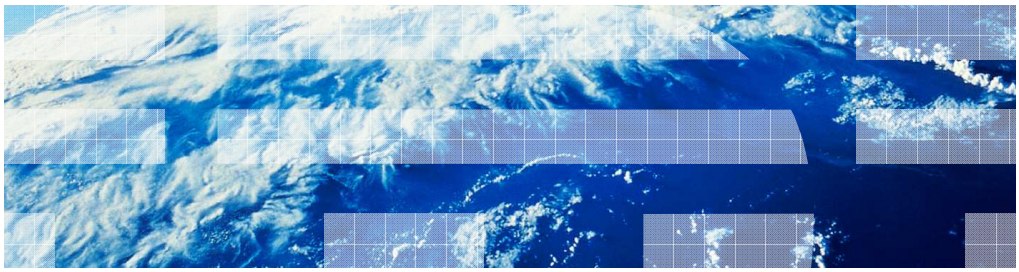
IBM Rational ClearCase MultiSite

Global monitor overview



Rational software

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This module will cover an overview of IBM® Rational® ClearCase® MultiSite® global monitor V7.1 and higher.

Module objectives

- These topics are covered in this module:
  - Overview of ClearCase MultiSite global monitor
  - Deployment architecture of global monitor
  - Global monitor console walkthrough
- When you complete this module, you will be able to:
  - Understand an overview of the global monitor
  - Plan global monitor deployment
  - Walk through the global monitor console

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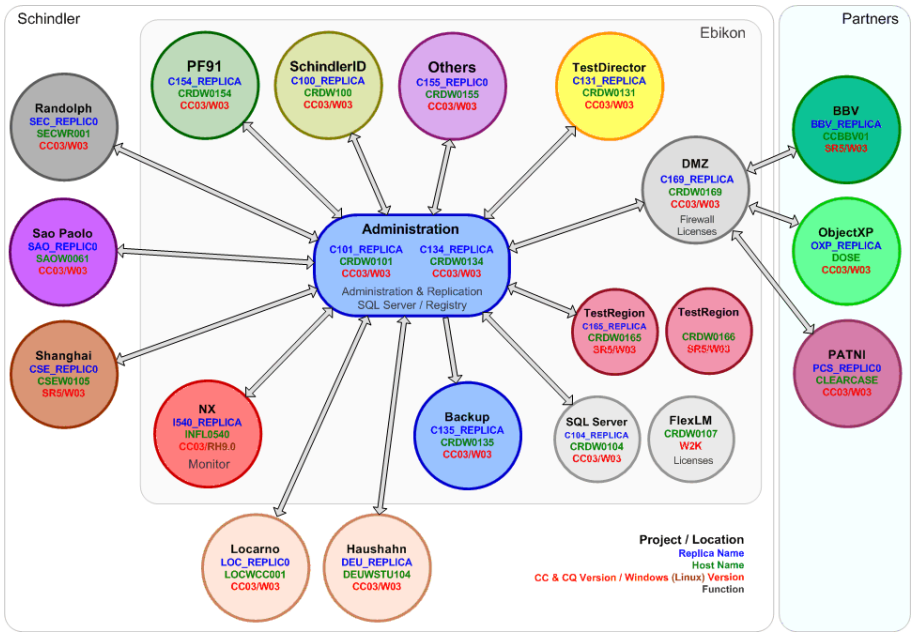
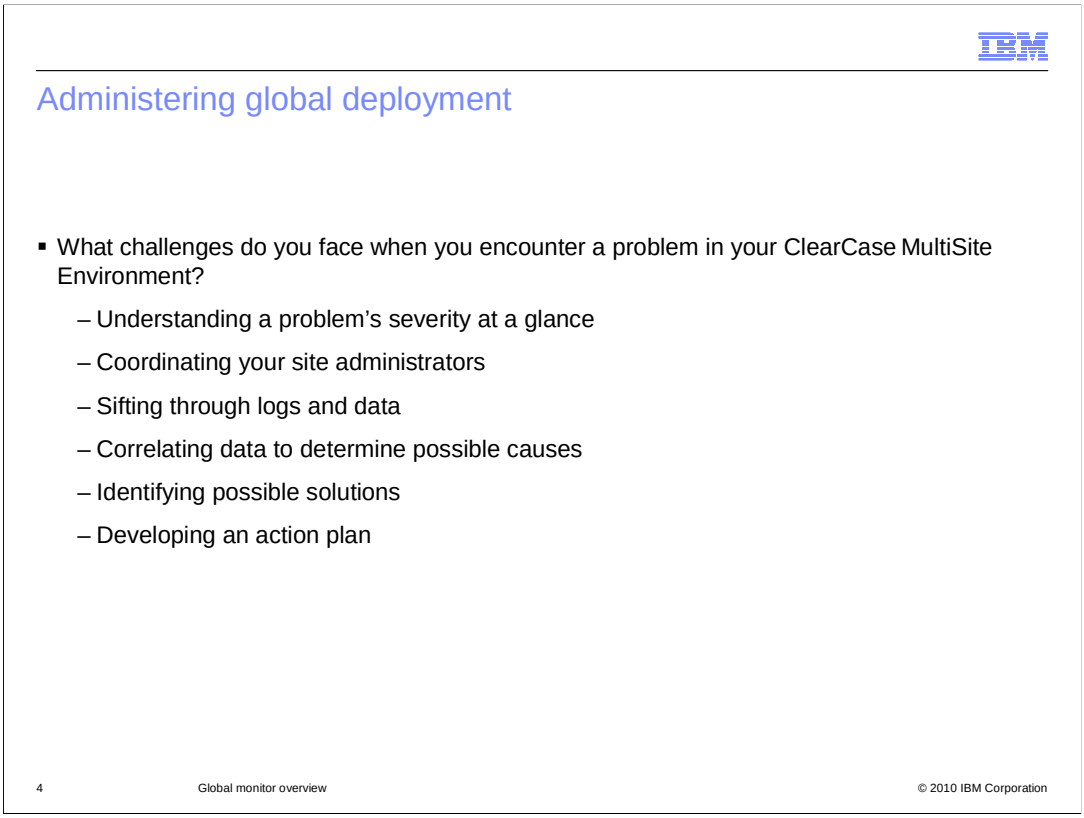
This course covers three topics. It gives an overview of ClearCase MultiSite global monitor; what global monitor can do for you, who and how global monitor can help with. It also covers a deployment architecture of global monitor, and global monitor console quick walkthrough. When you complete this module, you will be able to understand an overview of global monitor. You will also be able to plan global monitor deployment and to walk through the global monitor console.

