

*DBS Bank has soared from being one of the best banks in Asia to become the world's best bank. The bank's ascent to the top of its industry might seem quick, but its transformation efforts began even before the word "digital" came into vogue.*

# Cloud, Open Source, and the World's Best Bank

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*IDC visited DBS and caught up with DBS CIO David Gledhill to find out more about the technology transformation credited to the bank's digital success and why cloud and open source continue to be a key pillar of its technology strategy and success.*

## Growing into Digital

DBS requires no introduction, but its digital accolades command attention. Renowned for being the number one bank in Singapore for outstanding work in various areas of transformation, DBS now sets the pace for its industry worldwide, showing how a bank should be engaging with customers, building teams of innovation, and growing highly skilled bankers for the future.

The bank started its journey to the current era of greatness in 2009, when the industry was suffering from low customer satisfaction. Fresh out of the global financial crisis, banks had to recover their customers' trust, which required a rethinking of the banking business.

Recalling the impetus for the bank's new mission, DBS CIO David Gledhill said, "It was *choice*."

The bank's leaders, he explained, felt "we weren't the bank of choice to customers and to our employees".

With the region's trade corridors growing rapidly in activity, DBS built strength in what it calls the three key Asian axes of growth: Greater China, Southeast Asia, and South Asia.

By 2015, its successes in Hong Kong, China and India stood out from its peers, and gained DBS its reputation as one of the best in Asia. Its accolades grew and so did its aspirations.

According to Gledhill, the bank then set its sights on becoming the best in the world, and that also meant becoming the best in digital.

### SOLUTION SNAPSHOT

**Organization:**

DBS Bank



**Business Goal:**

To be the best in digital and technology

**Solution:**

Adopted Red Hat solutions including Red Hat Enterprise Linux, Red Hat JBoss Enterprise Application Platform, Red Hat OpenShift Container Platform, and Red Hat Ansible Automation

**Benefits:**

Cloud-and-open-source approach has seen an 80% drop in operating costs

That's how the ambition to become the best in digital and technology was born. "We saw that there was this massive sort of digital opportunity out there as well," added Gledhill.

## ***The Technology Underpinning DBS's Success***

In DBS's 2018 annual report, CEO Piyush Gupta noted, "Our technology journey actually began in 2009, when we upped our investment in technology to create resilience and standardization."

Among the technology decisions was to invest in a common application stack across most of its countries and products. By 2014, DBS was ready for the next great leap by re-architecting its systems to be cloud ready in respect of both hardware and software.

Gledhill attributes one of the bank's success in transitioning toward a truly best-in-the-world technology architecture to cloud. This refers to the scale and flexibility it brings, the possibility of platforms, and also cloud-native development — essentially all that cloud facilitates in the bank.

In its reference to the Red Hat Innovation Award APAC that DBS received in 2017 for accelerating innovation through open source, the bank has acknowledged that organizations, having invested heavily in infrastructure, applications, processes, and policies, cannot just throw out their existing assets — these cannot be on cloud right away. Gledhill's vision, therefore, is essentially "hybrid" — applications and workloads are efficiently run across physical, virtual, and cloud infrastructure. Within this hybrid vision, however, is the effort to modernize applications, in stages, to be more cloud-enabled.

Gledhill believes that in the basic stage of this modernization are primarily those legacy applications that are being made "cloud-ready". This means they are increasingly virtualized and run with "some automation"; applications will be moved to the cloud when it makes sense to do so. For example, applications and workloads that have personal data protection implications will probably not be on the cloud.

Then, there is the next stage of modernization in which the focus is to "cloud optimize" the bulk of DBS's applications. Here, applications are run on commodity hardware, with open system components, and with a high degree of standardization and automation. For DBS, that would include solutions like Red Hat OpenShift, Red Hat Enterprise Linux and Red Hat JBoss Enterprise Application Platform, said Gledhill.

The final stop is what he calls "cloud native" applications. These are microservices-based deployed through containers. Red Hat OpenShift Container Platform is used throughout the bank for container clusters and utilized extensively to automate deployment, scaling, and operating application containers.

