Symmetric Key Intercept
for TLS1.3 (and Legacy) Decrypted Visibility

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NUBEVA
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WHAT WE DO

Develop and License Software for

SYMMETRIC KEY INTERCEPT

A New Approach for TLS Decrypted Visibility

IMPROVED/RESTORED FUNCTIONALITY
Unlock ALL Traffic
TLS 1.3 (and Legacy) Inline and Passive

HIGHER PERFORMANCE
>10X Performance Throughput & Latency

SIMPLIFICATION
Architectural and **Operational**

INCREASED CAPABILITY

LOWER CAPEX and OPEX

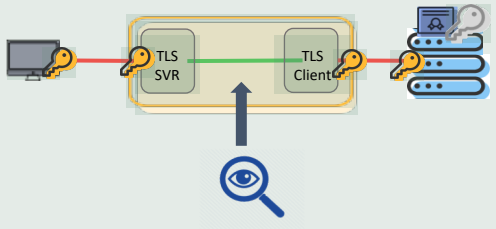
PROBLEM WE ADDRESS

ORGANIZATIONS NEED VISIBILITY INTO TLS

BUT **TRADITIONAL METHODS HAVE <u>GROWING</u> ISSUES**

Limited Capability – Price/Performance/Scaling - Complexity

Man-in-the-Middle

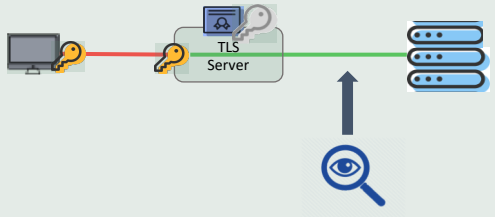


Blind Spots
- Pinned Certificates
- "Difficult" Protocols/Apps

Performance / Cost
- Throughput + Latency

Industry Moves To Thwart

Termination

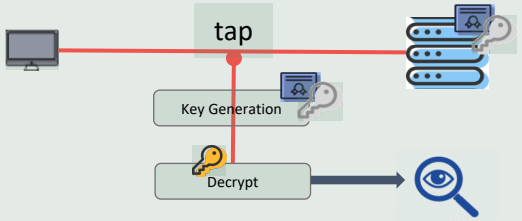


Security / Regulatory
- Exposes cleartext

Certificate Management/Security

Limited Use
- Not for Client-Side Connections
- Not Ideal Microservices/Service Mesh/Cloud

Handshake Replay



Does Not Work with Diffie-Hellman/PFS!!
- In TLS 1.3 and 1.2 (~90% of all traffic)

Limited Use - Requires Server Keys
- Not For Traffic To 3rd Party Servers e.g. Cloud, Internet, Suppliers

Certificate Management/Security

RETHINKING THE PROBLEM

Decryption is Easy and Efficient…

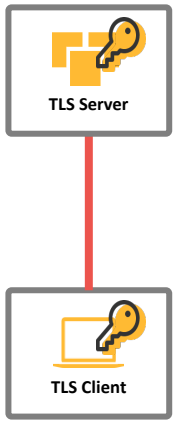
IF You Have the Session Keys!

