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Microsoft's One-Two Punch to Dominate 5G Telco Cloud: A Wake-Up Call to UC Landscape

In the midst of a global pandemic, Microsoft is charging forward to win over the virtualized telco cloud and mobile edge infrastructure in order to dominate the 5G computing era. In late April, Microsoft signed a definitive agreement to acquire Affirmed Networks, and two weeks later, Metaswitch Networks, to gain critical elements of fully-virtualized, cloud-native mobile networking infrastructure. Both companies took the market by storm when AT&T announced their selection as preferred vendors for its Domain 2.0 software-defined network (SDN) initiative back in February 2014. Five years later, Microsoft and AT&T announced a collaboration, laying out their approach to 5G for Business and mobile edge computing capabilities with Microsoft Azure.

> *Affirmed* specializes in fully-virtualized, cloud-native mobile networking solutions with special emphasis on mobile core, such as virtualized evolved packet core (vEPC), network slicing, and virtual probes (vProbe).
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> *Metaswitch* specializes in IP session management and carrier-grade and wireless networking protocols, such as virtualized IP multimedia subsystem (vIMS), voice-over-LTE (VoLTE), virtualized session border controllers (vSBC), VoIP softswitches, and virtualized telephony application servers (vTAS).

Microsoft envisions the new world consumed entirely by mobile. This new mobile-first, fully virtualized cloud world is based entirely on its Azure cloud computing clusters (called Azure Edge Sites) distributed across public clouds, private clouds, enterprise customer edge or telco operator edge. The network "edge" is a local data center housed next to telco mobile core infrastructure whose goal is to put more computing and caching capacity closer to end users. Such architecture enables ultra-low latency (under 10 milliseconds versus 4-5x higher latency currently) and high-speed workflows, thanks to 5G gigabit per second speeds and feeds, to tackle a variety of enterprise mission-critical workflows previously not possible with mobile computing, which require a backup from wireline backhaul and last-mile fiber connection. The new 5G world opens up real-time enterprise services like voice and video, industrial robotics, remote surgery/telehealth, mixed reality, intelligent video surveillance, and a slew of IoT use cases.

Impact of 5G and telco edge computing:

- Wireless networks emerge as a critical infrastructure for low-latency computing and DevOps application development
- The promise of fixed-wireless convergence is closer than ever
- Enterprise cloud workflows will be consumed entirely by mobile
- Disintermediation of WiFi and broadband telephony services
- Microsoft as white-label cloud infrastructure provider for wireless players
- A wake-up call to UCaaS CSPs and landline voice services landscape

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5G plus low-latency edge computing could sunset WiFi and broadband. Today, there are two separate telecom networks – fixed/wireline and wireless. The fixed-voice network, i.e., PSTN is over 100 years old, but it is still being used today for "dial-in" services when in the office, home or on-the-go for IP-based services like cloud telephony, contact center or video conferencing meetings. Fiber is still needed to haul a massive amount of traffic between public cloud or edge sites (data centers) but edge computing brings key telco network infrastructure closer to the end-user to enable ultra-low latency and high-speed applications to be deployed in the mobile environment. Emerging 5G architectures plus edge computing creates a paradigm shift to fixed-to-mobile convergence (FMC) and a path to one telco network effect, which is highly disruptive. Over time, this could lead to disintermediation and sunsetting of WiFi and fixed broadband networks.

A wake-up call to fixed broadband services such as UCaaS. While all infrastructure platform elements are readily available at its disposal, Microsoft is not interested in UCaaS or PSTN services per se, until it is able to shift these business workflows to mobile. Again, this highly disruptive and fundamentally different approach takes on the true meaning of FMC. Microsoft now has a better infrastructure offering than others to provide fully virtualized mobile edge sites—based on Azure Edge Sites and VNF software of the acquired companies—which will allow it to run enterprise applications like Office365, MS Teams, and other business workflows natively, using entirely cellular access. Furthermore, as Microsoft steps up to become a cloud infrastructure arms dealer to wireless carriers, fixed broadband and fiber network companies may look to acquire or partner with other wireless companies to defend their client base.

