HongKe 虹科

OMNIA

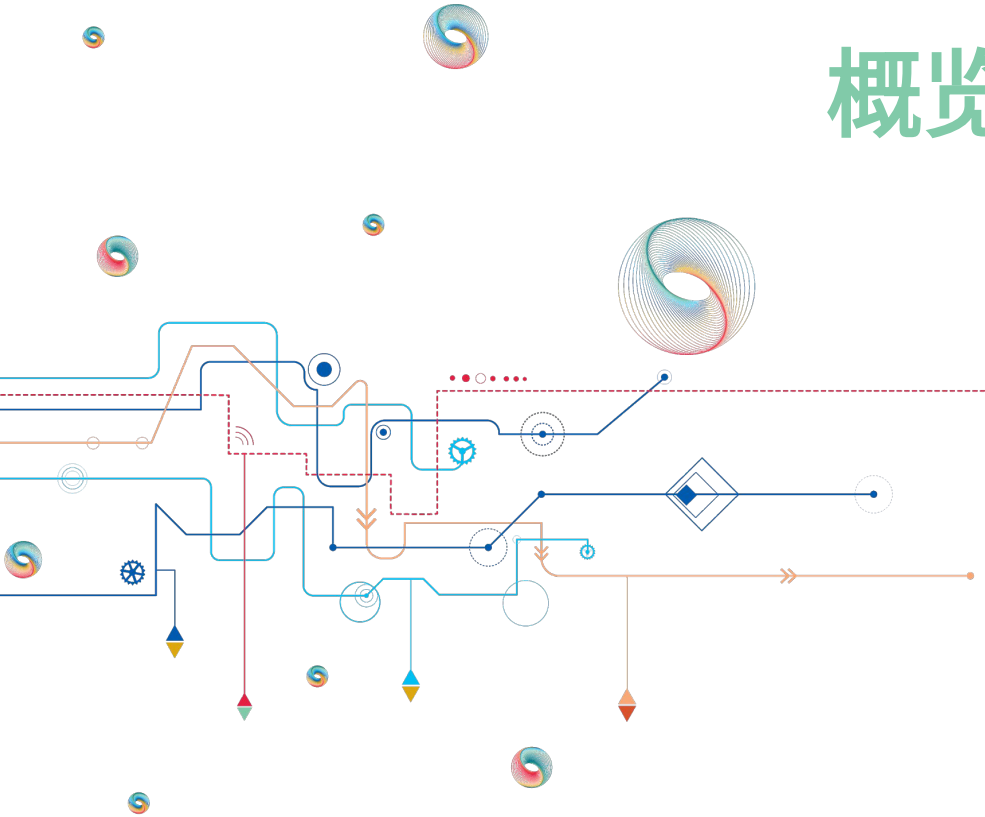
高级网络数据包代理

Oct. 2020

CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

目录

概览

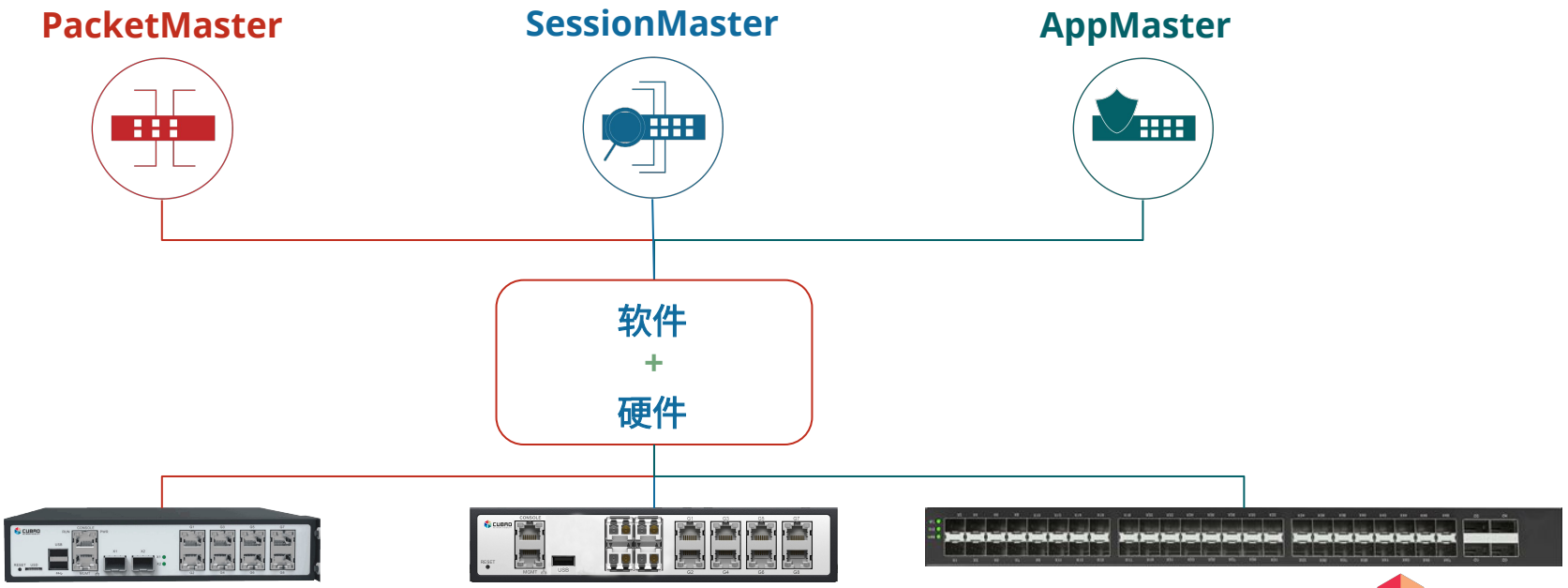


OMNIA

CUBRO
NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

强大&多功能，适用于任何企业

Omnia 将 Cubro 在网络可视性和监控方面的经验与 EXA8 平台的设计相结合。其结果是一个由目的驱动的硬件与经过多年经验和工程开发的功能堆栈相搭配的产品系列。这种方法为客户提供了更多的选择和更多的功能。



Omnia 10: 跨越多种部署的多功能性

CPU	四核 ARMv8
Switch	88E6190X Marvell
Memory	DDR4 ECC UDIMM 16GB
eMMC	16 GB
MGMT	10/100/1000 Base-T RJ45
Console	1 * RS232 (RJ45)
I/O	2 * USB3.0 (Type A) MicroSD Card slot
Bypass	支持4 组铜缆端口
Port	2 * 10GbE 8*GbE(RJ45)
Internal extended I/O	1* mini PCIex1 Gen 3 2* M.2(PCIex4 Gen3,2280) 1* M.2(Sata Gen3, 2242 & 2280 compatible 1* SATA (Gen3, support 2,5 inch HDD or SSD)
Power Supply	AC 100 - 264 or DC 48V
Size (W x H X D) mm	335 x 220 x 44.4
Power consumption	30 W

Omnia 10，原名EXA8，是一款多功能网络设备，非常适合中小企业、分支机构办公室和远程部署。它具有内置的无源分接能力、10G接口、板载存储以及多样化的软件选择，是一款能够解决多种网络和安全挑战的设备。

CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

Omnia 20: 针对要求苛刻的工作负载的性能

CPU	四核ARMv8
Switch	88E6190X Marvell
Memory	DDR4 ECC UDIMM 16 GB
eMMC	16 GB
MGMT	10/100/1000 Base-T RJ45
Console	1 * RS232 (RJ45)
USB	1 * USB3.0 (Type A)
Bypass	Support 4 group Copper Ports
Port	2 * 10GbE 2 * 1 GbE (SFP) 8*GbE(RJ45)
Internal extended I/O	1* mini PCIex1 Gen 3 2* M.2(PCIex4 Gen3,2280) 1* M.2(Sata Gen3, 2242 & 2280 compatible 1* SATA (Gen3, support 2,5 inch HDD or SSD)
Power Supply	AC 100 - 264 or DC 48V
Size (W x H X D) mm	335 x 220 x 44.4
Power consumption	30 W

Omnia 20在Omnia 10的基础上增加了额外的1G SFP接口，并将处理能力提高了一倍。它保留了Omnia 10的多功能性，同时也是执行特别苛刻任务的首选。

CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

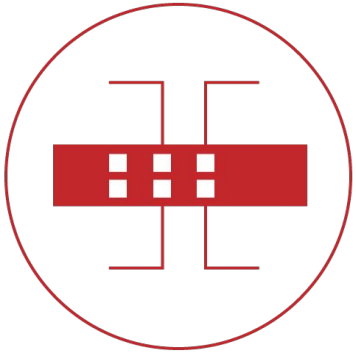
Omnia 120: 大型企业的强大设备

CPU	**2 x Multi-Core ARM CPU**
Switch	**Cavium Xpliant**
Memory	**DDR4 ECC UDIMM**
MGMT	**10/100/1000 Base-T RJ45**
Console	**1 * RS232 (RJ45)**
Port	**48 * 1/10GbE SFP+ 4 * 40/100GbE QSFP28**
Power Supply	**AC 100 - 264 or DC 48V**
Size (W x H X D) mm	**440 x 660 x 44.4**
Power consumption	**400W**

CUBRO
NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

PacketMaster功能：L2-L4可见性

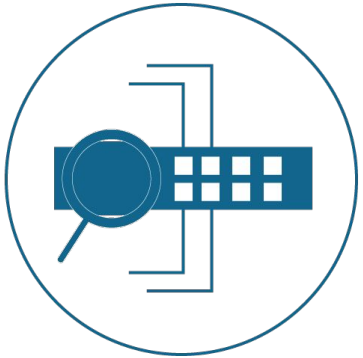
PacketMaster的功能堆栈包含了传统的网络数据包代理功能，如任意到多或多到任意的流量转发、过滤和拦截、报头修改和剥离、负载均衡、隧道终止等。

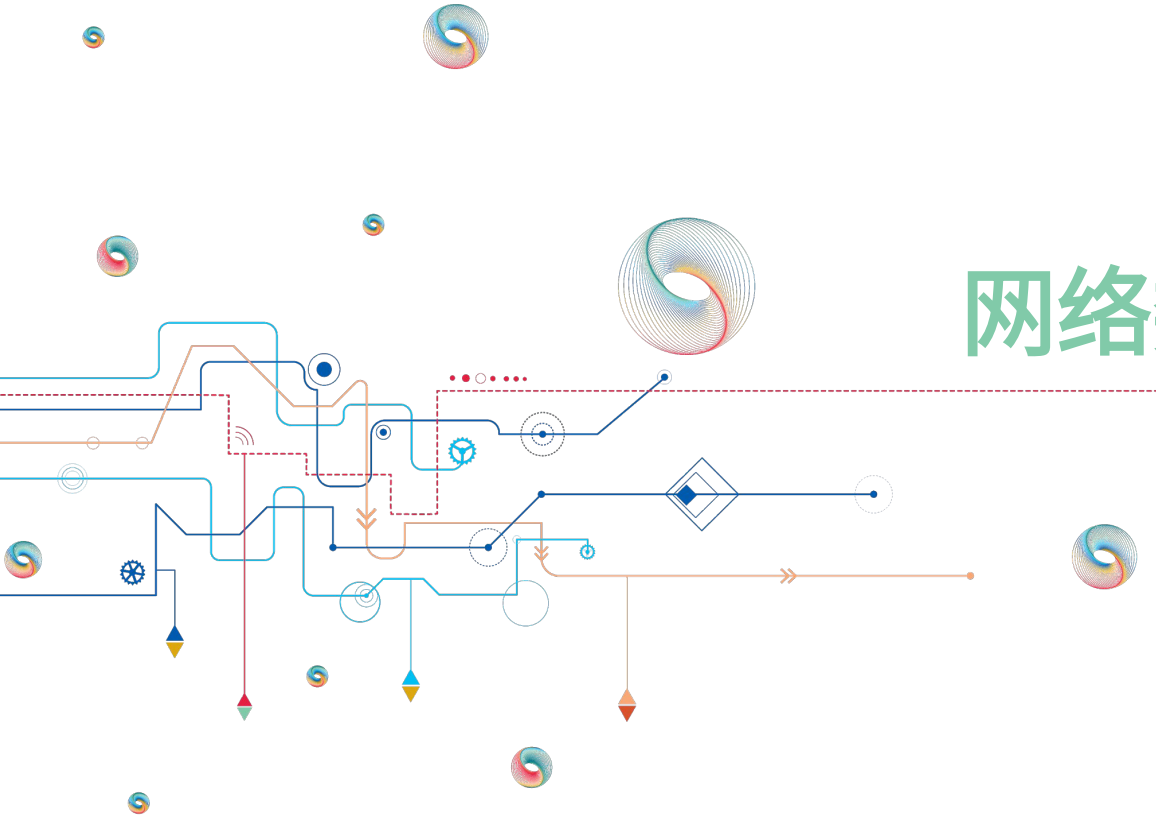


- 内联ACL过滤
  - 通过OSI L4标准过滤OSI L2的流量
  - 将特定流量转发到一个或多个接口
  - 丢弃指定流量
- **负载**均衡
  - **从**多种对称或非对称负载均衡算法中选择
- GRE终止
- ERSPAN终止
- VXLAN终止
- 时间戳
- 数据包切片
- 隧道报头移除
- VLAN添加/修改/剥离
- MAC修改
- 偏移剥离
  - 为特定的应用创建自定义的报头剥离偏移
- GRE和VXLAN活动隧道端点

SessionMaster功能：深度过滤&分析

The SessionMaster功能堆栈借鉴了Cubro先进的高级网络数据包代理。功能包括流量重复数据删除、正则表达式搜索、数据屏蔽（数据脱敏）、SSL/TLS解密等。在当今的网络中，在许多情况下，仅仅过滤L2-L4层的流量已经不够了。SessionMaster的功能为尖端部署提供了必要的深度可见性。



