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eventually everything connects

people | ideas | objects

skyline communications

VIDEO SERVICES FORUM

BEST PRACTICES ON PTP AND MEDIA FLOW MONITORING FOR ALL-IP INFRASTRUCTURES

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INTRODUCTION

SKYLINE COMMUNICATIONS

Our company: Skyline Communications

- established in 1985, independent
- headquartered in Izegem, Belgium
- global presence (19 international sites)
- 300+ employees
- acknowledged expert in e2e monitoring & orchestration

Our product: DataMiner

- multi-vendor off-the-shelf NMS & OSS platform
- monitor, control, orchestrate
- 6000+ systems deployed
- 5500+ drivers to interface with products from 600+ vendors

PTP CLOCK MANAGEMENT

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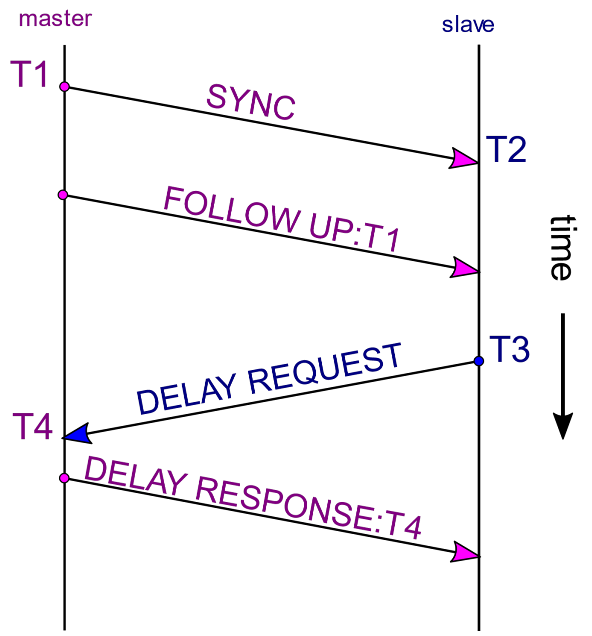
PTP – A PROTOCOL, NOT A SIGNAL

PTP standard has been designed for engineered environments and makes some assumptions

- no packet delay variation (PDV)
- no asymmetry (internal asymmetry, transmission asymmetry)
- timestamps are perfect



mechanisms to alleviate these sources of errors

- create timestamps in hardware
- use QoS to prioritize PTP traffic
- fine-tune PTP settings (BC, TC, E2E, P2P, correct timing intervals, etc..) to optimize the precision of time at the endpoint

but nothing is perfect

PTP CLOCK MANAGEMENT – MANY THINGS CAN GO WRONG

PTP – COMMON SOURCES OF ERROR

configuration issues (ordinary clock, grandmaster clock, slave only clock, boundary clock, transparent clock)

> PTP parameters & BMCA settings (domain, priority1, priority2, profiles, delay mechanism …)

> messaging rate intervals (announce message, announce timeout, sync message, delay request, delay response, …)

> communication mode (unicast, multicast, mixed)

device issues

> grandmaster, boundary clock failure

> loss of external reference

> badly implemented BMCA or PTP master election process

automate PTP configuration

network issues

> missing or corrupted event messages

> increased packet delay variations (PDV)

> network asymmetry

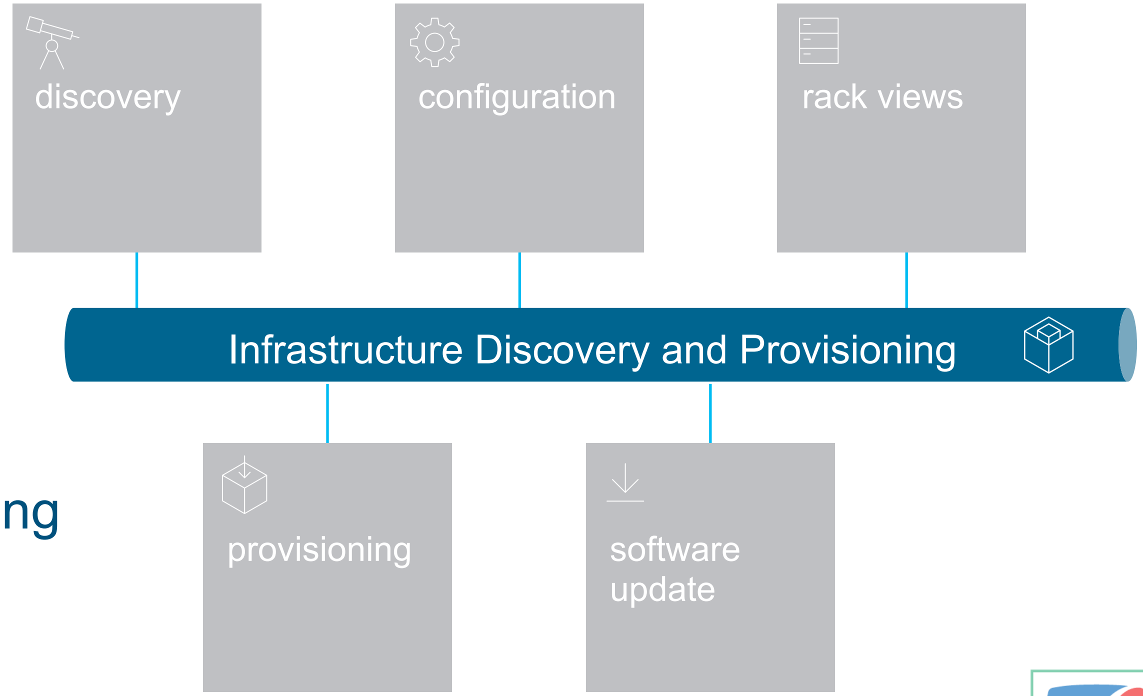
> multicast issues

monitor & control PTP environment

PTP CLOCK MANAGEMENT – PTP PROVISIONING IS A CHALLENGE

AUTOMATED PTP PROVISIONING

- automatically detect ANY new PTP aware devices (IS-04 / proprietary protocols)
- automatically extract e2e PTP topology (LLDP)
- apply standard PTP settings/profiles to ANY grandmaster, switch, slave device
- compare PTP configurations
- define and apply “golden” configurations



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infrastructure discovery and provisioning

PTP CLOCK MANAGEMENT – BMCA IS CONSTANTLY RUNNING

360° PTP MONITORING & CONTROL

- monitor every single PTP metric on all PTP grandmasters, PTP masters, PTP slaves
- monitor PTP performance (e.g. PTP offset, PTP mean path delay)
- monitor PTP multicast-traffic (network packets as well as switch tables)
- apply PTP security workflows (e.g. block PTP slave devices to never become a master)
- integrate network analyzers

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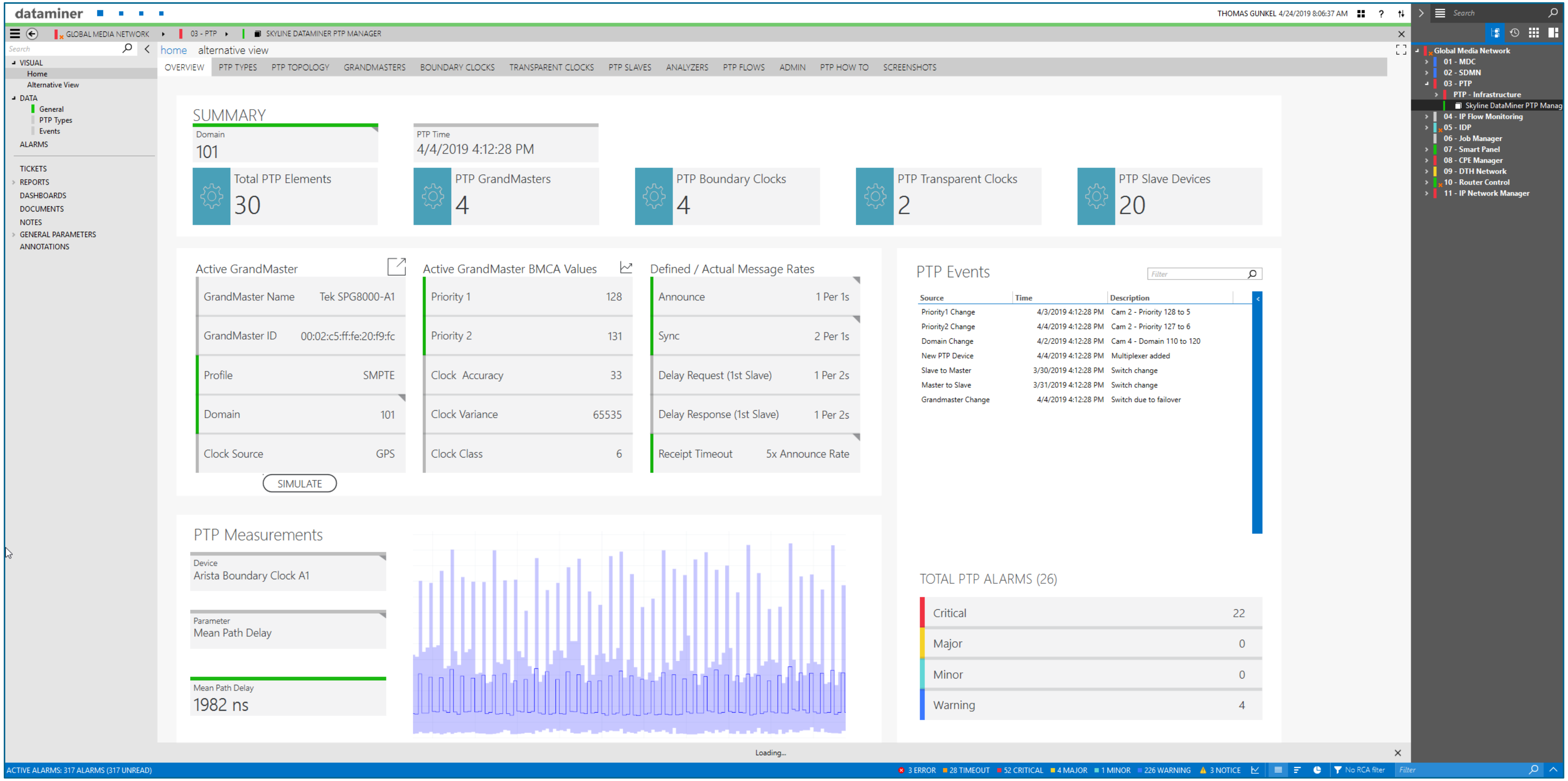
monitoring & control

