DISH and AWS Form Strategic Collaboration to Reinvent 5G Connectivity and Innovation

- *In a telecom industry first, DISH will leverage AWS infrastructure and services to build a cloud-based, 5G Open Radio Access Network (O-RAN) that delivers consistent, cost-effective performance from core to the edge*
- *DISH announces Las Vegas will be first live city in nationwide network deployment*
- *DISH will use AWS Outposts and AWS Local Zones to build its network in the cloud, enabling customers to apply the breadth and depth of AWS capabilities to innovate low-latency 5G applications and services for a wide range of industries*

SEATTLE–April 21, 2021 – Today, Amazon Web Services, Inc. (AWS), an Amazon.com, Inc. company (NASDAQ: AMZN), announced that DISH Network Corporation (DISH) (NASDAQ: DISH) selected AWS as its preferred cloud provider and will construct its 5G network on AWS, part of a strategic collaboration agreement under which both companies will work to transform how organizations and customers, including AWS and Amazon, order and consume 5G services or create their own private 5G networks.

DISH is deploying the first standalone, cloud-based 5G Open Radio Access Network (O-RAN) in the United States, beginning with Las Vegas later this year. DISH will connect all of its hardware and network management resources through the world's leading cloud to enable secure, rapid scaling and innovation as well as on-demand responsiveness to customers' wireless needs. Given this marks the first time that a 5G network will be run in the cloud, DISH will achieve agile and cost-effective operations while seeking to redefine the practical applications of 5G. As DISH deploys its network, the company is partnering exclusively with vendors offering cloud-native technology, bringing them together on AWS to provide DISH customers greater flexibility and control of their 5G-enabled solutions.

DISH will leverage AWS's proven infrastructure and breadth of services to deploy a cloud-native 5G network that incorporates O-RAN – the antennas and base stations that link phones and other wireless devices to the network – and the 5G Core – the logical architecture that directs traffic flow within the network. AWS will also power DISH's fully automated Operation and Business Support Systems (OSS and BSS) that will enable the company to provision and operate its customers' 5G workloads and monetize its network.

By building its network on AWS, DISH is also simplifying the process for developers to create new 5G applications. DISH developers and customers, as well as the AWS developer community, will be able to create innovative 5G solutions across a variety of industries by leveraging standardized application programming interfaces (APIs) to engage with data on DISH network attributes such as user equipment latency, bit rate, quality of service, and equipment location. Developers can then leverage AWS services and partner capabilities in machine learning, analytics, security, and more to create responsive solutions that use that data. For instance, they could offer low-latency augmented reality gaming experiences optimized for the user's device, serve contextual advertising, or orchestrate the movements of a robot at a disaster site.

"Through this collaboration with AWS, we will operate not just as a communications services provider, but as a digital services provider harnessing the combined power of 5G connectivity and the cloud. Together, we will enable our customers to take full advantage of the potential of 5G. Our approach will revolutionize wireless connectivity by giving customers the ability to customize and scale their network experience on-demand," said Charlie Ergen, DISH co-founder and chairman. "As a new carrier, leveraging AWS and its extensive network of partners enables us to differentiate ourselves by operating our 5G network with a high degree of automation, utilizing the talent of AWS-trained developers and helping our customers bring new 5G applications to market faster than ever before."

"DISH's cloud-native and truly virtualized 5G network is a clear example of how AWS customers can use our proven infrastructure and unparalleled portfolio of services to reinvent industries," said Andy Jassy, CEO of Amazon Web Services, Inc. "This collaboration means DISH and its customers can bring new

consumer- and enterprise-centric services to the market as quickly as they're created to deliver on the promise of 5G. Together, we're opening the door to new technologies that will transform factories, workplaces, entertainment, and transportation in ways people have only dreamed."

5G wireless is rapidly emerging as an enabling technology for industry use cases such as smart factories, personalized healthcare, self-driving vehicles, and immersive gaming that require extreme low latency, connectivity and data processing. DISH will use its 5G network to connect mobile and IoT devices like smartphones, robots, factory equipment, wearables, and other physical sensors to AWS to offload compute, analytics, machine learning, and related workloads, enabling systems to act on device data in real time.

