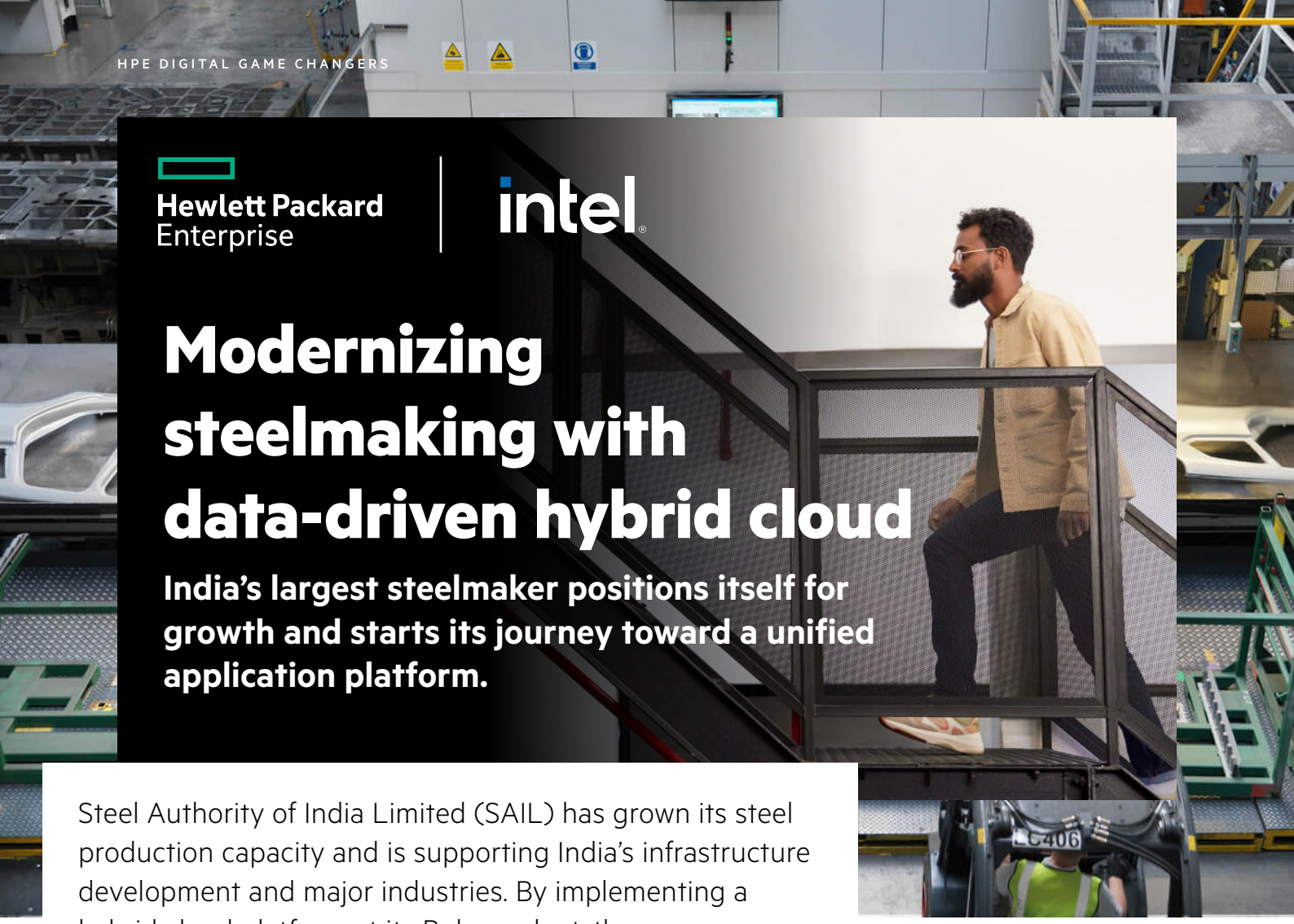

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Modernizing steelmaking with data-driven hybrid cloud

India's largest steelmaker positions itself for growth and starts its journey toward a unified application platform.