DATAMINER PTP SOLUTION – ANY VENDOR, ANY PROTOCOL – SAME LOOK AND FEEL

PTP OVERVIEW



SUMMARY

Domain
101

PTP Time
4/4/2019 4:12:28 PM

Total PTP Elements	30
PTP GrandMasters	4
PTP Boundary Clocks	4
PTP Transparent Clocks	2
PTP Slave Devices	20

Active GrandMaster

GrandMaster Name	Tek SPG8000-A1
GrandMaster ID	00:02:c5:ff:fe:20:f9:fc
Profile	SMPTE
Domain	101
Clock Source	GPS

Active GrandMaster BMCA Values

Priority 1	128
Priority 2	131
Clock Accuracy	33
Clock Variance	65535
Clock Class	6

Defined / Actual Message Rates

Announce	1 Per 1s
Sync	2 Per 1s
Delay Request (1st Slave)	1 Per 2s
Delay Response (1st Slave)	1 Per 2s
Receipt Timeout	5x Announce Rate

PTP Events

Source	Time	Description
Priority1 Change	4/3/2019 4:12:28 PM	Cam 2 - Priority 128 to 5
Priority2 Change	4/4/2019 4:12:28 PM	Cam 2 - Priority 127 to 6
Domain Change	4/2/2019 4:12:28 PM	Cam 4 - Domain 110 to 120
New PTP Device	4/4/2019 4:12:28 PM	Multiplexer added
Slave to Master	3/30/2019 4:12:28 PM	Switch change
Master to Slave	3/31/2019 4:12:28 PM	Switch change
Grandmaster Change	4/4/2019 4:12:28 PM	Switch due to failover

PTP Measurements

Device
Arista Boundary Clock A1

Parameter
Mean Path Delay

Mean Path Delay
1982 ns

TOTAL PTP ALARMS (26)

Critical	22
Major	0
Minor	0
Warning	4

ACTIVE ALARMS: 317 ALARMS (317 UNREAD)

3 ERROR 28 TIMEOUT 52 CRITICAL 4 MAJOR 1 MINOR 226 WARNING 3 NOTICE

your PTP ecosystem at a glance

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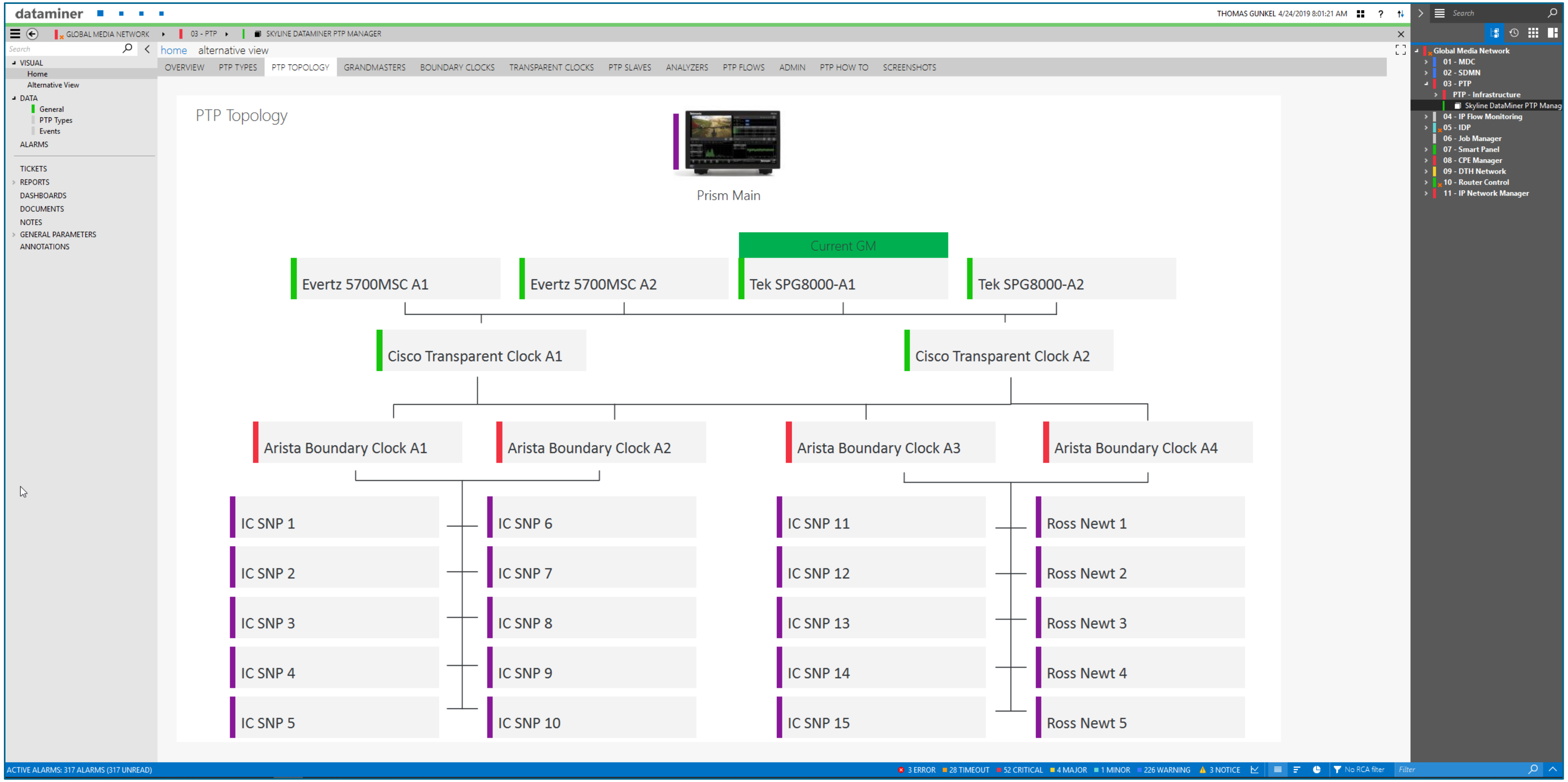
DATAMINER PTP SOLUTION – ANY VENDOR, ANY PROTOCOL – SAME LOOK AND FEEL

PTP TOPOLOGY



extract and display PTP topology

indicate current GrandMaster

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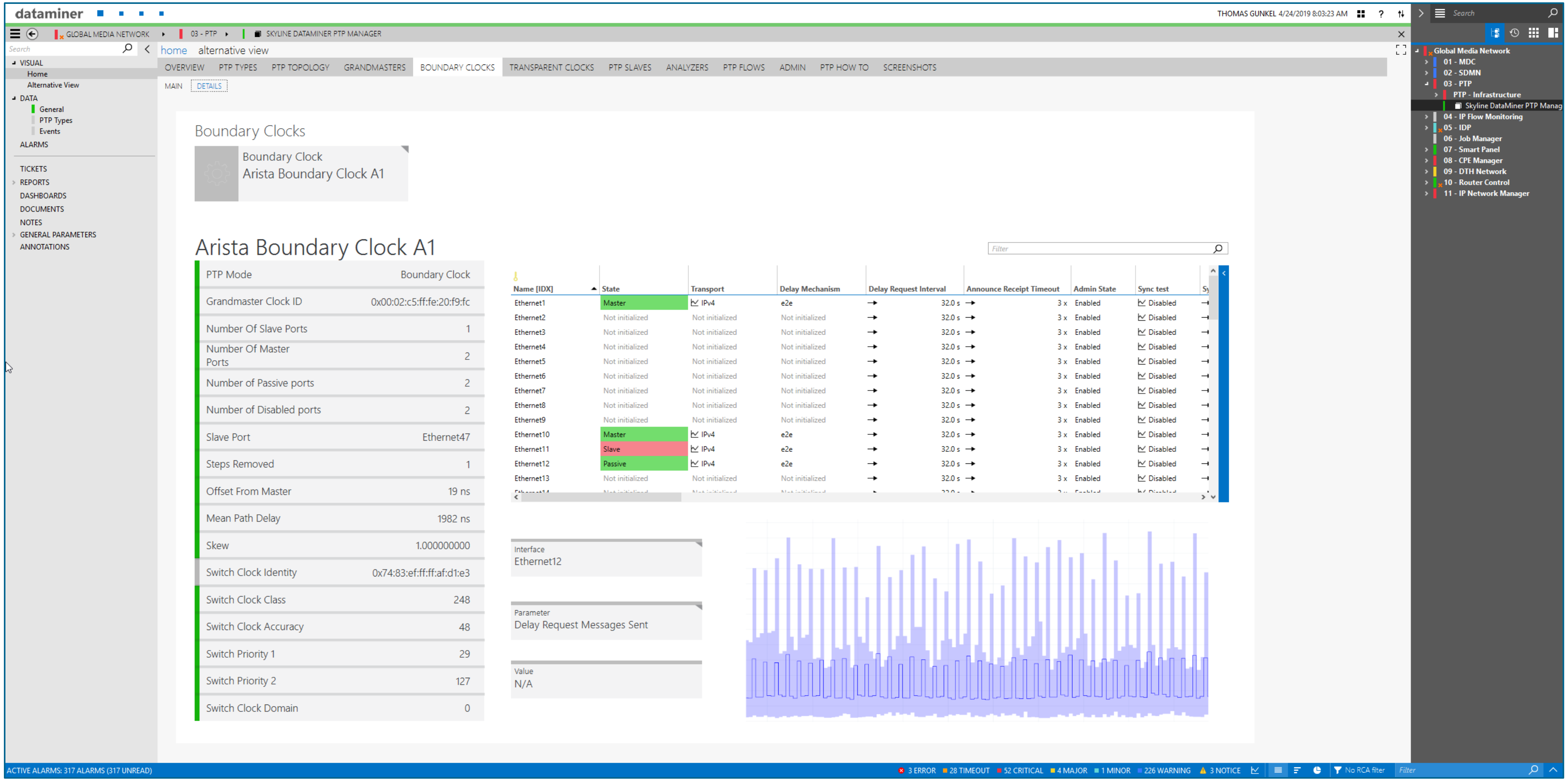
DATAMINER PTP SOLUTION – ANY VENDOR, ANY PROTOCOL – SAME LOOK AND FEEL

