What is Application Specific Networking?
03/02/18

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February 3, 2018

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You cannot simply release any app onto any network and expect it to work first time – the network performance and QoS need to match the apps' requirements. Software Defined Networking (SDN) allows a network to be programmed, and ASN can build that programming into the app itself – claimed NetFoundry Founder, Galeal Zino.

I was impressed with NetFoundry and their new Application Specific Networking (ASN) technology. To combine some current network notions, I believe NetFoundry has invented and is delivering "instant, intent-based software defined networks"— allowing users or programs to tell NetFoundry what network characteristics they

need for a particular application, and NetFoundry spins up that virtually private network. Let me explain using many of Galeal Zino's own words.

Netfoundry founder, Galeal Zino, in his keynote interview at NetEvents 2017 Global press & Analyst Summit, spoke about "Swiss army knife type networks". To quote him: "While a general purpose Swiss army knife type network is great -- it worked fine for the client server era, it worked fine when there's a center of gravity for applications and people and private data centers. In this new digitally transformed world, we believe you actually need application-specific networks that are literally specific to, and controlled by the context of the application."

I think we all recognize a Swiss army knife as a general purpose tool that readily adapts to specific applications: pull out a blade and it's a knife; pull out the scissors and it cuts paper; pull out the file, the saw, the toothpick, the magnifying glass… and so on. And yet this was exactly the sort of adaptability that NetFoundry is promoting for today's software-defined networks.

And Galeal and NetFoundry are taking this concept a full step further.

Application Specific Networking (ASN)

I asked Galeal what he meant by Application Specific Networking, and he explained: "each application is literally allocated its own virtual network, purpose built for the needs of that application. Every application is different, and we construct the network accordingly. Those needs are typically security, or compliance, or performance, or reliability."

Constructing a network for each and every application sounds extremely cumbersome, until he explained this in software-defined terms: "You go to a web console or you use our APIs in your answerable scripts, and in minutes you can spin up a global, secure application specific network. It's a similar experience to the AWS console or Azure console where you spun up virtual machines in the cloud. In our case we enable you to spin up global networks and we're unique in that aspect."

This turned out to be something of an understatement, when Galeal explained further: "We are providing network platform as a service (NPaaS), and that service has the hooks and the controls and the APIs so that your applications can actually control each one of those networks. Meanwhile, you don't need to operate those networks or own those networks; we take care of the plumbing underneath." Comparing again with Azure and AWS he added: "I can spin-up and compute in their clouds, I don't know how Amazon is allocating their compute blocks to your VM as

opposed to my VM, but it just magically works." And in the ASN case, "you are abstracted from the underlying complexity, yet have the ability to have your application get the reliability, performance velocity that it needs."

The exciting part for me was the fact that the application itself can do this: in the single act of opening an application you are at the same time opening up a virtual network specifically tailored to the needs and limitations of that application—an instant, intent-based software defined, private virtual network. To ground these principles in reality, we need a simple real life example.

ASN in the Real World

Integron – an IoT (Internet of Things) Managed Services company serving connected health, energy, and transportation industries – manages wireless connectivity, security, provisioning, device management and support for some million IoT devices worldwide. They have partnered with NetFoundry to provide very secure, high-performance private network solutions – including those designed specifically for healthcare information technology.

Galeal explained how, for example, a clinical drug trial typically begins in a laboratory or hospital, but then needs to continue in an everyday home environment. The patients are provided with an Android tablet running an Integron app that receives data about the time and consumption of their medication, plus other data such as times of eating, sleeping, etc. Such sensitive personal data must be transmitted securely, and, as clinical data, it must also be utterly reliable lest the trial be compromised. As field data, however, it is transmitted by whatever Internet connection happens to be available at the time. As Galeal explained: "Integron took our SIM toolkit, our software, and integrated it with their app. So we provided them the ability – regardless of that last mile network – to securely and reliably transmit data to the folks who needed it". The Integron App not only collects the data, it also digs a reliable, secure tunnel via NetFoundry across the Internet to transmit it safely to the administrators.

That example shows how ASN can be useful for the very wide array of network needs in various IoT environments, from infrequent, low bandwidth agriculture (corn fields, vineyards) to always on, low latency connected car. Galeal gave the example of an IoT device where the policy does not permit it to operate outside a specified geographical zone. So, if the IoT device were stolen, the app could trigger a network kill switch, or potentially divert the network traffic to a security honeypot where administrators could monitor what is happening. Galeal says "think about it from the perspective of the network engineer, the application developer, and devops, working together for that degree of automation, and essentially self-healing resiliency – a common challenge for both intent-based networking and application specific networking."

Another example he suggested was a just-in-time manufacturing operation: "somehow, across those multiple networks and clouds, multiple suppliers, multiple production lines or assembly lines, we're going to securely exchange data in real time for Just-in-Time manufacturing. In other words the data had better be accurate, better get there in time, and it certainly can't be compromised from a security perspective."

He was in no doubt about the wider significance of this technology either: "The overall need for networking has never been higher and the growth is exponential, tens of billions of IoT devices, applications that are no longer monolithic but composed of multi-cloud micro services and APIs, mobility, SaaS. All of a sudden the need for a network to connect distributed compute has never been higher. We are entirely focused on connecting application to application – while legacy networks connect node-to-node, site-to-site. Together we can meet the needs of that digital transformation journey."

SD-WAN today

I asked him: "these examples make a lot of sense, but the hi-tech arena is full of bright ideas that fail to catch on. So what about the uptake of ASN?"

"We're incredibly excited by the customers that are already using our platform -- they are now innovating in ways that we hadn't even thought of. When you arm developers and engineers with a new tool or a new set of capabilities, they use those tools and capabilities to innovate. For example, we have customers who are using our technology in multi-cloud applications, in IoT applications, to build business-to-business extranets where it's a wide variety of use cases, very innovative type application and integrations, all based on one common platform, an easy to use platform. The world is moving so quickly and has to be incredibly simple to use yet powerful. The infrastructure as a service folks – AWS, Azure or Google Cloud – we're copying what they did. It's very easy and simple to spin up a virtual machine in the cloud, you equally need to be able to spin up a global network to meet the needs of your application."

Reflecting on the level of agility and flexibility increasingly demanded by today's business, he described the legacy static network as a real handicap to that development: "we put the application in control, we give the engineers and developers the ability to actually control the network without owning the network. Now we have the capability to support the application explosion over our networks."

After Galeal's keynote and my interview with him, I was thinking that the Swiss army knife metaphor was a bit klunky and not sophisticated enough for ASN, but it served its purpose. I came away convinced about the significance and potential of Application Specific Networking.