How to maintain and administer Global deployment



This picture illustrates a real deployment of ClearCase and ClearQuest® MultiSite. A circle represents a geographical site and an arrow represents synchronization of replicas. You can easily appreciate the complexity of the real world deployment of change and configuration management from this picture. Software development these days is not completed in a single office, a single region, or a single country, but the project teams are spread all around the globe in many cases. ClearCase MultiSite replicas have been deployed and dispersed from site to site so as to meet the growing requirement of globally distributed development. Now the question is, how do you maintain and administer this complex deployment?



A ClearCase and ClearCase MultiSite administrator's daily job can never be easy in this complex deployment.

There are various challenges when you encounter an issue in your deployment, such as:

Understanding a problem's severity at a glance?

When an end-user reports a problem, he or she often provides limited information about the issue. You, as a ClearCase administrator, want to determine a problem's severity promptly, but you need to look into the issue further before you have a good sense of its severity or the extent of its impact.

Coordinating your site administrators?

If a host in a remote site is having a problem, you would need to coordinate your remote site administrators to access the remote host.

Sifting through logs and data?

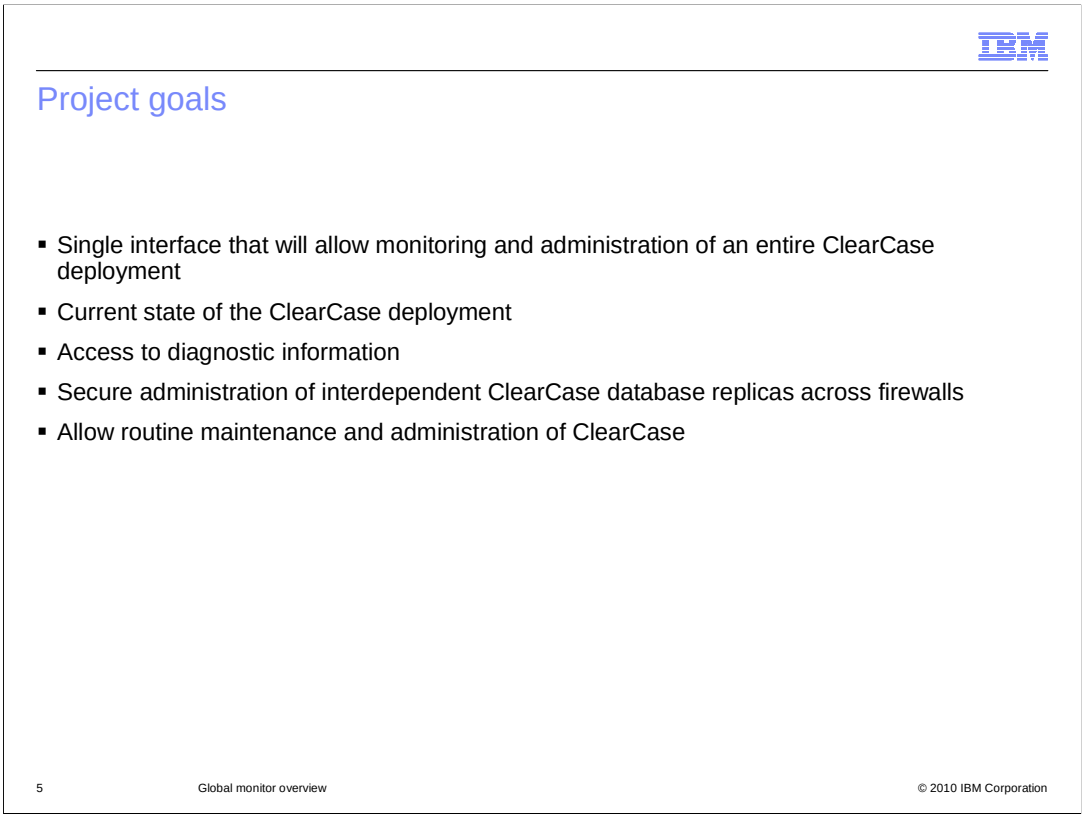
Correlating data to determine possible causes?

