is split from the monitor model logic. So the moderator is in its own cluster with a singleton policy but the model logic is installed in a separate cluster and on multiple active cluster members, so they are all processing the events in parallel.

Section

Event moderator

This section will delve into the details of the event moderator.
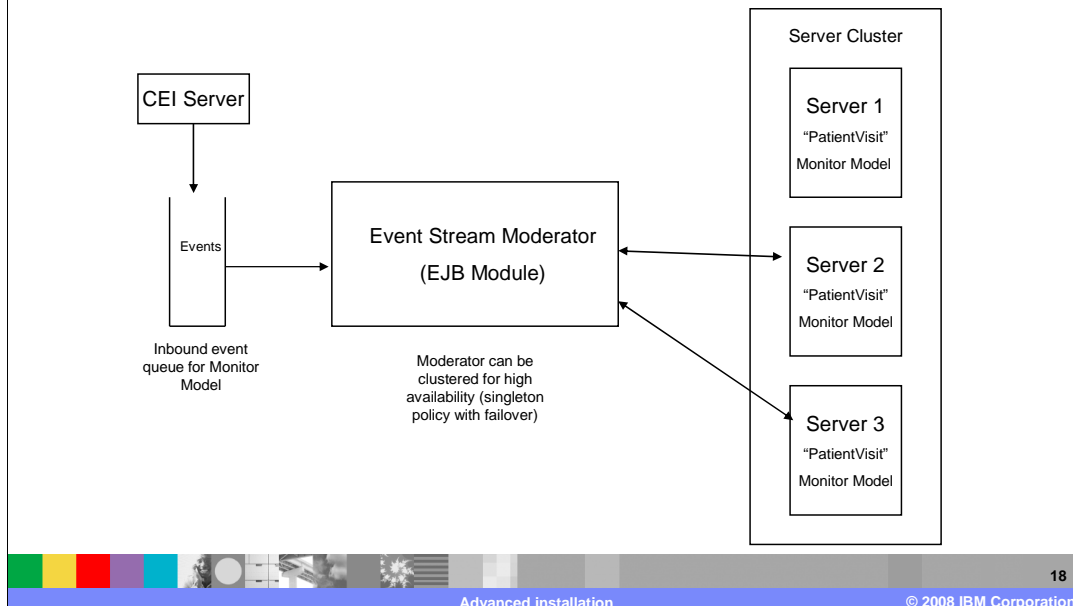
Event stream moderator

- A runtime component that is instantiated in conjunction with the monitor runtime server

- Provides these functions:
  - Multi-thread/cluster support
  - Out-of-sequence event handling
  - Event error queue support

- The server component consists of two EJB jars inside the monitor model ear
  - Event stream moderator - the model ear is installed on a server and cluster different from the designated monitor runtime cluster
  - Model application – the model ear is installed on all servers designated as the monitor cluster

The event stream moderator is new for 6.1. It sits between the CEI server and the monitor model application and pre-processes all events that are destined for the particular monitor model application version. It facilitates a well formed event stream and orchestrates the flow of these events to an owning WebSphere Application Server clustered model application.

It also provides for clustering capability, event sequencing and forwarding error events to an error queue.

To facilitate this capability, the monitor model EAR consists of two EJB's, one for the moderator and one for the monitor model logic. When the EAR file is installed, each EJB module must be assigned to the WebSphere Application Server on which it will run.

Event stream moderator

Server Cluster

CEI Server

Server 1
"PatientVisit"
Monitor Model

Events

Event Stream Moderator
(EJB Module)

Server 2
"PatientVisit"
Monitor Model

Inbound event
queue for Monitor
Model

Moderator can be
clustered for high
availability (singleton
policy with failover)

Server 3
"PatientVisit"
Monitor Model

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The moderator uses a sequence field defined in the model to sequence events that arrive out of order.

The moderator also supports clustering for scalability by delivering events across the target cluster, and it will ensure that bad events only fault the corresponding instance, and not all monitored instances for a given model.

