DEPARTMENT OF DEFENSE (DoD) 5G INITIATIVE

5G CHALLENGE COMMENTS AND RECOMMENDATIONS RESPONSE

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1.0   COMPANY BACKGROUND

Illuminate's corporate roots extend back to the Hewlett-Packard Company including a long history of innovation and leadership in communications, telecommunications processing, test and measurement. Illuminate leverages 30 years of subject matter expertise in telecommunication networks and applies the latest generation technologies in cloud computing, analytics and machine learning to offer modular end-to-end system solutions and provide technical support services across the entire Sponsor Mission spectrum.

Illuminate provides innovative commercial network monitoring solutions for surveillance and Lawful Intercept (LI), public safety, cyber threat detection and legal compliance for critical network infrastructure. Our solutions are optimized for network cyber security requirements in 2G, 3G and 4G mobile network infrastructure, NFV infrastructure and ISP networks, with aggressive company investment in evolutionary 5G SDN/NFV hyper-scale technologies.

The Illuminate solution portfolio includes a scalable family of interchangeable passive and active appliances supporting 1G/10G/40G/100G network access and monitoring with companion data analytics and visualization applications that can support Petabyte scale ingest, retention and analysis. Our solution applications can be deployed as traditional stand-alone applications in public or private cloud environments.

2.0   5G CHALLENGE

The 5G mobile network architecture is a packet architecture intended to provide high bandwidth, ultra-low latency, and high-volume communications with special emphasis on machine-type (Internet of Things, IoT) communications. The 5G network introduces new architectural features including network slicing to support virtual network deployments, strong support for non-3GPP access (e.g., Wi-Fi), more efficient radio access, a service-based architecture, and an enhanced security model. Most significantly, 5G networks and related network functions will be software-driven, dynamic and highly scalable making full use of cloud-based technologies.

Illuminate believes the greatest impediment to the maturation of open 5G stack will be the interoperability of these software-driven networks and network functions. In any network, complexity grows exponentially as the number of network functions grow. These network functions will be implemented by a wide variety of independent organizations (commercial operators, local and federal governments, first responders, private entities, etc.) all with different network requirements and goals.

For these networks to succeed, it will be vital to provide visibility at the interface points between these networks to provide information related to fault finding, remediation, and perhaps most importantly, the identification of security vulnerabilities introduced by the interconnect of these disparate networks. To address these challenges, Illuminate is developing cloud-native container-based network monitoring sensors (or probes) to provide disaggregated visibility. These cloud-native probes are able to scale up and down with the network to ensure complete visibility. The 5G probes will be able to record network traffic to enable offline analytics to provide network fault identification, remediation and vulnerability analysis. Each of these probes will act independently of each other to provide varying degrees of information. This feature means the end user will not be overwhelmed by the sheer volume of measurement data, but rather only requested data. The Illuminate 5G network probe will be a targeted sensor allowing organizations to effectively monitor and identify network faults and security threats in real-time.

The diverse nature of the open 5G stack community introduces a wide range of complexities and unknowns. The Department of Defense's 5G Initiative will require network assurance monitoring similar to that being proposed by Illuminate to guarantee interoperability.