Can you easily tell which log file or which data you would need to examine? The issue can be a network issue, an operating system configuration issue, an application issue, or an incorrect operation by an end-user. You might need to look into multiple log files in various levels. And log files can be spread across multiple hosts.

Identifying possible solutions?

Developing an action plan?

To identify a possible solution requires one to have in-depth knowledge and experience with ClearCase administration. In many cases, operating systems knowledge and experience would be required, too. And a single solution may not necessarily be sufficient. For example, you might have to come up with a temporary short term solution in addition to a long term solution.



The goals of the global monitor project are to alleviate these challenges that ClearCase administrators face day to day and to reduce the total cost of ownership of your deployment significantly. Here are the requirements that define a ClearCase administration system.

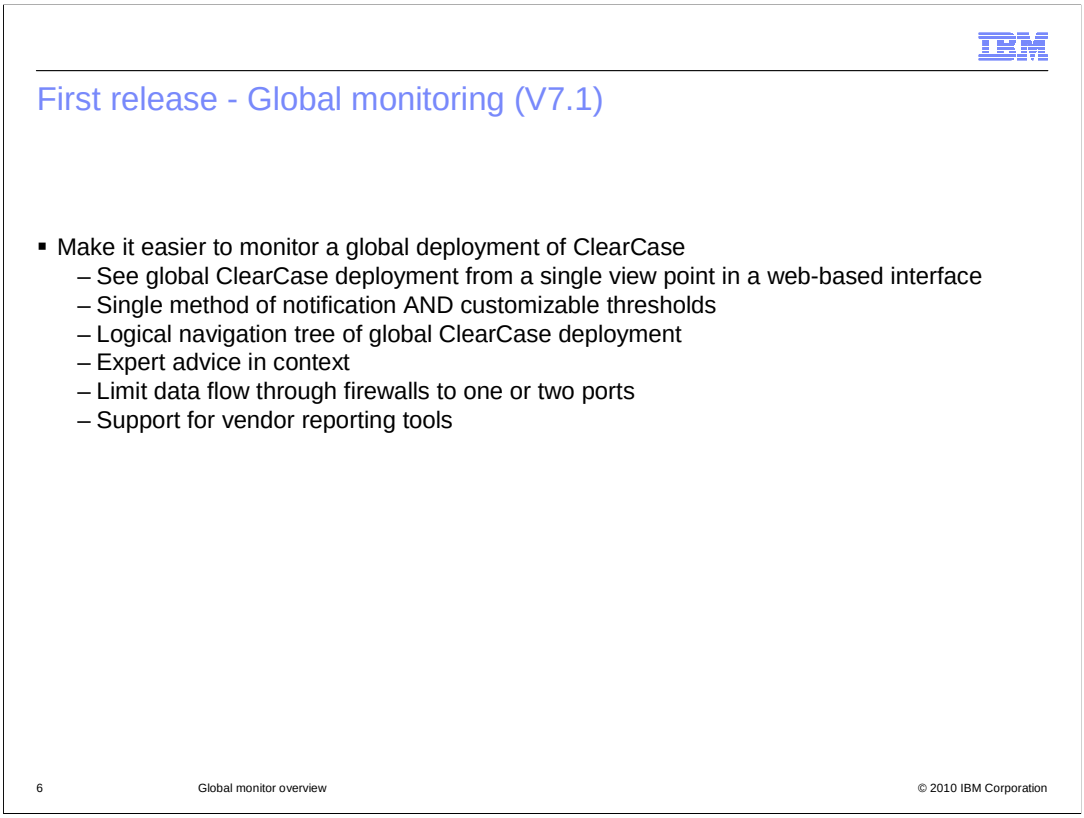
The system would have to provide a single interface that will allow monitoring and administration of an entire ClearCase deployment.

The system would have to report the current state of the ClearCase deployment, including the physical deployment model, critical processes, system resources, and so on.

The system would have to provide access to diagnostic information such as logs, ClearCase-specific files, and so on.

