

Toward Security Monitoring In NDN Network

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Abstract—The abstract goes here.

I. INTRODUCTION

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II. MONITORING CHALLENGES IN NDN NETWORK

A. Subsection Heading Here

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III. MMT FOR NDN PROTOCOL

A. Extracting meta data of NDN packet

MMT provides deep insight on your network by classifying more than 2600 applications and protocols, by collecting your business events, performing statistics and reporting them based on customizable reports and graphs. NDN protocol is also in the list protocols which can be classified, analysed and extracted metadata by MMT. When there is a NDN packet coming, MMT will classifies and extracts the meta data of the packet based on the NDN packet format specification.

1) *NDN packet format specification* [?]: The NDN packet is encoded in a Type-Length-Value (TLV) format. Type (T) presents for the type of data. Length (L) presents for the length of data. Value (V) presents for the value of data. All the NDN data types are presented in official documentation about NDN protocol[?]

Based on the TLV format and the list of NDN data types, MMT will classify, analyses and extracts meta data of NDN packets.

2) *NDN packet classification*: NDN protocol can be over Ethernet or TCP. MMT classifies NDN packet by analysing the Ethernet data or TCP data of packet. A packet will be classified as a NDN packet if its Ethernet data or TCP data satisfies those conditions:

- Type of packet: There are 2 types of NDN packet which are distinguished by the type value in the first and outmost TLV_0 . Interest packet type is assigned as 05 and Data packet type is assigned as 06.
- Length of packet: By extracting the length of NDN packet and compare with the length of Ethernet data or TCP data of packet
- Name of packet: Name is the common field of every NDN packet and its type value is assigned as 07

It is possible to use more conditions to classify NDN packet by deeper analysing the packet.

3) *Name*: An NDN Name is a hierarchical name for NDN content, which contains a sequence of name components

Name ::= NAME-TYPE TLV-LENGTH NameComponent*

NameComponent ::= GenericNameComponent — ImplicitSha256Digest

GenericNameComponent ::= NAME-COMPONENT-TYPE TLV-LENGTH

ImplicitSha256DigestComponent ::= IMPLICIT-SHA256-DIGEST-COMPONENT

4) *Interest packet*:

5) *Data packet*:

6) *NDN packet classification*:

B. Metrics and KPI

Subsection text here.

C. MMT implemented

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IV. FUTURE DEVELOPMENT FOR SECURITY

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A. Subsection Heading Here

V. CONCLUSION

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