

CHALLENGE	SOLUTION	BENEFITS
GWDG, which serves the Max Planck Society and the University of Göttingen, wanted to increase the computing power available for its users. Dell was selected to provide a High Performance Computing Cluster (HPCC) and wanted to work with a partner to deliver the management services required.	DPS delivered the HPCC, networking, and advanced management tools.	DPS was able to offer the GWDG its own 'best-of-breed' hardware with the best services and software in the market. The GWDG was able to obtain the best price to performance ratio and acquire the advanced management tools it required to serve the Max Planck Society and Göttingen University.

DPS + Scali = Success for University

Dell Professional Services (DPS) and Scali Work Together to Deliver a High Performance Computing Cluster to German Scientific Institutions

Challenge

In today's world, both businesses and educational institutions are under increasing pressure to find ever faster and more efficient methods of fulfilling their remits. Technology, and specifically raw computing power, is often a key enabler in delivering this.

The Max Planck Society is the largest scientific society in Germany. It consists of around 80 institutions and has a strong reputation for working on highly specialised subjects such as the modelling of fluid dynamics and other sophisticated mechanical engineering projects.

To perform these tasks more efficiently it needed to expand the computing power at its disposal. To do this, the GWDG wanted to purchase a high performance computer cluster (HPCC). An HPCC draws on the principles of grid computing. This is where a large number of inexpensive computers, based on industry-standard technologies, are joined together to deliver greater computing power than a dedicated mainframe, but at a far lower cost.

In choosing a supplier for its HPCC, the GWDG was looking for more than just an excellent price to performance ratio. It was also essential that it could easily manage, maintain and monitor the cluster. Furthermore it wanted the HPCC to form an integral part of other HPCCs at Göttingen University and the Max Planck Society. It then wanted to be able to partition them for use by different departments and assign computing resources as desired. This would enable it to make the most efficient use of the hard

ware, by assigning under-utilised HPCCs to departments when they needed more processing resources.

Professor Hartmut Koke, Vice President of the GWDG, says: "Not only do we need to have large amounts of computing power at our disposal but it's important for us to be able to distribute that power where we need it, when we need it."

Solution

In March 2003, the GWDG looked for companies to supply its HPCC. Koke says: "We engaged in extensive discussions with 10 suppliers but it was Dell that had the most appealing offer. We knew that it could offer the best hardware solutions, but it also became clear that we would get the best overall solution if Dell worked with a partner."

To enable it to deliver the complete package of hardware and the crucial management software, Dell employed its Professional Services (DPS). DPS offers competitively priced services as components in an overall package. It does this by working with carefully selected partners to deliver the best services to its customers.

Koke says: "We didn't want to go to a company that could only provide part of the solution. However Dell convinced us that it could provide a complete package by working with its partners". For the GWDG cluster, Dell wanted to work with Scali to draw on its expertise with Linux clusters. The companies have a close relationship having worked successfully together on previous projects.

Dell won the bid to supply the HPCC solution to the GWDG in May 2003. The HPPCHPCC consists of 54 Dell PowerEdge™ 2650 servers, running Linux and powered by dual 3.06Ghz Intel®



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– Professor Hartmut Koke
Vice President, GWGD

Pentium Xeon” processors. These were shipped to the GWGD in August 2003, taking just one week to install. DPS provided deployment, training, benchmarking and ongoing support services around the HPCC environment.

Once Dell had completed the initial hardware installation, it brought Scali’s expertise to bear on the project. To meet the requirement for high-speed communication between the nodes, Scali implemented Scali MPI Connect™ message passing interface (MPI) software running on low latency, SCi Dolphin networking components.

Scali implemented its Scali Manage™ software, which was critical in making the multiple servers act as one large supercomputer. It enables the GWGD to manage the cluster, integrate it with the Max Planck and Göttingen University datacentres, and allocate computing resources as required.

Bringing the ‘Direct Model’ to Services

DPS works by mirroring the successful principles that Dell employs in its hardware business with its innovative direct model and efficient manufacturing and supply chain management. Combining with selected system integrators, DPS delivers high-quality and cost-effective services that apply these core principles to operate an efficient services value chain. The DPS offerings range from storage solutions and server migration, to Linux and HPCCs, as and when it needs to.

Göttingen University and the Max Planck Society now enjoy the benefits of a HPCC that is rated in the top 300 most powerful computers in the world. Koke says: “We are very happy with the computing power now available to our users and the manageability on offer.”

Patrick Cowden, Services Director, Dell Germany says: “Operating free from the burden of large service costs and employing automated service delivery, works in our customers’ favour. While other vendors can only deliver particular services, Dell closely examines the needs of its customers and works with the best partner for the solution. We can then offer an optimal match of the best hardware with the best services.”

A Perfect Match

Dell’s relationship with Scali is a perfect example of this approach. Ruediger Warns, General Manager, Scali Central Europe says: “The relationship between Dell and Scali is very synergetic and was formalised in late 2002. Dell is the leading hardware company and we are the number one solution provider in the HPCC environment. Together we are an unbeatable team.”

Cowden says: “Dell only chooses to work with companies that can really deliver and Scali is just such a company. In the cluster space, price really makes a difference so the two working together makes for a very attractive proposition.”

DPS acts as the business aggregator and takes ownership and responsibility for the entire project delivery. Koke says. “We were very impressed by the way Dell and Scali operated together. Originally we were worried about working with more than one partner. However, their co-operation was so seamless, it was like dealing with one company. The responses to our queries were always very timely and though we knew the technology was reliable, this gave us added confidence that problems would be resolved rapidly and comprehensively if they arose.”

Reducing Services Complexity

DPS reduced the complexity of the solution for the GWGD. Dell was able to offer all the services it required without it having to go through a third party. Koke says: “The industry has seen how successful the Dell model has been at lowering hardware prices, and it can now offer the same advantages for services. The direct model means that you only have to go to Dell, which makes things easier for customers such as us.”

A Reference Project

Following the success of the project other Max Planck and university institutes have decided to standardise on the Dell HPCC platform with Scali Manage™ software and components.

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