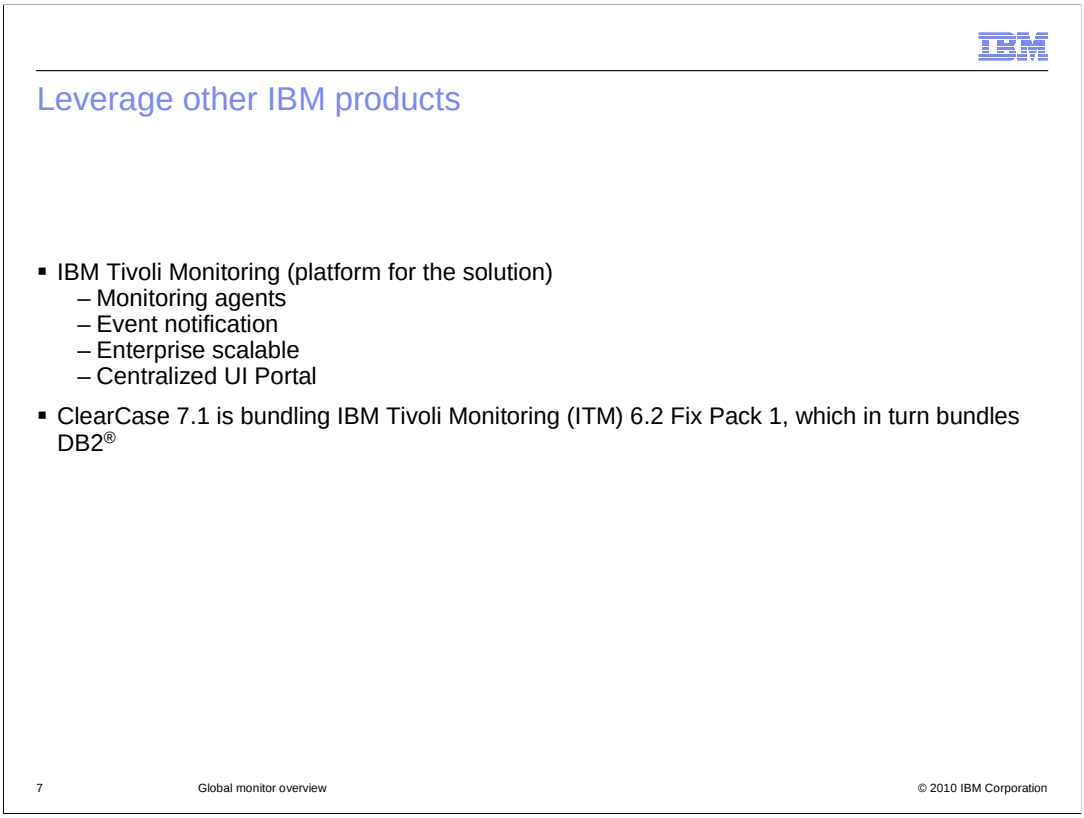
The system would have to provide secure administration of interdependent ClearCase database replicas across firewalls

The system would have to allow routine maintenance and administration of ClearCase such as creation, modification, synchronization and removal of ClearCase VOBs or VOB replicas.



Global monitor was first released as a part of Rational ClearCase MultiSite in version 7.1. The focus of this release is to provide a monitoring tool for your entire ClearCase deployment.

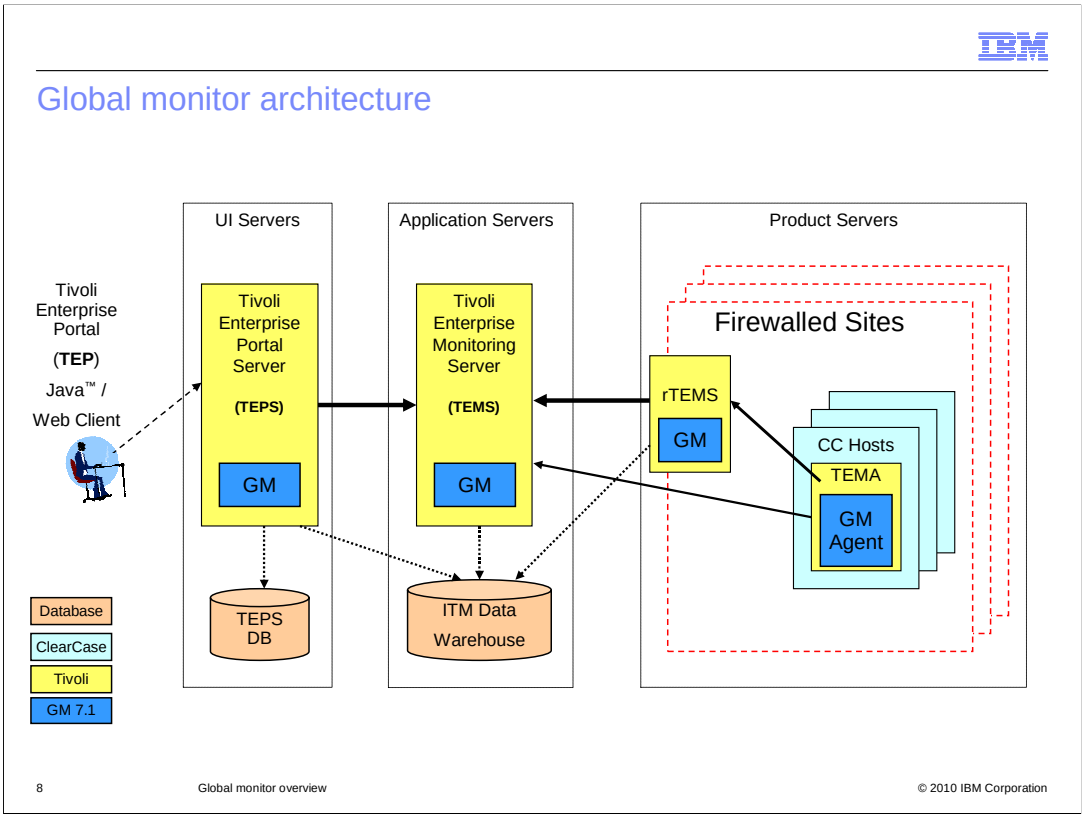
The global monitor allows you to see your global ClearCase deployment from a single view point in a web-based interface. It provides a single method of notification and customizable thresholds. For example, you can receive a text message on your cellular telephone when the system meets your customized thresholds. Global monitor also provides notification for several out of the box events, such as the ALBD server going down, or a scheduled job failure. The user interface provides a logical navigation tree of your global ClearCase deployment. ClearCase hosts are grouped by MultiSite site and ClearCase region. It also provides context-sensitive help documents called ‘Expert Advice’ when the system finds an issue in your ClearCase deployment. You can easily come up with possible solutions by reading the help text. Global monitor allows flexible deployment options, sufficient to pass through firewalls with limited data flow on one or two ports. And it supports vendor reporting tools such as open source BIRT projects or Tivoli® Common Reporting.