Growing presence of MS Teams ... In the meantime, Microsoft has been growing its presence in the cloud communications market with the development of Microsoft Teams—the fastest-growing business application of all time at Microsoft, now used by over 75 million DAUs, with a captive base of 258 million monthly active Office 365 business users. And while communication functionality within Microsoft Teams is critical, Microsoft is quite comfortable with PSTN services enabled via a carrier or through third parties using Direct Routing connections. The change in Teams strategy versus its prior cousin, Skype for Business —where Microsoft fulfilled the role of a traditional CLEC by offering calling plans and telco termination services —has been quite effective, as user growth seems to suggest. It simply tries to avoid direct competition with the carriers. However, when it moves to provide Teams services entirely in a mobile environment, that relationship could change.

... and risk of disintermediation to UCaaS CSPs in the mid-term. Real risk of disintermediation emerging in the mid-term to landline service providers who have been incorporating Teams into their services portfolio. Microsoft now has a complete collaboration portfolio, virtualized communication infrastructure, and hyperscale cloud that can offer a robust VoIP/VoLTE/Vo5G solution for retail/enterprise customers, wireless carriers, and managed service providers. As wireless and wireline carriers upgrade antiquated networks, rather than rip and replace, they will rip and outsource to Microsoft. This is the first true convergence of cloud and communications
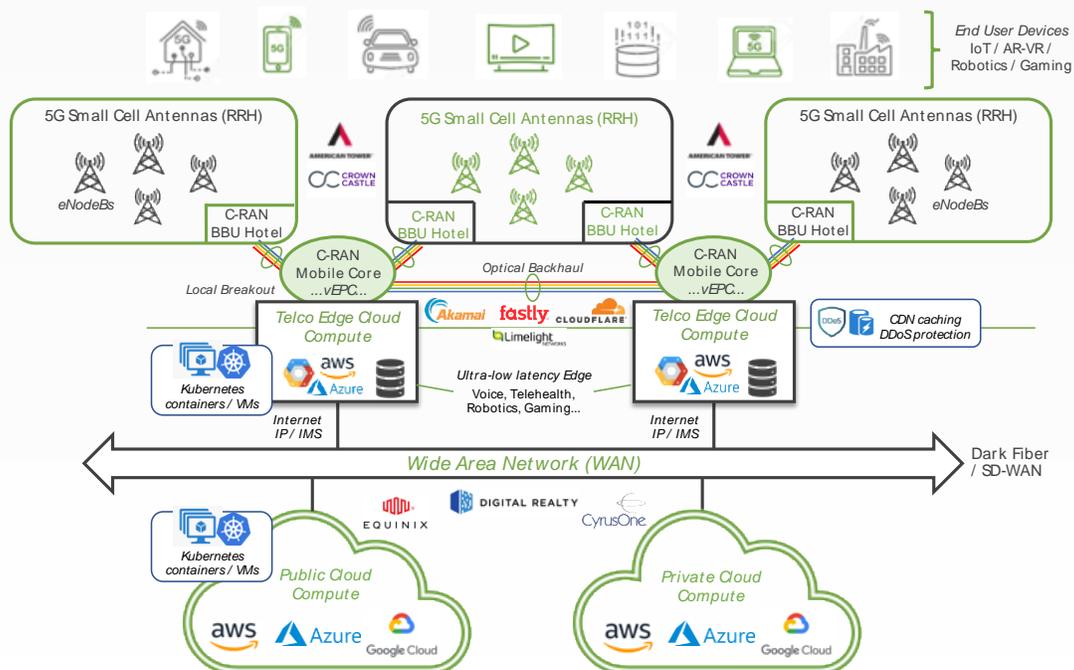
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networks – and will put pressure not only on proprietary UCaaS vendors, but also on traditional UCaaS CSPs (running on BroadSoft or Metaswitch stack).

