



Journey to the stars starts at the desktop

The Center for Space Simulator Development and Personnel Training in Russia maintains its premier reputation for astronaut training with the help of an end-to-end virtualized solution



Customer profile



Company The Center for Space Simulator Development and Personnel Training (CSD&PT)

Industry Technology

Country Russia

Website www.simct.ru

Business need

To remain a leader in training astronauts for space agencies around the world, CSD&PT wanted to boost its programmes using virtualized desktops.

Solution

CSD&PT deployed a Dell end-to-end virtualized desktop based on Dell PowerEdge servers, Dell PowerVault storage and Dell Networking switches with both Dell Wyse thin and zero client endpoint devices.

Benefits

- Maintains status as leader for training astronauts
- Achieves performance targets while reducing IT costs
- Promotes innovation with flexible access to systems
- Cuts energy use by 85–90 per cent on endpoints
- Helps attract customers from space agencies worldwide

Solutions at a glance

- Cloud Client-Computing
- Data Center Virtualization

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Valentin Shukshunov, General Manager, The Center for Space Simulator Development and Personnel Training (CSD&PT)

There was a time when the U.S. and Russia were the only countries that ran space programmes. But today countries including Japan, China and India have launched their own initiatives, as has Europe with its European Space Agency. And with greater interest in space exploration has come a growing demand for astronaut training.

The Center for Space Simulator Development and Personnel Training (CSD&PT) began life in Russia in 1993. The organisation focuses on the development of simulators and training systems for trainee astronauts worldwide. It has developed more than 30 specialised training solutions, including hardware and software systems for supporting Russian and international astronaut crews. Today, it continues to search for new ways to integrate the latest technologies into its programmes.

The search for stellar IT

CSD&PT wanted to ensure it had the technology to match the quality of its staff and satisfy industry requirements. But with tight budgetary constraints, it had to use existing resources as much as possible. It looked to update parts of its ageing IT infrastructure and enable continued development using a solution that was cost-effective and easy to manage. Attention was focused on the PC infrastructure that supported training simulators, some of which were used to train astronauts for the International Space Station. The PCs were getting old and lacked the performance to support rich media graphics. And, when CSD&PT looked at the infrastructure more closely, it realised how power inefficient the PCs were. They were also time-consuming to manage. Stakeholders decided to replace the existing environment with a virtual desktop infrastructure (VDI), including endpoint devices and a back end infrastructure complete with servers, storage and networking.

The CSD&PT experts looked at a VDI proposal from HP whilst visiting various conferences and a Dell Solutions Forum in Moscow. Dell was in a strong position to win the VDI project because CSD&PT was already a Dell customer. The center had purchased servers and client devices from Dell, and they were happy with the quality of its solutions and services. Vadim Yanushkin, Deputy

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Vadim Yanushkin, Deputy to General Manager on Technology Development, Center for Space Simulator Development and Personnel Training CSD&PT

Products & Services

Services

Dell Deployment Services

Hardware

Dell PowerEdge R520 and R720 servers with Intel Xeon processors

Dell PowerVault MD3200i storage array

Dell Networking 6224 and 6248 switches

Dell Wyse Z90Q7-7490 thin clients

Dell Wyse P25-5020 zero clients

Dell P2412H monitors

Software

Dell Wyse Device Manager (WDM)

MD Storage Manager

Partner

VMware Horizon View

Citrix XenServer

Citrix XenDesktop

NVIDIA GRID K2 boards

to General Manager on Technology Development, CSD&PT, says: "It was clear to us that a VDI from Dell was a good option. We are a small team and we wanted to minimise administration and concentrate on developing our training systems." Around 90 per cent of all applications at CSD&PT are built in-house. Yanushkin continues: "Our time needs to be spent providing world-class software for training astronauts."

Alexander Snytko, Engineer at CSD&PT, comments: "We were impressed with Dell support in Russia. The Dell partner channel is also professional and our experience of Dell partners is positive."

Developing astronaut training with end-to-end solution

The proposal of a Dell end-to-end solution, supported by Dell channel partners Ubtec and VAD WIAT (today a part of Merlion), proved to be stronger than anything HP could offer. Alexey Taktarov, General Manager of Ubtec, says: "We helped CSD&PT choose and test Dell Wyse solutions that support 3D graphics to ensure the simulators delivered their full value."

Elena Sorokina, Team Leader, Dell Wyse, Merlion, adds: "We're proud to have helped CSD&PT update its IT infrastructure on world class IT solutions. We have contributed to the development of the aerospace industry in Russia."

The Dell end-to-end solution included servers, storage and networking, as well as Dell Wyse thin and zero clients with management through Dell Wyse Device Manager (WDM). "The strength of the Dell solution was that we met all of our VDI requirements through a single vendor. It ensured tighter system integration while simplifying support and ultimately reducing costs," comments Alexander Ternikov, Engineer at CSD&PT.

After a successful proof of concept, CSD&PT proceeded with the deployment of its Dell solution.

It took just four months to implement the back end infrastructure as well as to start the rollout of the endpoint devices. "We saw good collaboration between all parties and went into the deployment stage with a lot of confidence," remembers Vadim Yanushkin.

