Consolidation of the IT environment as a key to effectiveness

Not long ago, T-Mobile Slovakia's swiftly-growing business posed a challenge also for its IT managers. Growth in the number of customers and system users, and higher demands on infrastructure for high availability and performance may cause certain complications in the future. TEMPEST and the T-Mobile information systems operations department devised a solution that adapted the infrastructure to changing business needs and helped to save operating expenses. Skilled experts on both sides, accurate growth projections, efficient infrastructure management and appropriate processes were the foundation for mutual success.

Pertinent pre-project infrastructure:

- Sun StorEdge D240 boot devices
- Sun Fire 6800 operating servers
- Veritas Volume Manager system software

Business results:

- IT infrastructure flexibility along with business growth
- significant decrease of variable costs

Original State

„We concerned ourselves with two primary problem areas that confronted us at thebeginning of the project," says Ivan Rúčka, T-Mobile Senior IT Operations Manager. We can divide these into technological and financial areas.

Technological problems:

- complicated expansion of the IT environment for further T-Mobile business requirements
- platform heterogeneity in the infrastructure

Financial problems:

- poorer utilisation of server infrastructure and datacenter footprint
- higher operating expenses for infrastructure operations

From the perspective of IT operations, the key systems that T-Mobile operates can be divided into several logical groups. Before implementing the new solution, most applications (with the exception of post-paid billing) were run on Sun Microsystems infrastructure scattered across a number of servers and concentrated in a single datacenter with no possibility of backup operations (backup datacenter).

Problem Identification

In light of the increasing requirements of the company's sales units, the server infrastructure for T-Mobile's key applications was progressively expanded in the past. An analysis of TEMPEST showed, however, that further increases in infrastructure performance would be inflexible and costly. The analysis confirmed that expansion would markedly complicate recovery processes. Even right before the project, managing the heterogeneous infrastructure was maintenance-intensive from a cost perspective and demanding on human resources. Infrastructure expansion using the same strategy as had been applied in the past might multiply potential problems.

Identified problems:

- barriers to meeting additional business requirements
- demanding infrastructure management (financially and technically)
- complicated processes for resuming activities after outages and restoring business processes
- potentially insufficient application availability and insufficient infrastructure performance

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Potential Solutions

It was possible to resolve the identified problems in several ways. The common denominator of all the potential solutions was the consolidation aspect, meaning consolidation of the environment that would eliminate all problems and resolve the incipient situation. T-Mobile also contemplated a platform other than Sun Microsystems, but accounting for the existing Sun infrastructure, the technical skills of T-Mobile technical staff and the utilisation of several servers in the new, consolidated solution, Sun Microsystems technology was the most efficient solution.

We divided potential solutions into two groups:

- continue on the lower-performance Sun Fire 6000 product line, thus implementing new Sun Fire 6900 servers in place of the one existing Sun Fire 6800 in the solution
- move up to the higher Sun Fire 20k line

With the aim of identifying potential solutions as precisely as possible, TEMPEST provided expertise and an analysis of the environment and served as the technological guarantor. Project implementation was managed by means of project management tools, and multi-level teams of specialists were established on both sides.

Solution Implementation

T-Mobile decided to migrate production systems to the better-performing Sun Fire 20k platform. Concurrently, we created a test system combined with a backup of the production environment on the upgraded Sun Fire 6900. Ivan Rúčka appraises the key reasons for the decision as follows:

- simple and effective reaction to further performance needs, for example, by adding an additional system board instead of purchasing more hardware and expanding the infrastructure
- topological and logical consolidation of production systems into a single integrated platform which provides for accelerated reaction times in the event of disaster and reduces operating expenses for infrastructure maintenance
- efficient utilisation of infrastructure resources by implementing load-balancing devices
- re-utilisation of existing resources in the back-up datacenter after the upgrade

The migration project was very demanding on TEMPEST's specialists in several respects. The priorities were minimum disruption of T-Mobile's production systems and adherence to the migration plan schedule and budget. Erik Francisci, Key Account Manager for TEMPEST: "The migration project was broken down into six basic phases encompassing a complex physical installation, a number of upgrades, the implementation itself and post-implementation testing."

Process Sequence

- installing the Sun Fire 20k and transfer of system boards into the Sun Fire 20k
- upgrading the Sun Fire 6800 to the Sun Fire 6900
- implementing the Sun StorEdge 3510 boot solution
- implementing Veritas Storage Foundation Enterprise
- migrating production systems to the new infrastructure, and testing

Resulting State

The outcome of the project was the migration of T-Mobile's applications to a consolidated platform consisting of a Sun Fire 20k and a Sun Fire 6900, with the system booting from a Sun StorEdge 3510. Individual boards were interconnected in a cluster in order to achieve the highest possible availability. Through the use of these key elements along with the configuration of the solution, TEMPEST was able to eliminate the identified problems. By implementing Veritas Storage Foundation 4.1 HA, we managed to increase the application availability to 99.44% (the average for 2007). The solution also includes capabilities for volume data management and for speedy data recovery processes. The creation of virtual data stores on the physical arrays is another capability enabling it to support the increasing sales activity of T-Mobile.

In the project's final evaluation, both teams declared it a success. The project was kept within the planned budget with modest schedule slippages. The deviation from the schedule was caused by time constraints on human resources in both teams.

Pertinent post-project infrastructure:

- bootstrapping from the Sun StorEdge 3510 disk array
- Sun Fire 20k and Sun Fire 6900 production servers
- Veritas Storage Foundation 4.1 system software

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