

# Move forward together

Accelerating change in manufacturing

**NUTANIX**<sup>TM</sup>

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# FOREWORD

Today's manufacturing plants are at a turning point, and brands we've grown up knowing and using, like Hyundai, LG, SK, and Lotte, are taking part. This rapid change includes an increased impetus for digitization and innovation—without adding silos, complexity, or high costs.

There's a saying which describes the situation at hand: *the best time to plant a tree was 20 years ago; the second-best time is now.*

We've entered the age of Industry 4.0, which demands smart factory platforms, digital technologies, blockchain platforms, and most importantly, a cloud-ready strategy.

But your ambition must be accompanied by support from partners that understand your business strategy and aspirations.

Cloud computing will help you save costs but not all clouds are equal. A patchwork of public cloud solutions may not be superior to a hybrid cloud network, and hybrid cloud will be challenging to manage without the ability to orchestrate the infrastructure from a single cohesive viewpoint.

Nutanix has helped organizations around the world tailor their enterprise cloud solutions to their specific needs.

Let Nutanix help you use cloud technology as a springboard for continued prosperity.

 [Contact details](#)





**Nutanix: Trusted by 14,000 customers worldwide, including 36% of Forbes Global 2000 companies.**

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## Chapter 1

# TRANSFORM FOR GROWTH

Manufacturers today are slowly moving toward Industry 4.0, leveraging on emerging technologies to merge the gap between operations and IT. But smart manufacturing isn't as easy as it sounds. As they say, Rome was not built in a day. Usher in the next stage of growth with a technology partner that understands your internal challenges and your aspirations for the future.

With more than 14,000 customers worldwide, including 36% of the Forbes Global 2000 companies, Nutanix has helped industry leaders from all verticals adopt highly tailored enterprise cloud solutions to fulfill their ambitions.

We've built-out mission-critical infrastructure for global aerospace companies and made Industry 4.0 possible for smart manufacturers. We know that the path to complete technological shift requires a coordinated mindset shift within your organization.

It's about conviction, commitment, and adding an empathetic, human touch to the process. Let our experienced consultants and partners help you as your business moves forward into the next era.





## Take care of your legacy infrastructure

Like most large, global organizations, your technological fabric is unlikely to be cohesive. As such, many decisions that were made to solve earlier problems may be causing management complexity and even network reliability issues. Steering the shift to cloud computing requires building architecture that can house both cutting-edge apps and older, legacy infrastructure awaiting its end-of-life. Build your foundation for tomorrow while taking care of mission-critical functions in the present.



## Complete cloud transformation with consultant guidance

Shifting to cloud services is more than just implementing technology. It's about changing the very way IT services are perceived within your organization. Unlock the true value of technology with complete cloud transformation—beyond the datacenter. Let an embedded Nutanix consultant guide your team as you troubleshoot your existing operational model and create a roadmap for change.

“

We had the full production system up and running very quickly. But with this kind of mission-critical system, we had to go very deep and test everything to make sure every eventuality was covered. The Nutanix XCP has passed with flying colors and we've been very impressed with the depth and knowledge of the Nutanix support staff who have helped us along the way.”



**Matti Lääkäri**

*Former IT Specialist at Elenia Group*

[Read the case study >](#)





## Incorporate compliance requirements

Ensure complete compliance with the Personal Information Protection Act (PIPA) and other sector-specific data protection laws with all-encompassing visibility on the activity within your network. Our customers have done so with a variety of Nutanix solutions including [Xi Beam](#), which provides a single, comprehensive overview on your multi-cloud environment, incorporating data encryption laws in both storage and at the edge.



## Guard against cyber security threats

[Research shows that exploits on Operational Technology \(OT\) systems derived from older, legacy IT attacks are on the rise.](#) Closing the gap between OT and IT inevitably means potentially increasing the number of attack vectors on the organization. Guard against purpose-built attacks on your Supervisory Control And Data Acquisition (SCADA) and other Industrial Control Systems (ICS) from the very beginning by [embedding security requirements in the software development process](#). Then further bolster safety standards by automating security audits, updates, and patches after going live.

