

Intelligent 21st Century Strategies for Broadband and Cyber Infrastructures Security

By

Dr. Emmanuel Hooper, PhD, PhD, PhD

Harvard University, Leadership for Networked World

Global Information Intelligence: <http://globalinfintel.com>

ehooper@fas.harvard.edu or ehooper@aya.yale.edu

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Intelligent 21st Century Broadband and Cyber Security Strategies for FCC broadband plans

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- Major considerations specific to planning for broadband to address large scale emergency preparedness and response
- **The Challenges Facing Broadband and Cyber Networks**
 - Acceleration of high speed broadband networks via wireless, Wi-Fi, and emerging WiMAX to cyber infrastructures
 - Challenges of high speed data transmission at high frequencies and speeds in the Gigabits range that transfer eventually terabytes of data across multiple interfaces to wireless and fiber networks that interconnect to the global Internet.
 - Broadband distribution, access controls, security, monitoring, intrusion detection and prevention, response and forensic evidence for traceability, sustainability of effective use and management.



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- NBP addressing means to protect and advance cyber security
- Proposed Broadband plan for Congress should include
- **Strategic on-going research** on the wider impact of broadband distribution and cyber security as follows:
 - **Ensure responsible broadband use, distribution and management is monitoring astute interceptions of high-speed traffic at various segments of the broadband infrastructures that interface with US cyber and global networks that transmit high-speed data in real time.**
 - **Identify legitimate traffic, understand the levels of appropriate thresholds for traffic on broadband networks, and ensuring effective cryptographic key management, ciphers and algorithms are adaptable to handle astute interceptions, evasions and insertions.**



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Proposed Broadband plan for Congress should include

- **Strategic on-going research** on the wider impact of broadband distribution and cyber security as follows:

FCC coordination with other federal agencies and state and local governments

- **Coordinated research and intelligence on broadband and cyber security for the FCC, Cyber Coordination Executive, National Cyber Study Group (NCSG), Director of National Intelligence (DNI), FCC regulations, DHS, DNI, DOD, DARPA, IARPA, DHSARPA, etc.**

Interoperability between state and local public safety entities and federal government agencies involved in these large-scale event

- **Development of Effective Management Standards**
- **Research, Development of Distributed Broadband Networks**
- **Strategic Intelligent Hybrid Data Mining for Broadband Network Security**



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Specific broadband technologies for pandemic or bioterrorism event should be integrated and deployed into the network for emergency response

- **New 21st Century Approach for Broadband and Cyber Security**
 - **Intelligent and strategically new approaches are required to meet the rapidly emerging challenges and threats for broadband technology, traffic, networks and cyber security in the 21st century**
 - **Detect and Respond to "man-in-the-middle" interceptions at interfaces of broadband traffic across wireless, Wi-Fi, WiMAX, and autonomous backbones of cyber networks and critical infrastructures**
 - **Real-time detection and response to astute attacks using effective of adaptable hybrid algorithms**
 - **Secure management of multifunctional features in emerging software and hardware designed for broadband users, but used by astute hackers to spy, evade detection, engineer stealth attacks and even prevent traceability in real-time**



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Reliability and redundancy of broadband communications infrastructure to protect against large-scale events capable of causing extensive physical damage or destruction

Intelligent Algorithms and Hybrid Data Mining Techniques

- **Secure management of congested networks and packets in backbones of cyber networks due to the rapid increase in the number of users, types of services, multi-functional applications, and meta data aggregation servers in regional and global data centers**
- **Strategic detection and interception of parse, load and transform meta data on government, corporate, public and private broadband networks between laptops, PDUs and Data Centers, etc.**
- **Interception high packet rates that evade detection and appropriate response in real-time**



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Strategic Research and Policy Development

- **Reliability and redundancy of broadband communications infrastructure to protect against large-scale events capable of causing extensive physical damage or destruction**

Hybrid Algorithms for effective and efficient broadband traffic management and security

- **Security of Broadband software and hardware vulnerabilities due to the lack of strategic design for adaptable performance for threat mitigation and ineffective anti-hacking code security standards**
- **Security standards for multi-functional features in applications**
- **Intelligent data mining to detect and respond to astute hackers who operate in stealth mode using broadband networks to penetrate Virtual Private Networks (VPNs), dedicated global backbones and cyber infrastructures**
- **Meta or Master Data Management (MDM) at regional, national and global centers.**
- **Sensitive data transmitted at high speeds into centralized storage.**
- **Address problems posed by stealth attacks, since broadband traffic travels at high speeds, real-time the detection and response to attacks versus false positives, or normal traffic versus abnormal traffic can evade detection**



Conclusion: Intelligent 21st Century Broadband and Cyber Security Strategies for FCC broadband plans

Strategic Research and Policy Development

- **Regulatory perspective the FCC/USG should**
 - Engage researchers on current data mining on broadband traffic management and security
 - Provide regulations on broadband distribution and security
 - Provide regulatory recommendations to congress based on broadband and security research
 - Recommend cost-effective and adaptable security for broadband traffic management
 - Sponsor research on Effective Hybrid adaptable algorithms for Efficient and effective broadband traffic management
 - **21st century response to embedded stealth software and malware, and crafted by rogue interceptions of broadband signals crossing global backbones of cyber traffic evading broadband providers and ISPs**



Research on Cyber Security and Broadband

References:

See Current Research Paper:

Hooper, Emmanuel. **“Intelligent Strategies for 21st Century Broadband and Cyber Infrastructure Security”**
and other IEEE Papers

Dr. Emmanuel Hooper, PhD, PhD, PhD
Harvard University

Leadership for Networked World
Senior Scholar and Researcher

Cyber, Broadband and Intelligent and Strategic Security

Founder, Global Information Intelligence

Global Information Intelligence: <http://globalinfointel.com>

Email: ehooper@fas.harvard.edu or ehooper@aya.yale.edu