Cloud wars for 5G and edge computing likely to intensify. We believe Google and AWS will likely follow suit. Both cloud giants have been quite active in their contribution to edge computing by partnering with major operators, but neither have yet made any investment into virtualized EPC or IMS core. It remains to be seen what Apple and Oracle will do. Oracle invested heavily in 4G SIP/VoLTE infrastructure with the acquisitions of Tekelec, Acme Packet, and Portal Software (SS7/Diameter signaling protocol, SIP session management, and OSS/BSS, respectively; running, however, on a legacy telco-hardened Solaris OS, developed by Sun). Cisco has all the voice and mobile core infrastructure elements (Broadsoft's IMS core, Starent's EPC, network switches, security and servers) running in multiple clouds and has long-standing collaborations with both AWS and Google Could. Cisco could emerge as a key enabler to Apple (given their partnership on the network side), as well as the mobile infrastructure powerhouses, Ericsson and Nokia (via Nuage Networks, its cloud-native/SDN subsidiary).

Affirmed celebrated its 10-year anniversary this year and raised a total of $155 million of venture financing reaching revenues of just shy of $100 million and more than 100 operator customers.

Metaswitch, backed by financial sponsors, achieved revenues of just north of $200 million and catered to over 750 service providers throughout its 40-year history.

Cloud Wars: 5G & Telco Edge Cloud Computing Infrastructure

Source: Q Advisors, LLC

Microsoft's collaboration with AT&T aimed at mobile edge and 5G. This June, Microsoft is planning to launch three cloud-native edge computing services: one standing up a mini Azure region on or close to an enterprise site, one for industrial connectivity on a 5G private network, and one offering cloud services that run inside the carrier's (AT&T) network. The three new services are called Edge Zones, Private Edge Zones, and Edge Zones with Carrier, respectively. The first Edge Zones with Carrier will be with AT&T in Atlanta, Dallas, and Los Angeles. Azure Edge Zones are connected to Azure's own public cloud network and, in time, Microsoft plans to let developers place workloads into these edge sites automatically. Microsoft envisions Azure Edge Zones to be used for advanced low-latency scenarios like mobile gaming, drone monitoring, smart cities, and real-time analytics. Several Microsoft Azure's partners are focusing on the industrial and retail opportunities like mobile point of sale, factories, and warehouses.

Google Cloud and AWS have similar agendas through collaboration with AT&T and Verizon. There are major similarities between Azure Edge Zones and Google Cloud and AWS's recently announced edge cloud services. Google launched Anthos for Telecoms last year and is working on multiple mobile edge and 5G solutions with AT&T. AWS late last year announced a Local Zones service and AWS Wavelength, working in partnership with Verizon. Verizon is also building a true virtualized 5G network, with the intelligent edge that is integrated with AWS cloud to enable developers to create and deploy ultra-low latency applications. Notwithstanding, Microsoft has on-boarded many more carriers than its two big cloud rivals. What sets Microsoft further apart is its tight integrations across the hyperconverged Azure cloud stack and its granularity of business services, especially for private network deployments. Google Cloud and AWS can't currently match that natively in the cloud, and will likely resort to M&A, in our view. While there are a lot of business workflows Google Cloud and AWS can go after, there aren't many remaining virtualized network infrastructure companies left to buy. One pure-play is Dallas, Texas-based Mavenir Systems.

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About Q Advisors

Q Advisors LLC (www.qllc.com) is a world-class global boutique investment bank formed in 2001 serving public and private companies, PE firms, entrepreneurs and large multi-nationals in the telecom, media, and technology (TMT) sectors. The firm has extensive, global reach, while also providing the personalized service of a boutique advisory firm. Thanks to our partners and senior staff, who come from leading investment banks and operating companies, we leverage extensive industry knowledge and analytical insights to help our clients achieve successful M&A and capital markets transactions.