HOW SOLID IS THE CLOUD?

Graham Oakes investigates whether you can build reliable cloud-based IT systems.

Graham Oakes: need to think about more than technology

Listen to the outcry. One of Amazon's data centres goes down and it's like the entire cloud has vanished in a puff of smoke. "See, that proves it, you can't trust the cloud," they all say.

Let's go back to basics. Here are some truths that apply to development of any complex system:

● **Component-based service level agreements (SLAs) are meaningless.** A system is only there when the full stack is available. If a service provider only gives component-level SLAs (as is the case for most vendors, cloud or non-cloud), then the client has to build enough redundancy between and across components to deliver an acceptable end-to-end service.

● **Single points of failure are hard to eliminate.** Lots of people think that the cloud automatically gives them redundancy. It does in some areas, but it also leaves plenty of scope for single points of failure, especially on the integration points between services. Identifying and eliminating every possible single point of failure is hard work and requires expertise. It's doubly hard work on systems which are dynamically reconfigurable – you have to ensure that the reconfigurations don't open up new failure modes.

● **Resilient design is complex.** It takes time and skills. It requires a lot of thought. Adding redundancy also tends to add complexity, which means you need to check that this hasn't introduced new failure points. And you need to think about more than technology – the operational processes, testing modes, etc, all need to be good too.

● **Resilient systems are expensive.** You need to pay for expertise. You need to pay for redundant components. You'll probably need to pay for additional network traffic, storage, etc. Then there's additional testing, out-of-hours support cover and so on. The reality is that all these costs may not be justified for many organisations – it may make more business sense to simply accept the occasional outage. That's OK, so long as it's a considered decision.

● **You get what you pay for.** Cloud has changed the charging model and introduced new price points, but it hasn't changed this fundamental truth. Some vendors cost more because they offer more.

The cloud makes some of this harder. Lack of transparency about how the service providers configure their systems can make it harder to identify single points of failure, for example. It also makes some things easier – cheap, usage-based pricing makes redundancy much more affordable, for a start.

Some Amazon customers survived the outage and continued to deliver service. They were the ones who'd thought about resilience and designed for it, not just assumed it would somehow come to them for free.

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