Maintaining status as leader in space flight programmes

CSD&PT is more certain than ever that it can meet the training requirements of today's and tomorrow's astronauts. What's more, the Dell end-to-end VDI will help the organisation maintain its reputation as a leader in the field, allowing it to concentrate on developing its training facilities. Alexander Ternikov says: "Our work is to develop efficient and user-friendly technical tools for training astronauts, not manage IT. With our Dell VDI solution, we can meet our goals more effectively and deliver well trained astronauts for space flight."

Valentin Shukshunov, General Manager of CSD&PT, comments: "A rich experience by CSD&PT engineers while developing simulator systems led to successful results and positive feedback, along with the ability of the team to efficiently apply up-to-date technologies of leading vendors. Many things were done for the first time, such as the use of virtualization technology for server graphics, the running of specialised simulator software, and the use of thin clients for desktops. Combined with our existing technology, there's great potential for developing next-generation integrated training simulators for preparing astronauts."

No longer sci-fi – a VDI that's easy to manage and simple to scale

To maximise the performance of the VDI, CSD&PT built the back end infrastructure on a Dell PowerEdge platform. It deployed a cluster of Dell PowerEdge R520 servers with Intel® Xeon® processors, with one gigabit Ethernet (GbE) and two 10GbE network interface cards. In addition,

it also installed a cluster of Dell PowerEdge R720 servers with Intel Xeon processors. In this cluster, each server has 96 gigabytes of RAM and two NVIDIA GRID K2 cards along with one 1GbE and one 10GbE network interface card. The Dell PowerEdge R720 server cluster supports the rich media graphics-based simulators while the R520 servers deliver less graphics-intensive applications. "We were able to select different Dell PowerEdge servers to meet our varied requirements," remembers Alexander Snytko.

For storage, CSD&PT implemented a simple-to-manage solution and avoided the expense of additional training. It chose a Dell PowerVault MD3200i storage array with around 20 terabytes of capacity. The solution appealed to CSD&PT because of its reliability and speed of performance thanks to the array's 10GbE ISCSI connectivity. Furthermore, the solution was easy to scale, enabling the team to add more capacity in the future by connecting additional disk enclosures. Finally, MD Storage Manager made administration simple. "We can reconfigure, expand and maintain our Dell PowerVault MD array without any downtime, helping us to maximise the availability of our training facilities," says Alexander Snytko.

To ensure CSD&PT staff and trainees gained a consistently good VDI experience, the Center deployed Dell Networking 6224 and 6248 with 10GbE throughputs. Combined, the switches minimise latency and give the Center the flexibility to scale the network over time to support expansion. Alexander Ternikov comments: "We gained a truly end-to-end VDI solution from Dell. Each element is designed to deliver a great experience to end users and keep down management costs."

Cutting energy use by 85–90 per cent on endpoints

When the CSD&PT experts look across the desktop infrastructure, they see a landscape that saves the Center significant IT resources. They know



that every rouble possible is going into the training programmes, driving innovation and enhancing the quality of service. That's because the Center is swapping out its PCs for a combination of Dell Wyse Z90Q7-7490 thin clients and Dell Wyse P25-5020 zero clients. Along with the endpoints, it's also deploying Dell P2412H monitors. A key feature for the Center experts from the start was the power efficiency of the devices. They consume around 85-90 per cent less energy compared with the Center's old PCs. "To reduce costs while improving services is a key driver for all organisations, and ours is no different. With our Dell end-to-end VDI, we are achieving these goals, lowering power usage substantially," confirms Vadim Yanushkin.

Promoting innovation with flexible access to systems

Astronaut trainees and users of the Center are gaining better access to its systems to enhance their progress using the Dell endpoints. The devices connect to multiple VDI software environments, including VMware Horizon View, Citrix XenDesktop and Citrix XenServer. Windows 7 is the main operating system for the virtual machines. Trainees use the Dell Wyse endpoints to access the 3D-based graphic applications for simulations and simpler programs, which teach them to analyse space data.

The beauty of the VDI system is that the infrastructure is highly flexible and endpoints can be moved around for different activities. Also, trainees and staff access the VDI through a Dell Wyse software client running on

CSD&PT laptops. "We can quickly adapt our training environments to emerging needs and be more innovative in the way we train our astronauts using our Dell end-to-end solution," says Alexander Ternikov.

Helping demonstrate success to global clientele

The CSD&PT team has no doubts that desktop administration costs have been cut significantly. It's already well documented that VDI solutions are easy to control through centralised, software-based management. To make things as simple as possible, the CSD&PT team uses Dell Wyse Device Manager (WDM). The software allows CSD&PT to configure, monitor and manage its endpoints through a single interface. It enables asset tracking, policy management and IT support, and can scale up to thousands of endpoints while running on a single server. CSD&PT expects to roll out Dell Wyse clients on a large scale in the next few years, but for now the Dell solution is effectively supporting astronaut programmes and highlighting the Center's commitment to future development. "We can demonstrate our facilities to various companies and agencies around the world to show them that our space programmes are among the best in the world using our Dell solution," confirms Vadim Yanushkin.



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