“

A matter of days has become a matter of hours. Developing a single process normally required a set of persons and skills; now we use typically one person with one skill. And that’s an incredible step forward in terms of time to deploy and time to deliver.

Our technical specialists were previously seen as mechanics. Now they are able to think, appreciate, and give their weight to their business case. They have evolved a lot thanks to the approach that Nutanix brought.”

### **Alessandro Rossi**

*Head of ICT Secure Infrastructure Business Area, Security and Information Systems Division at Leonardo*

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## Chapter 2

# OBTAIN STRATEGIC AGILITY

Nutanix's Enterprise Cloud has been battle-tested with leading organizations around the world, including governments. And to launch digital manufacturing strategies at lightspeed, you will need cloud-ready infrastructure that gives you the strategic agility to scale at the speed of light with equally impressive standards of reliability.

Not all cloud solutions are equal. A hastily stitched multi-cloud model built upon numerous public cloud providers or a hybrid cloud model with limited integration will eventually prove to be an unwieldy "frankencloud." Think of the enterprise cloud model as one that unifies your disparate cloud systems on a single, cohesive fabric.

Orchestrate innovations based on blockchain, open source development, Internet of Things (IoT) technologies, Artificial Intelligence (AI), advanced automation, and smart factory platforms, knowing that your IT infrastructure takes care of itself.





## One unified cloud network

Reduce management complexity and get a single pane view of your entire network [by consolidating your IT on one platform](#). With the ability to now [orchestrate all your apps from a central location](#), you'll be better placed to identify the most mundane tasks that can be automated and eyeball the functions that still require stringent human oversight.

Clients running e-governance projects on a Build-Operate-Transfer (BOT) model will appreciate the simplicity of smart infrastructure, knowing that they can eventually manage the system themselves with a lean team of IT generalists.



## Scalable infrastructure

[Hyperconverged infrastructure \(HCI\)](#) allows you to run your IT processes on a virtual layer, keeping your crucial IT functions safe from hardware dependencies. Start small with one node and add computing capacity as your operations grow. Virtual desktop infrastructure (VDI) can be deployed in the most remote of branches in the same manner as if it were located within central IT.

Our virtual infrastructure also works with almost all leading hardware vendors, which gives your team more autonomy to take advantage of location-specific deals.

“

We've had no downtime since we went live with Nutanix. We can rapidly expand it when we need to expand it. And we can provide those services we need to provide without worrying about how we're going to affect somebody's ability to get the mission-critical services they need for government [work].

You're only as good as your team in technology. And when your team thinks you made the right decision, that's probably the highest praise that I can give any technology.”



**Jon Walton**

*CIO, San Mateo County,  
California*

Read the case study >







## System-wide resilience

Failures can happen at multiple levels for a variety of reasons ranging from human error to hardware deterioration to natural disasters. We've factored these exigencies across the stack to create a robust infrastructure that will work in almost any condition.

Our hardware platform has redundant power supplies, memory, and CPU. Data is also replicated among multiple nodes within a server cluster, so if one node fails, other nodes in the cluster will work together to keep the system up and running. The end user will hardly find anything amiss.



## Developer-friendly architecture

Fully embrace open innovation with a platform that allows developers to build, test, and deliver applications without affecting the overall stability of the infrastructure. Nutanix can help you close the gap between development and operations by delivering a system that caters to both needs.

Build self-serve portals for developers to get computing resources without red-tape, or decouple applications from infrastructure by containerizing your cloud architecture. Creating a developer-friendly cloud network is crucial in a world where the speed of product deployment determines the success or failure of your entire business.

“

For the first installment, we were able to introduce Nutanix in a short period of time without any trouble, and it has remained stable since the launch. We wanted to adopt a platform that could be scaled out easily with the expansion of our business, so we selected Nutanix without hesitation.”