Steel Authority of India Limited (SAIL) has grown its steel production capacity and is supporting India's infrastructure development and major industries. By implementing a hybrid cloud platform at its Bokaro plant, the company has modernized its core systems and paved the way for migration to SAP S/4HANA®. This is helping SAIL meet its target to more than double crude steel production and has positioned the company for long-term growth while supporting India's economic development.

Producing the steel that supports India's infrastructure

SAIL is one of the world's largest raw steel manufacturers, producing more than 17 million tons annually and employing over 60,000 people.

The company's vision is to be a respected world-class corporation and leader in the Indian steel business, focusing on quality, productivity, profitability, and customer satisfaction. Given the importance of its products to India's construction, manufacturing, automobile, and other industries, the company's production facilities are critical infrastructure supporting the country's everyday operations and long-term growth.

SAIL's special steel plants, including those at Rourkela, Bhilai, Durgapur, Bokaro, and Burnpur, manufacture 50 products in 500 different grades of steel. As the industrial heart of the many cities where it conducts business, the company's activities are essential to entire communities. Because of this, India's Ministry of Steel closely supervises government-owned SAIL to ensure productivity.

सेल SAIL

Industry: Manufacturing

Country: India

Vision

Expand steel production capacity and secure long-term growth to support India's infrastructure development and major industries

Strategy

Implement a hybrid cloud infrastructure to improve performance, boost scalability, and pave the way for a transition to SAP S/4HANA

Outcomes

- Accelerates backups 10x
- Completes end-of-month and end-of-quarter reconciliations in around one-tenth of the time
- Gains insights to optimize production cycles and enables expansion of steel production capacity
- Enables the eventual consolidation of all business services onto a single instance of SAP S4/HANA

Twelve years of automation success

With an eye to continuous growth and expansion through new joint ventures, SAIL has invested heavily in automation and other efficiency enhancements. In 2010, it improved its enterprise resource planning (ERP) through a major SAP® deployment, running on HP-UX and HPE Integrity servers based on Itanium®, with implementation and ongoing support from Hewlett Packard Enterprise.

"That was a wonderful journey for us because we were able to achieve zero downtime," says Sharad Kumar Singh, Manager at SAIL's Bokaro plant. "The support of HP/HPE was wonderful, and there was no unplanned system downtime in 12 years because of the robustness of the system and its high-availability architecture."

SAIL eventually implemented almost all SAP functions. It doubled down on the platform to support logistics, marketing, preventive maintenance, production planning, supplier relationship management, finance, customer relationship management, and more. This enabled growth in steel production capacity, helping meet rising domestic demand and supporting key infrastructure and manufacturing projects as India accelerated its industrialization.

When growth poses its challenges

As SAIL's systems aged, maintaining them proved difficult. Increasing user expectations posed additional challenges. Keen to implement sophisticated data-driven applications, employees were pressuring the IT department to improve performance, facilitate large-scale data management, and introduce new applications such as automation and integration with plant equipment.

The IT environment had become so complex that end-of-month and end-of-quarter reconciliation reports were taking three or four days. "Performance was a real concern," Singh says. "The entire organization's business applications are running out of this environment, and we are an organization that runs 24x7. It's very difficult to schedule downtime when you don't have the luxury of bringing down the entire system to do maintenance."

As its data requirements grew, SAIL's backup architecture became a bottleneck because the system was no longer able to complete critical backups during the allocated five-hour overnight window. Such restrictions threatened the company's ability to seamlessly back up its more than 35 TB of critical SAP operational data, including 4.5 TB of SAP ERP Central Component data.

These pressures, in addition to HP-UX reaching the end of its life, led SAIL's IT team to explore options for upgrading its entire architecture—with the goal of consolidating all systems and legacy applications onto a single SAP S4/HANA platform.

