



## KEONICS

**Industry and Location**  
MSP | India

**Product and Services**  
SUSE Linux Enterprise Server on  
System z and LinuxONE

**100%**

uptime for mission-critical  
applications

**50%**

reduction in  
maintenance costs

KEONICS helps customers keep  
pace with evolving technology  
with SUSE

# Success Story

## At-a-Glance

KEONICS wanted to offer Linux application hosting to local communities, businesses and government departments. It realized that it could utilize its existing IBM System z mainframe, but to reliably host mission-critical applications, it would need a fully supported, enterprise-standard operating system. This led KEONICS to implement SUSE® Linux Enterprise Server (SLES) on System z. Now, by hosting applications on its mainframe, KEONICS can offer the flexibility of cloud hosting, coupled with the security of an on-premises solution.

## Overview

Established in 1976 with the objective of promoting electronics industries in the state of Karnataka, KEONICS (Karnataka State Electronics Development Corporation Ltd.) has played a major role in kick-starting India's IT revolution. KEONICS focuses on providing world-class infrastructure services for the electronics and IT-related industries in the state, including hosted and managed ERP platforms and web portals, software development, IT consultancy, IT training and networking components.

Furthermore, KEONICS offers state-of-the-art products and services for e-Governance. For example, its web-based e-procurement solution is used by many high-profile organizations, including government departments in Kerala and



Maharashtra alongside public sector organizations, such as Hindustan Shipyard.

Additionally, KEONICS delivers computer education to local communities through a network of 265 training centers, helping to spread the economic benefits of IT throughout the local region.

## Challenge

KEONICS is committed to ensuring that the state of Karnataka is always at the forefront of IT, providing state-of-the-art technology solutions and services to customers to help them keep pace with evolving technology.

One of the key services that KEONICS offers is education. Through a network of 265 centers spread throughout Karnataka, KEONICS provides IT training spanning a huge range of topics, from basic computer usage to advanced programming. Seeking to expand its service portfolio even further, in 2010 KEONICS acquired an IBM System z mainframe, intending to use it to teach students valuable mainframe administration and development skills.

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**SHIVANAND BHAVIKATTI**

Divisional Head, IT Services, Networking & IBM Mainframe Project  
KEONICS

Shivanand Bhavikatti, divisional head, IT services, networking & IBM mainframe project at KEONICS, takes up the story: “Mainframe experts are in high demand throughout the world. The systems that run on mainframes include some of the most critical business infrastructure, so organizations must keep them in optimal working condition at all times. As many existing mainframe specialists are approaching retirement age in the next few years, the organizations that rely on mainframes – in particular, governments, banks, airlines and insurance companies – are on the lookout for new talent.

“We recognized that by offering our students the opportunity to gain experience using the mainframe, we would give them a huge advantage in the job market. We also recognized that this would be a positive move in ensuring the availability of mainframe talent within India.

“However, to meet our goal, we needed to overcome a significant obstacle. As IBM mainframe servers are very sophisticated, specialist equipment, it would not have been economically feasible to dedicate an entire machine exclusively to training purposes. To achieve a return on our

investment in the mainframe, we needed to find more ways to leverage our investment in the hardware.”

KEONICS performed further research into other ways to utilize the mainframe. It soon came across IBM’s highly mature z/VM virtualization technology, together with Integrated Facility for Linux (IFL) specialized processors, which enable organizations to take advantage of the mainframe to run Linux workloads cost-effectively, alongside standard workloads. KEONICS recognized that taking this approach would significantly reduce the total cost of running the mainframe and offer a more attractive return on investment by enabling it to run different types of systems on the same physical server.

Bhavikatti explains: “Providing world-class infrastructure services is one of the core ways in which we help our customers thrive. When we saw the opportunity to utilize the mainframe to expand our hosting services into Linux applications, we were excited to seize it. Our research suggested that running Linux on z Systems would provide unparalleled performance, scalability and security, while being hugely cost-effective. We were very keen to ex-

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tend those benefits to our customers, while at the same time providing a new set of training platforms to our students.”

KEONICS decided to proceed with the purchase of an IBM z Enterprise BC12 mainframe server. The mainframe came equipped with one central processor and six IFL processors, which KEONICS divided into seven logical partitions running a variety of operating systems — including z/VM, z/OS and KVM for IBM z Systems. The mainframe is connected to an IBM DS8870 enterprise storage system, currently delivering 25TB of capacity, with the potential to scale to over a petabyte.

Initially, KEONICS used only the free, open source Debian operating system to host a number of non-critical Linux applications for various government organizations.

“Debian worked well, but as free software, we were on our own when it came to maintaining it,” says Bhavikatti. “We were happy to keep using Debian to run non-critical workloads, yet we knew that when we started hosting business-critical applications for our customers — many of which are government departments — we would want the security and peace of mind that comes with expert support.”

KEONICS set about looking for a new Linux operating system, complete with full support and purpose-built for enterprise workloads.