### Takashi Matsui

*Deputy General Manager of IT Platform business unit at TIS Inc*

[Read the case study >](#)

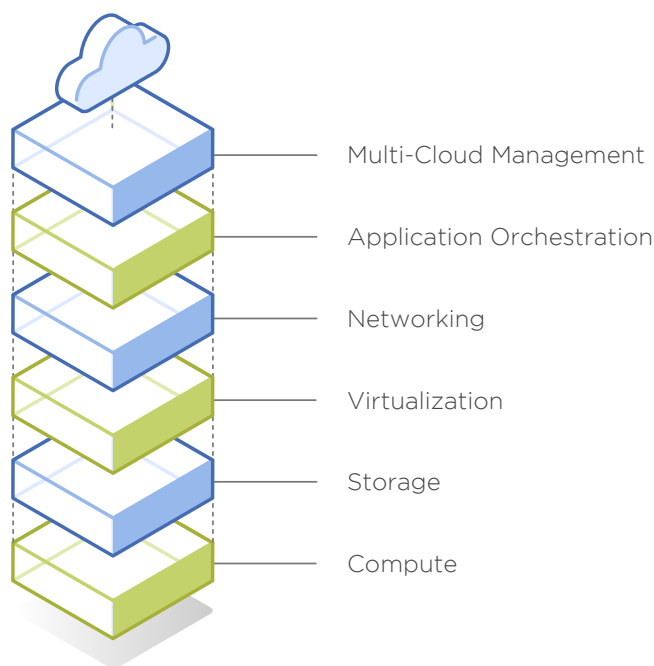




## How we do it?

Nutanix solutions are built on the industry's most popular hyperconverged infrastructure (HCI) technology—a complete, 100% software-defined stack that integrates compute, virtualization, storage, networking, and security to power any application at any scale.

Nutanix software and cloud services unify IT operations and bring frictionless application mobility across different cloud environments.



“

Right now, negotiations are taking place on the configuration that will be deployed in each government office building. In the future, it should become possible to seamlessly manage on-premises and cloud systems from a single screen without thinking about the environment using Prism. I have high expectations for the role Nutanix Xi Services will play in such a scenario.”

### **Motohiko Sakata**

*Senior Manager at BSN INET Co., Ltd*

[Read the case study >](#)





Cloud deployments are expected to **double to 45%** within manufacturing in the next two years, outpacing the global average by 4%.<sup>1</sup>

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## Chapter 3

### INNOVATION 4.0

Step up to Industry 4.0 by finally closing the gap between operations and IT. Our research shows that cloud usage in the manufacturing industry outpaces the global average across all industries. Cloud deployments are also expected to double to 45% within manufacturing in the next two years, outpacing the global average by 4%.

Whether you're making smart electronics, plastics, or batteries, and no matter what stage of modernization you're at, you will need responsive infrastructure to meet your application requirements. Jump-start your business by incorporating tomorrow's technology into the very heart of your manufacturing process.



## Tomorrow's industry

Edge computing is already changing manufacturing processes globally. But in order to fully embrace Industry 4.0 technology, you will need responsive infrastructure built for this very purpose. Manage latency and uptime concerns with [Nutanix's Xi IoT platform](#), which delivers real-time computing capabilities at the edge.

With intelligent edge solutions, you can increase yield and productivity by acting upon factory floor insights or improve shop floor safety and predict equipment failure. Other applications include improving quality checks on the production line with image recognition capabilities or optimizing energy consumption across the organization with smart energy management software. Industry 4.0 technology is already available—how ready are you for the change?

## Tomorrow's customer

The consumer devices and applications of tomorrow will be smarter, and customers will increasingly demand the next ground-breaking feature. Build the next big thing with a system that can [simply and seamlessly coordinate all activity across all clouds](#), whether you are working on open source software like webOS, Auptimizer, or AI-powered innovations like ThingQ.

The pressure to step up in terms of customer service is also on the boil. By bridging the offline-online gap with responsive IoT technology, you can lower customer support response times, schedule predictive maintenance, and even better, automatically be alerted about device malfunctions to solve issues even before the customer notices anything amiss.