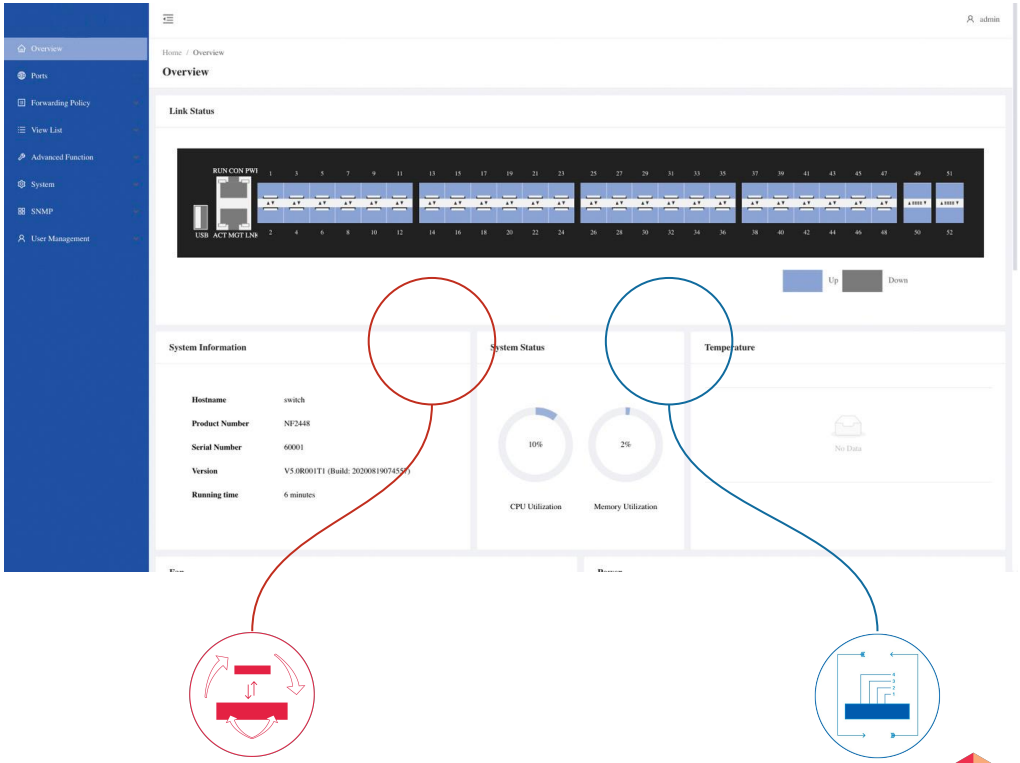


网络数据包代理功能

CUBRO
NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

集成的Web UI

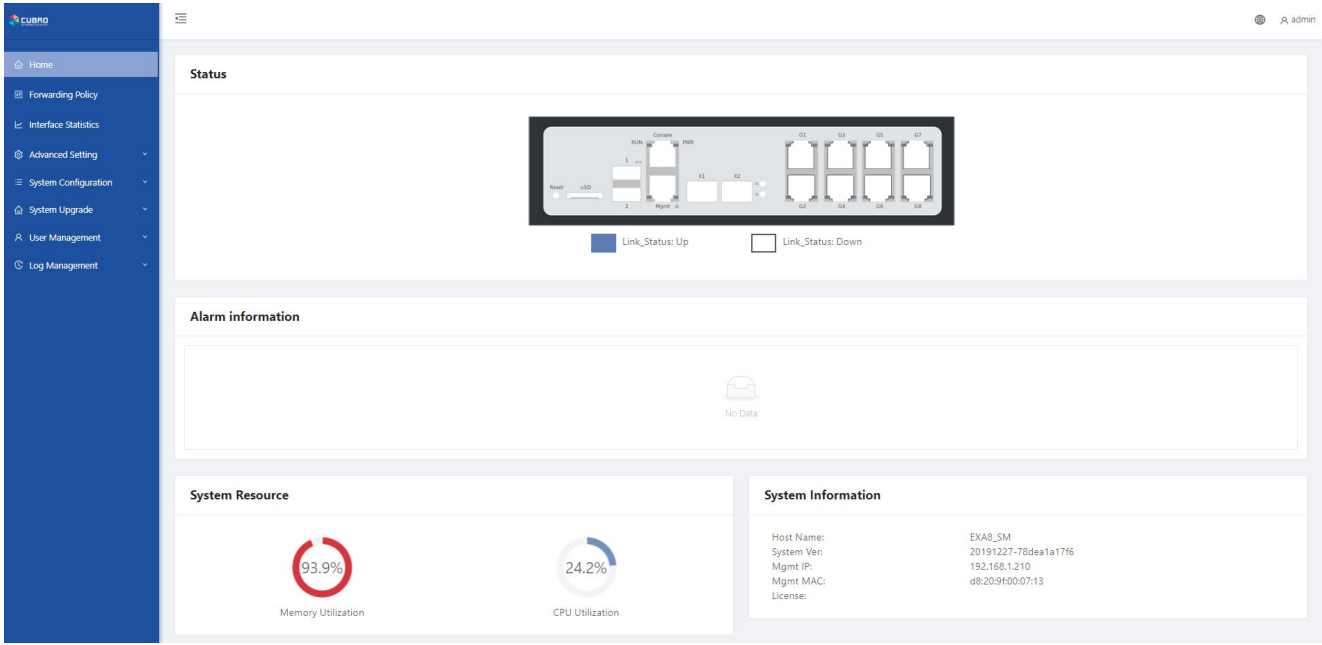
PacketMaster和SessionMaster功能集成到单个直观的GUI中，以简化可用性和简化配置。



Omnia网络数据包代理WebGUI

Omnia系列提供了一个简单易用的Web UI来实现快速配置。此外，还可以看到内存和CPU利用率等系统资源。

通过左侧菜单上的选项卡，用户可以在UI中导航。



CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

ACL Filtering Inline

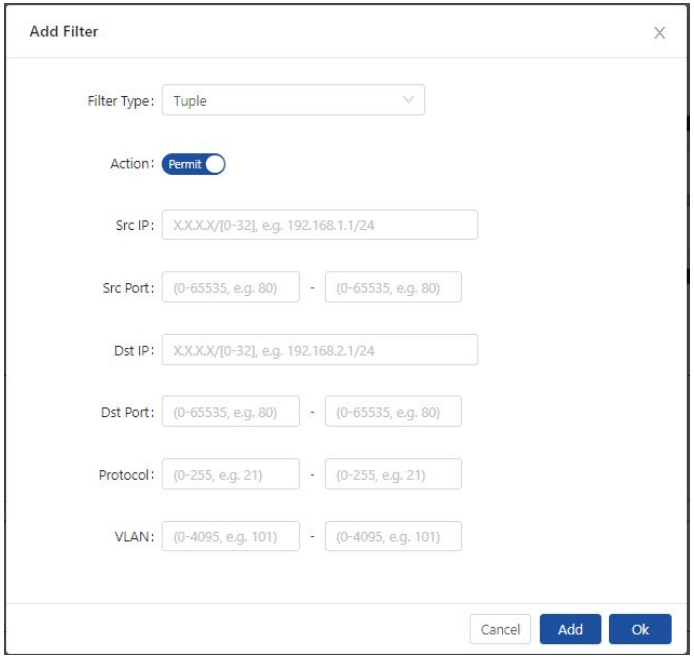
该设备支持IP+MASK和5元组内/外过滤。如果要使用内五元组，需要开启内五元组过滤。

ACL配置有7种过滤器类型：

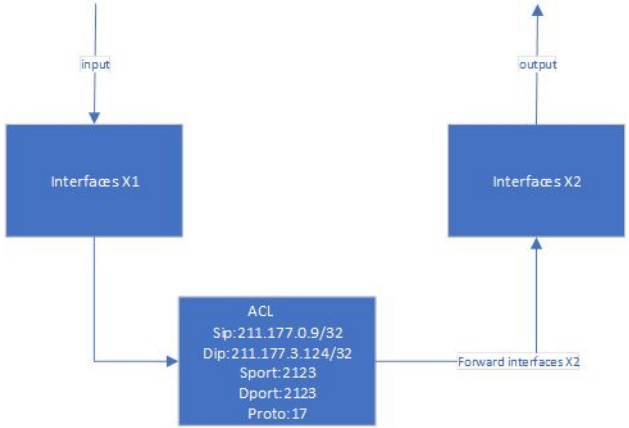
1. Tuple
2. Tuple V6
3. Ipset
4. Ipset V6
5. L2
6. Packet Type
7. Regex

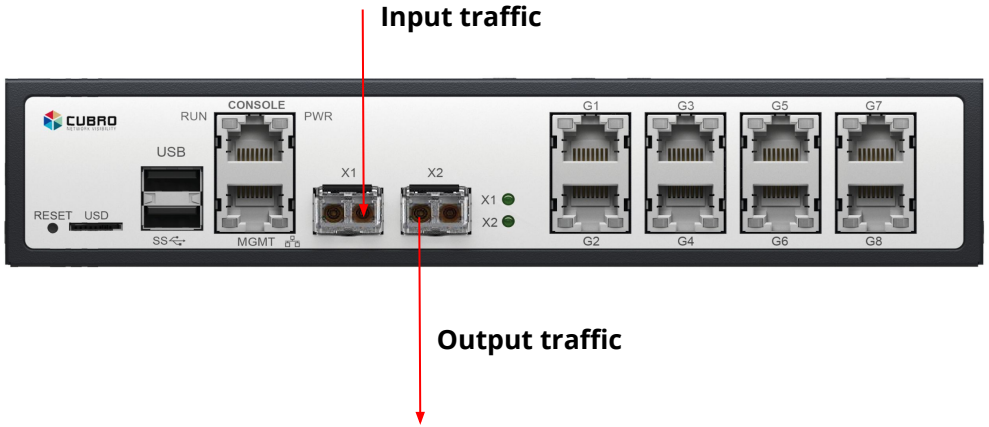
设备支持多组ACL。

每个ACL组是相互独立的。



ACL Filtering Inline





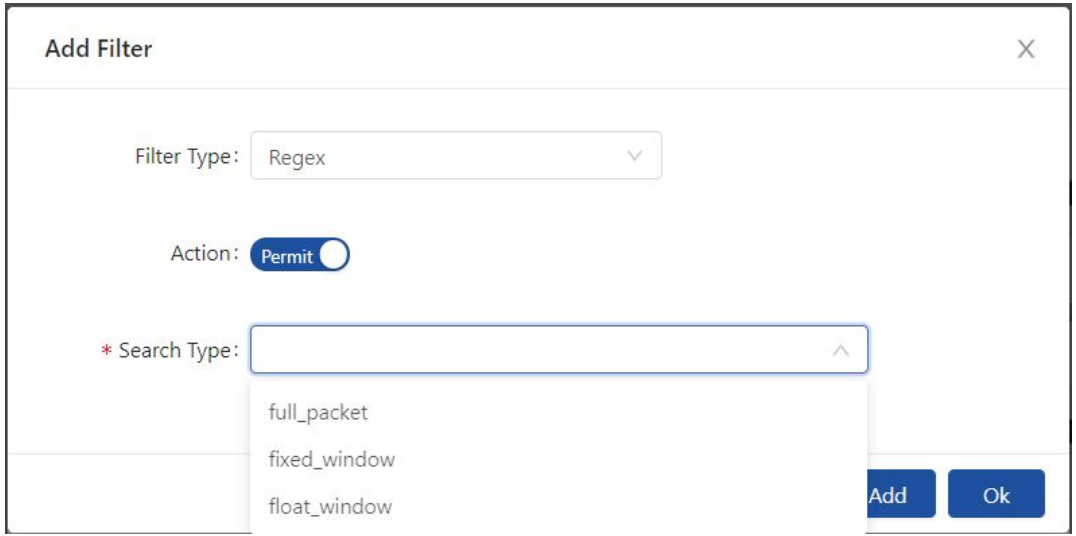
ACL Regex Filtering

在选择“ Regex Filter Type ”时，有不同的搜索类型：

•**Full Packet -** 扫描完整的数据包寻找关键字。一旦找到，就会过滤掉数据包。

•**Fixed Window -** 它只扫描数据包前256个字节。当发现关键字时，数据包将被过滤掉。

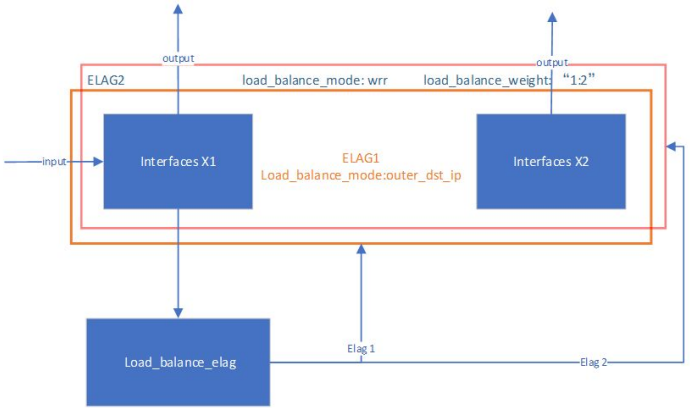
•**Float Window -** 设置特定搜索区域搜索关键字。一旦在范围内找到，就会过滤掉数据包。