WHAT IF…

YOU COULD GET THE SESSION KEYS **ANOTHER WAY?**

FACT

Symmetric Keys Exist
In Servers' and Clients' Memory
During The Session



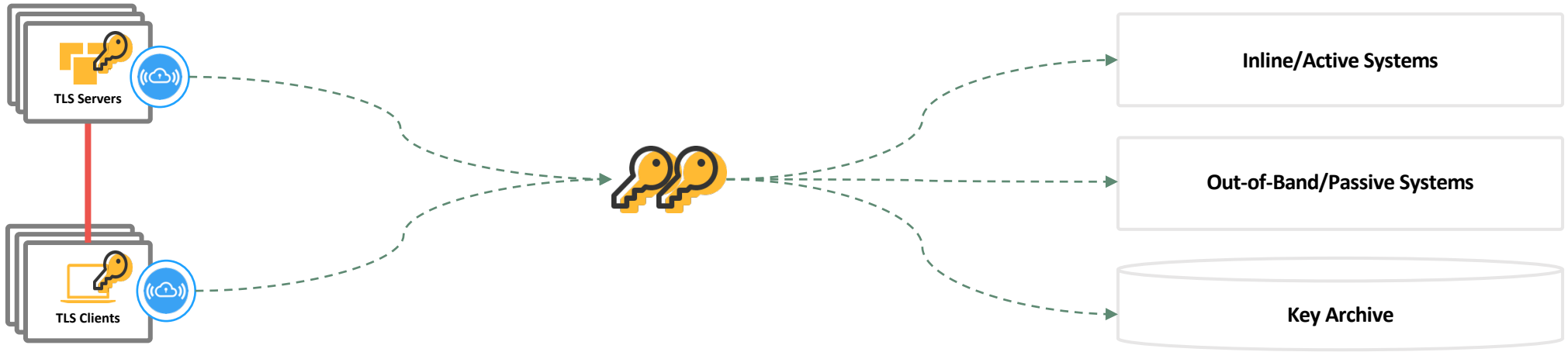
IDEA

Capture and **Re-Use**
Symmetric Keys
To Fuel Visibility Systems

And Make It
Commercially Viable
Reliable – Secure – Scalable
Non-Disruptive – Easy - Economic

THE NEW SOLUTION

SYMMETRIC KEY INTERCEPT (SKI)



Capture and Re-Use TLS Symmetric Session Keys

from **TLS SERVER and/or TLS CLIENT Memory** in during sessions

via **Suite of Nextgen Endpoint Agents**

To Enable Decryption and Visibility Systems

KEY SENSOR TECHNOLOGY

LEARN AND EXTRACT SYMMETRIC KEYS

- From TLS Processes and Libraries In Memory
- Nubeva Patented Algorithms = Core IP

A READ-ONLY MEMORY TRACER ON TLS SERVER AND/OR CLIENT

- Cannot Change System or Alter Memory
- Requires No Changes to Application or TLS Code/Libraries

HOW IT WORKS

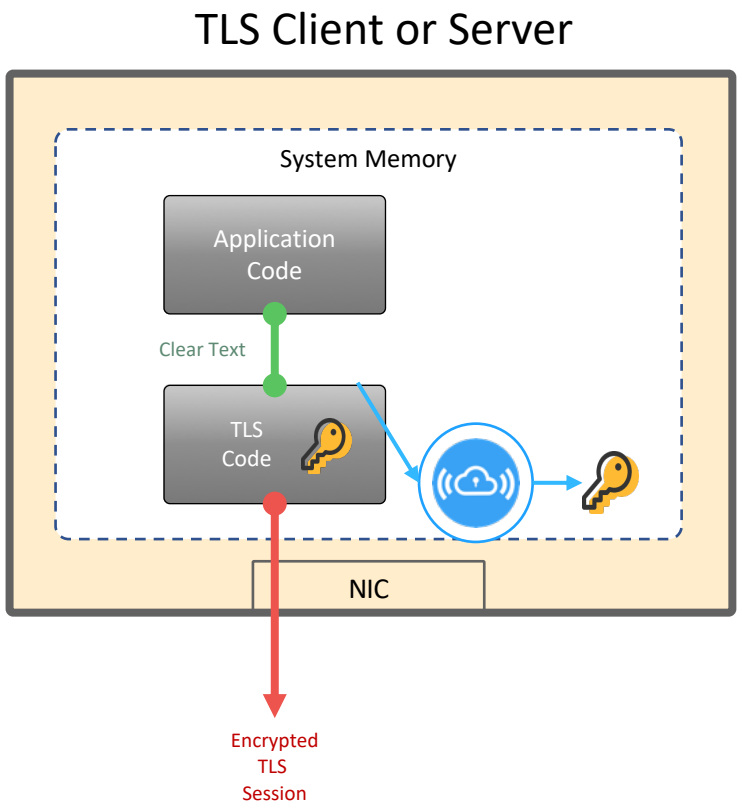
- Scan's System To Discover TLS Processes
- Loads Signatures with Discovery Algorithms
- Triggers on "Client Hello"
- Knows where Symmetric Key will be Set
- Copies and Exports It

ARCHITECTURAL ADVANTAGES

- Works for All / Independent of Protocol, Cipher, Handshake
- Easily Extensible to New Apps/Libraries/Protocols
- Only needed on 1 "side" of session (keys are Symmetric!)

