



IBM Deep Computing Visualization version 1.4

Highlights

- ***Secures access to information with zero file data transfer.***
- ***Offers improved usability to probe massive stores of complex data through scientific visualization and interpretation, and speeds time to insight.***
- ***Improved team performance increases the ability to collaborate with colleagues and partners in real time, anywhere.***
- ***Greater operating system and platform support enables you to scale the visualization solution while protecting existing IT investments.***
- ***Simplified installation, configuration and maintainability let you scale up and out on demand.***

The Globally Integrated Enterprise needs to unlock the power of their data, using the secrets stored in their databases to help deliver innovative business value. Whether it is optimizing revenue, responding more effectively to customer needs, or mitigating risk and uncertainty, companies need a way to literally “see and experience” their data to derive breakthrough insights.

Visualization is a key to making these breakthroughs. But without a flexible visualization infrastructure that can scale up and out without being price prohibitive and proprietary, companies cannot obtain real-time decision support. In addition, teams of experts from different disciplines might be down the hall, but what if they are across the world? Then how do you share data and insights?

IBM® can help. With IBM Deep Computing Visualization (DCV) v1.4, teams can collaborate on and see—even around the globe—the visual representations of all

appropriate data no matter where it was collected or is located. Unlike most visualization solutions that require specialized, proprietary and monolithic infrastructures, the IBM Deep Computing Visualization solution offers a cost-effective alternative approach. Using IBM graphics-enabled servers and innovative visualization middleware, DCV uses the capabilities of the latest generation of commodity graphics and network adapters to create an extraordinarily flexible, enterprise-class and powerful visualization solution.

This means that IBM graphics-enabled servers running Linux® or Windows® XP on x86-64 architectures coupled with extreme-class graphics cards can run IBM DCV middleware, in conjunction with OpenGL-based application software, to provide high-performance, high-resolution scientific visualization at a reasonable cost. A solution based on open standards and lower-cost, off-the-shelf hardware means that experts can quickly

IBM Deep Computing Visualization

visualize growing data volumes and derive insights that allow for better decisions—no matter where they are.

New DCV framework for faster time to insight

With Deep Computing Visualization, high-end graphical images can be created in different visualization modes:

- *Scalable Visual Networking (SVN)*
- *Remote Visual Networking (RVN)*
- *A combination using all the features of both SVN and RVN*

SVN supports multiple high-resolution monitors or projectors for scalable immersive, stereo visualization.

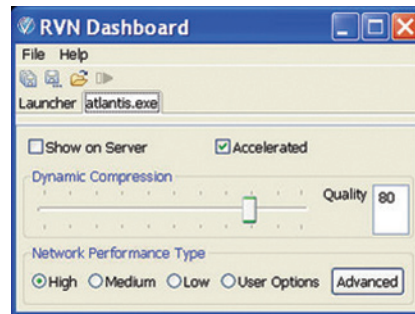
RVN will distribute graphical images to remote (collaborative) clients called endstations. This feature enables “thin clients,” such as laptops, to use all of the processing power and memory of the latest top-of-the-range graphics hardware and central application servers. All graphics applications and data are kept and managed securely in central locations, while avoiding unnecessary, costly and potentially insecure data transfer to remote collaborators. DCV also enables both modes, SVN and RVN, to cooperate seamlessly, a mode that we call Collaborative Visual Networking (CVN).

The possibilities with a pluggable framework are endless.

Dynamic compression algorithms allow RVN to compensate for low-bandwidth or high-latency links by increasing compression levels for dynamic images and then delivering sharp static images. All of this is under user control.

IBM Deep Computing Visualization enables you to do more with less:

- *More data: Handle today’s large and distributed data volumes and tomorrow’s exponential data growth.*
- *More eyes: Give more experts secure access to the visualizations with a rich set of security features, and local*

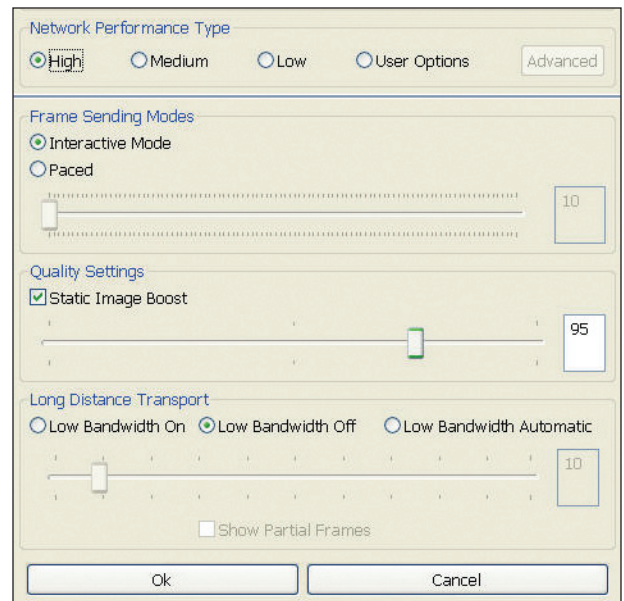


and remote collaboration tools and environments.