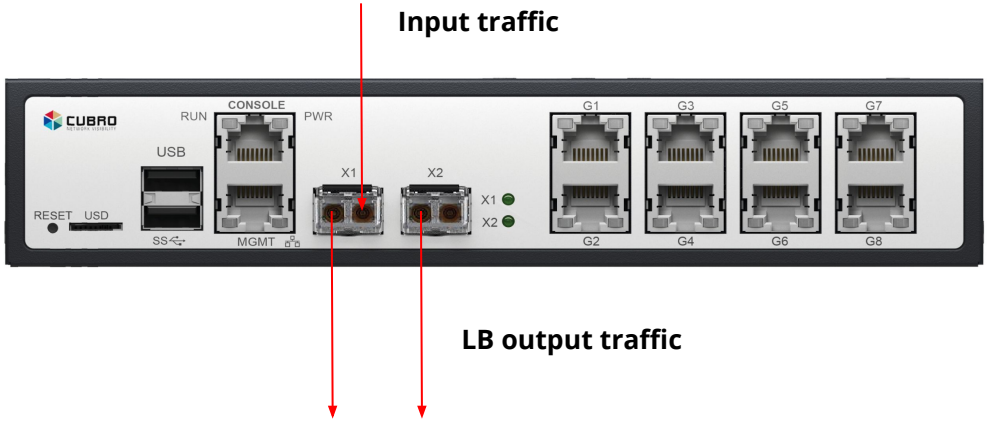


负载均衡

负载均衡可以基于多种哈希方法在多个端口上进行，包括：5元组、源IP地址和目的IP地址和轮询。以及隧道内层负载均衡模式。

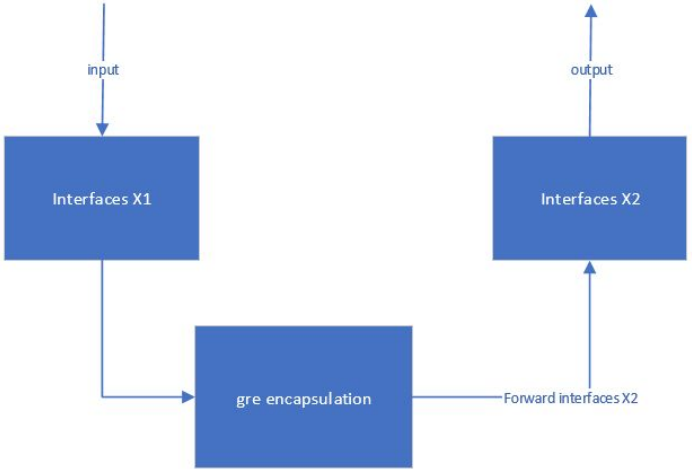
基于5元组哈希的负载均衡可以保证两台设备之间的同步，保证数据的完整性。

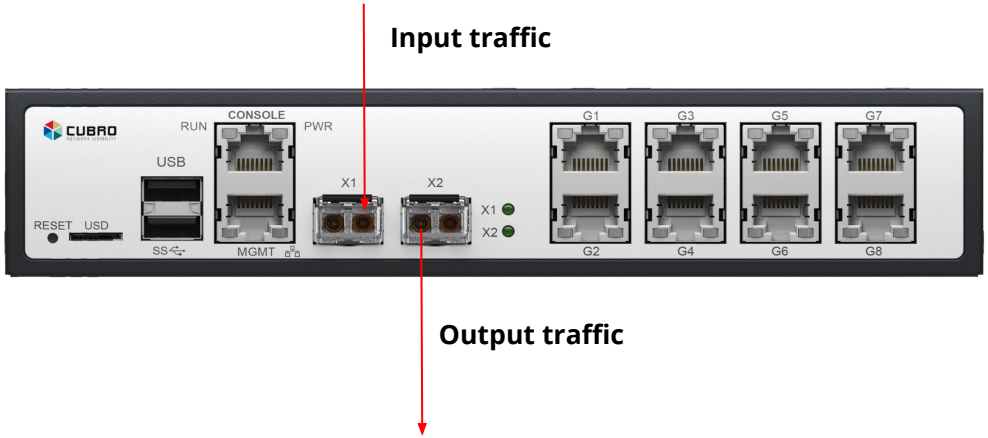




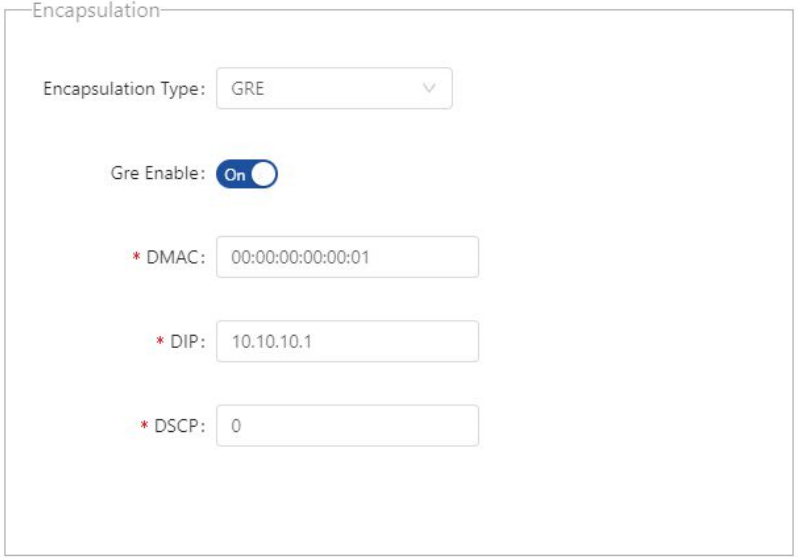
GRE封装

通过这个功能，我们可以将流量封装在GRE隧道中。





GRE封装示例

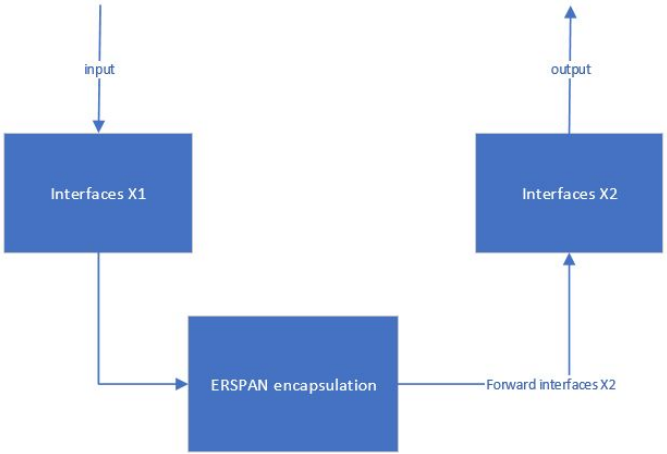


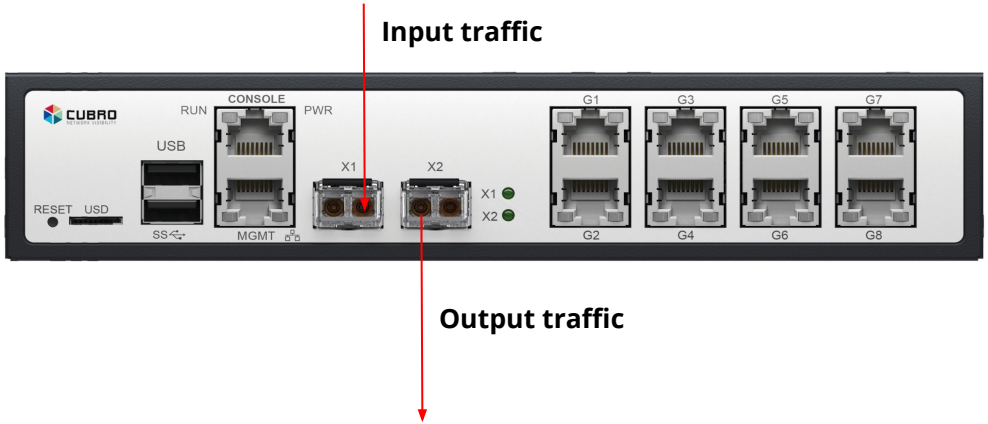

```
> Frame 2: 1370 bytes on wire (10960 bits), 1370 bytes captured (10960 bits) on interface \Device
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (1328 bytes)
```

```
> Frame 1: 1408 bytes on wire (11264 bits), 1408 bytes captured (11264 bits) on interface \Device\NPF_
> Ethernet II, Src: CubroAcr_00:07:15 (d8:20:9f:00:07:15), Dst: 00:00:00_00:00:01 (00:00:00:00:00:01)
> Internet Protocol Version 4, Src: 192.168.255.254, Dst: 10.10.10.1
> Generic Routing Encapsulation (Transparent Ethernet bridging)
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (1328 bytes)
```

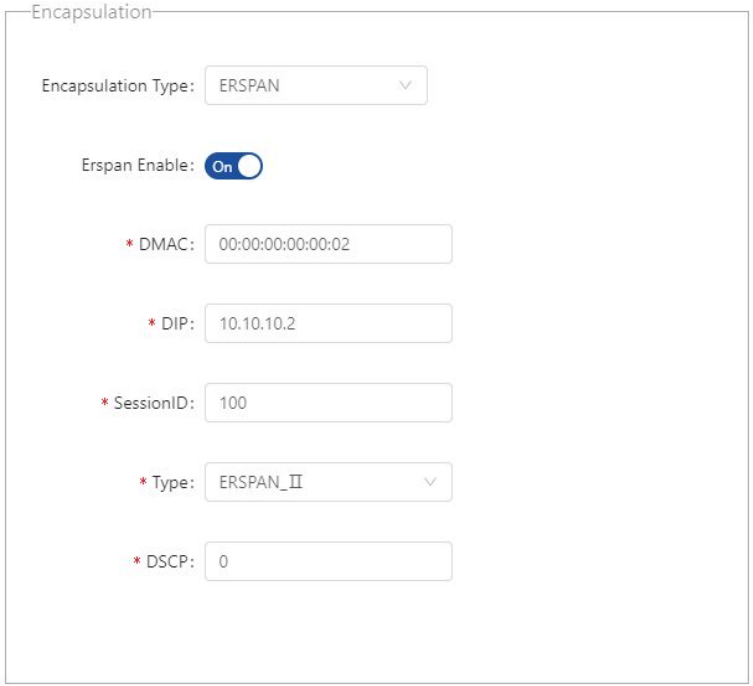
ERSPAN封装

通过这个功能，我们可以将流量封装在ERSPAN v1、v2或v3报头中。





ERSPAN v2封装示例

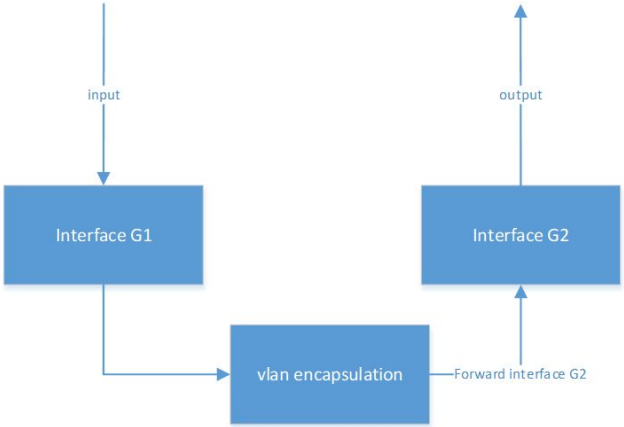


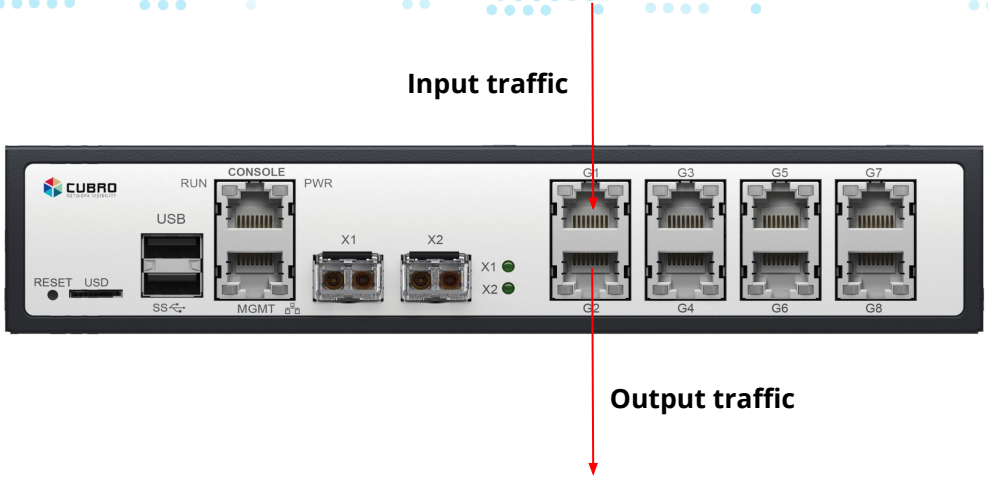

```
> Frame 2: 1370 bytes on wire (10960 bits), 1370 bytes captured (10960 bits) on interface \Device
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (1328 bytes)
```

```
> Frame 1: 1420 bytes on wire (11360 bits), 1420 bytes captured (11360 bits) on interface \Device\NPF_
> Ethernet II, Src: CubroAcr_00:07:15 (d8:20:9f:00:07:15), Dst: 00:00:00_00:00:02 (00:00:00:00:00:02)
> Internet Protocol Version 4, Src: 192.168.255.254, Dst: 10.10.10.2
v Generic Routing Encapsulation (ERSPAN)
  > Flags and Version: 0x1000
    Protocol Type: ERSPAN (0x88be)
    Sequence Number: 1
v Encapsulated Remote Switch Packet ANalysis Type II
    0001 .... .... .... = Version: Type II (1)
    .... 0000 0000 0000 = Vlan: 0
    000. .... .... .... = COS: 0
    ...1 1... .... .... = Encap: VLAN tag preserved in frame (3)
    .... .0.. .... .... = Truncated: Not truncated (0)
    .... ..00 0110 0100 = SpanID: 100
    0000 0000 0000 .... .... .... .... .... = Reserved: 0
    .... .... .... 0000 0000 0000 0000 0000 = Index: 0
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (1328 bytes)
```