“

[After deployment] we immediately saw some magic happen, in that our users were talking about the improvements they were experiencing. Users were, at random, asking us what we were doing differently because their experience of the system was now so superior. It was also just so simple to deploy and manage. We spend very little time on operational support now, which gives us more time to spend on enhancements to our business.”

**Theven Naicker**

*Head of IT at Scania Southern Africa*

Read the case study >



## Tomorrow's supply chain

Get complete traceability for high-value goods, whether they are the next shiny gadget or dangerously volatile battery cells. From the production line to storage, staging, and shipping all the way to the last mile, understanding where your products are at any point of time is crucial not just for security, but also to trace the causes of product damage, should they occur along the way.

With IoT sensors and robust edge computing capabilities, you will be able to get insight on your inventory, track and triage orders, and potentially even find trends to make manufacturing schedules more efficient. Maintain a bird's eye view of your supply chain operations by integrating smart logistics technology into infrastructure that can cope with complexity at the edge.

### Where are you on the path to industrial IoT?

>>> Read the infographic [here](#)



“

When we started developing this [IoT] solution [for our supply chain] in the cloud, we quickly realized we needed a partner who was able to operationalize this at an industrial scale at the edge. Nutanix and their Xi IoT platform was the right partner to assist us in doing so. By working with Nutanix, we were able to drastically reduce the time this innovative solution was brought to market for our customers and help them accelerate their supply chain and digital transformation.”



**Nicolas Odet**  
*CEO of Hardis Group*

Read the case study [>](#)



## Case study

### XIAOMI



Xiaomi is a mainland Chinese electronics company that builds smartphones, internet-enabled television sets, and other devices within the smart home ecosystem. Founded in April 2010, it has grown at a phenomenal pace and was the youngest company on the Fortune Global 500 list in 2019. It is currently the world's 4th most valuable technology startup valued at more than USD 46 billion.

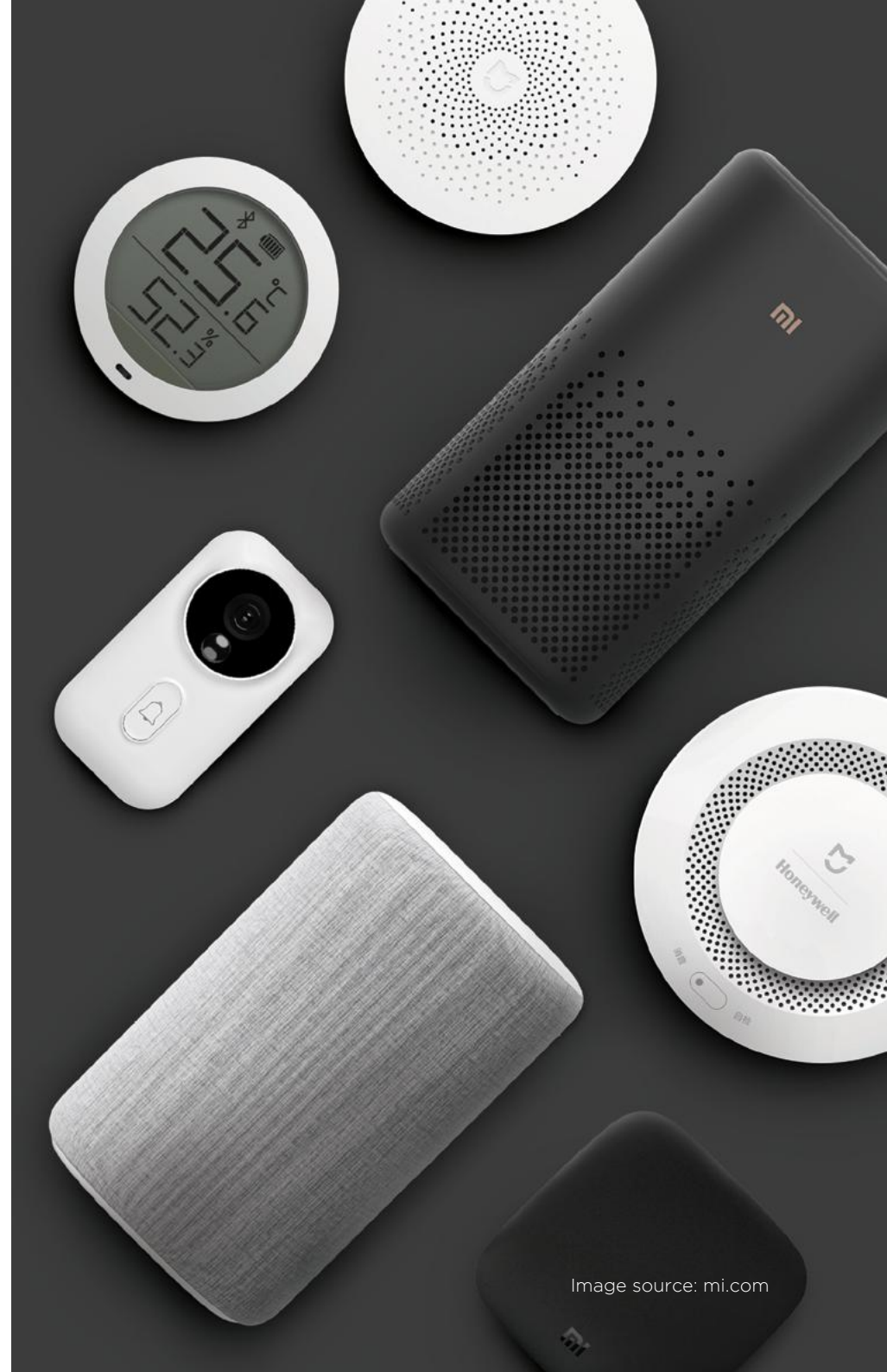
>>> Read the full case study [here](#).

