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nDPId
https://github.com/utoni/nDPId

Toni Uhlig <toni@impl.cc>
What is nDPIId?

• collection of several daemons and tools to capture, process, classify and visualize network traffic
  - main daemons: nDPIId, nDPIsrvd
  - tools / examples / user applications:
    • collectd wrapper, raw packet dumper, pretty flow printer, ML feature extractor, ML flow classification using sklearn, ...
What is nDPIId?
History of nDPId

- initially started as simple integration example for libnDPI (2020)
  - ndpiReader offers a wide range of functionality
  - high complexity and memory usage
    - just an example to show some libnDPI features

- evolved into a daemon / tool suite
nDPId Goals

- obligatory flow classification with libnDPI
- generate and send JSON events to other applications
- low memory footprint
- minimal dependencies to other libraries
- high scalability
nDPId Architecture

nDPId (eth0)
- Thread 1
- Thread 2
- Thread N

nDPId (eth1)
- Thread 1
- Thread 2
- Thread N

nDPIsrvd
- buffering & forwarding

user application 1
user application 2
user application N
nDPIId message format

• concatenation of the message length and JSON string
• example: 00016{'key':'value'}


nDPIId events

Flow

new       end       idle
update    analyse   guessed
detected  detection-update  not-detected

Error       Packet       Daemon
Plans for 2023 (nDPIId)

- Android support
- port to BSD/OSX
- GnuTLS / “push” support for nDPIsrvd
- other ML/DL approaches for protocol classification and anomaly/malicious traffic detection
  - Keras based Autoencoder (work-in-progress)
- detect false-positives using ML
Plans for 2023 (libnDPI)

- generic packet reassemble engine for stream based protocols e.g. TCP/QUIC
  - work-in-progress
  - usable for all layer 7 protocol dissectors
- move code from ndpiReader to the core library
  - datalink processing (?)
  - layer 3 / layer 4 tunnel detection
- reduce false-positives for certain protocol dissectors
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