VLAN封装

通过这个功能，我们可以在输出的数据包中添加一个VLAN标签。



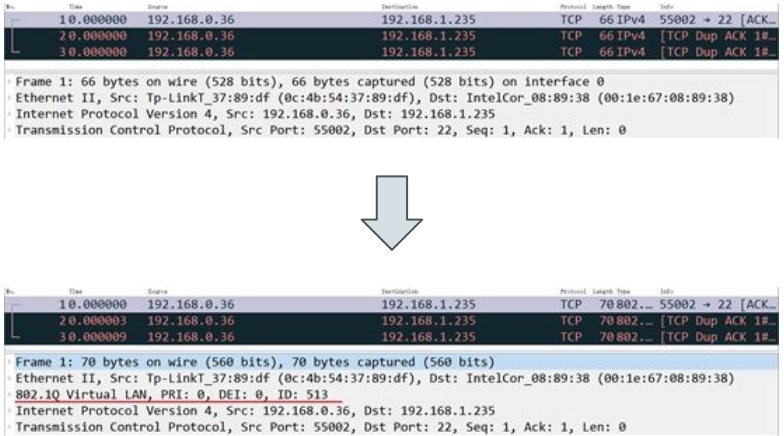


VLAN 封装示例

Add VLAN

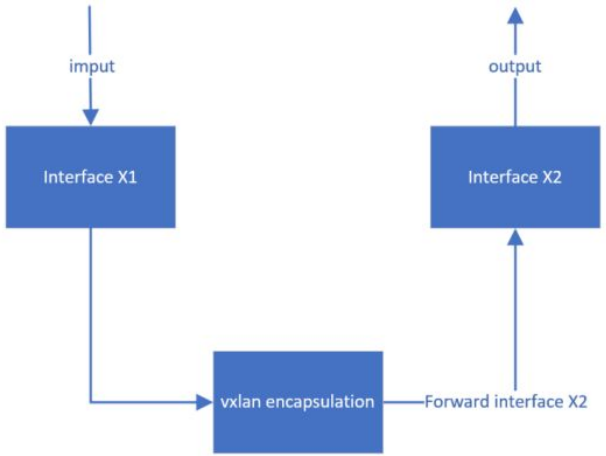
Add VLAN: On

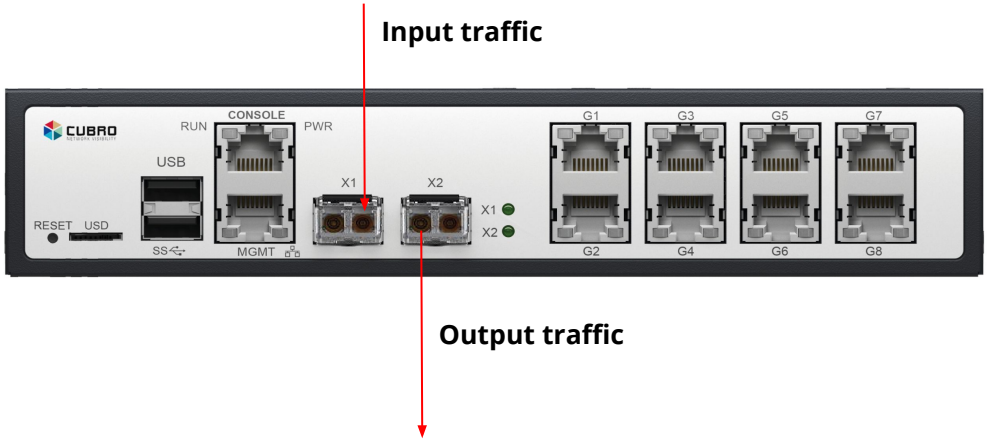
* Vlan ID: 513



VXLAN封装

通过这个功能，我们可以将流量封装在一个VxLAN报头中。





VXLAN封装示例

Encapsulation

Encapsulation Type: VXLAN

Vxlan Enable: On

* DMAC: 00:00:00:00:00:04

* DIP: 10.10.10.4

* DPort: 777

* VNI: 250

* DSCP: 0

```
> Frame 2: 1370 bytes on wire (10960 bits), 1370 bytes captured (10960 bits) on interface \Device
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (1328 bytes)
```

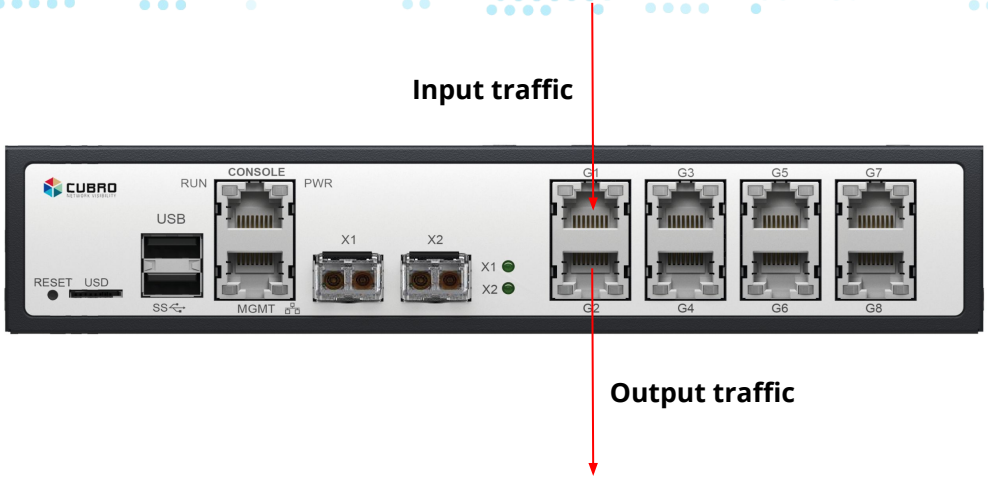
```
> Frame 1: 1420 bytes on wire (11360 bits), 1420 bytes captured (11360 bits) on interface \Device\NPF_
> Ethernet II, Src: CubroAcr_00:07:15 (d8:20:9f:00:07:15), Dst: 00:00:00_00:00:04 (00:00:00:00:00:04)
> Internet Protocol Version 4, Src: 192.168.255.254, Dst: 10.10.10.4
> User Datagram Protocol, Src Port: 4789, Dst Port: 777
v Virtual eXtensible Local Area Network
    > Flags: 0x0800, VXLAN Network ID (VNI)
      Group Policy ID: 0
      VXLAN Network Identifier (VNI): 250
      Reserved: 0
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (1328 bytes)
```

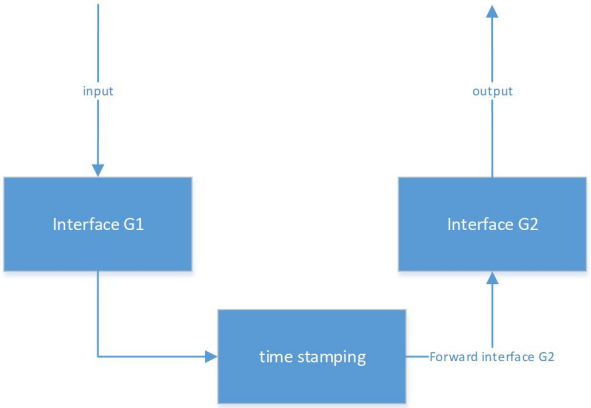
CUBRO NETWORK VISIBILITY

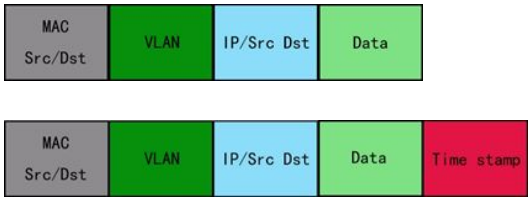
SIMPLE | SCALABLE | SUSTAINABLE

时间戳

启用该功能后，输出数据包帧的时间戳分辨率值在20-200ns之间。



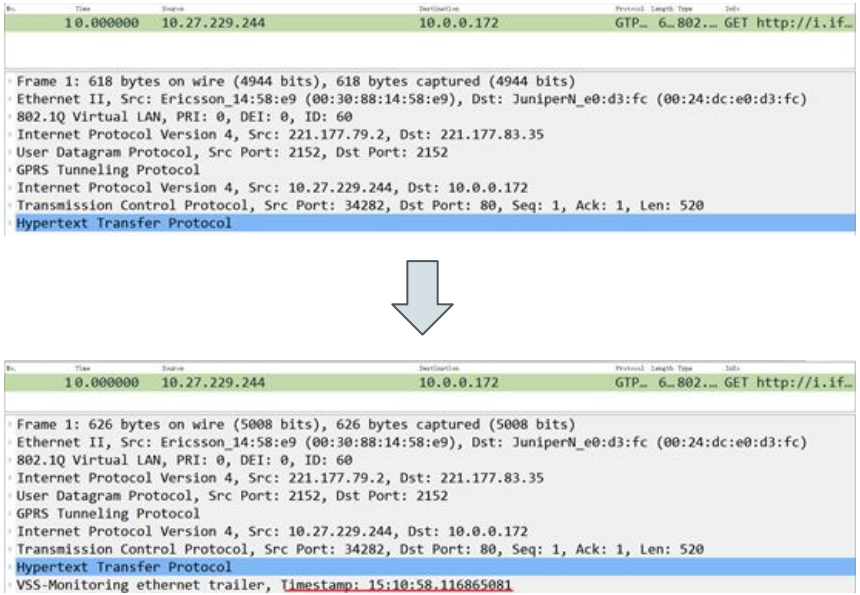




时间戳示例

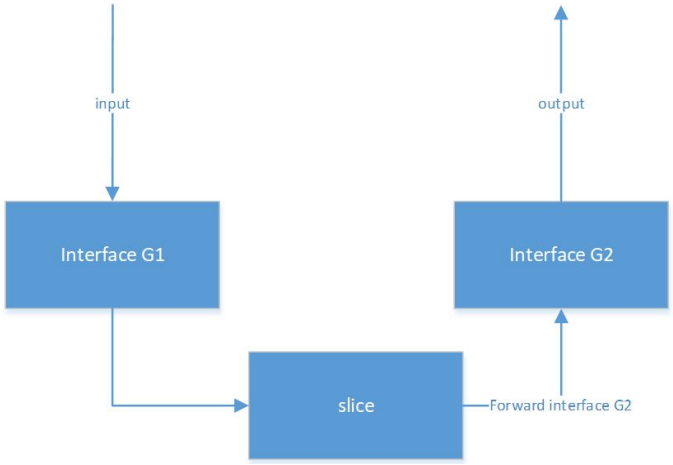
Tagging

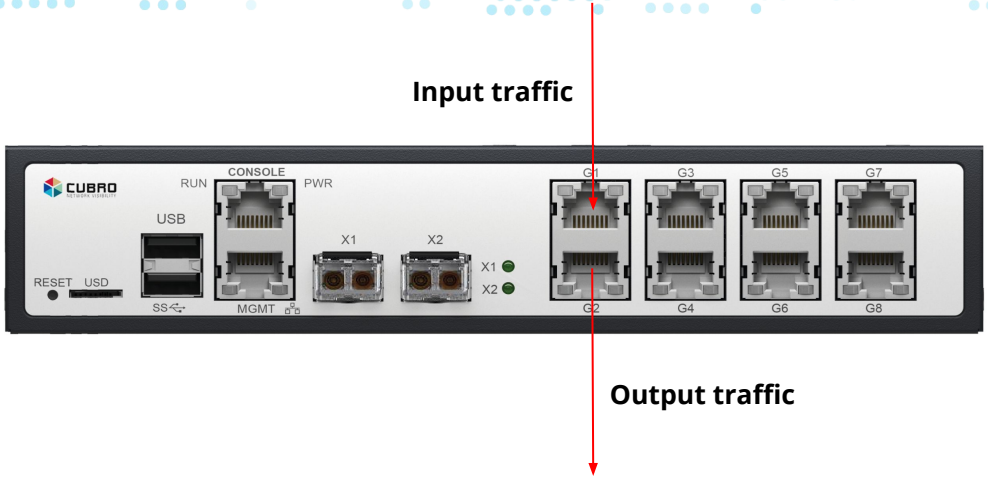
Time-Stamping: On



数据包切片

通过这个功能，我们可以对数据包帧的有效载荷进行切片，切片范围在40到1550字节之间。CRC可以重新计算。





数据包切片示例

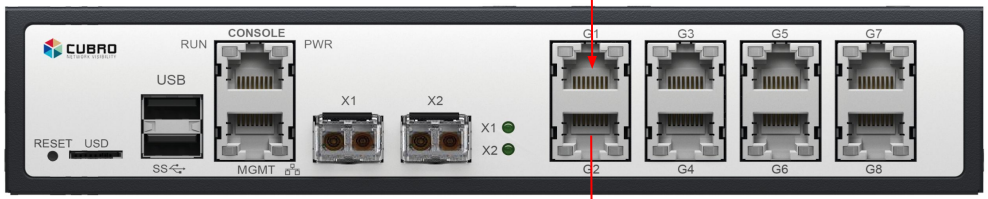

```
> Frame 2: 1370 bytes on wire (10960 bits), 1370 bytes captured (10960 bits) on interface \Device
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (1328 bytes)
```

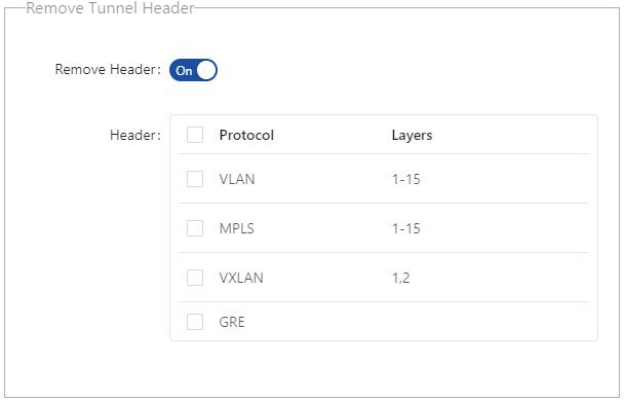
```
> Frame 1: 100 bytes on wire (800 bits), 100 bytes captured (800 bits) on interface \Device\NPF_
> Ethernet II, Src: Microsof_c5:2a:12 (f0:6e:0b:c5:2a:12), Dst: IPv4mcast_01 (01:00:5e:00:00:01)
> Internet Protocol Version 4, Src: 10.0.0.5, Dst: 239.0.0.1
> User Datagram Protocol, Src Port: 57977, Dst Port: 5004
> Data (58 bytes)
```