PTP BOUNDARY CLOCKS - DETAILS



Boundary Clocks

Boundary Clock
Arista Boundary Clock A1

Arista Boundary Clock A1

PTP Mode	Boundary Clock
Grandmaster Clock ID	0x00:02:c5:ff:fe:20:f9:fc
Number Of Slave Ports	1
Number Of Master Ports	2
Number of Passive ports	2
Number of Disabled ports	2
Slave Port	Ethernet47
Steps Removed	1
Offset From Master	19 ns
Mean Path Delay	1982 ns
Skew	1.000000000
Switch Clock Identity	0x74:83:ef:ff:ff:af:d1:e3
Switch Clock Class	248
Switch Clock Accuracy	48
Switch Priority 1	29
Switch Priority 2	127
Switch Clock Domain	0

Name [IDX]	State	Transport	Delay Mechanism	Delay Request Interval	Announce Receipt Timeout	Admin State	Sync test
Ethernet1	Master	IPv4	e2e	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet2	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet3	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet4	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet5	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet6	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet7	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet8	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet9	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet10	Master	IPv4	e2e	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet11	Slave	IPv4	e2e	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet12	Passive	IPv4	e2e	→ 32.0 s	→ 3 x	Enabled	Disabled
Ethernet13	Not initialized	Not initialized	Not initialized	→ 32.0 s	→ 3 x	Enabled	Disabled

Interface
Ethernet12

Parameter
Delay Request Messages Sent

Value
N/A

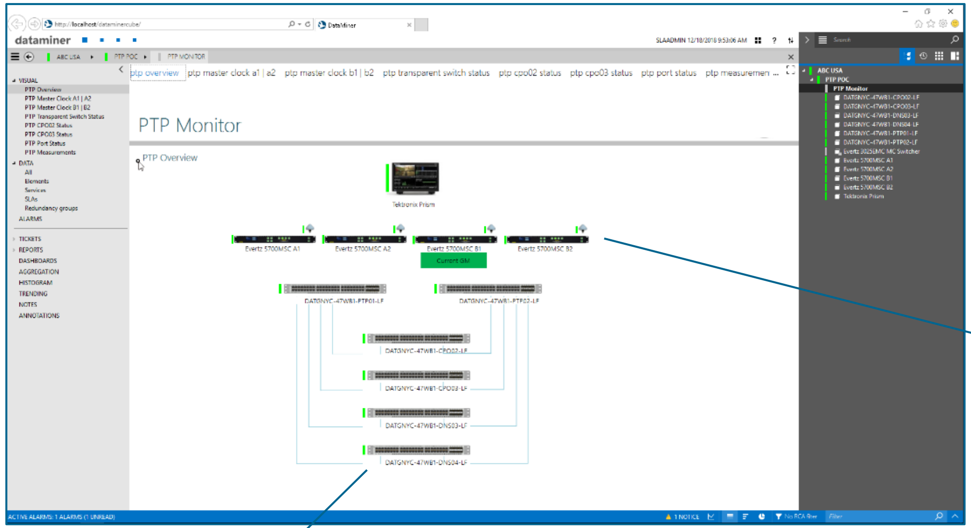
drill down to every single switch interface

compare PTP stats

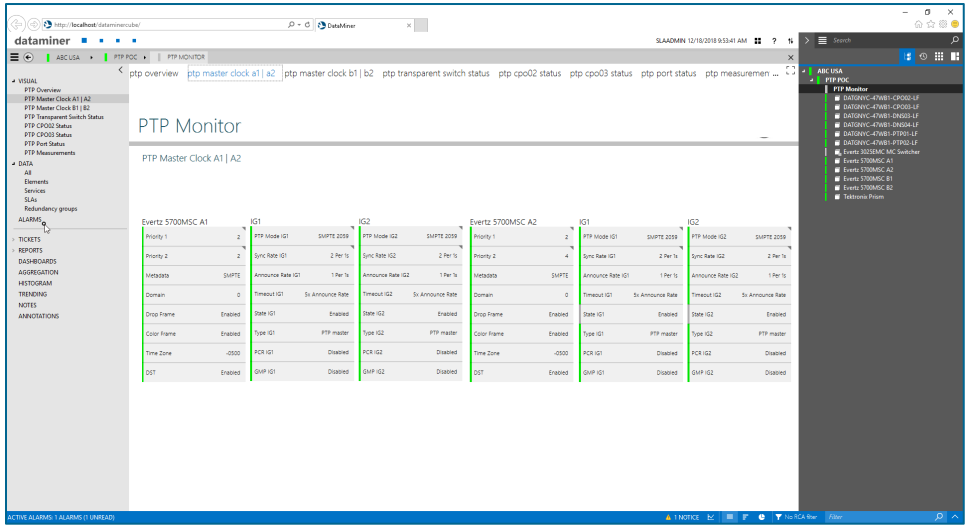
access PTP performance data

PTP CUSTOMER EXAMPLES

PTP DRILL DOWN NAVIGATION



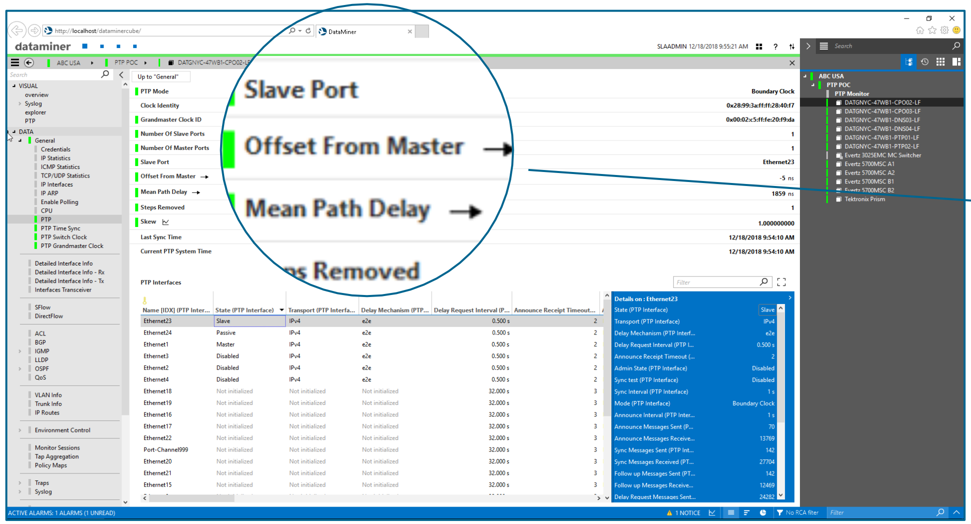
PTP landing page drill down to every PTP detail


PTP Monitor

PTP Master Clock A1 | A2

Evertz 5700MSC A1		IG1		IG2		Evertz 5700MSC A2		IG1		IG2	
Priority 1	2	PTP Mode IG1	SMPTE 2059	PTP Mode IG2	SMPTE 2059	Priority 1	2	PTP Mode IG1	SMPTE 2059	PTP Mode IG2	SMPTE 2059
Priority 2	2	Sync Rate IG1	2 Per 1s	Sync Rate IG2	2 Per 1s	Priority 2	4	Sync Rate IG1	2 Per 1s	Sync Rate IG2	2 Per 1s
Metadata	SMPTE	Announce Rate IG1	1 Per 1s	Announce Rate IG2	1 Per 1s	Metadata	SMPTE	Announce Rate IG1	1 Per 1s	Announce Rate IG2	1 Per 1s
Domain	0	Timeout IG1	5x Announce Rate	Timeout IG2	5x Announce Rate	Domain	0	Timeout IG1	5x Announce Rate	Timeout IG2	5x Announce Rate
Drop Frame	Enabled	State IG1	Enabled	State IG2	Enabled	Drop Frame	Enabled	State IG1	Enabled	State IG2	Enabled
Color Frame	Enabled	Type IG1	PTP master	Type IG2	PTP master	Color Frame	Enabled	Type IG1	PTP master	Type IG2	PTP master
Time Zone	-0500	PCR IG1	Disabled	PCR IG2	Disabled	Time Zone	-0500	PCR IG1	Disabled	PCR IG2	Disabled
DST	Enabled	GMP IG1	Disabled	GMP IG2	Disabled	DST	Enabled	GMP IG1	Disabled	GMP IG2	Disabled

PTP GrandMaster configuration comparison



PTP Mode	Boundary Clock
Clock Identity	0x28:99:3a:ff:ff:28:40:f7
Grandmaster Clock ID	0x00:02:c5:ff:fe:20:f9:da
Number Of Slave Ports	1
Number Of Master Ports	1
Slave Port	Ethernet23
Offset From Master →	-5 ns
Mean Path Delay →	1859 ns
Steps Removed	1
Skew	1.000000000
Last Sync Time	12/18/2018 9:54:10 AM
Current PTP System Time	12/18/2018 9:54:10 AM

