OTPC took advantage of the integrated KVM hypervisor and built-in high-availability components to create a compact, flexible and exceptionally reliable platform for SAP ERP.

**Overview**

ONGC Tripura Power Company Limited (OTPC) is a joint venture between three organizations: Oil & Natural Gas Corporation Limited (ONGC), Infrastructure Leasing and Financial Services Limited, and the Government of Tripura.

OTPC is responsible for two major projects in the Indian state of Tripura: first, the development and operation of a 726.6 megawatt Combined Cycle Gas Turbine thermal power plant near to ONGC’s natural gas fields, and second, the construction and operation of a 400 kilovolt DC transmission system connecting the power station to Bongaigaon in Assam, 650 kilometers away. Together, these initiatives are helping to transform the supply of electrical energy to the north-eastern region of India, catalyzing economic development. The generation project, the associated transmission project and an upstream gas supply project together are slated to bring investments of around INR 9,000 crore (approximately USD1.3 billion) into the region.

**Challenge**

As a recent joint venture that has grown swiftly to become one of the largest regional players in the Indian energy sector, OTPC needed to ensure that its business management systems could keep pace with its growth. The company was using a number of different processes and systems to manage operations, planning and finance, and recognized that it would need significantly more functionality and better control as it ramped up its activities.

Rajkumar Meena, Senior Manager IT & MIS at ONGC Tripura Power Company, comments: “Our existing solutions lacked sophistication, and we wanted to move to an integrated solution that would give us a comprehensive range of functions across all areas of the business, from sales through the human resources. In particular, we wanted the ability to streamline our

“Our six-month study concluded that the TCO for an x86 solution running SUSE Linux Enterprise Server for SAP Applications would be 60 to 70 percent lower than a UNIX solution on proprietary hardware.”

RAJKUMAR MEENA
Senior Manager IT & MIS
ONGC Tripura Power Company (OTPC)

OTPC at a Glance:

OTPC is a joint venture responsible for two major power-plant development and operation projects, and aims to transform the supply of electrical energy to the north-eastern region of India.

- **Industry and Location**
  Energy & Utilities, India

- **Products and Services**
  - SUSE Linux Enterprise Server for SAP Applications
  - SUSE Linux Enterprise High Availability Extension

- **Results**
  - Achieved rapid deployment of stable SAP ERP environment
  - Cut TCO by up to 70 percent versus UNIX-based solution
  - Reduced software costs by up to 30 percent versus Red Hat Enterprise Linux
  - Gained access to integrated, single-source support from SUSE for full SAP ERP stack
business processes and to align them with industry standards and best practices. At that time, our processes were siloed in different functional areas, so it was difficult to work in an integrated and efficient way across the business.”

OTPC wanted an integrated, end-to-end ERP solution specifically tailored to its needs as an energy company. After reviewing the options from leading vendors, the company chose to deploy SAP ERP.

“In the energy industry, it is vital to ensure trouble-free, round-the-clock operation for key systems,” says Rajkumar Meena. “Our customers rely on us literally to keep their lights on and their homes and businesses running, so we can’t afford to have any downtime in the systems that manage our business operations. This made it very important to choose the right platform on which to deploy our new SAP ERP solution.”

Solution
OTPC ran a detailed study of different platform options, starting with the leading commercial UNIX distributions: AIX, Solaris and HP-UX. The company compared these operating systems (and their associated RISC architectures) with Intel-based systems running Linux, using a scorecard of parameters including deployment cost, total cost of ownership, quality of support, and system performance.

Rajkumar Meena comments: “Our six-month study of the best platform for SAP ERP concluded that the total cost of ownership for an x86 solution running SUSE Linux Enterprise Server for SAP Applications would be 60 to 70 percent lower than a UNIX solution on proprietary hardware. Purely on the software side (and taking into account the enhanced integrated support available from SUSE for SAP environments) we determined that the cost would be 25 to 30 percent lower for the SUSE operating system than for Red Hat Enterprise Linux.”

Sunil Kumar, IT Executive at ONGC Tripura Power Company, adds, “Once we had decided that Linux on x86 would be the best platform for our SAP ERP deployment, we considered the distributions from SUSE and Red Hat. The inclusion of high-availability components and the KVM hypervisor with SUSE Linux Enterprise Server for SAP Applications was one of the key points in its favor. Equally, the fact that SUSE uniquely offers integrated support with SAP for the entire ERP stack was a critical factor in our decision. And finally, the strategic relationship between SAP and SUSE made us confident that this was the right long-term decision for OTPC.”

SUSE Linux Enterprise Server for SAP Applications is a tailor-made distribution of Linux specifically tuned for SAP software. SUSE runs a completely separate update channel for this distribution, pre-testing all new and updated packages and reverting to the last good version of any package that is found to create problems in SAP—whether in terms of performance, security or stability. The company then works to fix the faults in the package so that it can be safely added back into the main branch of the distribution.

OTPC worked with a local systems integrator to deploy SUSE Linux Enterprise Server for SAP Applications, and also directly with SUSE on the implementation of high-availability clustering.

“We decided to integrate our NFS file service inside the same high-availability cluster as the rest of the SAP ERP landscape,” says Sunil Kumar. “This increased the challenge a little but resulted in a less complex and costly infrastructure, because we have a single server cluster for the application, database and file server.”