- *Less worry: investment protection.*
- *Less data transfer.*
- *Less risk.*

Improved performance and usability

DCV employs a unique middleware that manages the graphics and network resources of graphics-enabled clustered server nodes. The middleware virtualizes the computing, graphics processing, memory and storage, alleviating bottlenecks in the graphics pipeline. Using a seamless intercept method, the middleware also distributes the graphics context from the application to the nodes. The nodes perform the requested processing and pass the partially rendered images back to the middleware, which then optimizes the transmission and assembly of complete visualizations to appropriate display or projection technology. The seamless intercept method means that applications do not have to be changed or reprogrammed.



IBM Deep Computing Visualization

This architecture allows the DCV solution to render scientific visualizations to large immersive or tiled displays (with SVN), to graphics-enabled servers and workstations to remote thin clients (with RVN). And with RVN, only pixels have to be broadcast throughout the network, so your valuable data can remain secured inside a data center. Since the rendering is performed centrally, all users can expect high performance no matter where the visualization is being displayed.

With DCV 1.4, IBM has introduced a pluggable transport layer for SVN, enabling support for different network technologies and improved interactive performance. In addition to favors of MPI (Message Passing Interface) transport, DCV 1.4 also offers an SDP (Session Description Protocol) socket transport for InfiniBand® and other network architectures. The new solution removes extra MPI overhead and simplifies system administrator tasks (including licensing).

In addition, DCV 1.4 also delivers improved usability with a robust application startup for Linux-based systems. Users will not need to spend time configuring their graphics-enabled servers and specifically complex setups for the SVN (or RVN) environment. With a single click, a user can enable SVN capabilities, turning

the immersive or tiled displays of SVN into another visualization option.

DCV offers:

- *More functionality: Supports efficient decision-making processes made up of rich sets of data exploration functions.*
- *More flexibility: Provides modular, configurable systems based on virtualized hardware and software components and standards.*

DCV helps you accomplish these tasks more efficiently:

- *Less setup, less installation hassle*
- *Fewer license costs*
- *Less support overhead*

Scale solutions without sacrificing flexibility

The IBM Deep Computing Visualization solution is built on rack-mounted IBM workstations or graphics-enabled System x servers with NVIDIA graphics adapters providing OpenGL rendering capability. Running on Linux or Windows XP (either 32-bit or 64-bit editions) with Gigabit Ethernet or InfiniBand cluster interconnects, DCV middleware manages one or more physical displays as a single logical display and controls the high-performance transmission of graphics commands to appropriate rendering nodes in a manner that is transparent to the user and the application. This architecture enables you to manage

your hardware, applications and data centrally and offers the ability to scale to fit your needs.

Hardware upgrades and the addition of nodes to the visualization cluster are transparent to applications, meaning that you can scale your DCV solution as your visualization needs grow. This type of resource virtualization also helps protect your investment by shielding your applications from hardware changes and technology decay.

Deep Computing Visualization solutions based on the Linux operating system already perform business-critical visualization and collaboration tasks for many organizations around the world. Last year, IBM introduced native 32-bit Remote Visual Networking (RVN) for Windows XP environments. With DCV 1.4, IBM now provides native 64-bit Remote Visual Networking as well as Scalable Visual Networking (SVN) for both Windows XP 32-bit and 64-bit editions, allowing Windows-based applications to be seen on extremely high-resolution cinematic or immersive displays.

These are just a few of the ways that DCV can help you improve the efficiency of your visualization applications:

- *More flexibility: Provides complete portability, running on multiple platforms*



- *Lower cost: Rely on commodity-based solutions that provide leading price performance, scalability and security*

Improved ease of use, scaling on demand

DCV helps the globally integrated enterprise increase their collaborative capabilities at a desirable level of price to performance. With SVN, face-to-face users can immerse themselves into their data to obtain insight and decision support, while RVN enables team members to participate in the same sessions at remote locations. Additional savings and security are achieved through the consolidation of technical workflows/workloads into shareable resources for centralized, controlled access to applications and data.

DCV runs your existing OpenGL-based applications unmodified to deliver both SVN and RVN capabilities. Visualizing scientific data is as simple as pointing and clicking. Version 1.4 offers a single dashboard to control RVN settings that can support multiple applications on a single desktop, has a platform native look and feel, and is keyboard accessible.

With a best practices scientific visualization solution, your teams around the globe can collaborate on and see the visual representations of all appropriate data no matter where it was collected or is located. With effective data representations, you can see patterns or find correlations to help you make good decisions quickly and with a greater degree of confidence in your decisions.

IBM Deep Computing Visualization provides a scalable, collaborative middleware infrastructure to help support and enhance the graphics functions of OpenGL-based software applications. A Deep Computing Visualization implementation is an economical and highly adaptable solution designed with a commitment to interoperability based on open standards.

For more information

To learn more about Deep Computing Visualization, visit:

ibm.com/servers/deepcomputing/visualization/

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10-07
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