"A real-life game of Risk":
how GE is betting on cloud

As a **Fortune 500 leader** with a truly global footprint, GE plays to win – and **cloud is no different**. *Ericsson Business Review* meets Shane Stakem, the man behind one of the **biggest cloud transformations in the game**.

"Nobody uses cloud in the way you expect"

What is GE Digital?

GE Digital was established in September 2015 and brings together GE's digital capabilities into one organization. GE is transforming itself to become the world's premier digital industrial company, and the role of GE Digital is to be a central nervous system for major business units across the globe.

We provide cloud platforms that support applications in critical sectors like Aviation, Oil and Gas, Energy, Transportation and Healthcare. For us, cloud isn't about taking baby steps or testing the waters – we're in this to transform our whole IT and development stack.

How is GE's cloud infrastructure set up today?

We have a range of cloud initiatives that are continually evolving. It's never one project followed by another, but a global transformation that exists in an ongoing continuum.

On one hand, we're embracing the public cloud, where we leverage a landing zone from public providers – so utility-based computing, basically. On the other hand, we're very focused on securing hybrid cloud capabilities that use public capacity in a private way. These clouds are multi-tenant for GE, but not for anybody else.

Our dual-track approach is driven by a very specific business requirement. GE is a global brand and we classify our applications into multiple risk tiers. The higher-risk examples have particular security and compliance aspects that determine the private or public cloud environment in which they live. Trust and governance are still the major obstacles for many enterprises considering making the move to cloud, and offering the right balance of public and private is critical for our long-term success.

Has progress matched your expectations?

We've seen cloud adoption go through the roof, particularly on the public cloud side. We anticipated a faster trajectory in hybrid cloud, but initial cost and service offerings are proving to be more important factors. We shouldn't forget that public cloud providers offer things like deep analytics, metrics and security out of the box that the hybrid or private cloud doesn't, and which take time and money to solve. Overall, the outlook is very positive and it's encouraging to see the momentum.

From a cloud perspective, which applications are the most challenging to support?

I see the biggest requirements coming from applications that overlap with the Internet of Things. The latency and security demands of time-sensitive, data-focused use cases are on a whole new level to anything we've had to manage before. The sheer volume of data generated by applications in Aviation and Energy, for instance, is also quite incredible.

The first thing you learn about cloud is that nobody uses it in the way you expect. Very few of the applications that we support have predictable workloads, and this certainly makes life interesting for the storage, compute and network components.

ERICSSON

“The trick is to go fast without the wheels falling off”

That said, I don't think these questions in themselves are necessarily unique to GE – the uniqueness comes from the scale. Our cloud supports business in every part of the world, every minute of the day. That's challenging even with the resources we have. Just because you're rolling out in North America, you can't put Australia on hold for a year. Customers don't like hearing those sorts of things – and CIO's certainly don't.

Ericsson views cloud transformation as a key business enabler. GE is one of the world's largest organizations – can your transformation happen at the speed required?

I come from a start-up background, where pretty much the only timescale is "as fast as possible". It's been quite surprising – and really exciting – to see GE taking the same approach.

The senior management understood the potential of cloud very early. Even if the bottom-line impact was one part of the equation, the transformational IT angle has also been there from the very beginning. GE sees cloud as a fully programmatic approach from an application perspective, and considers it to be a long-term business enabler. It's definitely not just a case of following the crowd.

Of course, GE is still a large ship that doesn't always turn quickly, but we're fixing that. As you would expect, there's a lot of legacy infrastructure, and given the number of physical servers we're still running, it wouldn't feel like a natural transition to throw everything onto cloud straight away. We need a logical transition phase.

Our leadership has recognized that the industry is moving very quickly, and is committed to accelerating our own transformation. The trick is to go fast without the wheels falling off. You can launch a cloud platform in a very compressed time frame, but how do you move your systems with compliance components at the same speed? Processes, security, our overall approach as application owners – all of these need to evolve. That's not always easy on a GE scale.

So we go as fast as we reasonably can. I've seen some of our cloud initiatives go from inception to general availability within four months, rather than the standard 12- to 18-month timeframe. We're moving at a speed that is unheard of for most large enterprises.

What is your approach to technology management?

This is one of the crucial questions for our cloud organization. Let's say we're rolling out cloud in a region over a six-month period. Within that timeframe, the public cloud provider's technology stacks and virtualization components can change completely – and so can the cloud provider itself. When things shift as quickly as they do today, it makes the implementation aspect of our job challenging, even if the overall strategy stays the same. It used to be the other way around – strategy was the hard part,

BACKGROUND CHECK

NAME: Shane Stakem

POSITION: IT Leader, IaaS Platforms, GE

PREVIOUS POSITIONS: Senior Director, Network and Infrastructure Operations, Joyent; Director, IT and Network Engineering, RealClear Technologies

HEADQUARTERS: Bay Area, US

▶

and implementation was more straightforward. You can never have a myopic view on one particular cloud technology. It's like playing a real-life game of Risk where instead of looking at a specific thing in a certain place, you stay up at the 40,000-foot level looking at all the pieces playing together and thinking how you can make the best strategic moves for the future.

How are you leveraging cross-industry cloud initiatives such as OpenStack?

We see these initiatives as very important, particularly from the speed point of view. GE has invested heavily in OpenStack. It's essential that we can get things off the ground without the need for multi-year projects or vendor lock-in, and OpenStack meets all those requirements.

There's also a multitude of companies who offer distributions and extensions of the base platform, and that gives us much more flexibility and protection of our investment than, say, jumping from VMware to Amazon Web Services, where the synergies are minimal. At the same time, the fact that these extension companies even exist is an indicator that pure OpenStack has certain shortcomings, and that it's not yet fully mature.

OpenStack can actually be a very challenging framework on which to base a private cloud. It changes so rapidly and doesn't always match our technology decisions on issues such as storage and networking, for example. I'm convinced that it's crucial for any business working with OpenStack to be very close to the development community, and to use that community experience to benefit everybody.

Does this mean competence – even more than technology or organizational structure – is the decisive factor in cloud?

It's an issue we face every day. Where are the people with the expertise to run, maintain and customize cloud platforms? We need platform developers and advanced sysadmins who can operate production environments – things really need to

ELECTRIC GENERALITIES:

COMPANY: GE

HEADQUARTERS: Fairfield, Connecticut, US

REVENUE: USD 117.4 billion (FY 2015)

EMPLOYEES: 305,000 (2015)

fuse together to make it work well. This is the principle behind DevOps, of course, and we have to invest in this, but it's not an easy synergy to find. Take software-defined networking (SDN), for instance – how many people really understand SDN well and have run it at scale?

If you want to deploy VMware, you could go out and find 10 VMware experts right now and put them to work. Try and do that with OpenStack – I dare you! As an industry, we haven't yet had the years of training, tracks and certifications. And even if we had, the technology is literally changing day by day anyway.

Instead, we're basically learning as fast as we can, based on necessity. One of my priorities is to transform our internal IT organization to a point where we can own, operate and maintain our own infrastructure and ultimately our own clouds. Since I came into this job, I've spent as much time on education as I have on engineering – working with people on best practices and to some extent even selling the idea of cloud and why it makes sense.

That sounds pretty rewarding.

I find it extremely gratifying to see people get what we're trying to do. There's no question that cloud is the future of IT, and when a global organization like GE starts to get that, it's very motivating. We have plenty of work ahead of us, but also endless opportunities to make IT better through cloud.

INTERVIEW BY NICHOLAS SMITH ●

"There's no question that cloud is the future of IT"