Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Service Rules for the 698-746, 747-762 and 777-792 MHz Bands	)	WT Docket No. 06-150
	)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
	)	
Amendment of Part 90 of the Commission's Rules	)	WP Docket No. 07-100

COMMENTS OF INTERNET2

Introduction

Internet2 is a not-for-profit consortium of more than 200 U.S. research universities, government agencies and laboratories, companies, and regional networks that provide advanced networking for a wide range of community anchor institutions. By bringing research and academia together with technology leaders from industry, government, and the international community, Internet2 has promoted collaboration and innovation that has had a fundamental impact on the evolution of broadband services to date, and will continue to have a fundamental impact on the future of broadband services. Internet2 has pioneered new broadband technologies, such as IPv6 and multicast, and deployed networks to enable the next generation of data-intensive e-science.

The United States Unified Community Anchor Network (U.S. UCAN) is a new national project that is being established under the auspices of a BTOP grant to Internet2. U.S. UCAN is dedicated to supporting community anchor institutions, including public safety, public libraries, schools, community colleges, research parks and health care institutions with advanced broadband capabilities. Utilizing the Internet2 network and in collaboration with regional

research and education networks across the country, U.S. UCAN will enable these anchor institutions to serve their communities far better than they can today.

The BTOP grant enables Internet2 to dramatically increase its bandwidth, resiliency and footprint to accommodate the connection of the nation's estimated 200,000 community anchor institutions, including public safety. The network and organizational projects are both national in scope and are configured to ensure that all the necessary bridges are built to connect the various community anchor sectors and provide programs tailored to their needs.

Discussion

Not unlike what the research and education (R&E) community began about 15 years ago, the public safety community is about to embark upon an endeavor that will require the development of special purpose networks to meet the needs of that community. These special purpose networks evolve out of the need to support capabilities not available over the commodity Internet. In the case of the R&E community, it was the need to meet ultra-high bandwidth capacity in support of researchers. The Department of Defense Intranet for example exists to meet security requirements that also cannot be served over the commodity Internet.

Today's public safety networks are comprised primarily of low speed (1.544 million bit per second T1s) circuits that are optimized for voice. Recent changes in emergency communications as well as changes anticipated in the near future are going to limit the usefulness of these existing networks. All of these changes are enabled by the transition to IP based networks and they include:

- The establishment of P25 interoperable two-way voice radio systems that allow roaming between networks as well as utilization of existing IP routed networks

rather than requiring dedicated T1 circuits for connectivity between the base stations and the network core.

- The beginning of 700 Mhz LTE public safety networks that the Commission has required must support network roaming. These networks require expensive network cores that if can be shared will result in significant savings.

- The establishment of State and Regional Emergency Services IP networks (ESInets) that will connect emergency callers to call takers and call takers to first responders. These ESInets are beginning to be deployed in some states.

One of the major differences between the existing networks and their replacement Next Generation (NG) is that while today's networks support only voice, the NG networks will support voice, data, video, text, telemetry, data base sharing and other applications. This will result in a significant increase in the amount of bandwidth required. For example, most 911 call centers (PSAPS) and radio base station sites require only a 1.544 million bit per second circuit whereas the LTE base station sites and NG 9-1-1 sites will each require approximately 100 million bits per second circuit with a redundant backup preferred. While there is significant discussion about the capital expense that will be required to complete this network transition, there is not as much dialog about the ongoing operational expense, which may be due to the fact that these network cost increases are not completely understood at this time.

In the mid 1990s the R&E community began to construct its own special purpose networks. These networks took the form of a national backbone (Internet2) peered with international partners connected to regional networks that often supported one or more states that were in turn connected to campus networks. Many of these networks were built out of private fiber, microwave or other private facilities since the circuits required were either non-existent or not affordable.

Now that the public safety community is in the early stages of developing its network, it is important that the Commission explore every opportunity for the public safety community to leverage the R&E networks wherever possible. This use of existing services could go a long way towards mitigating operational cost increases.

Two ways that Internet2 can assist the public safety community are by coordinating efforts with the regional networks and by permitting cost-effective use on the Internet2 backbone that will support U.S. UCAN. U.S. UCAN is an Internet2 project that will also offer a coordinating body to support communities of users like public safety. The capabilities of the U.S. UCAN organization, together with the new Internet2 network upgrade funded through BTOP, are uniquely positioned to offer a highly resilient, private network that can be a part of a national interconnection strategy for public safety.

Internet2 has the ability to partition sections of the network into separate networks. One of these networks could be the public safety network, and the potential benefits to the public safety community from use of Internet2 and U.S. UCAN would be immense.

We welcome the opportunity to work with the Commission and the public safety community to help us to maximize the investment that the taxpayers made in Internet2 through BTOP.

Respectfully submitted,

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