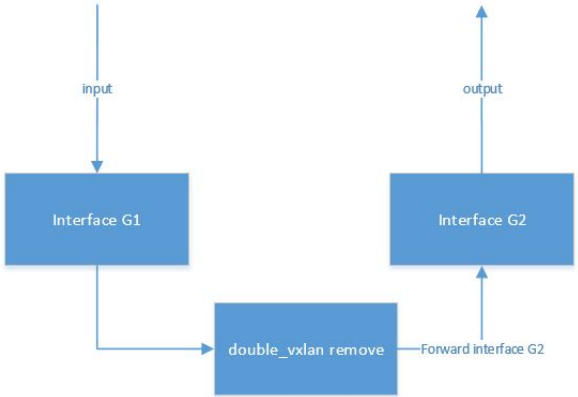
隧道报头移除

通过这个功能，我们可以删除下面列出的隧道报头：

- 剥离VLAN隧道
- 剥离MPLS隧道
- 剥离VXLAN隧道(剥离两层VXLAN)
- 剥离GRE隧道

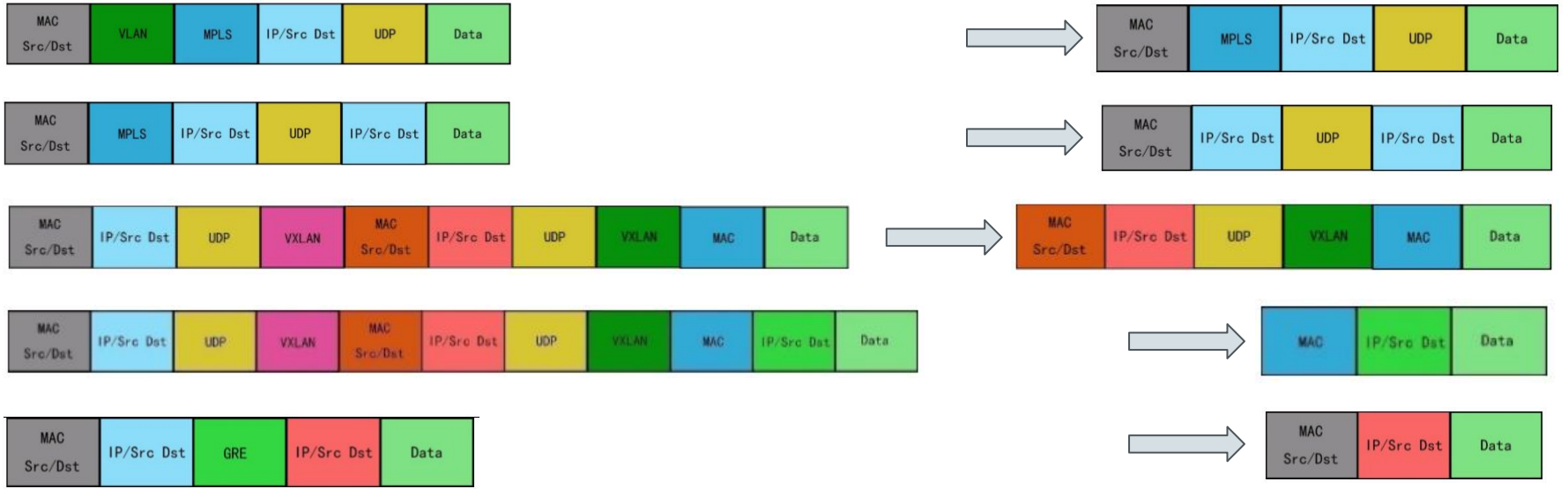






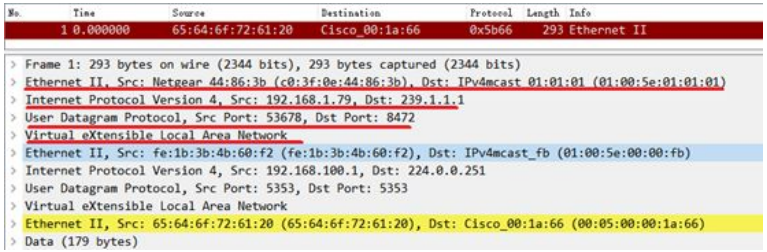
隧道报头移除

报头删除并不局限于单个报头，可以同时删除多个报头。

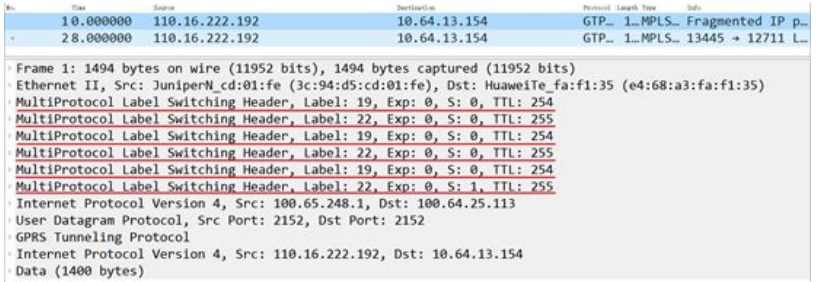


隧道报头移除示例

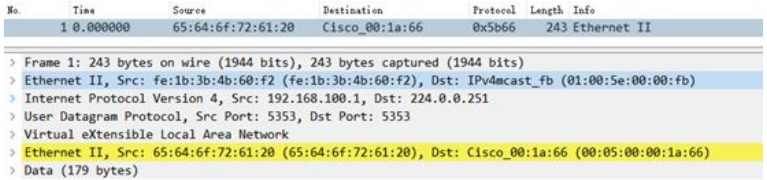
VXLAN报头



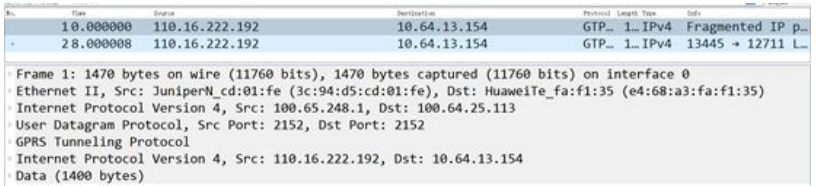
多个MPLS层



1st VXLAN报头移除

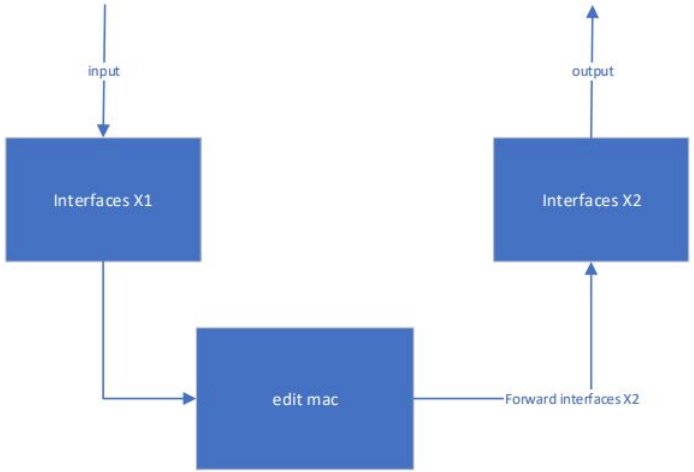


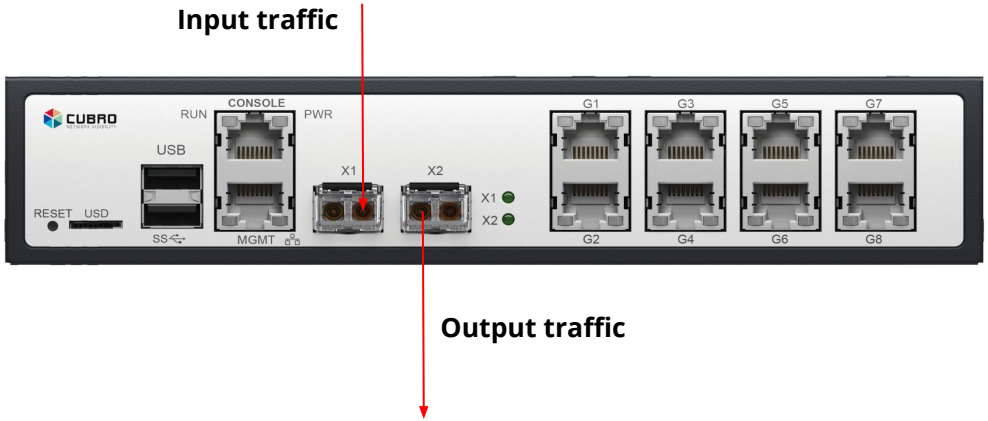
MPLS层移除



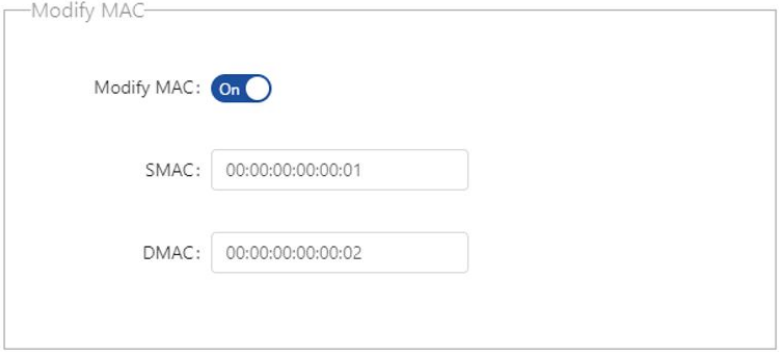
MAC修改

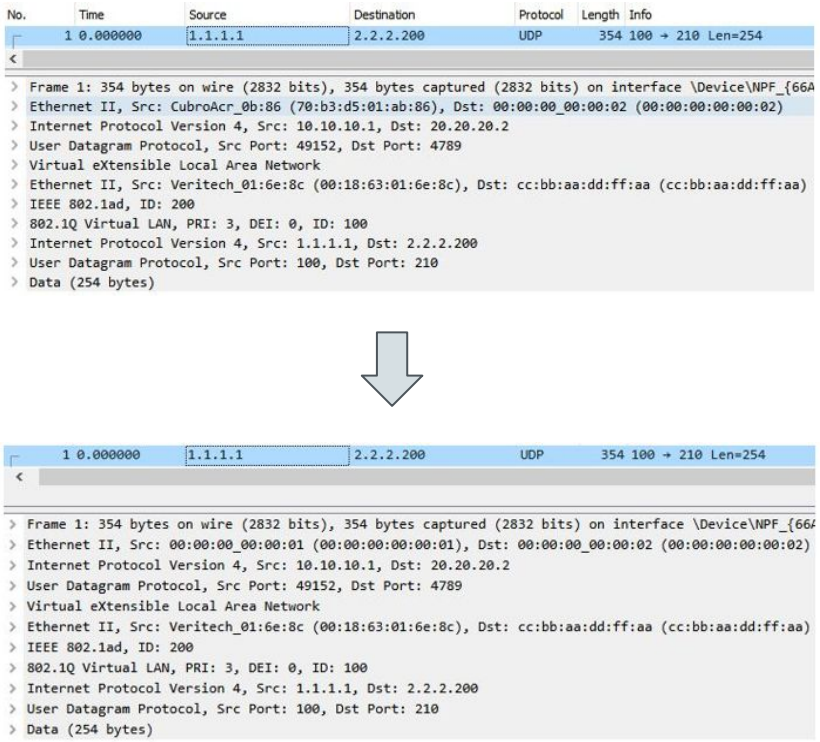
通过这个功能，我们可以修改数据包帧的源和目的MAC地址。





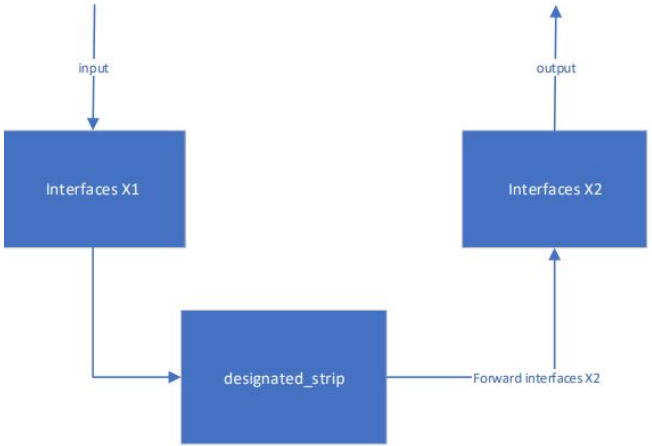
MAC修改示例

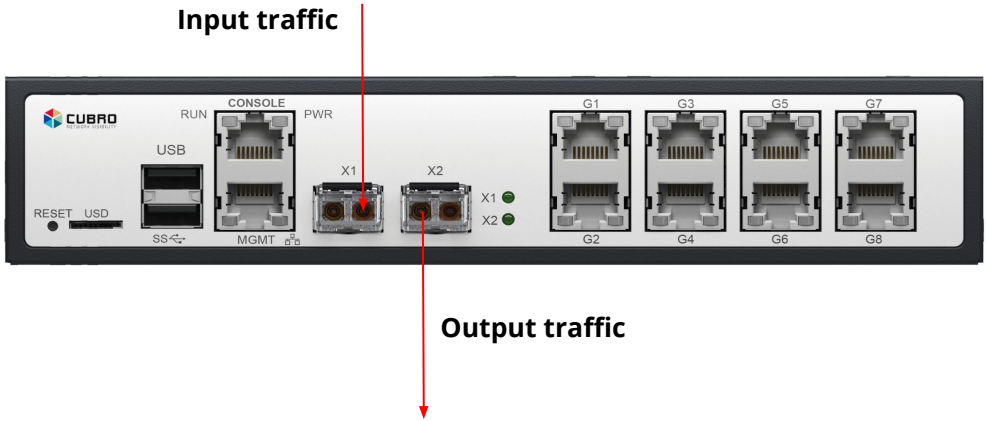

Modify MAC
Modify MAC:
On
SMAC:
00:00:00:00:00:01
DMAC:
00:00:00:00:00:02


No. Time Source Destination Protocol Length Info
1 0.000000 1.1.1.1 2.2.2.200 UDP 354 100 → 210 Len=254
Frame 1: 354 bytes on wire (2832 bits), 354 bytes captured (2832 bits) on interface \Device\NPF_{66A
Ethernet II, Src: CubroAcr_0b:86 (70:b3:d5:01:ab:86), Dst: 00:00:00_00:00:02 (00:00:00:00:00:02)
Internet Protocol Version 4, Src: 10.10.10.1, Dst: 20.20.20.2
User Datagram Protocol, Src Port: 49152, Dst Port: 4789
Virtual eXtensible Local Area Network
Ethernet II, Src: Veritech_01:6e:8c (00:18:63:01:6e:8c), Dst: cc:bb:aa:dd:ff:aa (cc:bb:aa:dd:ff:aa)
IEEE 802.1ad, ID: 200
802.1Q Virtual LAN, PRI: 3, DEI: 0, ID: 100
Internet Protocol Version 4, Src: 1.1.1.1, Dst: 2.2.2.200
User Datagram Protocol, Src Port: 100, Dst Port: 210
Data (254 bytes)