### Business need

Due to the rapid expansion of its ecosystem and the accompanying proliferation of users, systems, and smart devices, Xiaomi was facing exponential demand for stronger IT support from front-end operations. The steadily growing IT architecture also created daunting pressures on the space and power consumption of Xiaomi's datacenters.

Xiaomi initially attempted to keep up with the needs of its growing business by upgrading and optimizing its existing IT infrastructure, which was running traditional three-tier architecture comprising VMware ESi 5.5 virtual machines and SAN storage.

However, the solution proved inadequate as rapid business growth posed even higher requirements for the backend storage system. It also attempted to adopt virtualization technology but was unable to scale it out due to the limitations of shared storage.



## Solution

After much deliberation, Xiaomi decided to overhaul its entire IT infrastructure by adopting hyperconverged technology as the architecture of its virtualization platform. Its requirements for the IT solution provider were straightforward: the datacenter had to be stable, the solution had to incorporate redundancy configuration, high-availability failover, and data security, and most importantly, the resulting system had to be maintained with limited IT manpower.

Xiaomi adopted Nutanix's Enterprise Cloud platform for the deployment of its Microsoft Exchange, MS SQL Server databases, SAP Business Suite, and IPV6-based set top box and Internet TV application demonstration systems.

Compared with Xiaomi's previous backend storage, Nutanix Enterprise Cloud delivered a 300% improvement in storage performance as measured by latency and over 200% improvement in throughput. The solution also reduced the datacenter size by 70%, reduced power consumption by 30%, and reduced the workload of Xiaomi's IT administrators by 50%, freeing up their time to work on business innovation. Lastly, the deployment time for each new system—crucial for a rapidly expanding business—was decreased from two weeks to just two hours.

## Results

- ✓ **300% improvement** in storage performance as measured by latency
- ✓ **Over 200% improvement** in throughput
- ✓ Deployment time for each new system **reduced from 2 weeks to 2 hours**
- ✓ Datacenter size **reduced by 70%**
- ✓ Workload of Xiaomi's IT administrators **reduced by 50%**
- ✓ Power consumption **reduced by 30%**

## Hear from the team



“

For companies that are considering implementing a virtualization platform or building a private cloud, Nutanix, as the leading Enterprise Cloud company, is their best choice in terms of both technology and application.”