The SAP-certified SUSE Linux Enterprise High Availability Extension enables OTPC to attain exceptionally high availability for its mission-critical SAP landscape. SUSE Linux Enterprise Server for SAP Applications includes not only a clustering solution for application servers, but also solutions for high-availability storage and network load-balancing. Choosing the SUSE operating system therefore provides a single, integrated route to ensuring business continuity. By contrast, choosing a competing distribution would have required OTPC to licence, deploy and support three separate products for the OS, the storage and the network components.

The new SAP ERP (ECC 6.0 EHP 7) landscape is hosted on IBM FlexSystem hardware in a single chassis with ten physical servers. These servers include Intel Xeon E5 processors (which OTPC uses for...
non-production components where cost-effectiveness is key) and Intel Xeon E7 processors (for production environments and the Oracle database supporting the SAP systems, where good performance is paramount). OTPC uses KVM virtualization to run more than 50 virtual servers for its SAP landscape, which covers four key functional areas: Supply Chain Management, Financials and Controlling, Plant Maintenance and Materials Management. In the future, the company plans to deploy SAP components related to business intelligence, sales and distribution, and components specific to the energy industry.

“The KVM hypervisor built into the OS and supported by SUSE was the obvious choice,” says Sunil Kumar. “If we had chosen a third-party solution instead, it would have added cost and complexity. There were also technical reasons for our choice: the snapshot function is very useful for accelerating the backup process, and the directsync cache mode in KVM improves general performance.”

OTPC is taking advantage of the default page cache management option in SUSE Linux Enterprise Server for SAP Applications to optimize performance for its large SAP workloads. The Linux kernel usually swaps out rarely accessed application memory pages, and uses the freed-up memory pages as a cache to accelerate file system operations. However, some SAP applications need large amounts of memory to ensure fast access to business data—some of which is only rarely accessed. The page cache management option tells the kernel that once the page-cache is filled to the configured limit, application memory takes priority and should not be paged out. Using this feature, OTPC limits the amount of page-cache used by the Linux kernel, avoiding the possibility of degraded response times at times where there is competition between the application memory and the system page-cache.

Sunil Kumar notes that setting up new virtual servers is very rapid thanks to the combination of KVM and SUSE’s YaST® configuration tool: “YaST is extremely convenient and highly user-friendly—we really value the graphical interface, which makes it quick and easy to install and configure new virtual servers. In general terms, we have also found the SUSE documentation to be of very high quality, which makes it easier for us to resolve minor issues for ourselves.”

SUSE provides OS updates that have been tested specifically with SAP ERP components, so OTPC can be highly confident that they will not cause any issues in its SAP environment.

Rajkumar Meena comments: “Using the SAP-certified SUSE distribution of Linux gives us confidence that our systems will continue to work reliably, which is a key concern in our industry. And where we encounter any difficulties, the support from SUSE is excellent and the response very timely. With SUSE Linux Enterprise Server for SAP Applications, we can raise a support ticket through SUSE for any kind of issue in the whole SAP stack, without needing to decide for ourselves where the problem lies. This integrated support offering saves us time and effort, and helps to ensure faster resolution.”

Results
Choosing SUSE Linux Enterprise Server as the operating system for its SAP environment helped OTPC to achieve a rapid, trouble-free rollout of its new ERP system.
“The inclusion of high-availability components and the KVM hypervisor with SUSE Linux Enterprise Server for SAP Applications was one of the key points in its favor. Equally, the fact that SUSE uniquely offers integrated support with SAP for the entire ERP stack was a critical factor in our decision.”

SUNIL KUMAR
IT Executive
ONGC Tripura Power Company (OTPC)

“We were able to set up our SUSE landscape quickly and easily, and this contributed to the overall success of our SAP deployment,” says Rajkumar Meena. “The performance and reliability of the SUSE operating system meant that we could focus our efforts and attention on the SAP ERP components.”

The benefits expected from SAP ERP—including better process integration, improved transparency and financial control, and increased internal efficiency—will accrue once the company and its employees are fully familiar with what is a completely new solution. As far as the platform goes, OTPC is already seeing significant benefits, as Sunil Kumar explains: “Our SAP environment is running smoothly, and we are seeing good performance and response times. Our users are now building up their experience with the solution and adapting their existing ways of working to the best-practice processes embedded in the software. The stable and reliable platform provided by the SUSE operating system means that the SAP ERP solution is perceived in a very positive light by users, which should accelerate its adoption and increase user satisfaction.”

The easy manageability of SUSE Linux Enterprise Server for SAP Applications helps OTPC to keep down IT operational costs for the SAP landscape, contributing to the much lower cost of ownership versus the alternative commercial UNIX and Red Hat Enterprise Linux platforms the company originally considered. The stability and reliability of the SUSE operating system—assured in part by the built-in SUSE Linux Enterprise High Availability Extension—also helps minimize the requirement for unplanned maintenance. Sunil Kumar comments: “The availability of the operating system has been excellent so far. The system has not hung or needed a restart in the six months since we started using it. The performance is also very good, and in particular the system has low memory utilization, which keeps resources available for the SAP ERP solution running on top.”

With a single integrated support channel for the entire SAP solution stack—from the KVM hypervisor to the SUSE operating system to the SAP Basis and applications—OTPC enjoys rapid response to support requests and avoids the need to carry out its own troubleshooting. Rajkumar Meena says, “The combined support offering results in fast service and removes the hassle of dealing with multiple points of contact. It also means that there is no possibility of being caught between two vendors who are each blaming the other one’s solution!”

He concludes: “The key benefits we see in using SUSE Linux Enterprise Server for SAP Applications are its low total cost of ownership, high manageability, excellent reliability, great performance and professional support.”