DISH can also leverage AWS to tailor performance for individual customer use cases on demand, by optimizing network attributes such as transmission speed or network availability through a process known as "network slicing." For instance, if an enterprise wanted to set consistent performance standards for when its customers stream videos, they could request a dedicated network slice that is tailored for high-data-rate video distribution. DISH will tap into AWS's extensive roster of telecommunications partners, as well as AWS Professional Services, to automate deployment of 5G network slices and deliver results at unparalleled speeds instead of the months it currently takes with existing manual processes. Running on AWS, DISH's 5G network will also significantly outpace legacy networks in the speed with which it can facilitate hardware and software upgrades.

To support real-time workloads at the network edge and quickly process inbound and outbound data from its O-RAN infrastructure, DISH will leverage AWS Local Zones and AWS Outposts. AWS Local Zones are an infrastructure deployment that places AWS compute, storage, database, and other select services close to large population, industry, and IT centers for applications requiring single-digit millisecond latency, while AWS Outposts extend AWS infrastructure, services, APIs, and tools to virtually any on-premises facility, such as the factory floor or a 5G base station. With this combination of AWS infrastructure, DISH can push its 5G Core to the edge and achieve consistently high performance across its service area, while also enabling developers to take full advantage of 5G speeds when building new applications and services.

In addition, DISH will use AWS capabilities such as compute, containers, IoT, machine learning, and security to process 5G data and run its 5G Core, BSS, and OSS at scale while optimizing costs. DISH will use AWS Graviton2-based instances to power its compute workloads (AWS's custom-designed Graviton2 processors with 64-bit Arm Neoverse cores provide up to 40% better price-performance over comparable current-generation x86-based instances) and Amazon Elastic Kubernetes Service (Amazon EKS) to run containerized workloads, helping it deliver high availability during periods of peak network use. Running its 5G network over AWS will allow DISH to further reduce costs by bypassing the capital expenditure investments typically associated with building and operating network infrastructure hardware. DISH will also apply AWS machine learning capabilities at the network edge to help improve service by predicting network congestion at specific locations, as well as recognizing anomalies in network function, and then automatically taking corrective actions to optimize performance.

About Amazon Web Services

For over 15 years, Amazon Web Services has been the world's most comprehensive and broadly adopted cloud platform. AWS has been continually expanding its services to support virtually any cloud workload, and it now has more than 200 fully featured services for compute, storage, databases, networking, analytics, machine learning and artificial intelligence (AI), Internet of Things (IoT), mobile, security, hybrid, virtual and augmented reality (VR and AR), media, and application development, deployment, and management from 80 Availability Zones (AZs) within 25 geographic regions, with announced plans for 15 more Availability Zones and five more AWS Regions in Australia, India, Indonesia, Spain, and Switzerland. Millions of customers—including the fastest-growing startups, largest enterprises, and leading government agencies—trust AWS to power their infrastructure, become more agile, and lower costs. To learn more about AWS, visit aws.amazon.com.

About Amazon

Amazon is guided by four principles: customer obsession rather than competitor focus, passion for

invention, commitment to operational excellence, and long-term thinking. Customer reviews, 1-Click shopping, personalized recommendations, Prime, Fulfillment by Amazon, AWS, Kindle Direct Publishing, Kindle, Fire tablets, Fire TV, Amazon Echo, and Alexa are some of the products and services pioneered by Amazon. For more information, visit amazon.com/about and follow @AmazonNews.

About DISH

DISH Network Corporation is a connectivity company. Since 1980, it has served as a disruptive force, driving innovation and value on behalf of consumers. Through its subsidiaries, the company provides television entertainment and award-winning technology to millions of customers with its satellite DISH TV and streaming SLING TV services. In 2020, the company became a nationwide U.S. wireless carrier through the acquisition of Boost Mobile. DISH continues to innovate in wireless, building the nation's first virtualized, O-RAN 5G broadband network. DISH Network Corporation (NASDAQ: DISH) is a Fortune 250 company.

For company information, visit about.dish.com.

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