Laying the foundation for the future

SAIL went to market to evaluate options for its path forward, which would begin with an upgrade at its major Bokaro facility. It needed to ensure the process wouldn't interrupt the business while allowing the migration of legacy applications—laying the foundation for an eventual companywide migration to the SAP S4/HANA platform.

"We didn't have the luxury to stop the system and migrate to a new platform," Singh explains. "The migration had to be seamless and transparent so that users wouldn't feel anything had changed."

> Our users tell us that they're able to complete their work faster than ever and they're able to accomplish more. Our legacy applications have been consolidated onto our new platform, and we are getting very good response times and performance."
>
> – **Sharad Kumar Singh**, Manager, Steel Authority of India

The SAIL team evaluated several options and chose the HPE GreenLake edge-to-cloud platform to deploy an SAP S4/HANA-ready environment, including an HPE Superdome Flex 280 server, HPE Primera storage systems, and HPE StoreOnce systems.

"HPE GreenLake offered the ability to expand and scale and have on-demand capacity, giving us a cloud-based platform experience on our own premises while enabling us to use our existing data center infrastructure," notes Singh.

With a stable platform, VMware® virtual machines on Red Hat® Enterprise Linux® can provide as much agility and scalability as the application infrastructure requires—enabling SAIL to quickly deploy new services and innovate.

"In the older system, it was taking a lot of time to provision new resources," Singh says. "Because we would be running on a virtual machine-based architecture, we knew we'd be able to consolidate our legacy applications and provision new resources much faster."

This is helping SAIL achieve its target to more than double the company's crude steel production capacity to 50 million tonnes per annum (MTPA), including initially increasing the capacity of its Bokaro, Burnpur, and Rourkela plants by 12 to 14 MTPA. SAIL's ability to respond to rapidly growing demand for crude steel has particularly been vital to upgrading India's aging railways and developing new ones, supporting the movement of goods and people across the country.

And as the Bokaro campus aims to become a hub for flat steel, the HPE GreenLake environment is helping realize modernization plans to increase production capacity and offer engineering and manufacturing companies premium-grade products.

A smooth migration

Months of careful planning helped the SAIL and HPE teams to prepare for the live migration. This was implemented smoothly over a national holiday weekend. By the time users showed up for work on Monday, the applications were up and running on the new platform in what Singh calls "a very nice experience for us."

The implementation was about more than just migrating applications to new systems. To improve performance and data scalability, SAIL also implemented a new data storage architecture and upgraded its core network from 1 Gbps to 10 Gbps. This improved the user experience and the performance of data-intensive applications.

"Whatever processing we are doing at our core," Singh says, "if the network backbone is not fast or capable enough, the end user will ultimately get a poor response. Doing all these things in conjunction has provided a very good response time for our users."

Increased bandwidth has also supported a major upgrade to SAIL's data storage capacity and backup processes. These have been moved from legacy tape drives to a live HPE Primera 650 storage array, managed with Veeam backup software and leveraging HPE StoreOnce systems to minimize and manage data flows.

"This is a proven solution, and now we have the entire infrastructure being managed by HPE Advisory and Professional Services" Singh says. "Everything is being taken care of by them. On top of it, we have all our infrastructure in our own premises, so we have everything in our hands. And every time we have needed guidance, HPE has come forward to help."

> "Someone can email me requesting more resources. Thanks to the new architecture, I can deliver them within half an hour."
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> – **Sharad Kumar Singh**, Manager, Steel Authority of India

No longer held back by the weight of legacy

Since transitioning to the HPE GreenLake environment, reporting only takes hours and backups take 30 minutes—enabling the company to be more responsive. The new architecture has also minimized the data center's footprint, reducing energy consumption and supporting SAIL's corporate sustainability goals.

"Someone can email me requesting more resources. Thanks to the new architecture, I can deliver them within half an hour," says Singh.