With 80% of DBS's open systems already cloud enabled in 2018, and over 60 applications completely cloud-native, there are plans to expand its adoption of cloud-native applications in 2019. "Anything new that the bank will be building will be cloud-native. Much of this will sit on the Red Hat OpenShift Container Platform," said Gledhill. This will ensure rapid creation, maintenance, and management of applications that can run across the hybrid cloud environment that the bank is building.

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~ David Gledhill, DBS CIO

## The Impact

How have all these created technology advantage for DBS? One notable aspect is in the support of both traditional and cloud-native applications.

According to DBS, the Red Hat OpenShift Container Platform has not only been secure but also reliable in supporting different banking businesses. It also incorporates industry-leading standard technologies such as Docker and Kubernetes that provided the innovation as well as stability required by the bank.

Gledhill points to improvements in running the banking operations. Referring to "operate" — the dollars that DBS spends on operating technology platforms (e.g., production support, application development, and how data centers are run), which is measured over total income — he revealed that the cost to operate as a percentage of income has gone down by 40%.

He added that the bank "has become much more scalable at a lower cost to scale". This means that in bringing new business and functionality, "it's off the charts, less expensive". Gledhill attributes this to open source adoption, establishing the principles of common operating platforms, containers, and OpenShift. "That's what has enabled us to do this and be super inexpensive."

There is nuance too in DBS's approach to cloud adoption. Gledhill sees that the opportunity was in "cloudifying", not pushing one or two things to public cloud: lift and shift. "We see many companies just taking what they have and pushing it to cloud." But this approach, he pointed out, typically requires retaining expensive databases and software.

"That's not a cheap-to-scale model. We've engineered out all of those expensive proprietary technologies and put in open source. And that's the beauty of this transformation that not many other companies went that route. That's going to give us a much bigger ability to scale," he explained. Applications that transformed from a proprietary hardware-and-software stack to Gledhill's cloud-and-open-source approach has seen an 80% drop in operating costs.

Yet, an even bigger story might be in how the bank has decreased the cost of operations. According to Gledhill, DBS "dramatically increased" the amount spent on build. "We spend about 65% to 70% on build, which is the innovate stuff. So, what this whole cloud transformation has enabled us to do is totally shift our cost operating model to focus on investment and growth."

## The Platforms of Innovation as the Next Stage of Growth

What's next after achieving its big goal of becoming the best bank in the world? The massive and wide-reaching way that DBS is building innovation across the organization is a crucial part of its next-level growth strategy.

Gledhill said, "The big shift we have made over the last 18 months was restructuring ourselves internally, into what we call 'platforms'." Staff from business and technology, with co-leads from each side, support each platform in terms of owning and running it like they would businesses. It's pushing on and asking key questions like: *For the little business that you have, how do you grow it? How do you scale it? How do you make revenue from it? What's the three-year vision of what that little business will look like? How do you connect that externally?*

There are more than 30 such platform businesses at DBS now, ranging from wealth management, to SME, to payments. Citing the payments platform as an example, he noted, "Their job is to imagine this payment platform, work with business partners, but then collectively ideate with customers on how we could create new business opportunities for them."

This was what Gupta noted in his 2018 remarks on what he saw as the next phase of growth when DBS decided that it had to learn how to operate like a start-up. "We have tried to build a culture that is customer-driven, data-

obsessed, open to experimentation, and that embraces an agile way of working. We have automated DevOps, allowing us to have almost complete automated testing, and an increase in our release cadence of almost 10 times."

With DBS's platform-businesses strategy, Red Hat OpenShift Container Platform has also become more important as it incorporates technologies and practices like containers, microservices, agile, DevOps, and continuous integration and deployment (CI/CD). What each platform zeroes in on is a set of key performance indicators (KPIs) around resilience and modernization, scale, large-scale stability, risk management, and security. "What we do from a central perspective is working these KPIs and the tooling behind those," said Gledhill.

