第19部

ネットワーク管理とセキュリティ

Glenn Mansfield Keeni、Hiroshi Tsunoda

第１章 Introduction

The WIDE-Netman WG has been carrying out research and development to make the Internet more manageable and secure.

The WG has focussed on the security aspect of Internet of Things (IoT) and proposed an operational model which has built-in security.The WG is working on network traffic traces to detect events in the network.The working has also done some introspection and investigation on how we have got where we are in the context of Information Security and Privacy.

第２章 Societal model for Internet of Things

For securing IoT, the WG proposed the societal model, a simple operational model which has built-in security. Its requirements were examined and its feasibility was established using off-the-shelf technology available in the Internet standard network management framework.The WG has been working on the practical prototype implementation of the model.

This year, the WG examined the requirements of a bootstrap mechanism for user authentication. The WG also attempted to develop the prototype implementation that can handle multimedia data such as images and photos.Preliminary results are presented in [97].

The WG will continue work on providing elemental technologies of the model to make the model practical.

第３章 Mining for events in network traffic traces

The WG attempted to detect events by examining network traffic traces from the darknet and from an operational intranet (a livenet). For efficient event detection in darknet traffic, the WG is trying to automate the processes of traffic analysis and anomaly detection. The progress of this work is presented in [98]. For livenet traffic, the WG is attempting to characterize the behavior of terminals in the intranet based on the number of ARP (Address Resolution Protocol) requests and the destinations of each request. The progress of this work is presented in [99].

The WG will continue to examine the information that can be mined from the network about network devices and their activities.

第４章 Visualization of SDN-based intranet topology

SDN (Software Defined Networking) technology enables an operator to control the network topology dynamically. This feature is being increasingly deployed for flexible topology construction, even in intranets. Network management and monitoring systems must be able to adapt to this dynamic nature of SDN-based intranets. The WG is working on an efficient and accurate scheme for monitoring and visualizing the dynamic topology in SDN-based intranets. This is an ongoing work.

第 5 章 High availability of network monitoring systems

Network monitoring is an essential aspect of network management. Networks that require a high level of security need a network monitoring system that continues to operate in the event of a fault or failure in one subsystem or the other. The WG investigated the effects of failure in each component of a widely-distributed network monitoring system. The WG also discussed how to keep the system available with minimal disruption in the event of a failure. The progress of this work is presented in [100].

第 6 章 Security and Privacy Awareness: for Software Creators and Users

Information technology (IT) has far-reaching impact on society. Its security and privacy aspects are now under intense scrutiny. The WG examined how we got where we are today. It focused on the Internet and related applications and reviewed its evolution. It became clear that there was lack of security awareness among the innovators. The technology and its applications grew with minimal regulations, unfettered. When technical security awareness dawned for engineers and knowledgeable folks, users at large either remained unaware or they could not be weaned from the attractive and easy to use insecure applications. Without enough social awareness of the implications of the Internet based tools and systems, the Networked Society now has gigantic pools of information most of it without much protection for security and privacy. The WG discussed the importance of social checks and balances to ameliorate the situation.

This work is presented in [101].

第 7 章 Plans for 2020.

The WIDE-Netman WG will continue the investigation on data collection on a large scale and from small devices. We will continue working on

a. a security model for Internet of Things

b. mining for events in network traffic traces

c. visualizing topology of SDN-based intranets

第 8 章 Copyright Notice