Global monitor uses IBM Tivoli Monitoring, which is a market-leading enterprise monitoring tool. IBM Tivoli Monitoring (ITM) provides basic monitoring of infrastructure such as an operating system monitoring agent, or a monitoring server that collects data from agents. It also provides customizable event notification that allows you to receive an e-mail or a text messages on a cell phone. It is enterprise scalable and can monitor thousands of agents in a single monitoring system. And it provides a centralized user interface portal for the entire deployment.

In terms of license, Rational ClearCase MultiSite bundles IBM Tivoli Monitoring, and you do not have to buy a separate license to install and run global monitoring. There are a couple of limitations to this bundled ITM license, but most major global monitor use-cases are covered by this license. You can check the product or support Web site to see it in detail. There is one ITM component named ‘Tivoli Enterprise Portal Server’ that requires IBM DB2, and Rational ClearCase MultiSite also bundles IBM DB2 9.1. Enterprise Edition. This DB2 license is limited to usage by the Tivoli Enterprise Portal Server, and it is not allowed to use this bundled IBM DB2 for other purposes.

If you already have an IBM Tivoli Monitoring system, you do not need a separate system for global monitoring. You can connect global monitor agents to your existing monitoring server and can monitor everything from a single console. Rational ClearCase MultiSite version 7.1 bundles IBM Tivoli Monitoring version 6.2 Fix Pack 1. The existing ITM environment has to be version 6.2 Fix Pack 1 or higher to monitor ClearCase deployment.



This is a logical deployment drawing of global monitor. On the right side you can find ClearCase Hosts in light blue. When you upgrade ClearCase or install version 7.1, the global monitor agent, which is the dark blue box labeled ‘GM Agent’, is installed on the same host. The global monitor agent runs cleartool or multitools commands to collect monitoring data and sends them to monitoring servers.

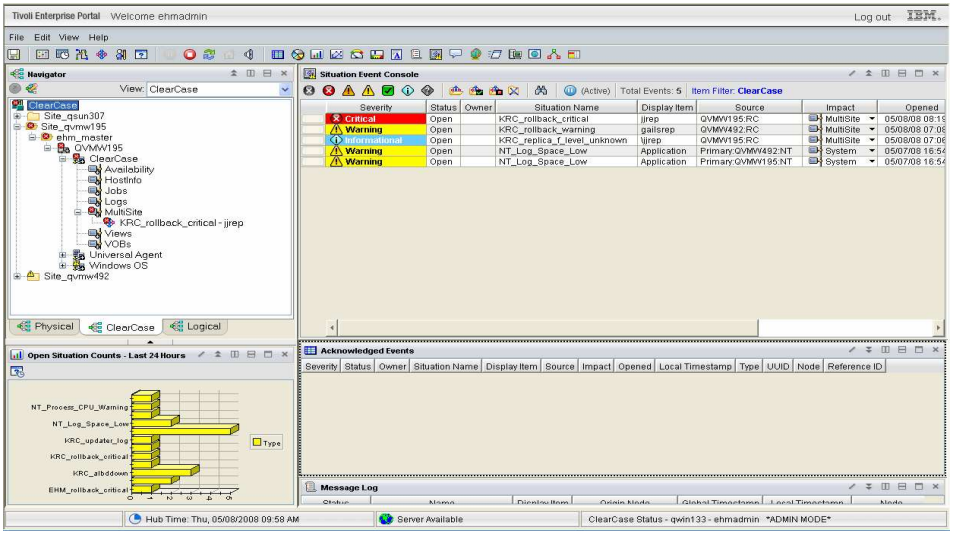
The next component is the Remote Tivoli Enterprise Monitoring Server which is labeled ‘rTEMS’ in the yellow box. This server works as a proxy to pass through the firewall if the ClearCase hosts are located behind one, and it receives data from the global monitor agents and sends the data to the centralized monitoring server. It is recommended to install a remote TEMS for every firewalled MultiSite site to reduce communication from ClearCase hosts over the firewall. An arrow in this picture represents a network connection between components. For example, the global monitor agent connects to a single TCP/IP port of the rTEMS, and the connection is initiated from the global monitor agent. In this way, the remote TEMS connects to a single port of the centralized server in the left side.

The next component is the Hub Tivoli Enterprise Monitoring Server which is labeled ‘TEMS’ in the middle yellow box. This server sends data collection requests to appropriate agents and passes the received data to the user interface server. It also evaluates collected data for event notification. A monitoring agent can be connected to this hub TEMS directly, or can report data through remote TEMS. The global monitor support files have to be installed on both the remote TEMS and the hub TEMS to monitor ClearCase hosts.

The yellow box on the left represents the Tivoli Enterprise Portal Server, which is labeled TEPS. The TEPS is a user interface server and it receives monitored data from hub TEMS and send UI widgets to the clients. It also stores monitoring configurations and user customization such as event notification or user interface layouts. The global monitor support files have to be installed on the TEPS, too, to monitor ClearCase hosts.