DBS is thus able to magnify its advantage in "build". What this means is that developers who deploy their application on a platform as a service (PaaS) focus most of their effort in developing quality codes. PaaS gives them the ability to scale horizontally, designing and developing workloads as cloud-native applications and deploying as microservices. For this, IDC notes that a relatively small operation team is required to support the PaaS platform, and platform administrators automate operational tasks through Red Hat Ansible Automation solution.

### The Next Journey

What else is on the horizon? "It is not about winning," said Gledhill, who since the interview with IDC has concluded his stint in Singapore but remains a senior advisor to DBS. "It is about the journey and about improving."

The bank has moved from focusing on being "better than anyone else" to becoming a bank that believes in "being better for our employees and our customers — by enriching lives and by enabling and helping businesses to grow. And doing that in a sustainable way."

It is clear that DBS is well set up for its next journey. For Gledhill, "The future requires us to build using cloud-based technologies, leverage the best of open source, and bring new ideas to the company."

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### Conclusion

The bank's imaginative acronym of the moment borrows from the fictional Wizard character in the *Lord of the Rings*: that DBS, like Google, Amazon, Netflix, Apple, LinkedIn, and Facebook, will fit nicely as the D in this GANDALF platform movement. Despite its current status as the world's best, DBS's ambition represents the mindset of the broader banking community: that it needs to build platform businesses much like the technology giants of the world.

Like all leaders of great companies that continuously and objectively assess their market positions, Gupta noted in his 2018 reflection: "Our investments have taken us a long way forward to operating like a tech company. However, it's fair to say that we are still a long way from the leading global technology companies. We still need to do a lot of work on data, which is a big part of our agenda going forward. In addition, technology is always changing. Developments in blockchain, artificial intelligence, Internet of Things, augmented reality and other new technologies will need us to remain on our toes in the years ahead."

In the near- to medium-term, DBS will see further expansion of its platform businesses and the intensification of its innovation activities. IDC expects DBS to be among the first banks in the world to crack the CI/CD delivery model, in which new code of new features are deployed and redeployed on a regular basis, perhaps even hourly. This is innovation at scale — and this is something that technology partners like Red Hat can play a key role in DBS's next growth phrase.

Open source as a source of innovation to create a “multiplier innovation effect” has the potential to continue to impact the way DBS’s teams work together towards a CI/CD capability. Tools like Red Hat Enterprise Linux, Red Hat OpenShift Container Platform, Red Hat Ansible Automation, and Red Hat JBoss Enterprise Application Platform are helping to accelerate a culture of innovation and experimentation because of what the tools enable DBS’s platform team to do. Previously, it would have been too expensive, too long to get software developed and too long to deploy. Experimentation is about attempting new features and new services in a cost-effective way, lowering risks without affecting the entire customer or user base.

Indeed, open source is increasingly seen as a way for many organizations in and out of banking to innovate on the one hand, and to scale on the other. Red Hat and its open source tools need to support requirements for a highly elastically scalable, responsive autonomous, automated and agile way to run platform businesses.

That said, the reality is that scale will be an expensive proposition for many banks. The sheer growth of workloads and activities will stretch many organizations that are new to this race to innovate, especially those that have stuck to traditional IT provisioning and procurement practices. Banks looking to build this advantage will need technology partners that can help them scale cost effectively.

Banks building their own business and IT teams like the platform businesses of DBS will inevitably be confronted by varying and often conflicting KPI requirements and quality of service standards. The use of Red Hat technologies should make it easier for banks to resolve the potential trade-offs between functionality, and speed, and stability, and customer-responsiveness. Banks that want to be the best in the world will need to be able to “build platforms smartly” — that means building innovation grounded on a robust understanding of large-scale stability, performance and security.

## **Methodology**

The project and company information contained in this document was obtained from multiple sources, including an interview with DBS CIO David Gledhill, DBS Group Annual Report 2018, information supplied by Red Hat, questions posed by IDC directly to DBS Bank, and IDC Financial Insights research.

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