



The Edge is a Team Sport

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KEY THEME – THE RIGHT PARTNERSHIP ARCHITECTURE IS ESSENTIAL FOR EDGE SCALE

Edge Compute is arguably one of the most of exciting and innovative areas of promise for commercial businesses. As semiconductors increase performance and use less power due to ever-improving fab processes, networks improve their capacity, latency and reach, software development leverages cloud native capabilities, and AI inferencing leverage cloud-trained models, we're at an inflection point on how these systems can transform business.

With all of this promise also comes significant complexity. Edge compute is an extremely heterogeneous space and that affects the amount of scale any one technology provider can reach. Without scale, edge businesses die and solutions never evolve past PoCs.

How do technology companies reach this scale and how do companies create their own "team" to successfully transform their business? Let's look at a several factors:

- 1) **Architecture** – can the solution be a "best of class" that leverages the right silicon, the right hardware design the right kernel, development platform, firmware updating, provisioning and workload management? Or is it designed as a monolith? There's a careful balance between having complete functionality and control and leveraging partners with their ideas and innovations – but this is the crux of the edge ecosystem. This brings us to our next key factor.
- 2) **Dependencies** – all good development processes have well documented dependencies. Through a disciplined dependency process, teams - and companies - can count on each other to supply the right functionality at the right time. Yes, this introduces risk. What happens if a dependency doesn't deliver on time or on spec? It requires clear communication and trust. It requires people working together – but the scale opportunity is tremendous.
- 3) **Channel** – we've all heard the term "one throat to choke." It's not a great metaphor but at the end of the day someone needs to stand behind the solution that commercial customer is counting on. There are amazing channel partners out there that are experts in semiconductors, know hardware design, and are also value-added resellers of software. There are system integrators that can build the stack from metal-to-cloud.

These are the fundamentals.

Let's take an example that has a lot of buzz today – container-based workload deployment and management. The ability to spin up VMs and containers in hyper-scalars has unleashed an incredible wave of productivity, predictability, and consistency for developers in the cloud, and now there is a growing movement to move that container-based orchestration beyond the data center onto edge hardware. But...the value prop of containers in the cloud rest upon the fact that you should be able to use a range of orchestration and management systems with a range of “container enabled” hardware. That means that the containers are OCI-certified – but what else? Can you use Azure Arc in the cloud and AKS on the edge device, or can you use K8s or K3s implemented on a Linux distro...or? All of these elements need to work together for the value prop of container-based orchestration to work – otherwise you end up with yet another proprietary silo.

This is just one example, but there are also crucial factors around incentives and motivations, aligning investments and roadmaps, and making big mutual bets. At the cusp of this new edge era, we face a unique set of opportunities and challenges to go beyond IoT, go beyond embedded systems, and create something new, from cloud to edge.