Even more importantly, the new environment cleared the bottlenecks that prevented the company from tapping into the cloud-based applications and services required to run the modern, data-driven enterprise.

SAIL users report improved outcomes as they use advanced data-driven analytics capabilities. The company's technical team is saving time and money by using the new virtualized architecture to be more responsive to rapidly changing business requirements.

"Our users tell us that they're able to complete their work faster than ever and they're able to accomplish more," says Singh. "Our legacy applications have been consolidated onto our new platform, and we are getting very good response times and performance."

The company is now discussing similar migrations at its other sites, laying the foundation for an even bigger push to consolidate its entire operational infrastructure onto the SAP S4/HANA platform by 2028.

A robust new architecture for future growth

Implemented with the transformation support of Advisory and Professional Services, SAIL's new environment leverages a range of HPE and partner technologies. Specifically, this environment runs on an HPE Superdome Flex 280 modular compute infrastructure featuring 3rd Gen Intel® Xeon® Scalable processors. SAIL chose HPE Superdome Flex 280 to support its current needs and significant future expansion with sufficient and scalable CPU, memory, and storage.

The platform provides VMware virtual machines running on a Red Hat Enterprise Linux core. HPE Serviceguard for Linux manages the many compute nodes as a single enterprise cluster, providing high availability and robust disaster recovery resilience.

After the initial migration, several applications were moved to HPE ProLiant DL325 and HPE ProLiant DL380 servers to maintain continuity of services. SAIL will primarily run on the new HPE Superdome Flex environment once it moves to SAP S4/HANA.

The new architecture is supported by HPE Primera 650 persistent storage. The solution has a 100% availability guarantee and provides high-speed access to the more than 35 TB of operational data that SAIL must always keep online. HPE Primera also supports a modern backup environment, which leverages the deduplication of HPE StoreOnce systems and Veeam backup software to complete high-speed backups with much higher performance than their legacy architecture.

Also supporting the migration are more than 400 new Aruba CX 8360 enterprise switches, deployed via HPE GreenLake. These have boosted capacity across SAIL's Bokaro campus from 1 Gbps to 10 Gbps, with headroom to move to 40 Gbps. This capacity boost is vital to ensure the operational network can support ever-increasing data volumes and low latency for strong performance of SAIL's hybrid cloud environment. It allows the company to collect and process data from the Bokaro facility's manufacturing floor, enabling it to identify issues early on and giving it insights to accelerate and optimize steel production cycles.

"The new GreenLake environment has provided the scalability around compute and storage that we could never have achieved in the past," says Singh. "That has given us confidence that we will be able to run this application infrastructure for another 10 years or more—and enable our future plans to bring together all business units of SAIL onto the one S4/HANA platform."

Better control and management of applications

Despite its complexity and the many potential showstoppers, the successful migration validated SAIL's decision to extend its long and fruitful partnership with HPE.

HPE's expertise around SAIL's existing technologies and the support of HPE Pointnext Services ensured the migration was meticulously planned and implemented. The migration delivered the high degree of business continuity SAIL needed, allowing its Bokaro facility to keep running its complex production processes without missing a beat.

"The planning part was nice, and the execution even better," Singh says. "Apart from the services themselves, the support we've gotten from HPE has been the major point that attracted us towards them.

"It has given us very good control and manageability over our applications, and it has helped us in securing the platforms and applications in our data center."

Looking back over the migration process, Singh says that HPE's expertise was a great help as SAIL modernized its technology platform to tap into the service-focused approach of HPE GreenLake.

"People understand that tapping cloud services is a better approach than other solutions. But they often believe that once your application is in the cloud, you don't have to think about it," says Singh.

"Whenever there is a problem, HPE gives us a detailed analysis about why it happened and how we can prevent it happening again. That gives us a lot of confidence."

