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Via Electronic Submission

February 28, 2011

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Comments Requested in the Matter of Rapidly Deployable Aerial Telecommunications Capable of Providing Immediate Communications to Disaster Areas
PS Docket No. 11-15

Dear Ms. Dortch:

Layer 2 Connections, LLC ("Layer 2 Connections") hereby submits the following comments in response to the Commission's Public Notice, DA 11-175, released January 28, 2011, regarding aerial telecommunications architecture, such as unmanned aerial vehicles or balloons, that can be rapidly deployed in emergency response situations.

Layer 2 Connections suggests that a key capability which should be considered in the architecture of rapidly deployable systems is the ability to simultaneously utilize similar and dissimilar network connections so that the combined and aggregated bandwidth may be made available for all applications and services based on user-definable policies.

We note that natural disasters and terrorist attacks often result in key network infrastructure being impacted. Both commercial and private terrestrial networks – whether wired or wireless – may not function or may function intermittently due to node failure, congestion, interference or a combination of other external factors. The disaster or attack may result in large geographic regions being left with limited connectivity, with intermittent availability and restricted throughput.

Regardless of the types of network on hand, the ability to make the best of whatever connectivity is available with due consideration for its changing performance is critical to providing situational awareness to public safety, emergency and disaster recovery personnel.

(continued)

We note five fundamental features that increase the utility, resilience and capacity of any and all available network types.

1. Bonding – the ability to utilize the bandwidth of more than one disparate network at the same time in a manner that allows applications and services to address the aggregate bandwidth of all networks simultaneously.

2. Seamless Mobility – the ability to transition data traffic from one network to another via a "make-before-break" connection with no loss of connectivity or security.

3. Real-time Network Performance Management – the ability for traffic to be effectively shaped and prioritized over one or multiple network links (whether wired or wireless – terrestrial or satellite) in such a way that instantaneous changes in availability, bandwidth, latency, jitter and packet loss are considered when making bonding and seamless mobility decisions.

4. Direct Radio Management – the ability to control the client-side radio so that a more reliable architecture can be established; bearer management is as important as IP and session management for the field operation.

5. Resilient Security – the ability to work with potentially insecure wide area bearers using a VPN that is capable of managing the unreliable and variable nature of radio connectivity. It is also important that every session and every user encryption be uniquely keyed to ensure exposure to replay is minimal. It is also an advantage that a VPN can be fragmented over multiple bearers to make it near impossible to decrypt the overall message.

In the case of use of VPNs over satellite communication, we note that VPNs can have a severe impact on throughput. As such, any VPN must be able to negate this effect and maximize the potential performance of the satellite bearer.

For a rapidly deployable field architecture it would also be highly desirable to operate at Layer 2 of the Open Systems Interconnect (OSI) model and thereby facilitate VLAN's and connectivity that is not dependent on specific IP addressing by the carrier. This ability would permit instant deployment by any operator, would maintain central security and governance and through multiple VLAN delivery, provide a common platform to deliver multiple agency operation using the same field unit while maintaining traffic separation. The ability to prioritize traffic and applications agnostic to the bearer would also be highly desirable functionality. (continued)

We note that the Bonding, Seamless Mobility, Real-Time Network Performance Management, Direct Radio Management and Resilient Security features described above are capabilities currently available from Brand Communications' Apollo Anywhere software platform.

Apollo Anywhere is a mature solution that has been used in mission-critical scenarios where its end-to-end Layer 2 (Link Layer) encryption secures traffic across any combination of network technologies. Applications and protocols can be prioritized and shaped over the bonded networks ensuring that quality of service can be maintained as network performance changes and as networks become available and unavailable. Apollo Anywhere is software-based which can ease rapid deployment.

Layer 2 Connections is a small, woman-owned business based in North Carolina with experience serving the public safety community with mission-critical voice and data communications.

If you have any questions or comments regarding these comments, please do not hesitate to contact me.

Sincerely,

Pascal de Hesselle
Principal
Layer 2 Connections, LLC

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