The rise of the dedicated device – a new lease of life for hardware

Thought Leadership Article

Glenn Fitzgerald, Chief Data Officer, Product business at Fujitsu

As Chief Data Officer for the Product business at Fujitsu, Glenn Fitzgerald is responsible for taking the lead in enabling customers to embrace Fujitsu's data-driven transformation strategy. Here, he explains why customers today are more interested in software than hardware.

For many technology veterans, it might be a painful thing to say, but increasingly, customers are not interested in enterprise hardware anymore. If they even want to talk about anything technical, it's usually about software stacks and development environments, rather than hardware. Increasingly, hardware is commoditized, driven through the process of cloud and the predominance of the hyper-scalers.

However, we are seeing a surge in the use of specifically configured hardware for use in software-defined environments – those where the hardware is simply the host. This is happening quickly in the telecommunications sector, where in some ways the latest developments are a return to the practice of the past, when the telcos used large pieces of very specific hardware in the backbone of their networks.

Increasingly, this means providing hardware that is optimized for one very specific task. Although it's still based on industry standard, x86 servers today – and perhaps low-powered ARM processors in the future, we are seeing customer requirements differ to that of simply wanting a commoditized rack server.

In telecoms, this means more in terms of environmental protection: widening the temperature range in which the server will continue to operate normally. For example, in a typical data center, the normal operating temperature is between around 5 and 40 degrees Celsius. In a telecom cabinet, the requirements can range from below zero to up to 80 degrees. Another difference to a standard server is that in the telco space, less memory is generally required.

At the network edge – one of the most-hyped areas of computing today – requirements are also different again, as the interface between computer and function is changing all the time and spans everything from sensors to robotics through to actuators and motors. As you would expect, the hardware to support this also requires specifically manufactured devices.

A third trend is around the growth and proliferation of compute environments. I'm thinking here about ARM as well as Intel and AMD, but also about low-level operating environments, orchestrating containers and virtual machines. These are also driving the marketplace in different directions and maintaining expertise in all of them is difficult for any organization; strategic choices need to be made which impact beyond the choice of platform and affect development environments as well.

Software requirements are increasingly driving hardware specification, as functionality is increasingly delivered via the software, not the hardware. Or, in some cases, it's where we are combining hardware, software and intellectual property to create dedicated solutions that are focused on excelling at a single task.

A good example of this is the specialized platform created by Fujitsu and Capgemini's newly acquired engineering research and development services arm, Altran. This is an AI-powered digital twin – in this case, focused on the ability to robotically control a device in one location from another using Augmented Reality. The project is based on computer vision, a field of artificial intelligence that trains computers to interpret and understand the visual world. Examples of computer vision include optical character recognition, and methods for acquiring, processing, analyzing and interpreting digital images.

This positions data at the heart of digital transformation within a hybrid cloud, edge-to-core-to-edge model. In the past, it's likely that we would have developed specialized hardware, but today, the solution was built from standard server hardware, controlled by Red Hat OpenShift software.

Another example is how Fujitsu is collaborating with Wirepas, a company delivering mesh networks in local areas such as factories. This provides complete connectivity across a company's premises, which is used as the basis for activities such as guiding driverless vehicles for optimal delivery of components to a production line. Another scenario is running edge-based solutions where you need complete connectivity all the time, for example where automated assembly means that a failure of connection at the edge will stop the line.

The hardware marketplace is commoditizing rapidly

As the hardware marketplace commoditizes rapidly, so Fujitsu is also adapting. With Data-Driven Transformation Services, Fujitsu becomes a solution integrator for our customers. We put together solutions to their business problems, drawing on equipment both from Fujitsu and from third parties.

We are focusing on the total customer experience – which starts by understanding what the customer wants, aspires to, and what success looks like – and working forward from there. This is an elevated approach which creates consistent experiences that are designed to exceed expectations, every time.

This approach combines our comprehensive industry solutions, consultative approach and technology expertise to understand our customer needs, predict their demands and deliver a responsive, innovative solution.

As with any technology, then points of differentiation between vendors start to disappear as the hardware becomes a commodity. Today, it's simply a fact that the servers produced by the major players are homogenized, and no customer is prepared to pay a premium for what would have been differentiating factors in the past. Part of the reason for this is the shifting market, where more and more companies are using cloud-based systems. This just means – companies are moving their workloads to someone else's hardware, running in someone else's data center – often in a different country.

There is no brand differentiation for servers inside these data centers operated by hyper-scale cloud providers. Just like any other commodity, any rack or blade server that fails is simply ripped out and replaced, although some components may be salvaged from a faulty unit before it is recycled. But the failure of any single unit doesn't cause the data center itself to skip a heartbeat, since software is spreading functionality across so many identical servers.

What's going to happen next is that this commoditization of data center infrastructure is going to spread to storage, too. Enterprises are storing increasing amounts of data in the cloud – and that is putting a strain on existing storage economics, in terms of the price per GB, TB or PB of data that companies are prepared to pay to protect and store their data.

I expect things will happen more slowly in storage. Also, not all storage hardware will be commoditized. For example, in areas such as disaster recovery, companies will continue to invest in making sure that they have a recent backup that can quickly be restored, ensuring that any downtime is reduced to the bare minimum. But when it comes to the general storage of unstructured data, we see signs of the same sweeping changes that have already taken place in the server market.

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Glenn joined ICL, now Fujitsu, in 1979 as an apprentice and through a varied career has gained expertise manufacturing and production test, hardware, software and firmware design, infrastructure implementation, project management and business and ITC architecture.

In his current role, Glenn works across Fujitsu's global business and is responsible for the development of the technical aspects of the Data Driven Transformation Strategy and developing the solution consulting capability within Product Business to assure the delivery of industry-leading solutions.

He is honored to hold the appointment of Fujitsu Engineering Fellow and in that role is particularly active in reaching out to the academic and educational sectors.