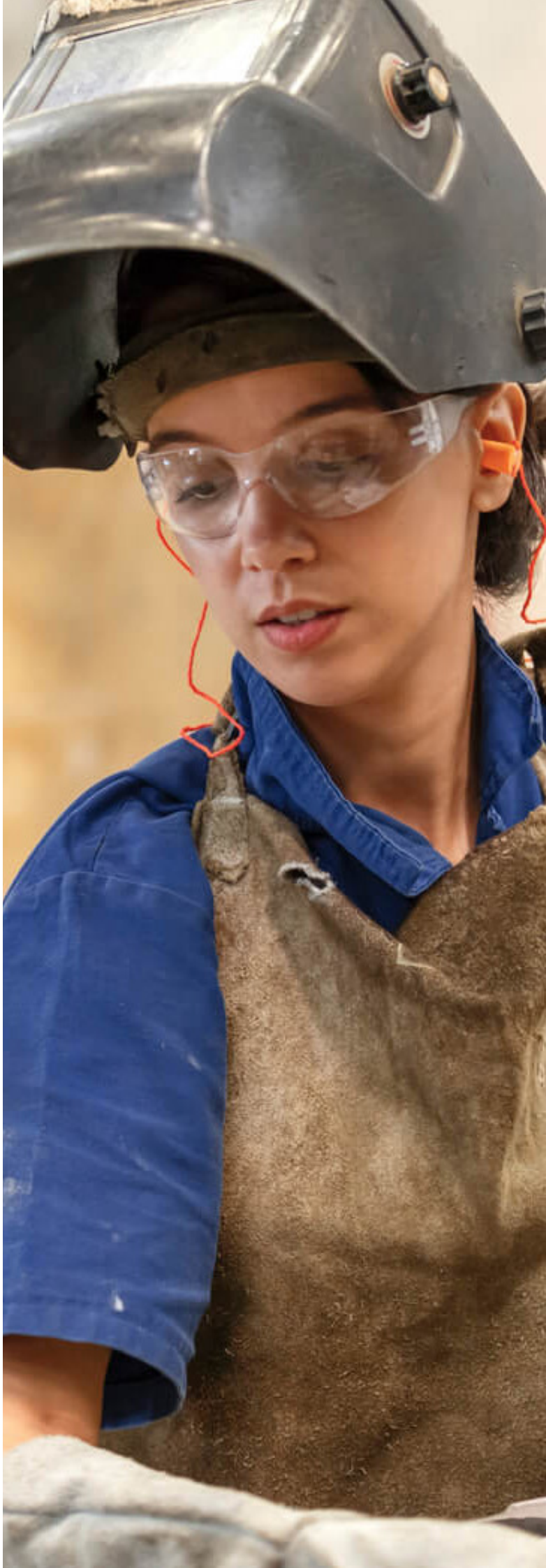
Ready for the next phase of transformation

SAIL's successful shift to the HPE GreenLake platform, HPE Superdome Flex 280, HPE Primera, and HPE StoreOnce systems has helped the company avoid disruption when it stops receiving support for the HP-UX environment.

In the long term, SAIL plans to migrate its entire nationwide operation to S4/HANA, running on top of the new infrastructure. The consolidation onto a single platform will be enabled by HPE GreenLake services. Singh is also considering expanding the HPE GreenLake platform to boost business resiliency even further.

"It is a big vision and bringing all the units onto the one single platform is a huge task. But with the help of HPE GreenLake and the team's very strong support, we have made a strong start," Singh says.

"And because we have had such a good experience, with no problems at all, we are certainly proposing that we should continue using this solution across the business."



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Solution

HPE GreenLake platform

- HPE Superdome Flex 280 server
- HPE Primera 650 storage
- HPE ProLiant DL325 and ProLiant DL380 servers
- HPE StoreOnce systems
- HPE MSA SAN storage
- Aruba CX 8360 Switch Series
- Intel Xeon Scalable processors

Software

- HPE Serviceguard for Linux
- SAP
- VMware
- Red Hat Enterprise Linux
- Veeam

HPE Pointnext Services

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