1 0.000000 1.1.1.1 2.2.2.200 UDP 354 100 → 210 Len=254
Frame 1: 354 bytes on wire (2832 bits), 354 bytes captured (2832 bits) on interface \Device\NPF_{66A
Ethernet II, Src: 00:00:00_00:00:01 (00:00:00:00:00:01), Dst: 00:00:00_00:00:02 (00:00:00:00:00:02)
Internet Protocol Version 4, Src: 10.10.10.1, Dst: 20.20.20.2
User Datagram Protocol, Src Port: 49152, Dst Port: 4789
Virtual eXtensible Local Area Network
Ethernet II, Src: Veritech_01:6e:8c (00:18:63:01:6e:8c), Dst: cc:bb:aa:dd:ff:aa (cc:bb:aa:dd:ff:aa)
IEEE 802.1ad, ID: 200
802.1Q Virtual LAN, PRI: 3, DEI: 0, ID: 100
Internet Protocol Version 4, Src: 1.1.1.1, Dst: 2.2.2.200
User Datagram Protocol, Src Port: 100, Dst Port: 210
Data (254 bytes)

偏移移除

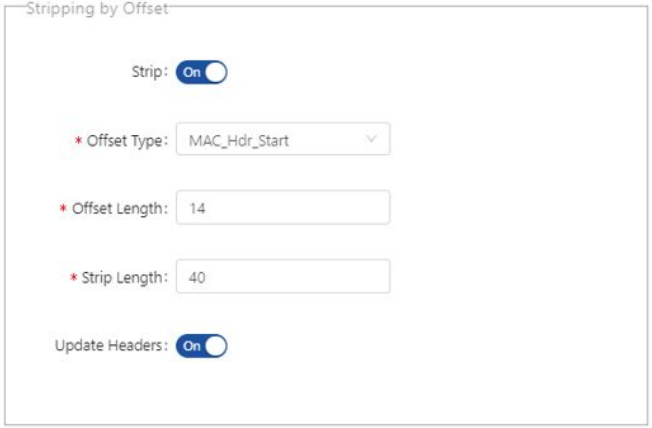
通过这个功能，我们可以删除数据包帧中的一定范围的字节。

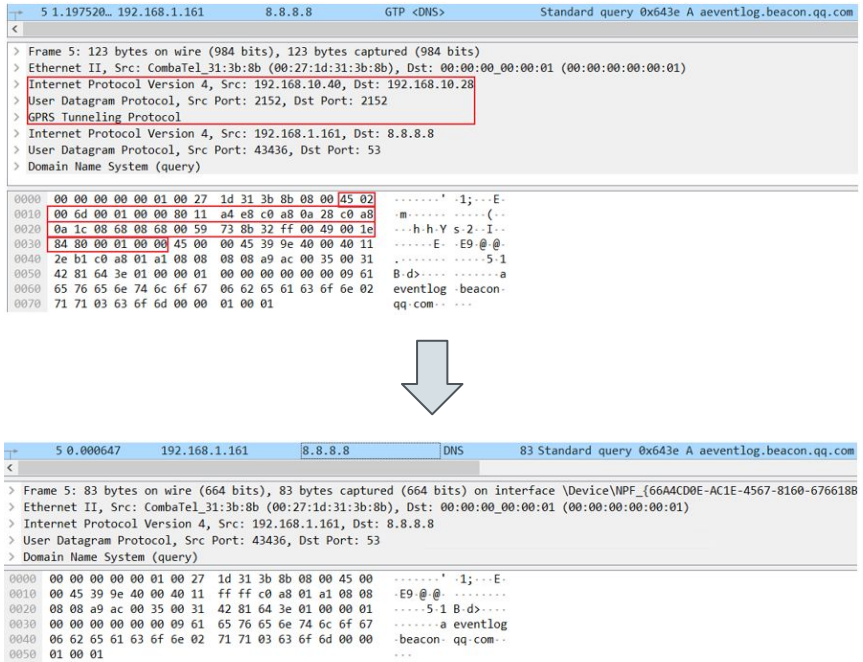




偏移移除示例

本示例展示了在4G会话中通过“ offset Stripping（偏移移除）”进行GTP报头剥离。从补货中可以看楚，GTP报头（外网IP地址+外网L4协议+GTP）的长度为40字节，数据包帧中的offset起始值为14“ 45”。通过设置这些值，我们可以看到，在第二次捕获中，GTP报头被删除了。



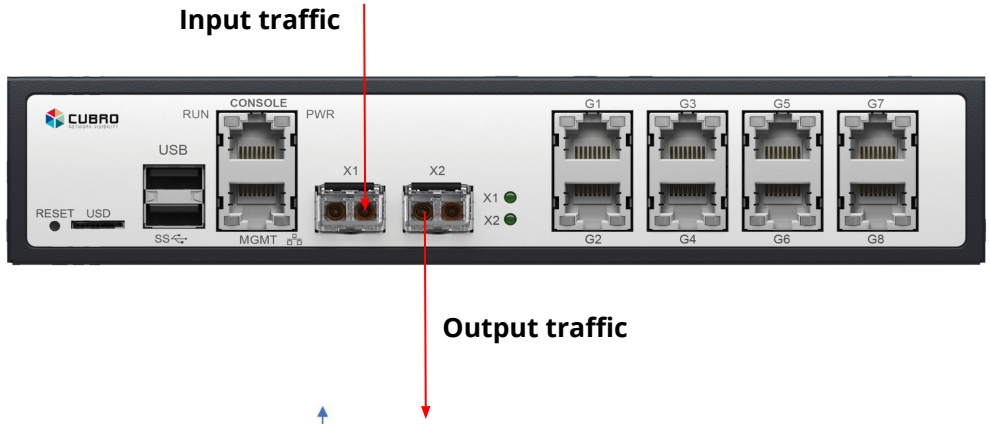


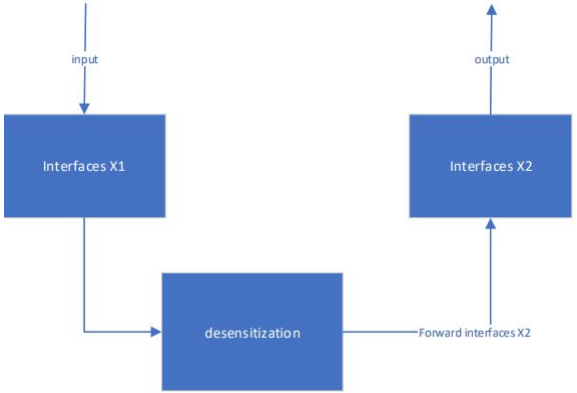
脱敏/数据屏蔽

通过这个功能，我们可以修改内容来隐藏原始数据。数据屏蔽有2个选项：

1- Keyword: 在指定的范围内，通过设置的十六进制值来搜索和修改关键字。

2- Customized: 选择一个随时的字节范围进行修改。

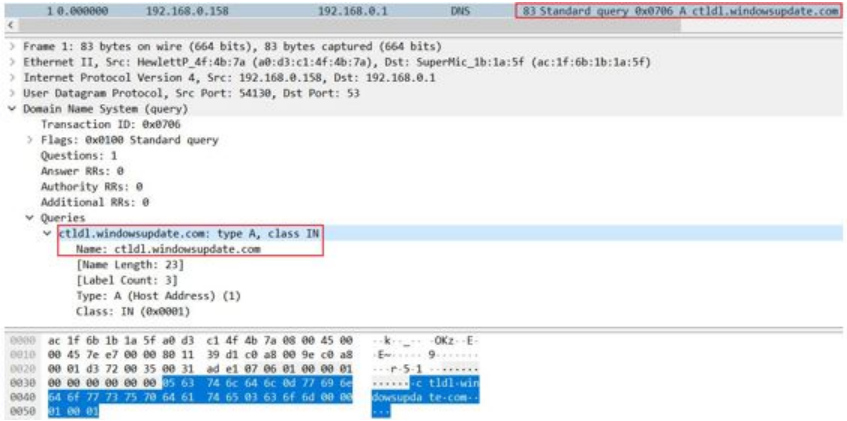


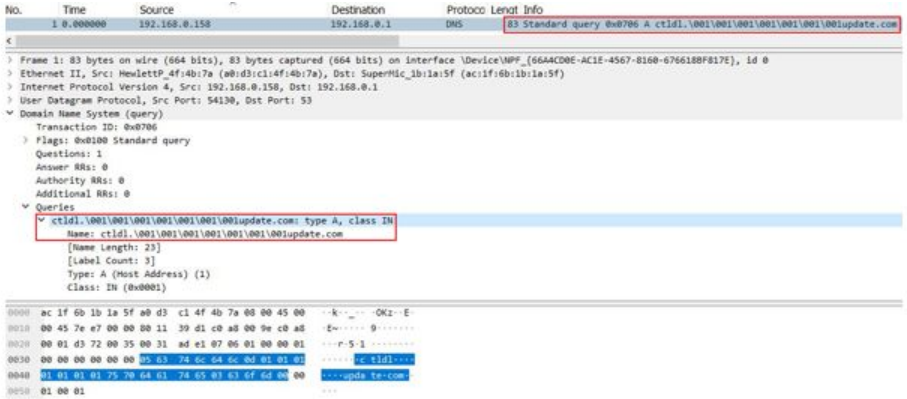


脱敏/数据屏蔽示例

1- Keyword

示例：关键字“ windows” 已被找到并用十六进制值“ 001” 进行了修改。

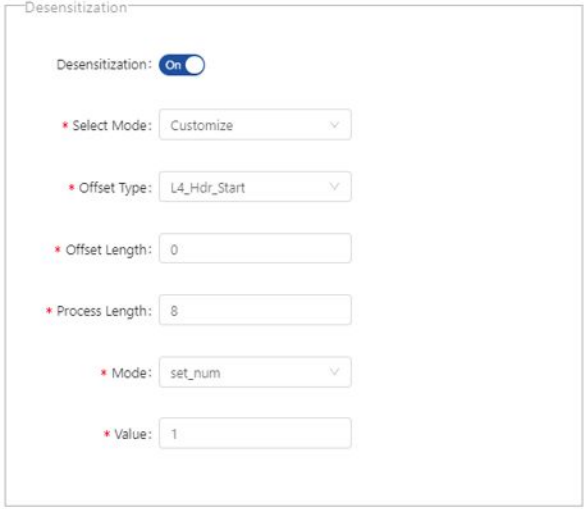


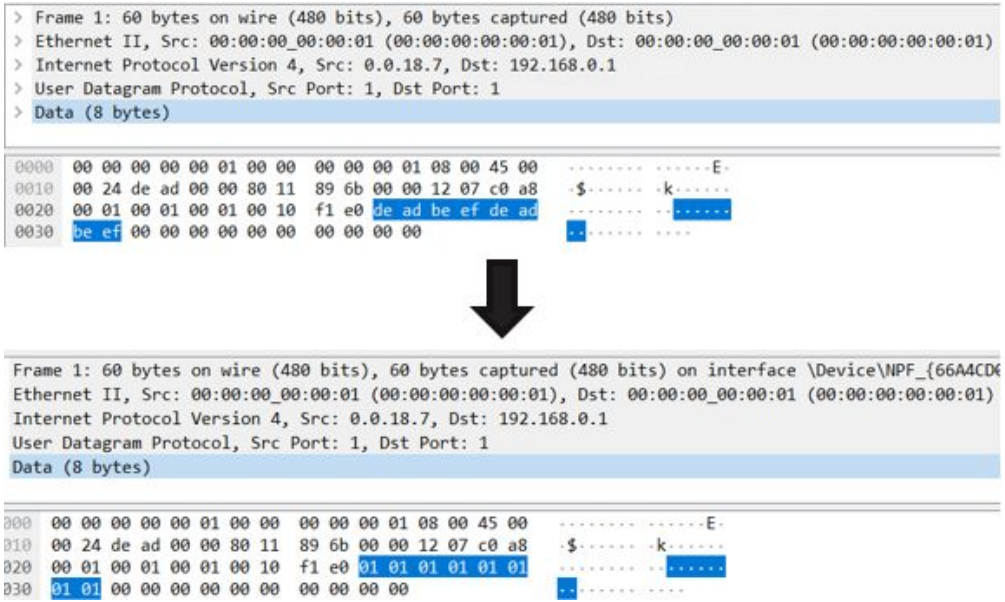


脱敏/数据屏蔽示例

2- Customized

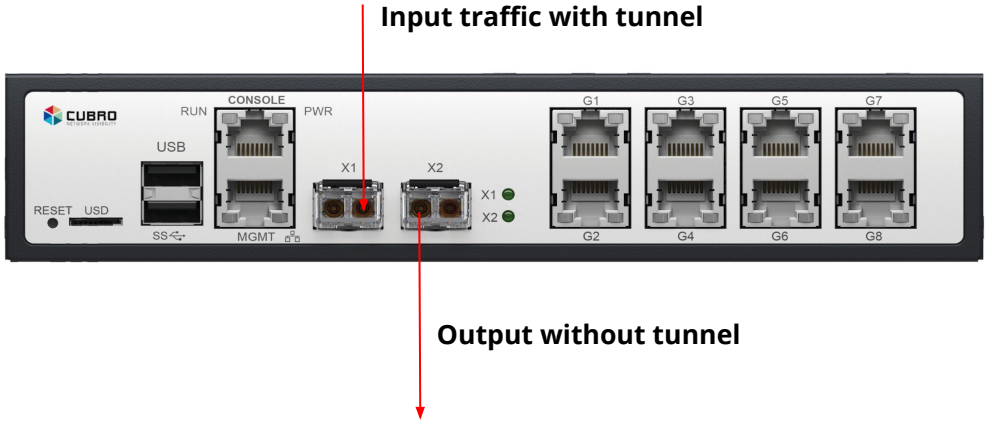
示例：如下图所示，我们定义的 "L4_ Hdr_Start "参数之后的8个字节，已经被十六进制值 "01 "修改了。