At the left most component, you can find the Tivoli Enterprise Portal. This is a centralized console for this monitoring system. There are two types of clients – one is a Java-based desktop client, and the other is an applet-based Web client. They are identical in terms of functionality. The desktop client requires installation on your client machine, while the Web client just needs to be navigated to TEPS server’s URL.

Global monitor console



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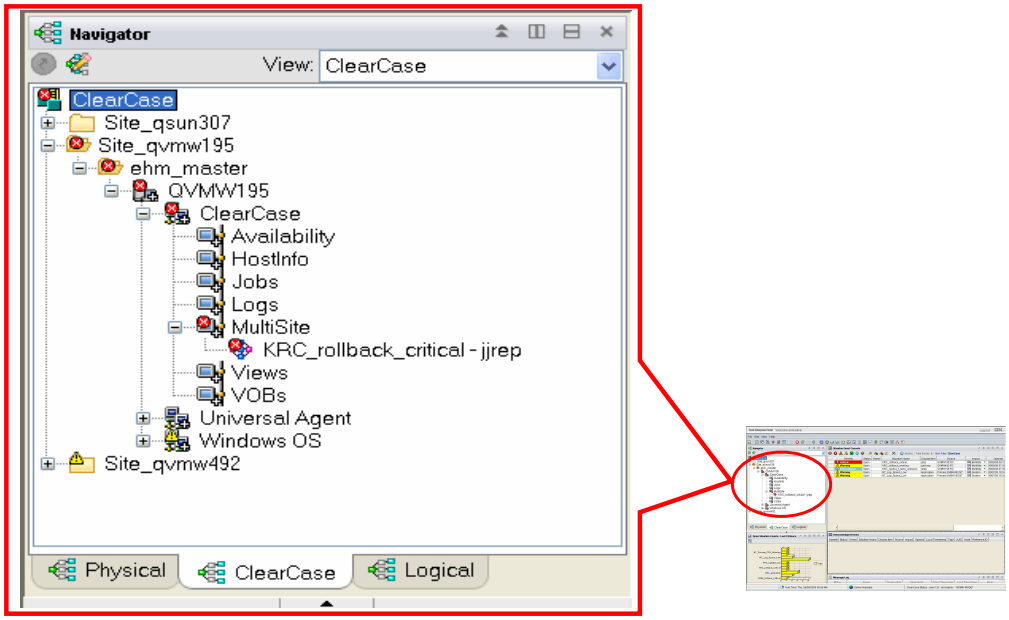
This is the first window you see when you start the Tivoli Enterprise Portal console. As previously discussed, there are two types of Tivoli Enterprise Portal client consoles, but both java-based desktop and applet-based Web client provide the same user interface. The user interface consists of a navigator on the top left, and one or more views that fill the rest of the window. The layout of this navigator and views is called a ‘Workspace’. The navigator is always at the top left of the workspace, and the rest of the window displays monitored information that is associated with the selection of the node in the navigation view. In this screen capture, the top level ‘ClearCase’ node is selected and the views display the health status of an entire ClearCase deployment. For example, the top right view labeled ‘Situation Event Console’ displays all the situation events firing at this moment.

Global monitor console (continued)



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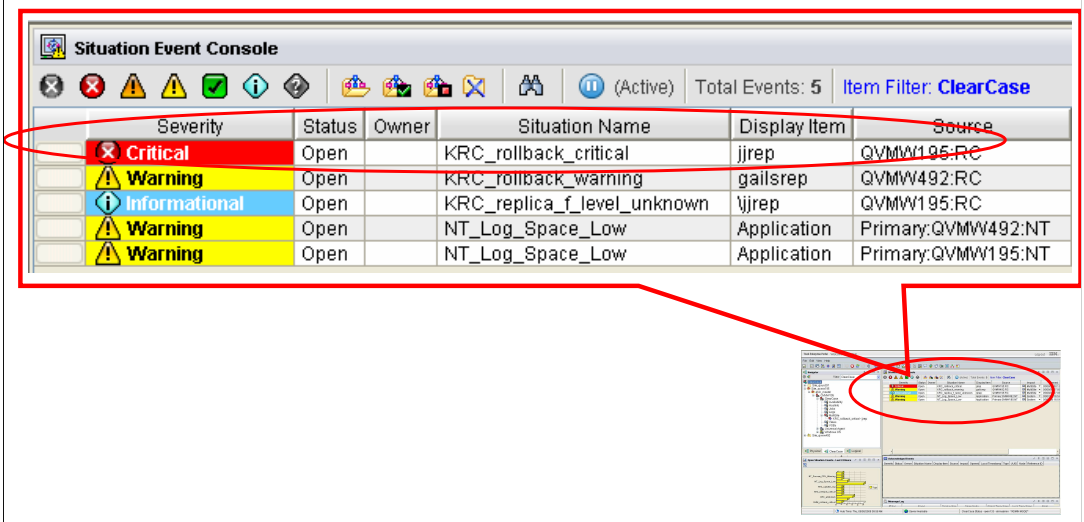
In the Navigator, you will find nodes, like Site_qsun307 or Site_qvmw195, that represent MultiSite sites. Under each site node there are levels, like ehm_master, that represent ClearCase regions. The ClearCase hosts, like QVMW195, are grouped by region, and each host node has child nodes that represent monitoring agents, such as ClearCase, or Windows® operating system. You can find detailed application data or operating system data by navigating to the child nodes of those agents, such as Hostinfo, MultiSite or VOBs. You might find red and yellow small icons laid over the Navigator nodes. These icons represent situation events firing on an application or on a host. A situation event provides a situation workspace that shows the details of the event. In this screen capture, there is a situation event that relates to MultiSite on host QVMW195. You can see a situation workspace labeled 'KRC_rollback_critical – jjrep' under the MultiSite node.