**Wu Jiaqing**

*Leader of System Group, Infrastructure Architecture Department at Xiaomi Inc*



## Case study



# KANEKA CORPORATION (MALAYSIA)

Kaneka Corporation is a Japanese chemical manufacturing company founded in 1949. The group's Malaysian business, Kaneka Malaysia Sdn Bhd, opened in 1995. Kaneka Malaysia is currently the group's largest complex plant in Asia outside Japan.

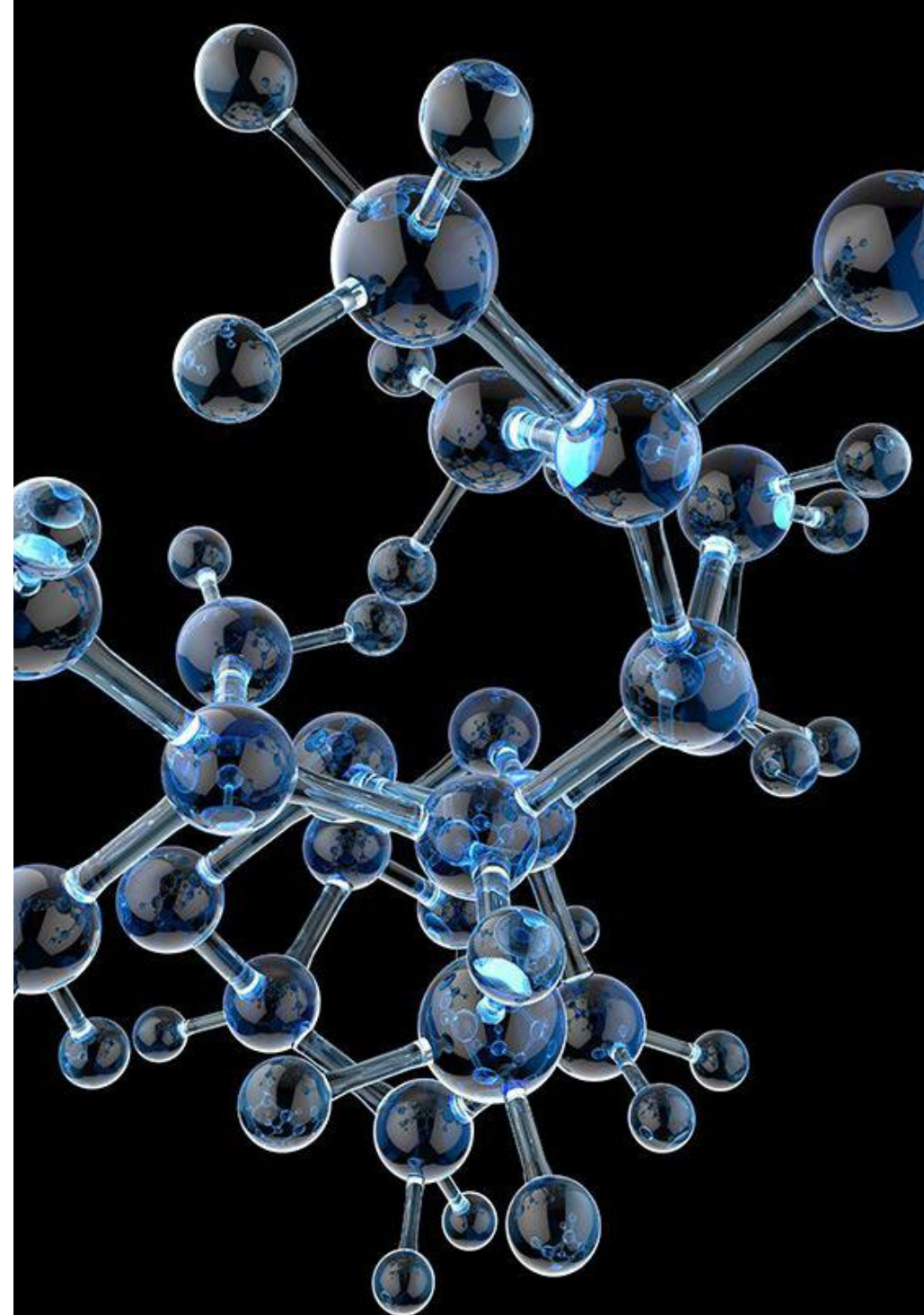
>>> Read the full case study [here](#).