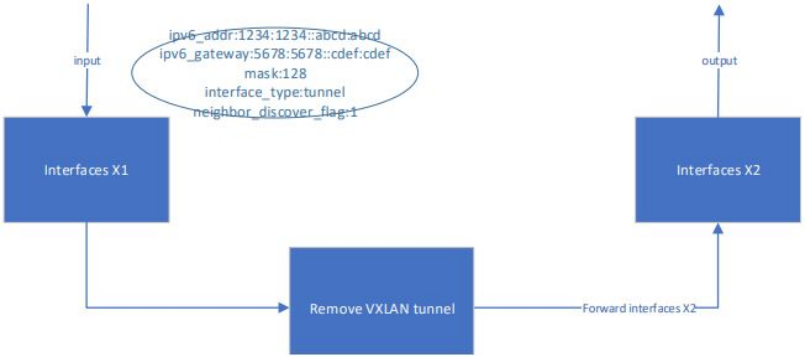




GRE and VXLAN Endpoint

通过在输入接口上配置IP和必要的协议（如IPv4的ARP或IPv6的NDP），Omnia设备可以被配置为主动端点，以便发送器找到网络上的端点。主动接收隧道，然后将其解封装（终止）。

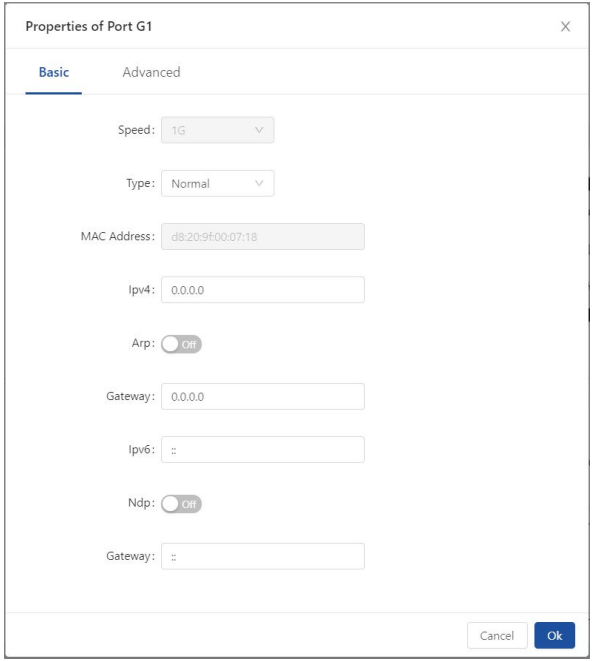




CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

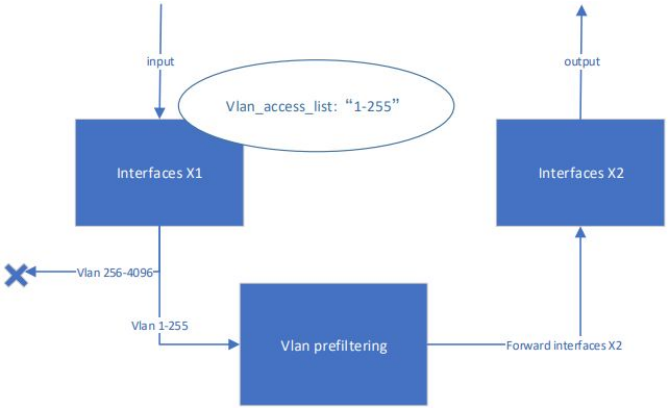
GRE and VXLAN Endpoint

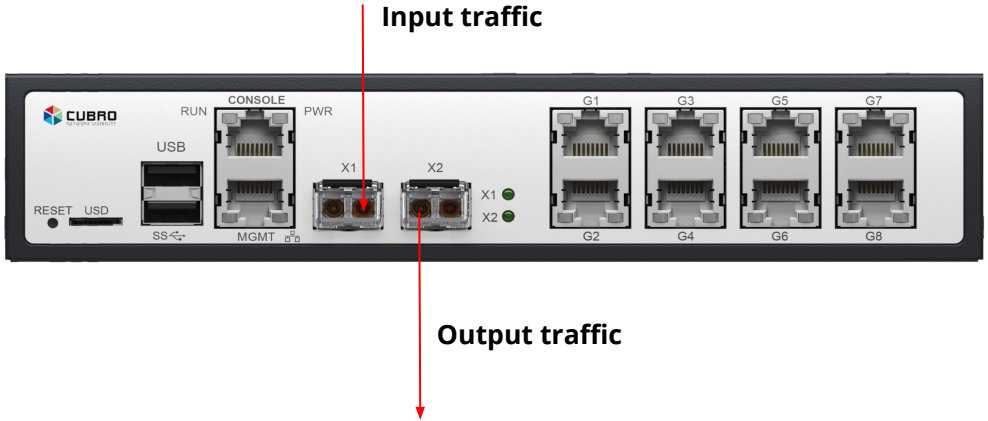
通过G1接口将Omnia设备配置为主动端点。



VLAN过滤

根据端口限制，含有VLAN标签的数据进入系统，实现过滤数据的功能。



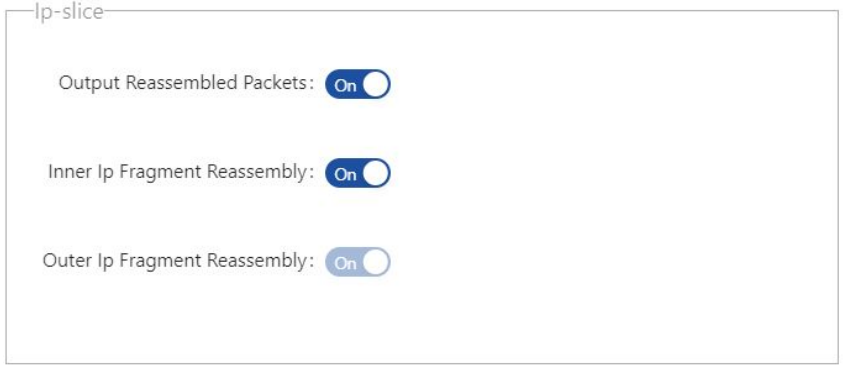


不需要将ACL配置为通过VLAN ID进行过滤。

TCP Reordering and Packet Fragment Reassembling
TCP重排序与数据包片段重构

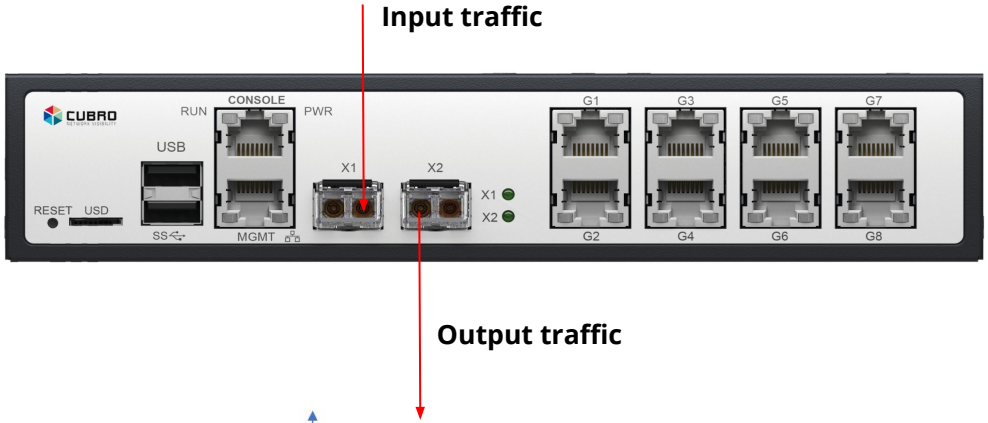
TCP Reordering: 通过这个功能，就可以对已经到达的失序的会话包进行重新排序。

Packet Fragment Reassembling:
通过这个功能，碎片化的IP数据包会被重新组合，并发送到输出端口。

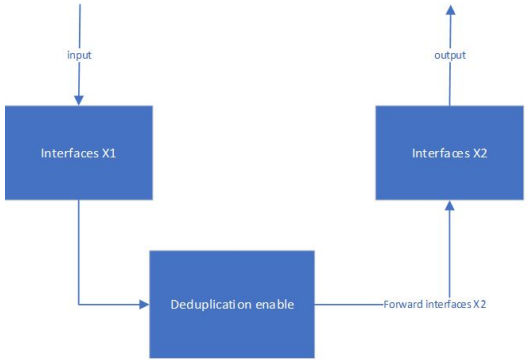


内联或在SPAN端口上进行重复数据删除

由于在链路上的多个点进行分流，链路上会传输重复的数据包。此功能可在1s内检索出链路上的重复信息，并删除重复信息。

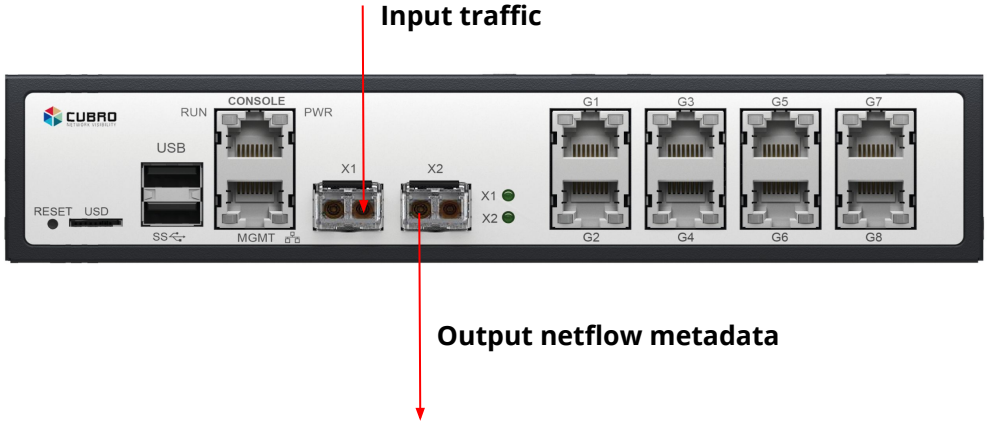


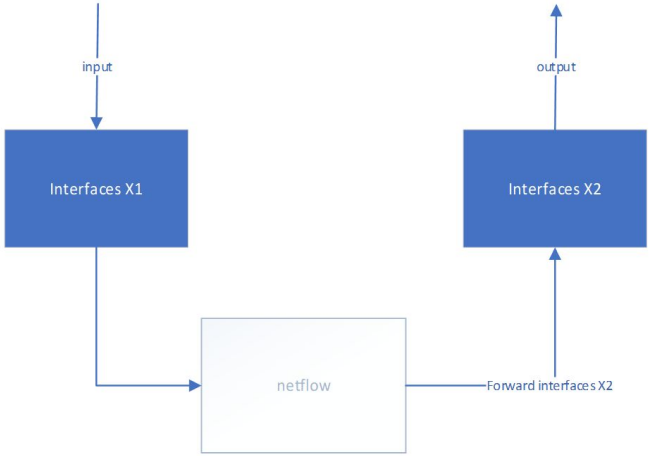
重复报文的基础是从报文的IP层开始，并比较报文末尾的所有数据。用户可以确定数据包的起始深度（Compare - offset）和匹配长度（Compare - depth）。