Global monitor console (continued)



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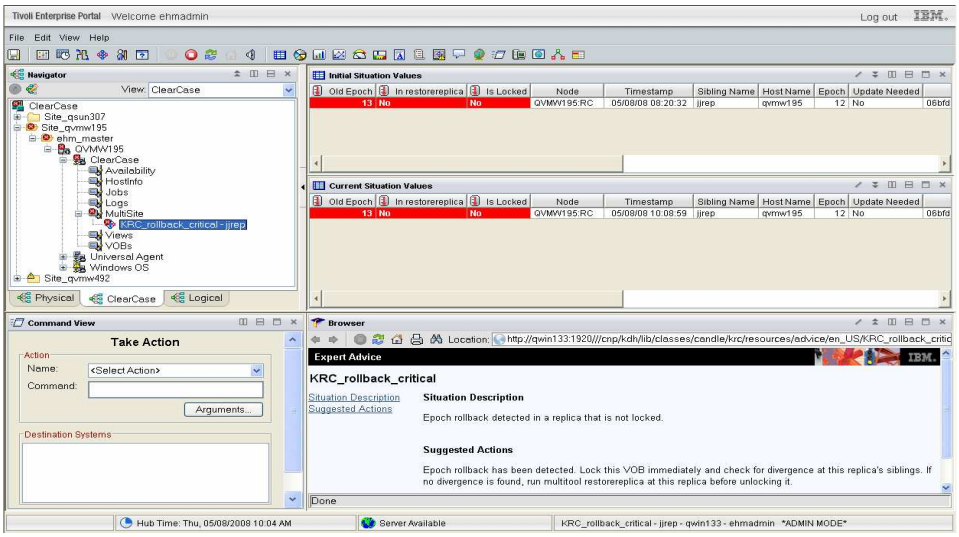
In the top right of ‘ClearCase’ workspace, you will find the Situation Event Console. This view provides all the situation events firing in your deployment. They are labeled by severity and by situation name. You can also find the host name and related data in the Source column and the Display Item column. Again, you can customize to receive e-mail or other notifications when a situation event fires, or you can navigate to this centralized console. You can navigate to a situation workspace by right-clicking a row and select a menu, and you can find more detailed information in the situation workspace.

Situation event workspace



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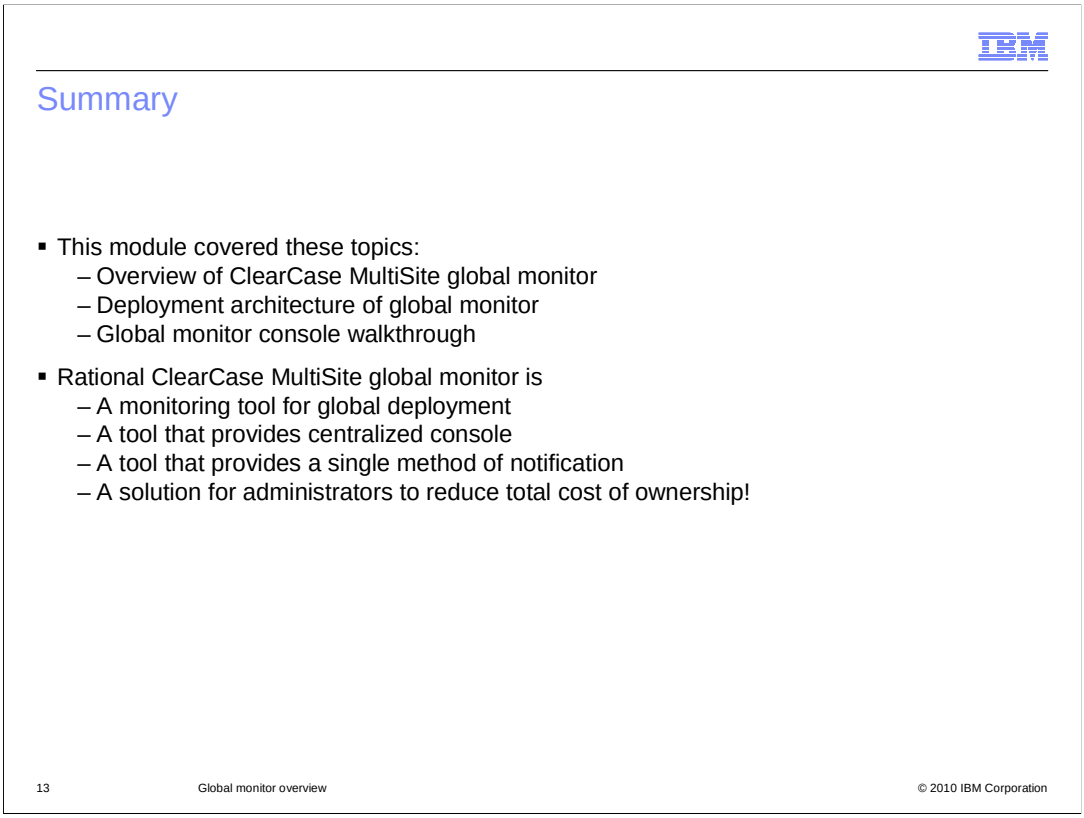
This is a screen capture of a situation workspace. You can reach this workspace when a situation fires by selecting it in the Navigator or in the Situation Event Console. In the top right area, you can find detailed data collected from agent. The first top view displays initial data when the situation event fires, and the second top view displays the current values of the same data set. The bottom right half of the workspace displays the Expert Advice. You can find a context-sensitive help document in this area that helps you to come up with a solution and an action plan easily. In this screen capture, the Expert Advice provides a brief situation description and suggested solution for KRC_rollback_critical situation event.