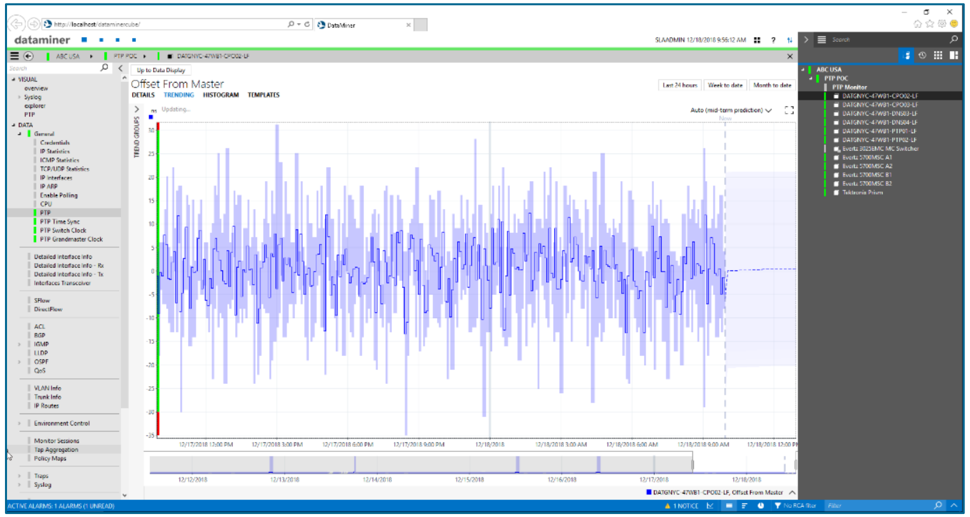
PTP Interfaces

Name [IDX] (PTP Inter...	State (PTP Interface)	Transport (PTP Interfa...	Delay Mechanism (PTP...	Delay Request Interval (P...	Announce Receipt Timeout...
Ethernet23	Slave	IPv4	e2e	0.500 s	2
Ethernet24	Passive	IPv4	e2e	0.500 s	2
Ethernet1	Master	IPv4	e2e	0.500 s	2
Ethernet3	Disabled	IPv4	e2e	0.500 s	2
Ethernet2	Disabled	IPv4	e2e	0.500 s	2
Ethernet4	Disabled	IPv4	e2e	0.500 s	2
Ethernet18	Not initialized	Not initialized	Not initialized	32.000 s	3
Ethernet19	Not initialized	Not initialized	Not initialized	32.000 s	3
Ethernet16	Not initialized	Not initialized	Not initialized	32.000 s	3
Ethernet17	Not initialized	Not initialized	Not initialized	32.000 s	3
Ethernet22	Not initialized	Not initialized	Not initialized	32.000 s	3
Port-Channel999	Not initialized	Not initialized	Not initialized	32.000 s	3
Ethernet20	Not initialized	Not initialized	Not initialized	32.000 s	3
Ethernet21	Not initialized	Not initialized	Not initialized	32.000 s	3
Ethernet15	Not initialized	Not initialized	Not initialized	32.000 s	3

Details on : Ethernet23

State (PTP Interface)	Slave
Transport (PTP Interface)	IPv4
Delay Mechanism (PTP Interf...	e2e
Delay Request Interval (PTP I...	0.500 s
Announce Receipt Timeout (...	2
Admin State (PTP Interface)	Disabled
Sync test (PTP Interface)	Disabled
Sync Interval (PTP Interface)	1 s
Mode (PTP Interface)	Boundary Clock
Announce Interval (PTP Inter...	1 s
Announce Messages Sent (P...	70
Announce Messages Receive...	13769
Sync Messages Sent (PTP Int...	142
Sync Messages Received (PT...	27704
Follow up Messages Sent (PT...	142
Follow up Messages Receive...	12469
Delay Request Messages Sent...	24282

PTP boundary clock



PTP performance measuremen t

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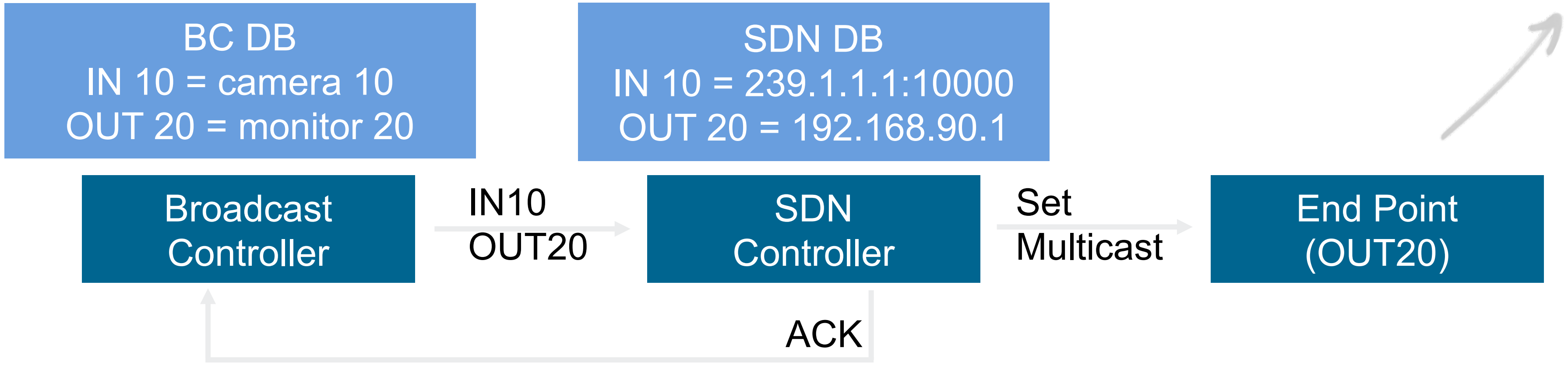
IP MEDIA FLOW MONITORING

IP MEDIA FLOW MONITORING – WHY DO I NEED TO TRACK MY MEDIA FLOWS?

IP MEDIA FLOW TRACKING

- network is a shared & non-linear medium (vs single SDI cable)
- complex switch fabrics (vs single SDI router)
- multiple ST2110 essence streams (vs single SDI signal)
- SDN controllers talk to plenty of end points (vs single SDI router)
- broadcast and SDN controllers still use „classic“ SDI router protocols



BC DB
IN 10 = camera 10
OUT 20 = monitor 20

SDN DB
IN 10 = 239.1.1.1:10000
OUT 20 = 192.168.90.1

Broadcast Controller

IN10
OUT20

SDN Controller

Set Multicast

End Point (OUT20)

ACK

what if the BC-controller panel shows a connection but the screen stays black?

IP MEDIA FLOW TRACKING – MANY THINGS CAN GO WRONG

IP MEDIA FLOW – SOURCES OF ERROS

Controller

> wrong DB entries (initial setup, device replacement, IS-04 querier issue)

> BC-controller and SDN controller DBs are out of sync

Source

> source not active, not streaming

> wrong IP(s) or multicast transmit address(es)

Network

> IGMP join / leave issues

> static multicast issues

> source specific multicast issues

> oversubscription (ghost streams)

Destination

> IGMP join not sent

> wrong multicast receive address(es)

track your media flows in real-time

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IP MEDIA FLOW TRACKING – TRACK YOUR VIDEO, AUDIO AND ANCILLARY DATA STREAMS FROM SOURCE TO DESTINATION

DATAMINER MEDIA FLOW MONITORING SOLUTION

read crosspoint status from SDN controller

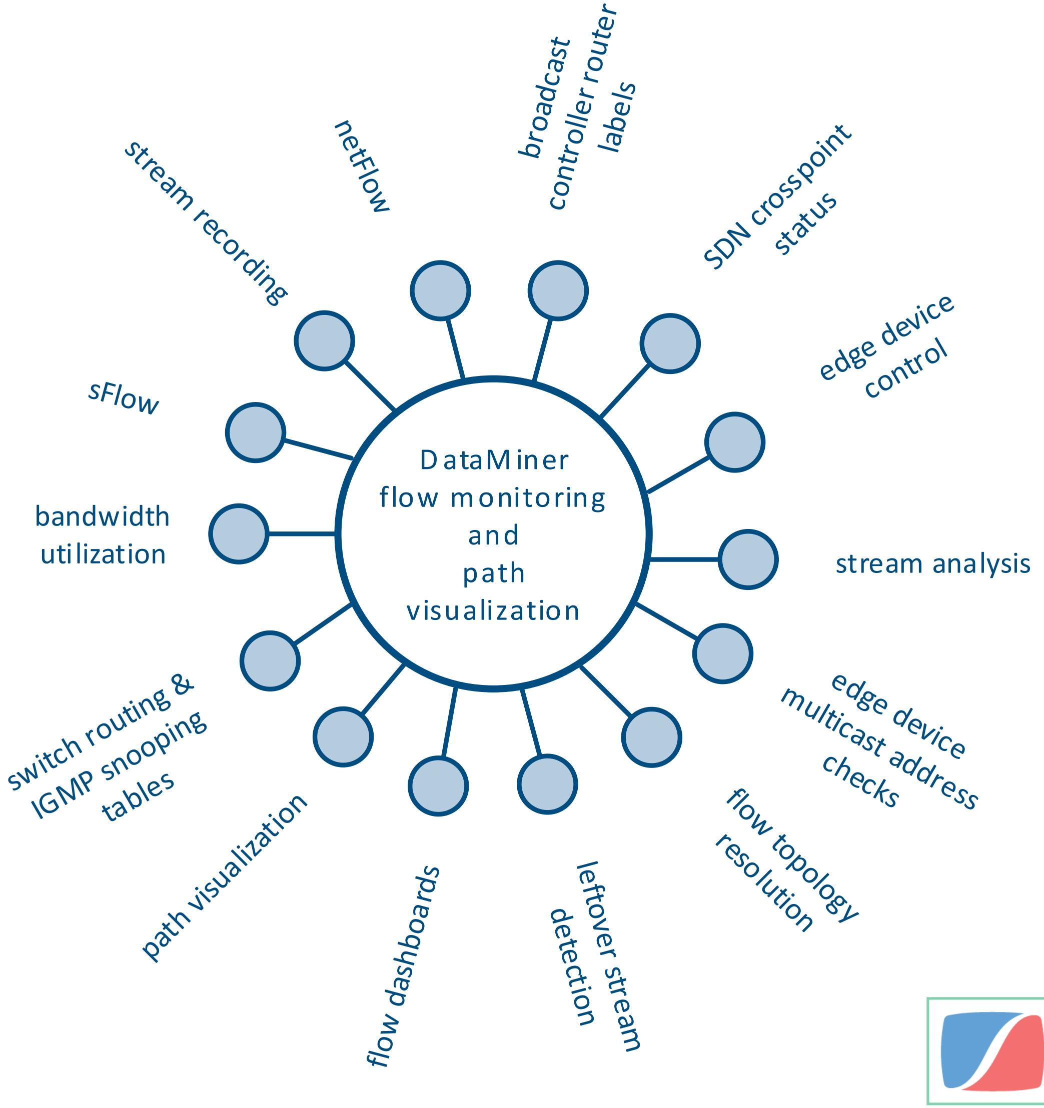
> “where are all my flows supposed to be?“

check this status versus the real-time situation

> “where are my flows in reality?“

AND detect the flows which are there but should not be there

gather real-time information from source to destination: „crawl“ through the network and find the root cause of any stream issue


