

Tata Teleservices (TTSL), better known to us as 'Tata Indicom', recently consolidated its multiple servers that worked on a mix of operating systems into three Sun Fire 15K servers. The result is a lower TCO and higher availability, besides other benefits. A case study of the changeover.



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## Solution to TTSL Woes: **Consolidation of Servers**

**T**he server setup at Tata Teleservices initially consisted of multiple servers running a mix of operating systems, and was difficult to scale. The company has succeeded in consolidating it to three Sun Fire 15K servers, and avoided setting up redundant data centres in the process.

### The client

Tata Teleservices Limited (TTSL) is a leading private basic service provider offering basic telephony, ISP, NLD, broadband and CDMA mobile services. The company uses a fibre-optic backbone spanning 2,000 kilometres to provide these services. Having established its presence in the Andhra Pradesh (AP) telecom circle, the company plans to roll out its

services in five new circles in Karnataka, Tamil Nadu, Maharashtra, New Delhi and Gujarat.

### A heterogeneous environment

Prior to its server consolidation, TTSL was using 11 servers that were used to run diverse enterprise applications such as ERP, billing, order management, CRM and data warehousing. Two HP 9000 K260 servers with two CPUs each were used to run TTSL's mediation application, that records calls from the switch and pumps it to the billing system. The data is used in applications such as fraud detection and network management. Two HP 9000 K570 servers, with four CPUs each, ran reporting and data warehousing applications, while another two HP

N-Class servers with eight CPUs each ran billing and order management.

Additionally, the company was using three 1200 Compaq AlphaServers for ERP, GIS and network management, and one 4100 AlphaServer for production and development. A Sun E4500 server was used for running CRM. All these servers were located at TTSL's data centre in Hyderabad. Before opting for server consolidation, TTSL was using disk-attached storage that was insufficient for meeting its growing data requirements.

### Challenges before TTSL

In today's competitive economy, enterprises must reduce costs, achieve better returns on their assets, and improve op-

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TTSL was expanding operations from one to six circles. The key challenges included:

- Building the infrastructure on an architecture, which can scale and can assist them in their growth plans.
- Investment protection and the least total cost of ownership (TCO).
- Being a telecom service provider with a focus on good customer service, the infrastructure needed to be highly available.

For this, TTSL could have adopted either of the two approaches—consolidation or discrete distributed systems. In the second approach it would have needed to deploy different applications for different circles on separate servers, sizing each of them for the peak load.

Some of the key advantages for TTSL in adopting a consolidation approach included:

- Sharing the same computer resources (using the Dynamic Domaining facility on Sun's Enterprise Servers) between different applications and different circles across the country. The load of different applications and different circles does not peak at the same time. This made it easy to deal with average loads and also manage peak loads.
- Adding/redistributing system resources on the fly.
- Initially configuring larger resources for the 'development' environment, then using some of those for 'staging' and subsequently for the 'deployment/production' environment.
- Using the high availability features of enterprise servers, especially the 15Ks, which are much higher than the smaller workgroup servers.
- Maintaining a common resource pool of skills/IT staff (instead of distributing resources across circles).
- Reducing total cost of ownership (TCO).

TTSL is in a major growth mode. Its scalability requirements were very well addressed by using 15K servers. Each of these servers can scale up to 106 CPUs. The only downside is that the dependence on the consolidation environment is high. A highly available data centre environment and redundant WAN links are required.



Kapil Sood, GM-telecom, Sun Microsystems India Pvt Ltd

erations. In the last three years, TTSL had added servers to meet its application requirements. The company had invested in eleven different types of servers, with distinct configurations to run its applications, and managing these servers was not a simple task. According to Mr A.V. Rajendran, general manager-IT, TTSL, "From the business side, we were to provide a single window for all India customers and so decided on a single server instance strategy."

### Availability and manageability

In the earlier setup, as multiple applications ran on many servers, there were times when a sudden peak in network

load resulted in applications not being available. Mr Rajendran says, "Keeping these servers running was a real chore."