High availability is achieved in WebSphere Application Server by the use of clusters. When the monitor model logic module is running in a cluster, it is running with a parallel runtime policy. If a server member should become not available, the other servers in the cluster will continue running as normal but with one less server being able to do work. When the Moderator is running in a cluster, it is running with a singleton runtime policy. If the currently active Moderator server becomes not available, the WebSphere Application Server high availability manager enables one of the other servers in the Moderator cluster to become active.

The Event Stream Moderator maintains a set of active event stream instances. As events arrive, each is registered into its corresponding batch using its "instance ID". When a batch is well formed, that batch is sent to the server cluster as a work request to be processed. To ensure sequential event processing, only one batch work request for the same instance will ever be processed at a time. Only when an active batch work request for an instance is complete will another batch work request be sent to the server cluster. Many work requests can be processed concurrently, but just not for the same instance. The definition of being "well formed" is a set of ordered events that have arrived with-in the stand-off processing delay.

Multi-thread/cluster support

- Support for multiple-threaded processing on either a single JVM, or spread across members of a WebSphere Application Server server cluster.

- Events for different instances are processed concurrently across the JVM/cluster thread pool.

The moderator ensures that all events for a given instance are processed sequentially and in order but context can switch to any thread in the JVM/cluster. The processing of events for a given process instance does not have affinity for any particular thread/JVM within the cluster.

Out-of-sequence event handling

- Detects out-of-sequence events for an in-flight instance and attempts to reorder the events for proper processing by the model application

- Settings defined in the runtime configuration
  - Batch size
  - Stand off delay
  - If both are specified, then whichever comes first

- Disable event reordering in the deployment options

- To enable it, specify an event sequence field in the model. And make sure that all inbound events have a correlation expression that references the key of the top-most monitoring context

The sequence field is defined for the monitoring context or inbound events in the monitor model editor. If you do not specify a sequence field in the model, you will not have the ability to perform event reordering. For BPEL processing this also currently defaults to the Creation Time. Also to enable event reordering, make sure all inbound events have a correlation expression that references the key of the top-most monitoring context.

A batch of events is maintained by the event stream moderator for monitored instances and it consists of a set of events in sequence. When the batch is well formed, the events are forwarded onto the server cluster to be processed. In the runtime configuration you can adjust the size of the event batch to be processed.

In the runtime configuration of the monitor model you can specify parameters for the event reordering.

The stand off delay is used by the event moderator to delay the processing of a well-formed event batch for an amount of time allowing more events to join the batch before being processed. It can be based on the first one in the batch or the last one in the batch. You can also configure the amount of time to wait for events that arrive out of sequence.

When specifying both an event processing "stand-off delay" and a batch size, a well-formed batch is held until either the delay expires or the maximum count is reached, which ever comes first.

You can disable event reordering when you deploy the monitor model using the monitor deployment options page.

Event error queue

- Persistent holding point for all instances whose processing has faulted

- A fault can occur because of a missing event. Also because of some model application runtime error (division by zero, parent not found)

- Monitor model instance autonomy

If an event cannot be processed, the model stops processing all subsequent messages for the instance in which the fault occurred. Other instances of the model can continue to process incoming events. Manual intervention is therefore only required to restart processing of a particular instance. For failed events you can use the administrative console to view, export, import, replace, delete, re-sequence and resubmit them.

In the previous release an event fault causes processing for the entire model to be stopped. In this release, only the monitor model instance for the error event is faulted, and all other instances can continue.

This section provides some troubleshooting information.

Troubleshooting

- Installation problems
  - ▶ %TEMP% directory of the administrator user
  - ▶ <serverPath>\ logs
  - ▶ <serverPath>\ logs\wbm

- Deployment or runtime problems
  - ▶ <serverPath>\profiles\wbmon01\logs

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If you have installation problems, there are logs stored in the monitor home folder plus additional logs in the temp folder.

If you have deployment or runtime issues, check the Monitor Server logs.

Summary

- Covered what is new in WebSphere Business Monitor V6.1 advanced installation

In summary, you have reviewed the WebSphere Business Monitor version 6.1 Advanced installation capabilities.

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