DataMiner flow monitoring and path visualization
broadcast controller router labels
SDN crosspoint status
edge device control
stream analysis
edge device multicast address checks
flow topology resolution
leftover stream detection
flow dashboards
path visualization
switch routing & IGMP snooping tables
bandwidth utilization
sFlow
stream recording
netFlow

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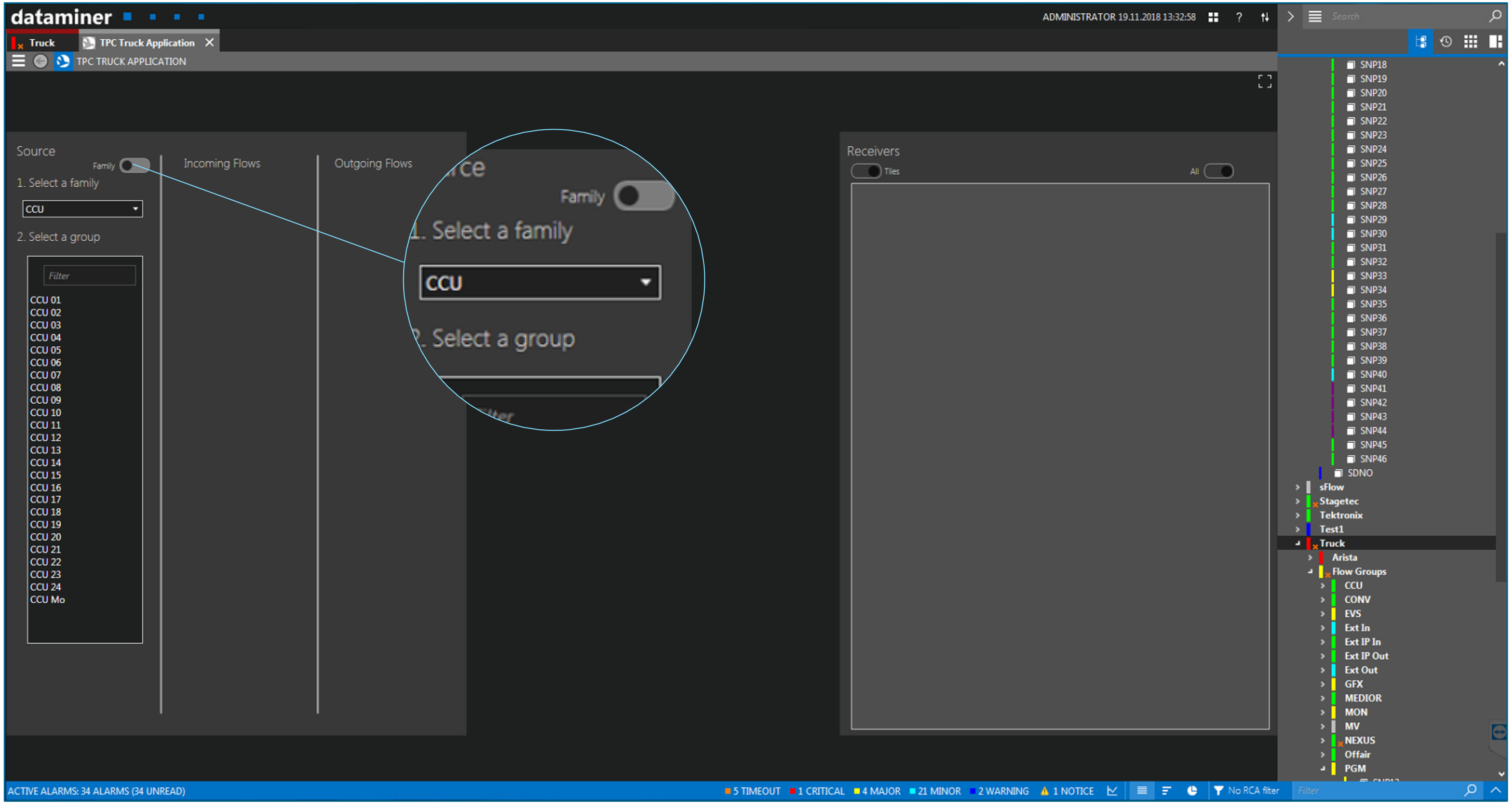
DATAMINER IP MEDIA FLOW MONITORING SOLUTION

START WITH ANY DEVICE



connect with your label database

integrated filtering and sorting capabilities

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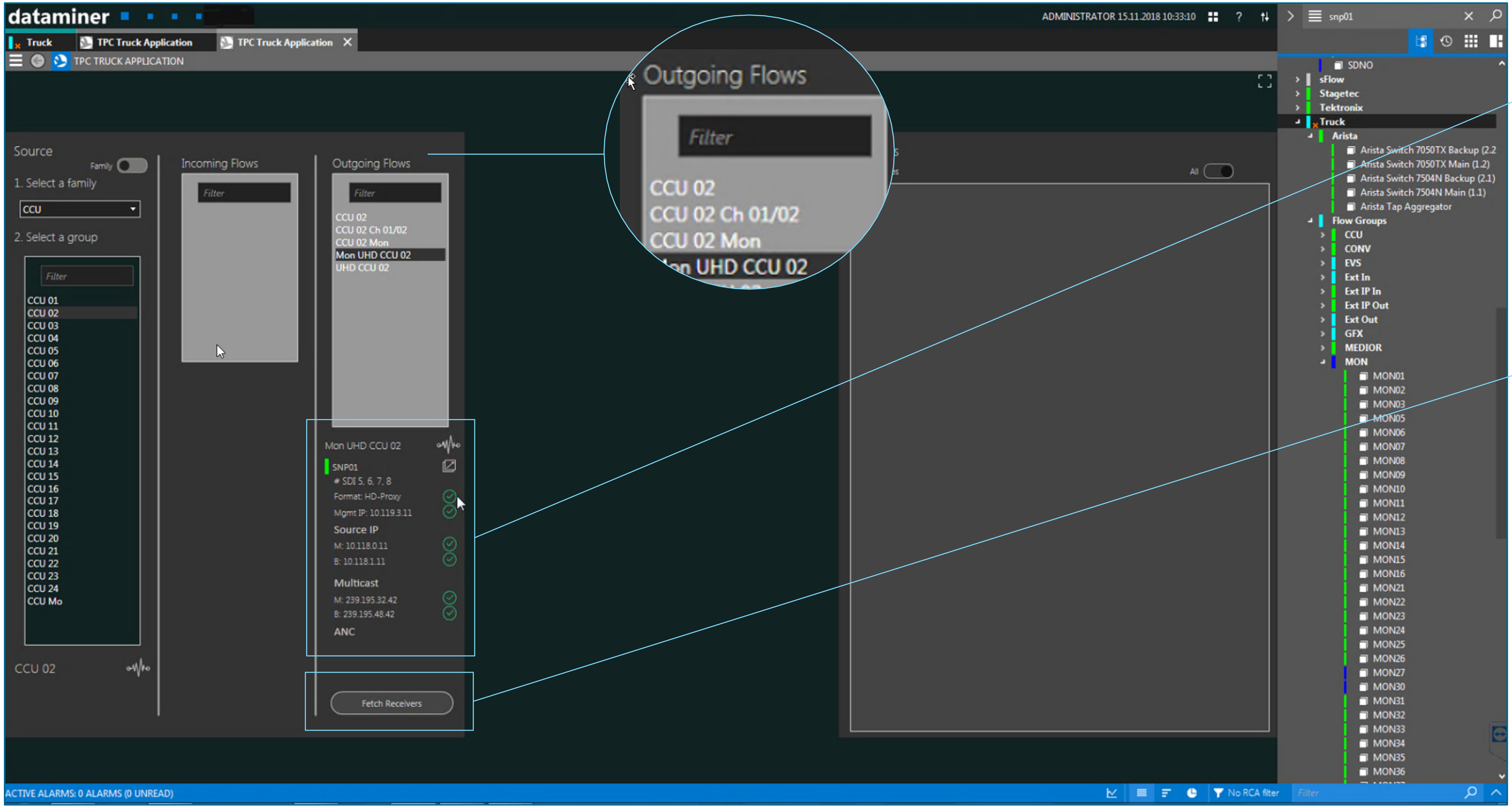
DATAMINER IP MEDIA FLOW MONITORING SOLUTION