In summary, this module covered an overview of Rational ClearCase MultiSite global monitor. It also covered a deployment architecture of global monitor and global monitor console walkthrough. Global monitor is a monitoring tool that reports the current state of your global ClearCase deployment. It provides a centralized console that can monitor your entire ClearCase deployment. ClearCase hosts can be located behind firewalls. It also provides a single method of notification and customized thresholds. You can be notified at an e-mail account or on your cellular telephone when the system finds your customized condition is met. Finally, the global monitor is a solution for administrators to reduce total cost of ownership significantly.

Additional resources

- Next steps
  - Plan your deployment of Ration ClearCase MultiSite global monitor
  - Install and configure it for better administration
- List additional resources on ibm.com
  - http://www.ibm.com/software/awdtools/clearcase/multisite/
  - http://www.ibm.com/software/awdtools/clearcase/multisite/support/
  - http://www.ibm.com/developerworks/rational/products/clearcase/
  - https://publib.boulder.ibm.com/infocenter/cchelp/v7r1m0/index.jsp

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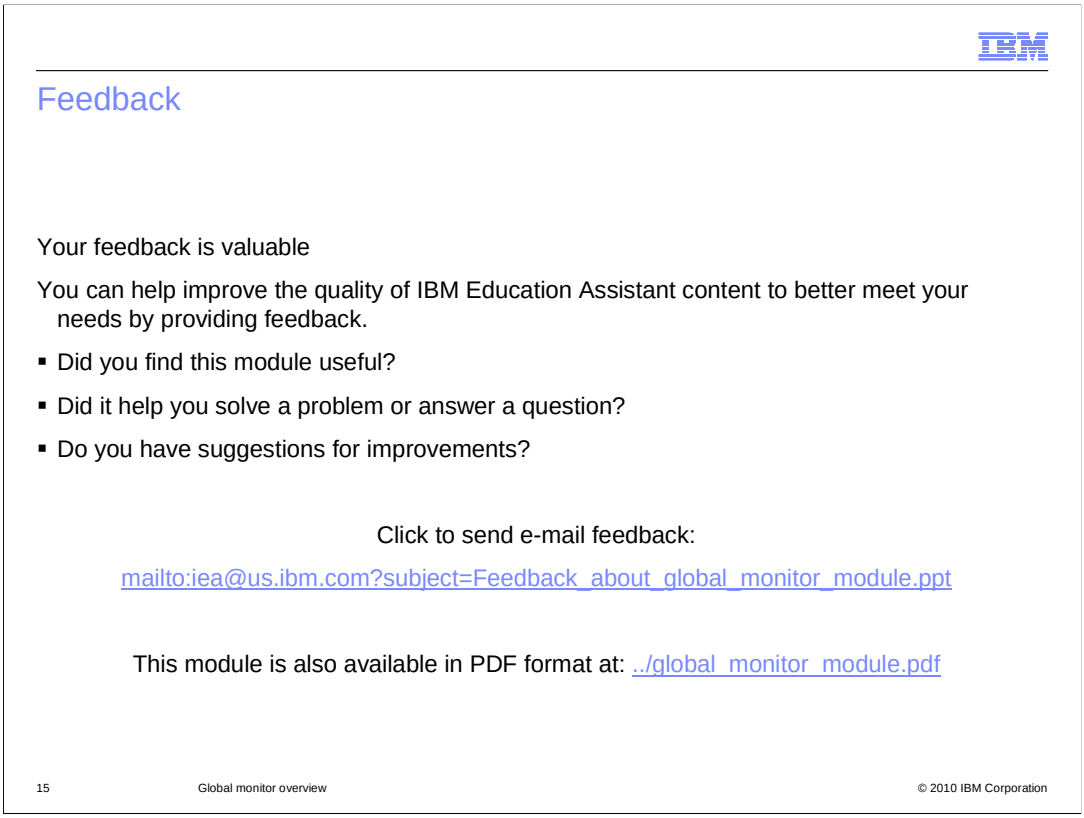
The next steps are to plan your deployment of Rational ClearCase MultiSite global monitor, and install and configure it to administer your entire ClearCase deployment effectively. Additional resources can be found on www.ibm.com, on the ClearCase MultiSite product and support page, ClearCase DeveloperWorks page, and ClearCase Information Center page.



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