Managing these servers and keeping them up and running required additional staff, so TCO was high. In addition to this, these servers were neither scaleable nor did they meet the new demands of TTSL and its expansion plans, to offer services in five new telecom circles. Mr Rajendran said that the only way out was to buy additional servers and create new data centres across the new circles. TTSL was also facing difficulties in managing its disk-attached storage. So it decided to consolidate storage and implement network-based storage using a SAN so that it

could plan and set up a disaster recovery site in Mumbai.

### The options

TTSL had two options to solve its business problems. The first was to replicate its data centres across all five telecom circles. This could be based on a distributed architecture with servers at different locations, requiring fresh investments in setting up data centres. The second option was to consolidate its existing 11 servers and deploy top-of-the-line servers that would meet future requirements, and bring down costs of data centre management and administration. Consolidating the servers gave TTSL the option of

doing away with disk-attached storage, implementing a SAN using Brocade switches, and an EMC Symmetrix 8830 box, and later setting up a disaster recovery site.

**Implementation**

TTSL evaluated various servers in early 2002. After initial talks with Sun Microsystems, TTSL decided in April 2002 to consolidate all its servers into three Sun Fire 15K servers. Mr Rajendran says, "We wanted to have a centralised IT infrastructure that could give us the flexibility in deployment, as well as scale up with the increase in our customer base, or whenever an application reached peak usage. Additionally, it would give us the option to dynamically allocate CPUs, resources and monitor networks on the fly, bringing high availability to our business." There would also be a reduction in cost of investment, as each server would maintain a single pool of buffer resources, which could be allocated dynamically at application peak times.

TTSL invested US\$ 2 million on three Sun Fire 15K servers, and hired TCS as the systems integrator for the deployment. The installation was completed in three months. The two Sun Fire 15K servers located in Hyderabad are partitioned into six domains, and are currently using 92 CPUs, with 50 per cent headroom available. These servers run applications such as billing, order management, ERP, CRM and data warehousing. The third



Sun servers at the TTSL facility

Sun Fire 15 K server is being used at the company's disaster recovery site in Mumbai.

All discrete data from older servers has been consolidated to the Symmetrix 8830. TTSL is using EMC's Symmetrix Remote Data Facility (SRDF) software for remote mirroring its data in Mumbai over an 8 Mbps link.

Anil Valluri, director-systems engineering, Sun Microsystems India says, "The architecture allows enterprises to partition large servers into smaller servers based on logical and physical partitioning requirements." Simply put, it allows dynamic allocation of CPUs, memory and storage without actually powering down the servers. The other advantage of using this architecture is that you can do online repair work and configuration. For example, it can mask a bad sector on its own and alert the IS manager who could then replace the HDD with a fresh one without affecting the server. Or say, if one out of eight CPUs fails, the IS manager could get into the software command line and replace the CPU with a new one. The advantage of using the Sun Fire 15K servers is that TTSL can reallocate bandwidth based on critical applications when server load peaks.

**Benefits**

By consolidating its servers, TTSL has been able to avoid setting up additional data centres in each circle and has reduced its IT support manpower. Says Mr Rajendran, "Server consolidation helps in better utilisation of resources. You would have needed to maintain a buffer of resources on each of the servers, which in the consolidated environment needed to be on a single server. Rollout of applications is slower with distributed architecture. It helped in cutting cost of operations and management, enabling better scalability."

The quantifiable benefits are:

**Lower TCO:** Consolidation has helped TTSL in lowering its IT support manpower by 25 per cent. Some intangible



EMC storage at the TTSL facility

benefits are that TTSL can make marginal investments into buying additional CPUs and memory modules, rather than adding new servers as it would have had to do in the past.

**Availability:** Availability has improved; TTSL has not experienced any outages to date.

**Lesser number of licences:** The consolidation has helped TTSL reduce number of software licenses required.

**No replication:** TTSL would have had to replicate the Hyderabad data centre in other circles if it had stuck to its earlier setup. By consolidating, it has managed to avoid this expensive and time-consuming task.

**Pitfalls**

According to Mr Rajendran, "As the infrastructure is consolidated, there is the risk of impacting services across India in the event of the central server going down. We have overcome this by having a cluster of servers as well as a disaster recovery site."

**What lies ahead**

TTSL wants to roll out a series of value-added services related to customer support systems. In addition to this, the company intends to offer data services such as SMS and strengthen its voice-based services. The SMS services are in the process of being implemented.



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