OUTGOING FLOW CHECK – SOURCE CHECK



Mon UHD CCU 02

SNP01
SDI 5, 6, 7, 8
Format: HD-Proxy ✓
Mgmt IP: 10.119.3.11 ✓

Source IP
M: 10.118.0.11 ✓
B: 10.118.1.11 ✓

Multicast
M: 239.195.32.42 ✓
B: 239.195.48.42 ✓

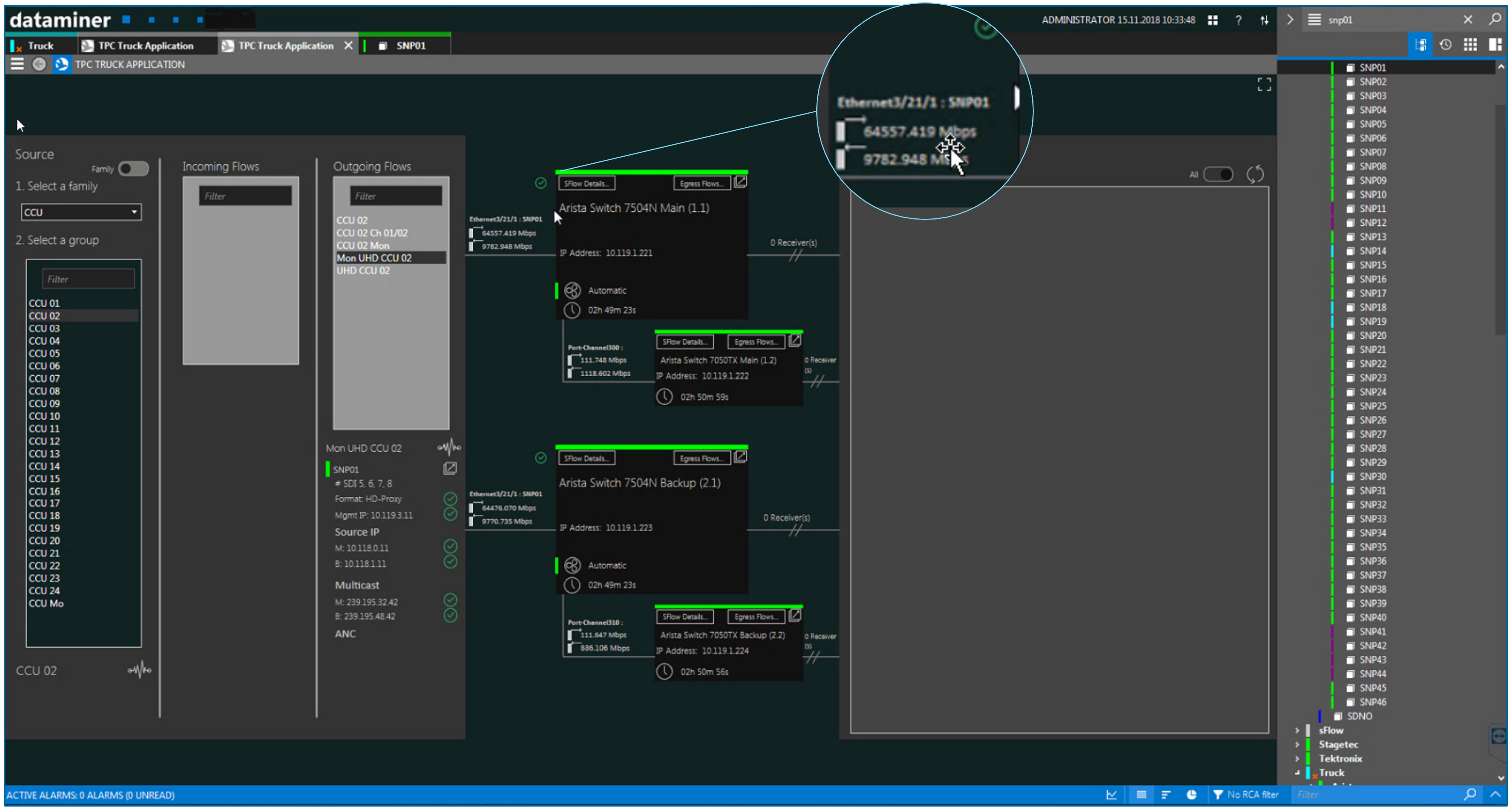
ANC

outgoing flow check

first compare SDN controller database entries with the actual device settings for all multicast-addresses as well as the network interface addresses

start resolving the topology in real-time and show all destinations for that stream

SWITCH FABRIC CHECK

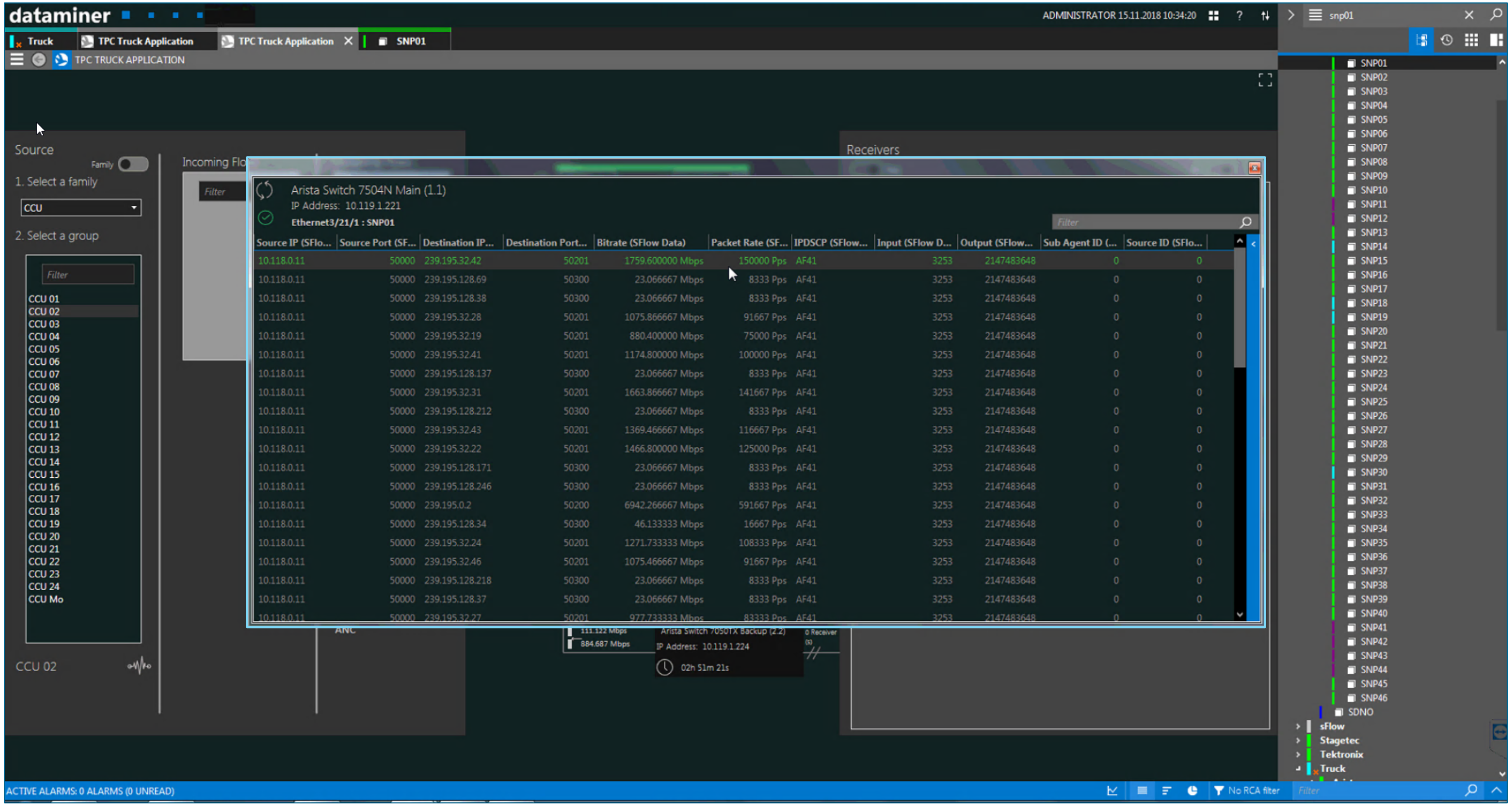


switch fabric check

connectivity framework to check if network traffic is present at the correct ingress port

ALL-IP SMPTE 2110 INFRASTRUCTURE AND MEDIA-OVER-IP FLOW MONITORING

SFLOW CHECK



Arista Switch 7504N Main (1.1)
IP Address: 10.119.1.221
Ethernet3/21/1 : SNP01

Source IP (SFlo...	Source Port (SF...	Destination IP...	Destination Port...	Bitrate (SFlow Data)	Packet Rate (SF...	IPDSCP (SFlow...	Input (SFlow D...	Output (SFlow...	Sub Agent ID (...	Source ID (SFlo...
10.118.0.11	50000	239.195.32.42	50201	1759.600000 Mbps	150000 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.69	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.38	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.28	50201	1075.866667 Mbps	91667 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.19	50201	880.400000 Mbps	75000 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.41	50201	1174.800000 Mbps	100000 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.137	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.31	50201	1663.866667 Mbps	141667 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.212	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.43	50201	1369.466667 Mbps	116667 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.22	50201	1466.800000 Mbps	125000 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.171	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.246	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.0.2	50200	6942.266667 Mbps	591667 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.34	50300	46.133333 Mbps	16667 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.24	50201	1271.733333 Mbps	108333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.46	50201	1075.466667 Mbps	91667 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.218	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.128.37	50300	23.066667 Mbps	8333 Pps	AF41	3253	2147483648	0	0
10.118.0.11	50000	239.195.32.27	50201	977.733333 Mbps	83333 Pps	AF41	3253	2147483648	0	0

Arista Switch 7050TX Backup (2.2)
IP Address: 10.119.1.224
02h 51m 21s

sFlow check

not only show complete network traffic, with Sflow individual multicast-streams are made visible.

