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Driving business value with 3D Virtual Datacenters

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Introduction: Extending the power of virtualization with 3D virtual world technologies

Consolidation and virtualization of the enterprise IT resources is the first step toward optimization and simplification. IBM 3D Datacenters can extend the virtualization capability and enables customers to interact with the enterprise in an innovative new way. The 3D datacenter application places users in an immersive environment with familiar 3D datacenter structures such as servers, power equipment, and displays. Since the 3D datacenter is a multi-user virtual world, users can effectively collaborate on elements of the datacenter together. While the 3D datacenter application can be used to manage real datacenters, it can also be used as a modeling and simulation tool.

With the availability of increased workstation CPU and video and graphics capability, and the maturation of technologies from gaming and virtual worlds, IBM has made 3D Datacenters a reality. These centers allow users to experience a near real time awareness of not just a single datacenter, but can also show distributed resources as a single operational set of assets, enhancing the manager's enterprise situational awareness.

Highlights



IBM 3D Datacenter in action

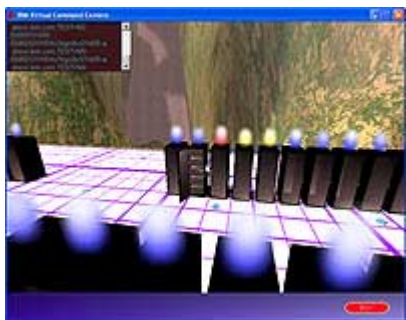
What is a 3D Datacenter?

A 3D Datacenter is an immersive, interactive streaming business application based on virtual world technologies. The 3D datacenter provides a mirror image of an IT environment, comprised of models of equipment and facilities such as servers, racks, network equipment, and power and cooling equipment.

These 3D assets provide more than static models of equipment. The models receive data from live enterprise managers such as IBM Director, Enterprise Workload Manager, Tivoli Omegamon, and MQ Series. With the available SDK, other data sources are easily integrated. By aggregating information from these management systems and presenting it in a familiar 3D space, managers are able to respond quickly to alerts and events on demand.

In addition to monitoring, certain functions such as power control and virtual machine migration can be performed completely in-world. An intuitive query mechanism allows users to quickly locate resources, and context sensitive menus and heads up displays provide additional information and function, such as context sensitive launch of native management tools.

Highlights



Thermal view mode (available with IBM Director and select hardware)

Business Value

The 3D datacenter brings together data from customers systems and renders the many dimensions of the datacenter in ways that are not possible with 2-dimensional business applications. The integrated and consolidated view of the datacenter provides enhanced situational awareness of multiple facets of the center, leading to improved operational efficiencies and new insights into the business.

The 3D datacenter is customizable and versatile, both in the data it receives and the layout and function of the datacenter. This customization is useful when managing live systems, but especially if the tool is used to perform simulations for planning such as space, thermal, power, or other planning needs. Or if the business is oriented toward marketing and branding, customers can include their own brand images, products, and equipment in the center for sales and marketing purposes.

The 3D datacenter also extends the business value of previous investments, by leveraging and extending existing systems management and monitoring infrastructure.

Highlights



IBM 3D Control Room

Single view of the global distributed enterprise

Many enterprise management tools for managing IT resources are focused on a single instance of a datacenter. In today's distributed world, the fragmentation of a manager's understanding of the enterprise operations is a significant challenge. Even after consolidation and virtualization for IT optimization, operators are often required to switch between several different instances of monitoring and management applications for the various systems, as well as the systems that are remote.

IBM 3D Datacenters organize and present information from these systems in familiar and easy to understand ways. For example, the 3D datacenter application can show the consolidated view of 2 or more datacenters and their assets, in a single view. This allows managers to see and understand the collective set of enterprise resources and their individual states, for multiple distributed datacenters.

Highlights



IBM 3D Control Room

Leverage and extend existing facilities and systems management tools

The IBM 3D datacenter uses state of the art virtual world integration middleware to link real-world data center operations data with the virtual world. This middleware can connect to your existing IT and even facilities management systems to make pertinent data available in the 3D world.