## Business need

Rising commoditization in the chemical manufacturing industry has created pressures to accelerate product innovation and reduce operating costs. Looking at its dynamically changing industry, Kaneka Malaysia decided that its legacy three-tier infrastructure was no longer suitable for its next stage of growth.

The company conducted an assessment with Nutanix's IT partner, Virtuosity Solutions, and found that its existing IT infrastructure comprised inefficient and disparate systems that were expensive to maintain and difficult to scale.

It also showed that Kaneka Malaysia was not adequately protected against potential hardware or software crashes, system intrusions, or datacenter outages. These were weaknesses that could severely impact the availability of its critical operations. Additionally, the disparate IT systems were not standardized in deployment and operations, curtailing manpower efficiency and inhibiting business growth.





## Solution

Kaneka Malaysia decided to adopt Nutanix Enterprise Cloud OS software to streamline its management operations. 34 of its servers were migrated to Nutanix Enterprise Cloud platform, and business-critical applications were virtualized, including the company's SAP applications (SRM and PI), Microsoft SharePoint, Human Resources Management System (HRMS), and several other proprietary mission-critical systems for plant operations.

After deploying the system for a year, the company experienced a 35% increase in productivity, a 91% reduction in IT support required, and drastically reduced the amount of manpower needed for maintenance. The solution also reduced the company's datacenter footprint by eliminating 15 physical servers and achieved an 83% reduction in power consumption. The company predicts that Nutanix's solution would reduce its overall operation costs by RM 1.5 million (USD 379K) by 2022.

## Results

- ✓ **35% increase** in productivity, **91% reduction** in IT support required
- ✓ **Reduced datacenter footprint** by eliminating 15 physical servers
- ✓ Achieved an **83% reduction in power consumption**

## Hear from the team



“

Our IT assessment allowed us to realize the value of our digital infrastructure in driving overall productivity, and that helped us to make the decision to overhaul our systems with Nutanix as one of the core technologies.

The change [with Nutanix] was immediately apparent—it was as if cogs that had stopped turning years ago were springing to life, and Nutanix was there to provide support for this transformation whenever required.”

**Ehtesham Ihsan**

*Head of IT Department  
at Kaneka Malaysia Sdn Bhd*



## Case study

# GS GROUP



GS Group is a leading South Korean conglomerate. As of 2019, it was the 8th largest conglomerate in the country with businesses in energy, retail, and professional services, amongst many others.

The IT infrastructure in GS Group is managed by GS ITM, which delivers IT services to other affiliates within the group, such as GS Energy and GS Global, as well as external customers.

>>> Read the full case study [here](#).

## Business need

Legacy infrastructure was impeding GS ITM's mandate to provide superior experience and optimized services to the group. Not only was the existing system unable to be flexible or efficient, the firm also faced problems as it migrated its systems from Unix to Linux, such as transitioning existing applications such as data communication services for socket communication.

At the same time, affiliates like GS Energy and GS Global were also facing issues relating to the poor performance of their IT systems which impacted uptime. But until it solved its own infrastructure problems, it was unable to offer adequate support to the group.

GS ITM knew it needed a solution to unify its disparate IT systems under a common cloud-based architecture. It then opted for a hybrid cloud transformation strategy powered by Nutanix.



## Solution

The project began with an IaaS initiative for private cloud transformation at GS ITM. Nutanix provided hyperconverged infrastructure (HCI), complementary products, and roadmaps that aligned with the firm's hybrid cloud strategy. The Nutanix engagement was then expanded to other affiliates.