Main KPIs:

- Source IP
- Source Port
- Destination IP
- Destination Port

calculate the bitrate of each stream

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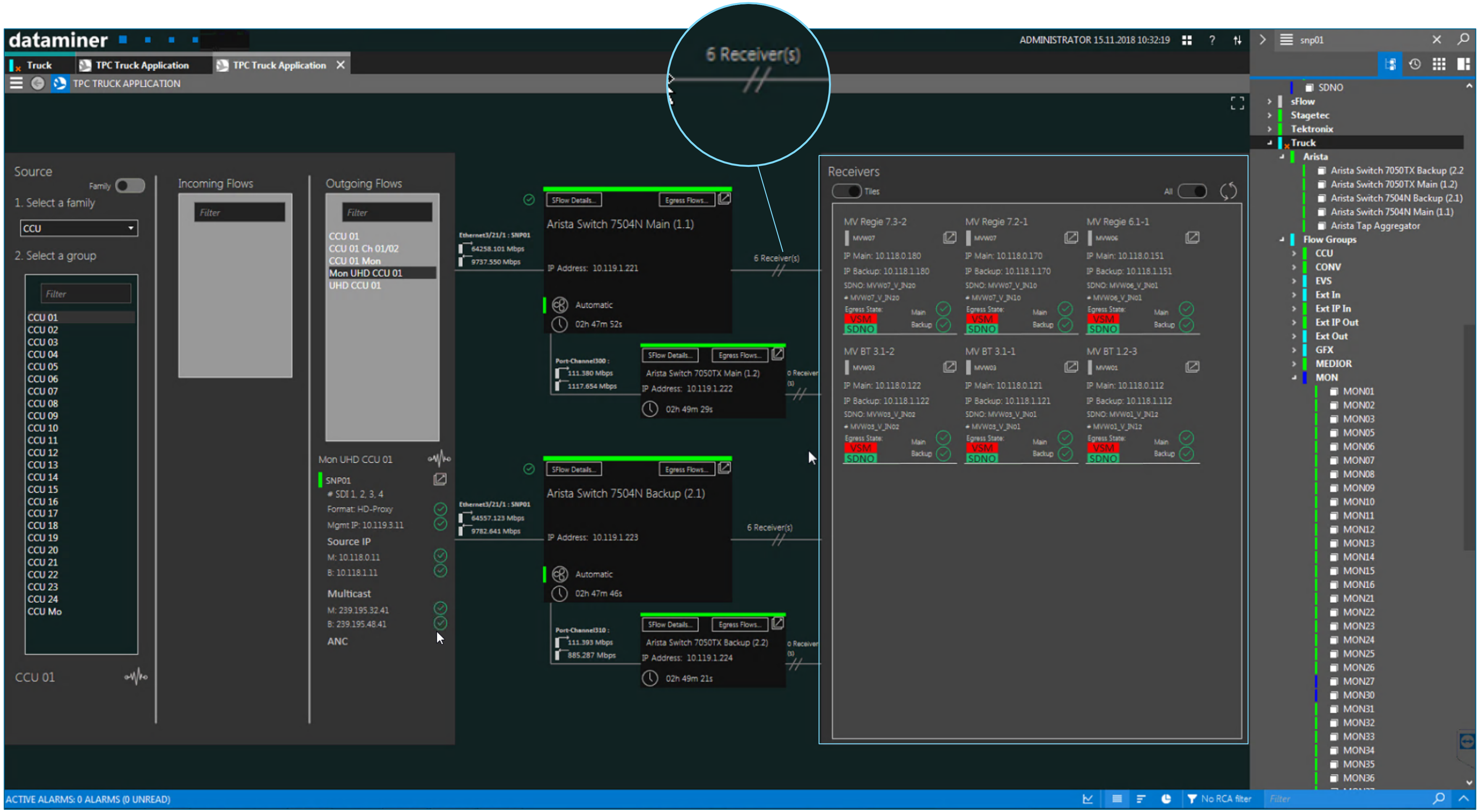
DATAMINER IP MEDIA FLOW MONITORING SOLUTION

DESTINATION CHECK



destination check

show all receivers which a SDN or broadcast controller has set a „crosspoint“ for

compare status against routing tables in the switch fabric

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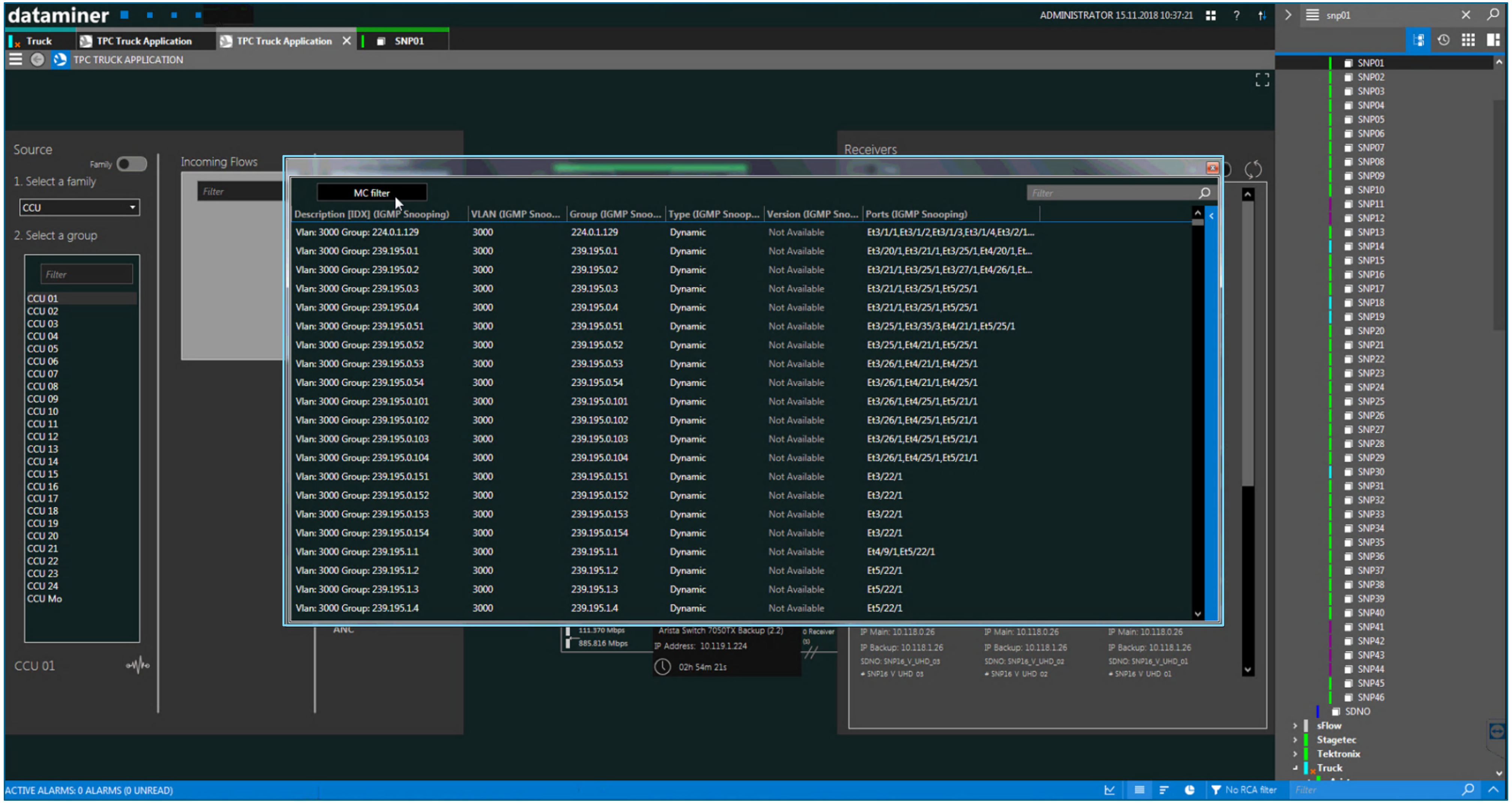
DATAMINER IP MEDIA FLOW MONITORING SOLUTION

DESTINATION CHECK - DETAILS



Description [IDX] (IGMP Snooping)	VLAN (IGMP Snoo...	Group (IGMP Snoo...	Type (IGMP Snoop...	Version (IGMP Sno...	Ports (IGMP Snooping)
Vlan: 3000 Group: 224.0.1.129	3000	224.0.1.129	Dynamic	Not Available	Et3/1/1,Et3/1/2,Et3/1/3,Et3/1/4,Et3/2/1...
Vlan: 3000 Group: 239.195.0.1	3000	239.195.0.1	Dynamic	Not Available	Et3/20/1,Et3/21/1,Et3/25/1,Et4/20/1,Et...
Vlan: 3000 Group: 239.195.0.2	3000	239.195.0.2	Dynamic	Not Available	Et3/21/1,Et3/25/1,Et3/27/1,Et4/26/1,Et...
Vlan: 3000 Group: 239.195.0.3	3000	239.195.0.3	Dynamic	Not Available	Et3/21/1,Et3/25/1,Et5/25/1
Vlan: 3000 Group: 239.195.0.4	3000	239.195.0.4	Dynamic	Not Available	Et3/21/1,Et3/25/1,Et5/25/1
Vlan: 3000 Group: 239.195.0.51	3000	239.195.0.51	Dynamic	Not Available	Et3/25/1,Et3/35/3,Et4/21/1,Et5/25/1
Vlan: 3000 Group: 239.195.0.52	3000	239.195.0.52	Dynamic	Not Available	Et3/25/1,Et4/21/1,Et5/25/1
Vlan: 3000 Group: 239.195.0.53	3000	239.195.0.53	Dynamic	Not Available	Et3/26/1,Et4/21/1,Et4/25/1
Vlan: 3000 Group: 239.195.0.54	3000	239.195.0.54	Dynamic	Not Available	Et3/26/1,Et4/21/1,Et4/25/1
Vlan: 3000 Group: 239.195.0.101	3000	239.195.0.101	Dynamic	Not Available	Et3/26/1,Et4/25/1,Et5/21/1
Vlan: 3000 Group: 239.195.0.102	3000	239.195.0.102	Dynamic	Not Available	Et3/26/1,Et4/25/1,Et5/21/1
Vlan: 3000 Group: 239.195.0.103	3000	239.195.0.103	Dynamic	Not Available	Et3/26/1,Et4/25/1,Et5/21/1
Vlan: 3000 Group: 239.195.0.104	3000	239.195.0.104	Dynamic	Not Available	Et3/26/1,Et4/25/1,Et5/21/1
Vlan: 3000 Group: 239.195.0.151	3000	239.195.0.151	Dynamic	Not Available	Et3/22/1
Vlan: 3000 Group: 239.195.0.152	3000	239.195.0.152	Dynamic	Not Available	Et3/22/1
Vlan: 3000 Group: 239.195.0.153	3000	239.195.0.153	Dynamic	Not Available	Et3/22/1
Vlan: 3000 Group: 239.195.0.154	3000	239.195.0.154	Dynamic	Not Available	Et3/22/1
Vlan: 3000 Group: 239.195.1.1	3000	239.195.1.1	Dynamic	Not Available	Et4/9/1,Et5/22/1
Vlan: 3000 Group: 239.195.1.2	3000	239.195.1.2	Dynamic	Not Available	Et5/22/1
Vlan: 3000 Group: 239.195.1.3	3000	239.195.1.3	Dynamic	Not Available	Et5/22/1
Vlan: 3000 Group: 239.195.1.4	3000	239.195.1.4	Dynamic	Not Available	Et5/22/1

