

Presenting Privacy Tree Structure for IP Address Anonymization Based on Privacy Levels

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Privacy becomes more and more serious concern in network traffic analysis. Because of an analysis process is related to private information of users in network system. It is a significant issue in determining what we can and cannot access in packet data that include the sensitive information, for example, IP address. Recently, IP address anonymizations become an interesting topic. They can anonymize original IP addresses and reform as anonymized IP addresses. Most methods are prefix-preserving anonymization [1, 2], which can preserve the network relationship among the same network group from the original IP addresses. However, these methods anonymize all 32 bits of IP address unnecessarily. In fact, we can anonymize only some bits or parts of IP address for different privacy levels. In this paper, we study and develop the privacy levels to anonymization scheme, and present a factor, a privacy tree structure, to consider and select appropriate privacy level. Our idea is the IP address structures between any two organizations have different privacy levels and each organization has different views of packet data. We represent the different views as a tree and IP address structure as nodes and edges. The operation results of two tree structures from each organization will be the results which are used in the selecting appropriate privacy level. This privacy tree structure is good factor for anonymization scheme based on privacy levels.

REFERENCES

1. G. Minshall, *TCPdpriv Command Manual*, July 1996.
2. J. Xu, J. Fan, M. H. Ammar, and S. B. Moon, *Prefix-preserving IP Address Anonymization: Measurement based Security Evaluation and a New Cryptography based Scheme*, IEEE International Conference on Network Protocols (ICNP), 2002, 280-289.

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