## Solution

At that time, the two Linux distributions that IBM supported for use on the mainframe were Red Hat Enterprise Linux and SLES, so KEONICS focused on these two offerings. Following a transparent tendering process, KEONICS choose SUSE.

“Advisers from IBM and other technical experts all supported our choice,” says Bhavikatti. “SLES is by far the most mature and popular Linux operating system for IBM System z servers, so we were confident it would deliver.”

KEONICS was also impressed with the excellent availability of the SUSE operating system, which would enable it to guarantee 100% uptime on its customers’ mission-critical applications.

Bhavikatti comments: “One of the biggest advantages of using a mainframe is the incredible resilience and reliability that it offers, so it would make no sense to invest in the platform and then run an unreliable

“The mainframe is so powerful that we can run a huge number of virtual machines on the same system. As we win more customers for the SUSE Linux Enterprise Server on mainframe platform, the number of users will rise without a corresponding rise in IT costs, so the offering will become even more cost-effective for us to operate.”

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operating system on top. SLES is itself superbly reliable and well supported, so it complements the mainframe rather than compromising it.”

As a proof of concept, KEONICS migrated one of its hosted applications from Debian to SLES on System z, installed in a virtualized logical partition. The migration was smooth and successful, and guaranteed support from SUSE gave KEONICS considerable peace of mind. With the proof of concept providing hard numbers to support the numerous recommendations, KEONICS did not hesitate to choose the SUSE solution.

Working with expert teams from both SUSE and IBM, KEONICS migrated from Debian to SLES on System z on time and without unforeseen complications. So far, the organization has activated three of its six IFL processors, which means that there is substantial headroom for future growth.

“The transition to SLES on System z went very smoothly. Our in-house team was

already familiar with using openSUSE, SUSE’s non-commercial Linux distribution, on their desktop machines. Our in-house team also took advantage of the YaST® administration and configuration tool, which made adapting to the new operating system especially easy.”

Today, KEONICS runs a number of critical workloads for its clients on SLES running on the IBM mainframe. Specifically, the applications run in a KVM image with 16GB virtual memory allocated. The solutions include a learning management system, a project management solution and a web portal.

KEONICS also takes advantage of SLES on z Systems to run an enterprise resource planning system used by up to 100 concurrent users. KEONICS employees use this system to manage various workflows for procurement, inventory, human resources and training for internal purposes.

In addition, KEONICS uses the same platform to support training efforts for

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students from the University of Petroleum and Energy Studies, and to offer training to other individuals, too. Using other logical partitions on the same physical server, KEONICS provides training courses for z/OS and other mainframe operating systems, ensuring that students get a comprehensive education on the platform.

## Results

“The biggest benefit of choosing SLES on System z is that we have support from both SUSE and IBM,” says Bhavikatti. “We really appreciate the close working relationship between the two vendors, and the way they are collaborating to make Linux on System z even better. The integration between the two companies means that we have a single support organization, which saves time and effort when troubleshooting minor issues.”

SUSE and IBM are also promoting KEONICS’ mainframe services in Karnataka, helping the organization to win additional customers and convince them of the benefits of running SLES on the IBM mainframe. Bhavikatti adds: “With their reputation and expertise, SUSE and IBM are providing invaluable support in persuading government organizations to adopt the new service.”

As more and more customers take advantage of the mainframe hosting, KEONICS is anticipating substantial cost savings.

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Linux on z Systems offers excellent value to KEONICS’ customers as well. Since KEONICS needs relatively few processors to support a large number of clients — a single z Systems processor is capable of running a very large number of Linux servers — the organization also requires fewer software licenses and uses less floor space and energy in the data center. All of these factors contribute to minimizing operational and maintenance expenses, which means that KEONICS can offer extremely competitive pricing to its customers.

Based on its early success, KEONICS is now planning to launch additional offerings running on SLES on the IBM mainframe. Specifically, the organization plans to deploy applications for space management, contract management and tenant

management for their IT parks in the state of Karnataka.

The highly secure nature of the mainframe is enormously attractive to clients. Cloud hosting is hugely popular at the moment, and for good reason; advantages such as easy and rapid provisioning of new systems, no infrastructure to manage, and zero upfront investment are hard to turn down. Yet cloud is not the right fit for every organization.

“Government departments in particular are hesitant to move to the cloud,” explains Bhavikatti. “They need to know exactly where their data is and that it is completely secure. With the mainframe, we can offer the same benefits as cloud hosting without the risk – all data is stored in one place, on a platform that is renowned for its security, within the state itself.”

Bhavikatti concludes: “Not only are we helping government departments optimize their operations, but we’re also training a new generation of mainframe experts; and we’re providing virtual Linux servers to support new startup businesses. SLES on System z is going to play a key role in keeping Karnataka at the forefront of IT innovation.”

## Benefits

- Guarantees 100% uptime for clients’ mission-critical applications.
- Cuts maintenance costs by 50%.
- Delivers the benefits of cloud, with the security of a mainframe.
- Ongoing partnership with SUSE and IBM helps promote the new service.

## Find out how SUSE can help you become an innovation hero!

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