V5 and V9 Netflow Probe

有了这个特性，Omnia就可以作为**NetFlow探针**，为网络监控生成**元数据**。我们支持NetFlow **V5**和**V9**。

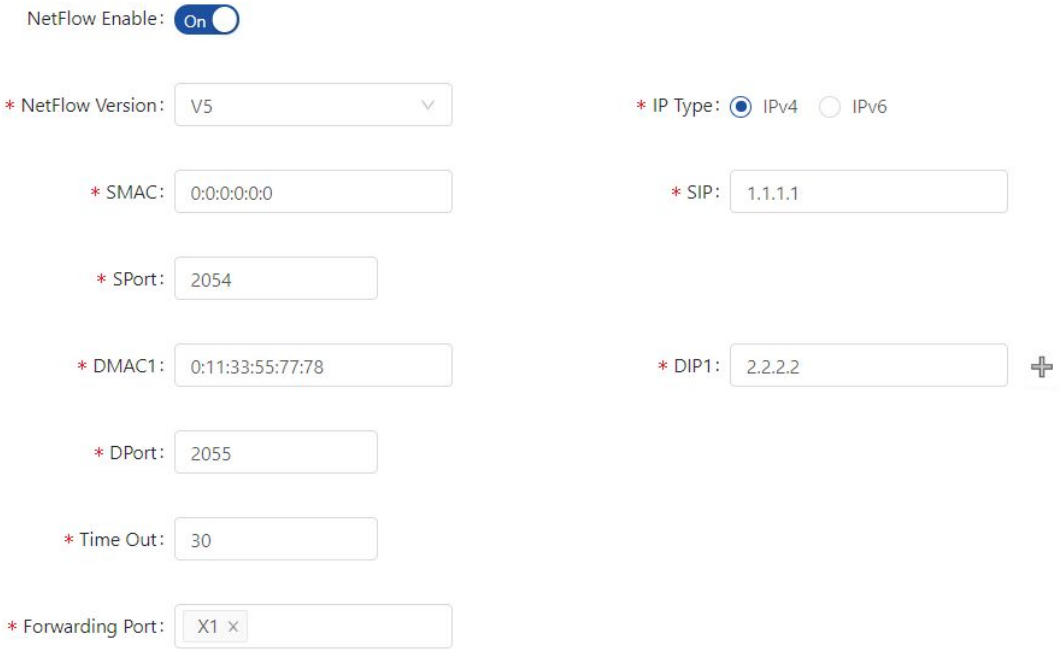




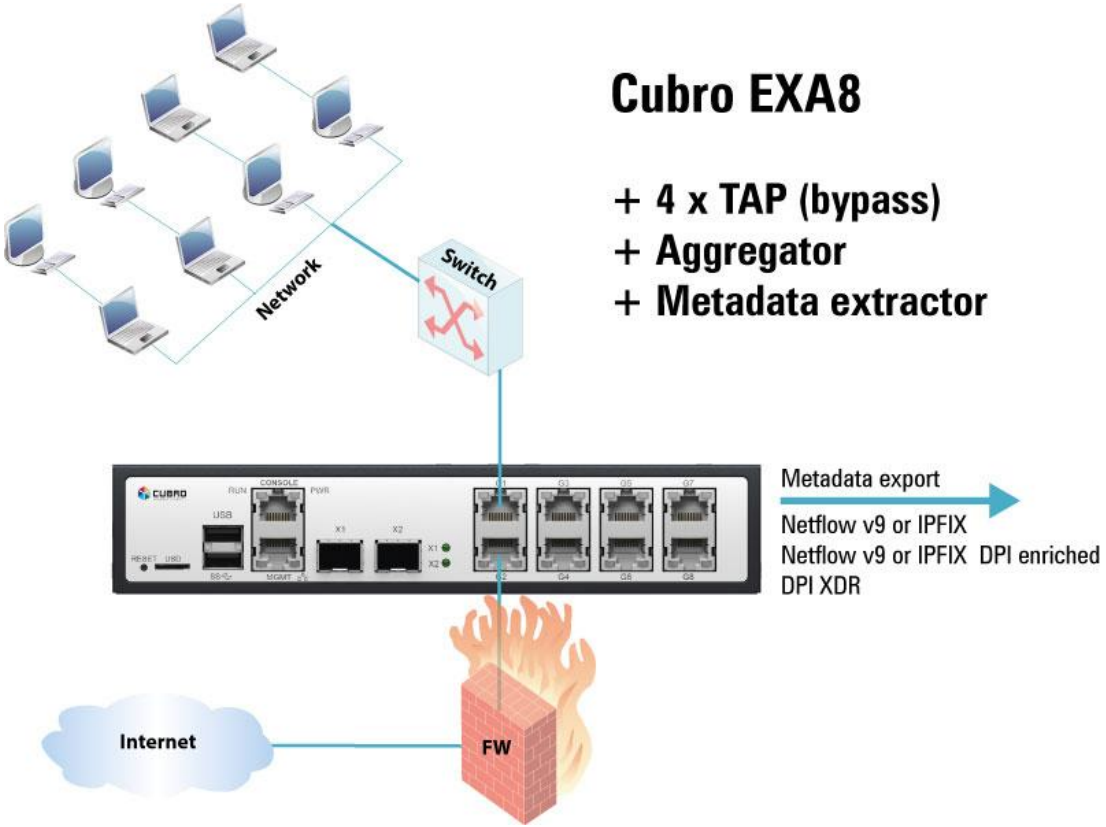
CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

V5 and V9 Netflow Probe

Netflow v9 配置



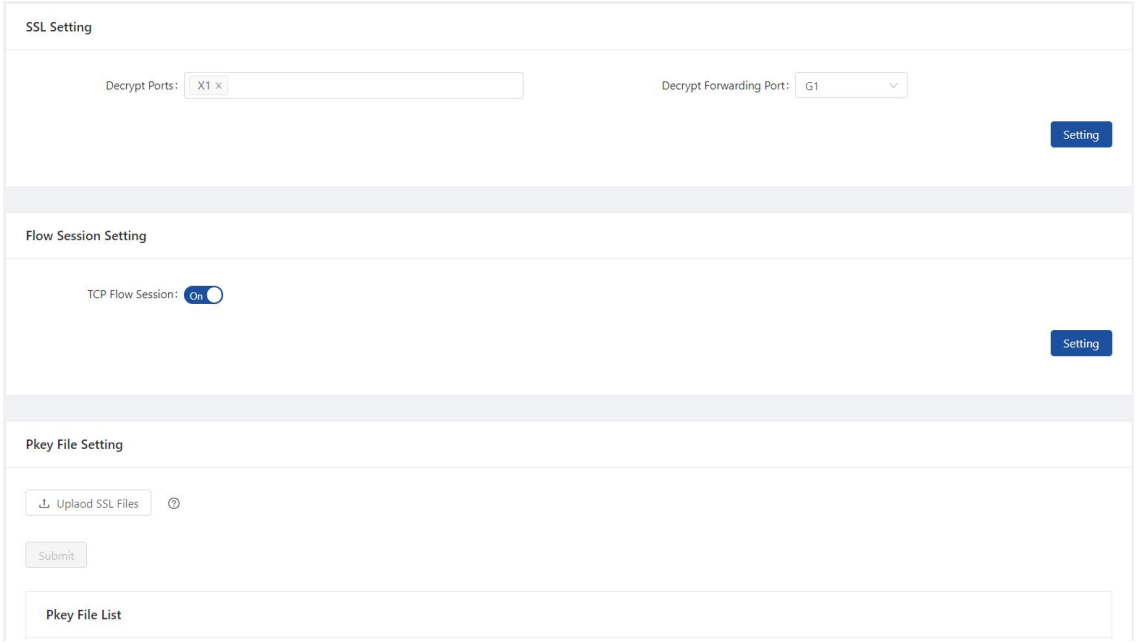
Metadata Exporter Netflow / Netflow - DPI / DPI



CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

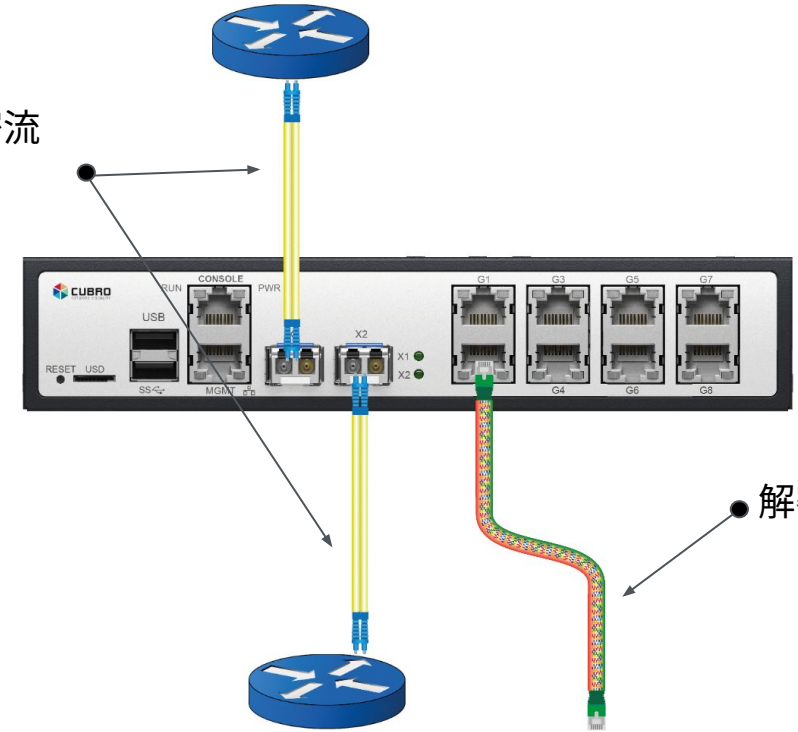
SSL/TLS Decryption

SSL / TLS 解密功能配置



SSL/TLS Decryption 应用

实时链路加密流量



解密的流量

CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE

质量&环境管理

TÜV NORD

CERTIFICATE

Management system as per
DIN EN ISO 9001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

Cubro Acronet GesmbH
Ghegastraße 3
1030 Wien
Austria

CUBRO NETWORK VISIBILITY

applies a management system in line with the above standard for the following scope

Sales and development of network monitoring and network visibility solutions

Certificate Registration No. 44 100 18600030
Audit Report No. ZER1634a

Valid from 2019-06-12
Valid until 2022-06-11
Initial certification 2019

Certification Body
at TÜV NORD CERT GmbH

TÜV Nord Austria GmbH
Dieferbachgasse 35
1150 Vienna, Austria

Vienna, 2019-06-12

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

IAF DAkkS Deutsche Akkreditierungsstelle D-ZM-12007-01-01

Cubro按照国际标准通过了ISO 9001质量管理认证。

TÜV NORD

CERTIFICATE

Management system as per
DIN EN ISO 14001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

Cubro Acronet GesmbH
Ghegastraße 3
1030 Wien
Austria

CUBRO NETWORK VISIBILITY

applies a management system in line with the above standard for the following scope

Sales and development of network monitoring and network visibility solutions

Certificate Registration No. 44 104 18600030
Audit Report No. ZER1634a

Valid from 2019-06-12
Valid until 2022-06-11
Initial certification 2019

Certification Body
at TÜV NORD CERT GmbH

TÜV Nord Austria GmbH
Dieferbachgasse 35
1150 Vienna, Austria

Vienna, 2019-06-12

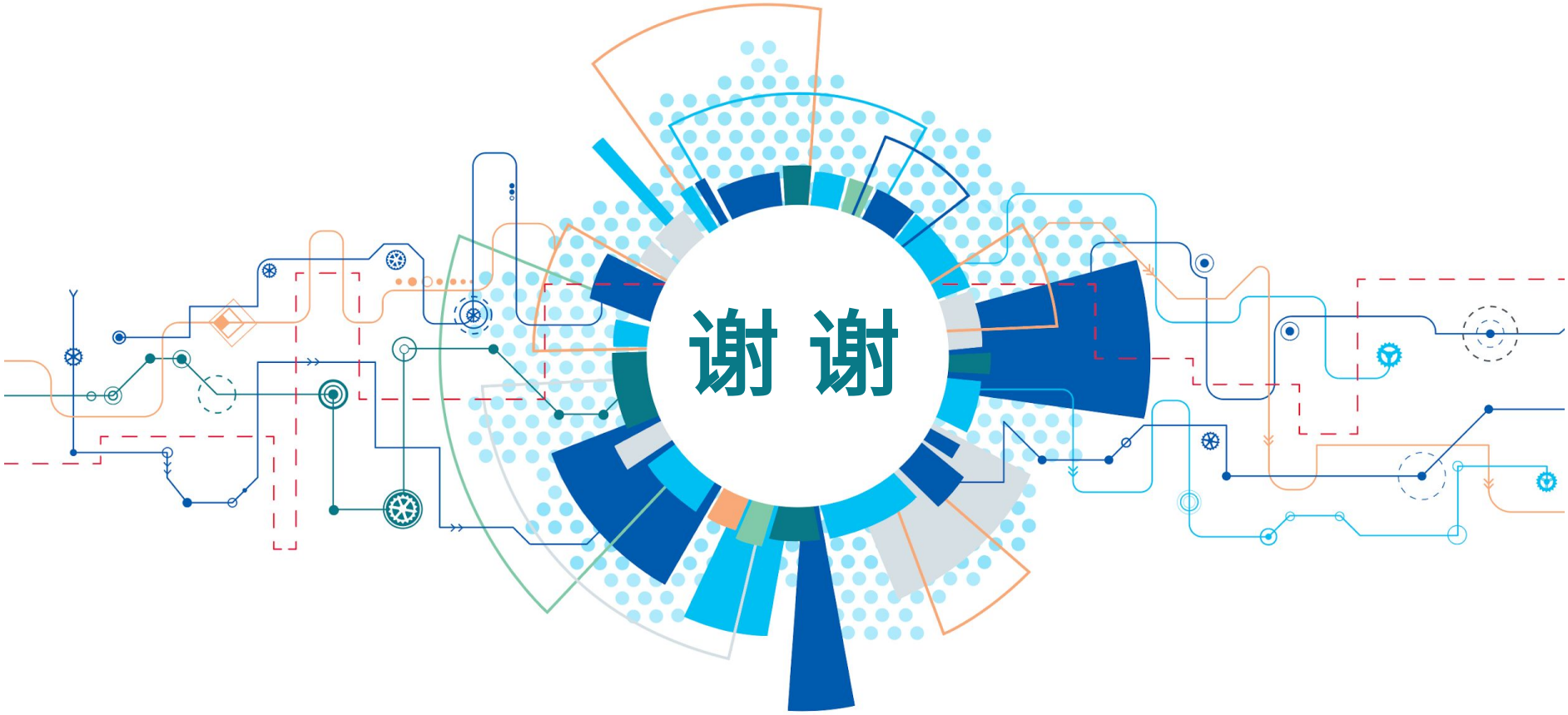
This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

IAF DAkkS Deutsche Akkreditierungsstelle D-ZM-12007-01-01

Cubro公司已获得ISO 14001认证，以管理我们的环境保护工作。

CUBRO NETWORK VISIBILITY
SIMPLE | SCALABLE | SUSTAINABLE



HongKe 虹科

关注我们

hongwangle

广州虹科电子科技有限公司

需要详细信息？请通过sales@hkaco.com

联系我们 | 电话: 400-999-3848办事处：广州 | 北京 | 上海 | 深圳 | 西安 | 武汉 | 成都 | 沈阳 | 香港 | 台湾 | 美国