This integration middleware, known as the Holographic Enterprise Interface, can be configured to dispatch events, alerts, and other data coming from management systems. The modular and flexible design allows customers to create custom plugins to interact with native APIs and the virtual world. Plugins that access the APIs and perform operations or retrieve data encode the relevant data into a special message format that is suitable for transmission in the virtual world.

Programs, or ‘machinery’ in the virtual world, are able to receive and process these messages, and update their state. Examples of this include animated alerts for affected servers, updating monitoring parameters such as CPU and power utilization, and LPAR configuration.

Highlights



***Datacenter power management
assets***

Datacenter modeling and simulation

With the IBM 3D datacenter, customers can not only monitor and manage live systems, but they can perform simulations and ‘what-if’ scenarios about their enterprise.

Since the 3D assets are data driven, and there is no knowledge of the source of the data (only the structure of the message and its semantic meaning), the datacenter can be driven with mock up or pre-recorded data. The HEI has the ability to record and play back messages from live systems, and can even plug into sophisticated algorithm based models.

The modeling and simulation capability can also be used for exercises in space, power, and cooling planning, training, and disaster recovery scenarios. Users can move assets, interact with them, and drive them with real or simulated data.

Highlights

Collaboration in the 3D datacenter

Since the 3D datacenter is a multi-user virtual world, complete with in-world 3D messaging, multiple users can have a shared 3D experience about aspects of the datacenter, either in simulation or live mode, and carry on active discussions in-world. This shared experience allows technical, business, and even partner personnel, to collaborate on elements of the enterprise datacenter.

The use of commonly understood metaphors ensures increased access to elements of the datacenter. This type of collaboration provides much faster cycle times for analysis and decision making, by viewing operations in near real time, instead of exchanging messages and 2-dimensional drawings via email.

Highlights



IBM 3D asset – z990

3D assets and datacenter styles

There are several 3D assets that are combined to form a 3D datacenter. These include equipment models such as IBM zSeries, BladeCenter, and pSeries for systems. Other elements address the in-world architecture, related to the style of datacenter, such as classical, futuristic, or hybrid.

Many of the assets are ‘data driven’, from data coming from the enterprise. Examples of these types of assets are IBM pSeries 3D models which are able to show 3D LPAR and CPU information, bladecenters whose blades are updated to show CPU and memory utilization, and models of VMware virtual machines. Models for non-IBM and custom equipment can also be made available, and provide similar features and functions, provided APIs are available for the native systems.

There are 3 main types of datacenter, each of which can be customized according to specific needs. The first is a contemporary datacenter on a raised floor, which is contained within a standard building. The second is the IBM Virtual Control Room, which features sections for central monitoring via dynamic screens (charts, metrics, and summary information), a section for

Driving business value with IBM 3D virtual datacenters

hardware, and a section for power or facilities (HVAC, etc). The third type is a futuristic operations center, featuring a data tower, observation platform, catwalks, and large display banks.

Highlights

How it works

The IBM 3D datacenter uses a state of the art 3D infrastructure to create the virtual world environment. The server component manages the virtual world, and users log in with clients and are brought into the virtual world. Once logged onto the 3D datacenter server, they can interact with other users and the machinery in the center.

The datacenter is driven by the data from the aforementioned virtual world integration middleware, or Holographic Enterprise Interface (HEI). Since the 3D datacenter can represent multiple centers, each physical datacenter must have at least one instance of the HEI. These HEI instances transmit messages over the private network using internet standard protocols (XML over HTTP) to the 3D virtual world server, where they are delivered to the appropriate 3D asset for processing.

Driving business value with IBM 3D virtual datacenters

Highlights



How to buy

IBM 3D datacenters are available as a services offering through the IBM Global Technology Services IT Optimization Business Unit. IBM 3D datacenter professionals will perform a short assessment of the datacenters, prepare a set of options, and work with you to select the best 3D datacenter. The team will then customize, deploy, and test the 3D datacenter infrastructure.

Contact your IBM Client Representative today, or send an email to mosias@us.ibm.com.