GS Energy dramatically simplified its IT operations and management, freeing up IT staff to spend more time for quality service delivery. The company also obtained cost savings from the built-in AHV Nutanix hypervisor and received positive feedback from business stakeholders about the speed and performance of the new system.

Next, GS Global unified its infrastructure management, substantially reduced unplanned downtime and ultimately ensured non-stop service continuity. Nutanix also supported one-click management of the company's hypervisor, virtual network, VMs, and storage, as well as simple, efficient infrastructure monitoring.

Other group affiliates have since either adopted Nutanix or are considering installing the solution to help stay ahead in an increasingly competitive business landscape.

## Results

- ✓ **Improved infrastructure performance by 40% and management efficiency by 85%**
- ✓ **Reduced IT expenditure by 45% and infrastructure complexity by 60%**
- ✓ **Nearly 50% performance improvement of SAP S/4 HANA**
- ✓ **Simplified infrastructure** to enable IT staff to focus on delivering superior services

## Hear from the team



“

Nutanix Prism allowed us to improve the efficiency and predictability of infrastructure operations and cope with the demands of our global operations which are increasingly fast paced and complex,”

**Kim Young**

*Deputy General Manager of IT Planning Team at GS Global*



## Case study

# TSINGTAO BREWERY



Tsingtao Brewery is the second largest brewery in China. Founded in 1903, it has more than 60 breweries across the country and was one of the first Chinese brands to successfully penetrate the overseas market. Although the leaders of Tsingtao Brewery are proud of the organization's heritage, they recognise the need to continually innovate in a challenging international marketplace.

>>> Read the full case study [here](#).

## Business need

IT infrastructure is a core platform for Tsingtao Brewery's critical operations, and the organization realised it needed a more scalable, flexible solution to support new business initiatives, such as pivoting to a new, intelligent retail model. Therefore, as part of an ongoing effort to improve product quality, service, management, and create more value for consumers, Tsingtao Brewery decided to embark on a digital transformation programme to upgrade its core business operations.

This required an agile, scalable datacentre solution that would meet the company's strict technical and operational standards.



## Solution

Nutanix Enterprise Cloud was chosen as the solution for Tsingtao Brewery as it featured a powerful combination of high usability, a simple interface, and robust security. The solution encompassed a hyperconverged infrastructure (HCI) component, and the Nutanix AHV hypervisor, to support Tsingtao Brewery to scale up as needed whilst maintaining outstanding performance.

Specifically, the solution made it easy for the IT team to expand computing and storage resources simply by adding nodes, to boost performance and capabilities. Business operations now remain unimpeded even when the brewery expands or adjusts processes.

Since deployment, Nutanix Enterprise Cloud has delivered consistent reliability, enabling the brewery to meet stringent manufacturing SLA requirements, while providing robust performance and data security. The solution has also improved the efficiency of the brewery's IT organization, providing worry-free daily operations, and streamlined maintenance capabilities.

## Results

- ✓ **Flexible, scalable infrastructure** to support unimpeded business operations
- ✓ **Improved infrastructure reliability** to meet strict operational standards
- ✓ **Reduced IT management workload** to free them to focus on other priorities

## Hear from the team



“

The Nutanix HCI delivers the performance, stability, and great ease of use that we need to maximise agility and establish a flexible, scalable foundation for digital transformation.”

**Xu Haiqing**

*Director of Information Management  
Department, Tsingtao Brewery Co., Ltd.*





## MOVE FORWARD TOGETHER

Nutanix is a NASDAQ-listed world leader in enterprise cloud solutions. Founded in 2009, we have been an early market leader in hyperconverged infrastructure (HCI) and have evolved to provide a broad portfolio of software solutions and cloud services.

According to Gartner, 70% of all global enterprises will be running some form of HCI by 2023, up from less than 30% in 2019. Nutanix has been a leader on the Gartner "Magic Quadrant" for HCI for three years running.

We hope this eBook was useful to you. If you would like to learn more, please visit our website:  
[www.nutanix.com/manufacturing](http://www.nutanix.com/manufacturing)

Or please contact us at:  
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