HIGH PERFORMANCE + SMALL FOOTPRINT

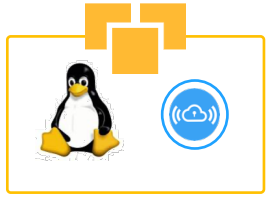
- <200 µsec extraction time
- Reference Benchmark
  - 600 keys/second, AWS C5a.XLARGE
  - <28MB Memory, <0.5% CPU Core



SUPPORTED PLATFORMS

Works With Modern Environments in Private, Public and Hybrid Clouds

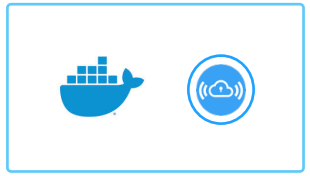
LINUX



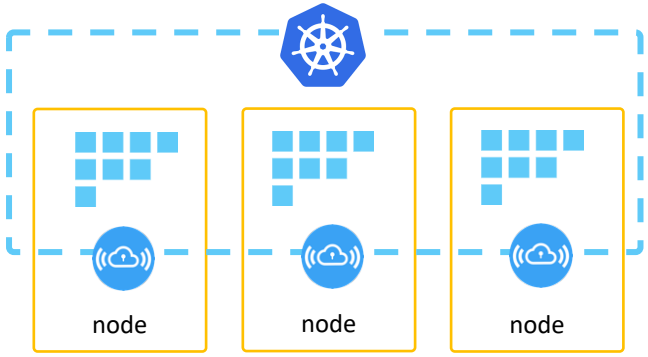
WINDOWS SERVER

WINDOWS DESKTOP

CONTAINER



KUBERNETES DAEMONSET



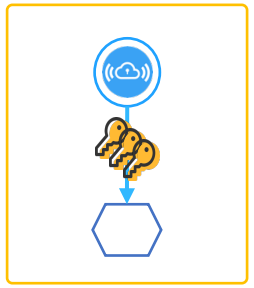
*OSX, Android, IOS In Development

KEY HANDLING

Multiple Secure Options For Key Re-Use

WRITE TO
LOCAL FILE

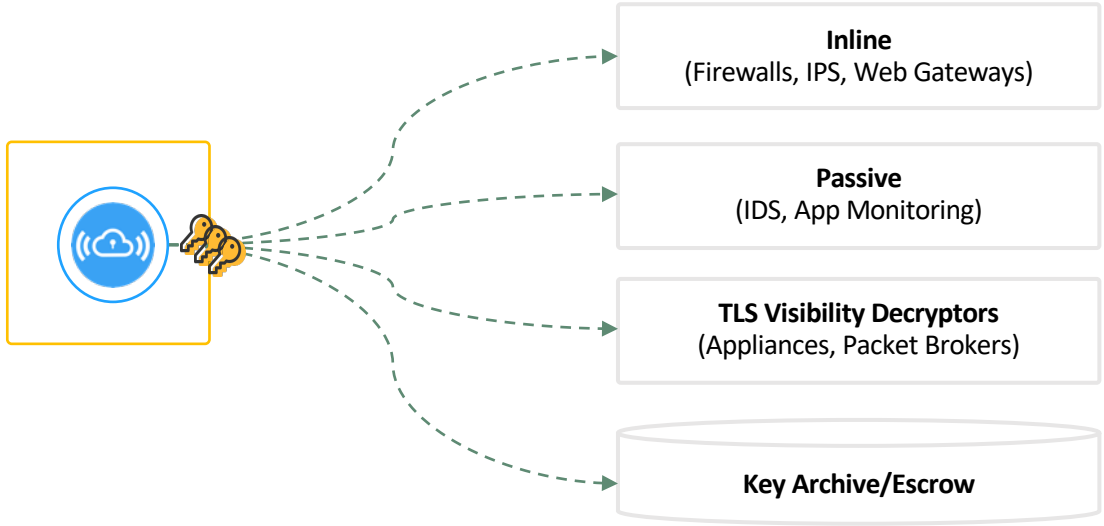
PIPE TO
LOCAL APP
Or AGENT



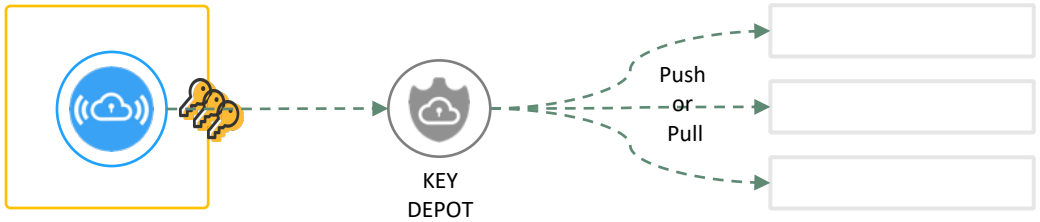
Or.. Export via

HTTP or DTLS

EXPORT TO
DECRYPTION
SYSTEMS



EXPORT TO
"KEY DEPOT"
TO AGGREGATE,
BUFFER/DISTRIBUTE
and SCALE-OUT



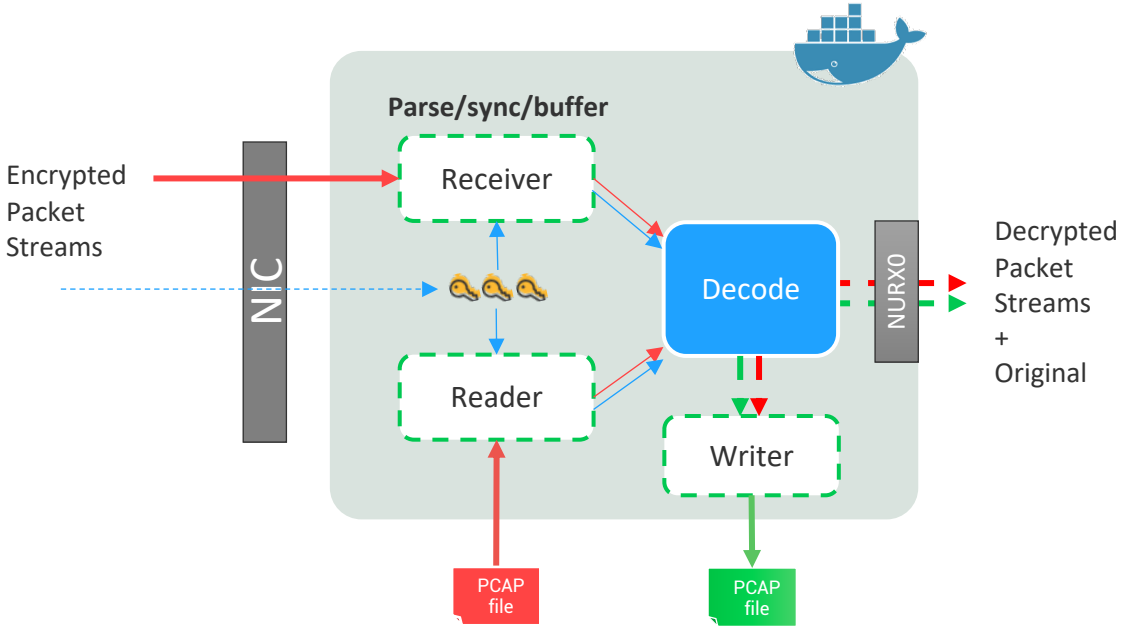
SYMMETRIC DECRYPTORS

FORM
- Container (Docker)

CORE FUNCTION
- Reads Inbound Encrypted Streams
- Buffers and Queries Key via Client Random
- Syncs and Passes to Decryption Function
- Efficient Decrypt of all Modern Protocols

OUTPUT
- Established output Interface: NURX0
- Output Original Packet, and..
- Outputs Matching Decrypted Packets
- CLI based File Reader/Decrypt Function

BENEFITS/ADVANTAGES
- Reference Solution for Symmetric Key Decryption
- Run Anywhere – Embedded or Standalone
- Scale up/down – With Parallel Operation



SWEEPING APPLICATION

SYMMETRIC KEY INTERCEPT CAN ENABLE MOST SYSTEMS AND USE-CASES

ENHANCE AND BOOST

INLINE SYSTEMS

Web GW's, NGFW, IPS/APT,
Visibility Appliances, ADCs

10x Performance Boost
See all Traffic – Including Pinned
Operational Simplicity

RESTORE AND EXPAND

PASSIVE SYSTEMS

Security and App Monitoring Tools
Visibility Appliances and NPBs

See PFS Traffic – TLS1.3, 1.2
See Into 3rd Party Traffic
Eliminate Cert/Key Complexities

CREATE AND ENABLE

GREENFIELD

Container-Container/Kubernetes,
Cloud Platforms, High Speed Links

Now Functionally Possible
Now Economically Viable
OpenSource and Commercial

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