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An Exploration of Cyberspace Security, Strategy for a New Era

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Abstract : The Internet connects all the networks, including the nation's critical infrastructure that are used extensively by not only a nation's government and military to protect sensitive information and execute missions, but also the primary infrastructure that provides services that enable modern conveniences such as education, potable water, electricity, natural gas, and financial transactions. It has become the central nervous system for the government, the citizens, and the industries. When it is attacked, the effects can ripple far and wide impacts not only to citizens' well-being but nation's economy, civil infrastructure, and national security. As such, these critical services may be targeted by malicious hackers during cyber warfare, it is imperative to not only protect them and mitigate any immediate or potential threats, but to also understand the current or potential impacts beyond the IT networks or the organization. The Nation's IT infrastructure which is now vital for communication, commerce, and control of our physical infrastructure, is highly vulnerable to attack. While existing technologies can address some vulnerabilities, fundamentally new architectures and technologies are needed to address the larger structural insecurities of an infrastructure developed in a more trusting time when mass cyber attacks were not foreseen. This research is intended to improve the core functions of the Internet and critical-sector information systems by providing a clear path to create a safe, secure, and resilient cyber environment that help stakeholders at all levels of government, and the private sector work together to develop the cybersecurity capabilities that are key to our economy, national security, and public health and safety. This research paper also emphasizes the present and future cyber security threats, the capabilities and goals of cyber attackers, a strategic concept and steps to implement cybersecurity for maximum effectiveness, enabling technologies, some strategic assumptions and critical challenges, and the future of cyberspace.

Keywords : critical challenges, critical infrastructure, cyber security, enabling technologies, national security
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