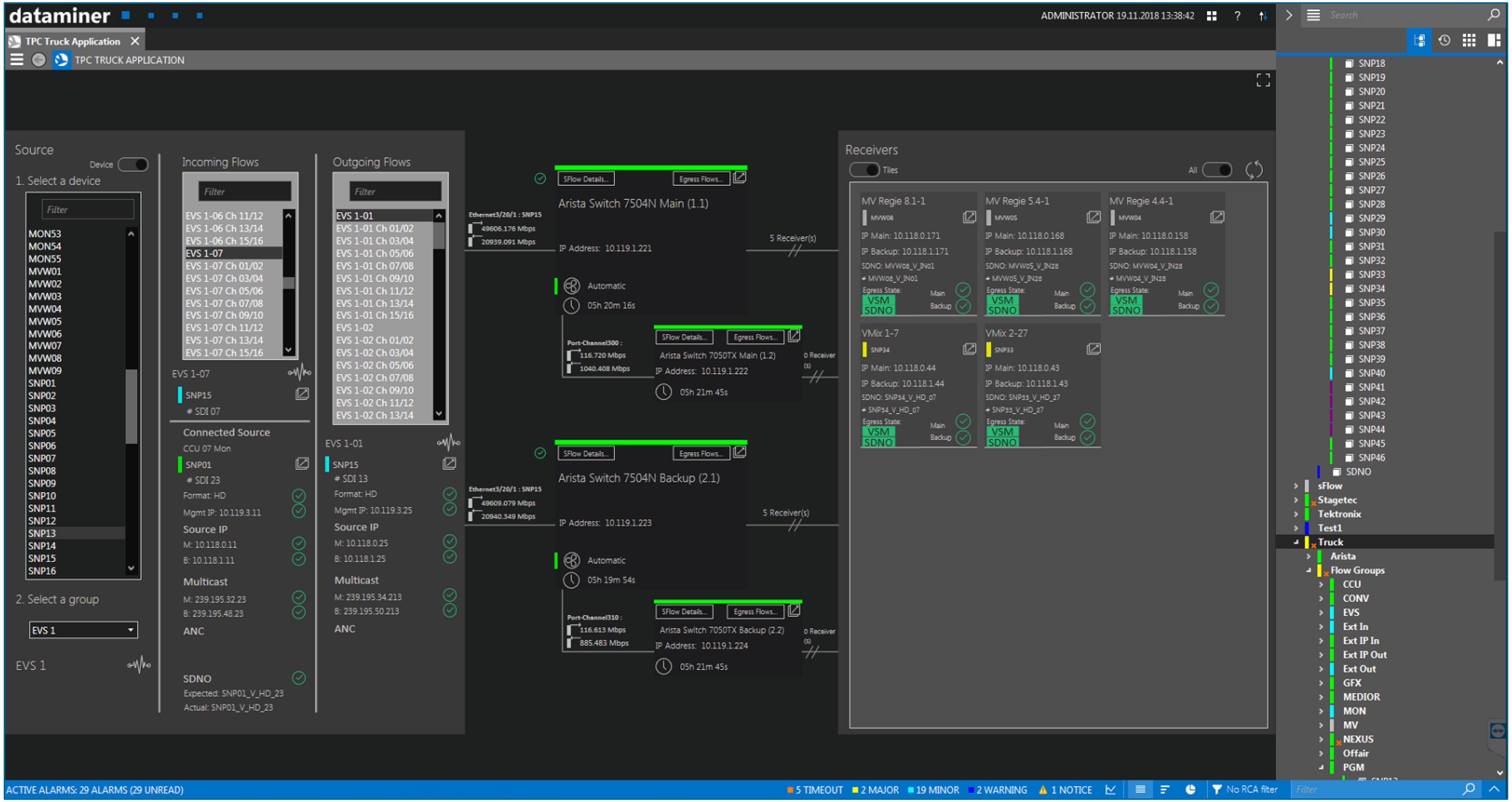
destination check

show IGMP snooping details
for every multicast-group

VIDEO SERVICES FORUM

DATAMINER IP MEDIA FLOW MONITORING SOLUTION

CUSTOMER EXAMPLE – IN SYNC



Source

Device

1. Select a device

Filter

MON53, MON54, MON55, MVW01, MVW02, MVW03, MVW04, MVW05, MVW06, MVW07, MVW08, MVW09, SNP01, SNP02, SNP03, SNP04, SNP05, SNP06, SNP07, SNP08, SNP09, SNP10, SNP11, SNP12, SNP13, SNP14, SNP15, SNP16

2. Select a group

EVS 1

EVS 1

Incoming Flows

Filter

EVS 1-06 Ch 11/12, EVS 1-06 Ch 13/14, EVS 1-06 Ch 15/16, EVS 1-07, EVS 1-07 Ch 01/02, EVS 1-07 Ch 03/04, EVS 1-07 Ch 05/06, EVS 1-07 Ch 07/08, EVS 1-07 Ch 09/10, EVS 1-07 Ch 11/12, EVS 1-07 Ch 13/14, EVS 1-07 Ch 15/16

EVS 1-07

SNP15
SDI 07

Connected Source

CCU 07 Mon

SNP01
SDI 23

Format: HD

Mgmt IP: 10.119.3.11

Source IP

M: 10.118.0.11
B: 10.118.1.11

Multicast

M: 239.195.32.23
B: 239.195.48.23

ANC

SDNO

Expected: SNP01_V_HD_23
Actual: SNP01_V_HD_23

Outgoing Flows

Filter

EVS 1-01, EVS 1-01 Ch 01/02, EVS 1-01 Ch 03/04, EVS 1-01 Ch 05/06, EVS 1-01 Ch 07/08, EVS 1-01 Ch 09/10, EVS 1-01 Ch 11/12, EVS 1-01 Ch 13/14, EVS 1-01 Ch 15/16, EVS 1-02, EVS 1-02 Ch 01/02, EVS 1-02 Ch 03/04, EVS 1-02 Ch 05/06, EVS 1-02 Ch 07/08, EVS 1-02 Ch 09/10, EVS 1-02 Ch 11/12, EVS 1-02 Ch 13/14

EVS 1-01

SNP15
SDI 13

Format: HD

Mgmt IP: 10.119.3.25

Source IP

M: 10.118.0.25
B: 10.118.1.25

Multicast

M: 239.195.34.213
B: 239.195.50.213

ANC

SFlow Details... Egress Flows...

Arista Switch 7504N Main (1.1)

Ethernet3/20/1 : SNP15
49606.176 Mbps
20939.091 Mbps

IP Address: 10.119.1.221

5 Receiver(s)

Automatic

05h 20m 16s

Port-Channel300 :
116.720 Mbps
1040.408 Mbps

Arista Switch 7050TX Main (1.2)

IP Address: 10.119.1.222

0 Receiver (s)

05h 21m 45s

Arista Switch 7504N Backup (2.1)

Ethernet3/20/1 : SNP15
49609.079 Mbps
20940.349 Mbps

IP Address: 10.119.1.223

5 Receiver(s)

Automatic

05h 19m 54s

Port-Channel310 :
116.613 Mbps
885.483 Mbps

Arista Switch 7050TX Backup (2.2)

IP Address: 10.119.1.224

0 Receiver (s)

05h 21m 45s

Receivers

Tiles

All

MV Regie 8.1-1
MVW08
IP Main: 10.118.0.171
IP Backup: 10.118.1.171
SDNO: MVW08_V_IN01
MVW08_V_IN01
Egress State: Main Backup
VSM SDNO

MV Regie 5.4-1
MVW05
IP Main: 10.118.0.168
IP Backup: 10.118.1.168
SDNO: MVW05_V_IN28
MVW05_V_IN28
Egress State: Main Backup
VSM SDNO

MV Regie 4.4-1
MVW04
IP Main: 10.118.0.158
IP Backup: 10.118.1.158
SDNO: MVW04_V_IN28
MVW04_V_IN28
Egress State: Main Backup
VSM SDNO

VMix 1-7
SNP34
IP Main: 10.118.0.44
IP Backup: 10.118.1.44
SDNO: SNP34_V_HD_07
SNP34_V_HD_07
Egress State: Main Backup
VSM SDNO

VMix 2-27
SNP33
IP Main: 10.118.0.43
IP Backup: 10.118.1.43
SDNO: SNP33_V_HD_27
SNP33_V_HD_27
Egress State: Main Backup
VSM SDNO

SNP18, SNP19, SNP20, SNP21, SNP22, SNP23, SNP24, SNP25, SNP26, SNP27, SNP28, SNP29, SNP30, SNP31, SNP32, SNP33, SNP34, SNP35, SNP36, SNP37, SNP38, SNP39, SNP40, SNP41, SNP42, SNP43, SNP44, SNP45, SNP46, SDNO

sFlow, Stagetec, Tektronix, Test1, Truck, Arista, Flow Groups, CCU, CONV, EVS, Ext In, Ext IP In, Ext IP Out, Ext Out, GFX, MEDIOR, MON, MV, NEXUS, Offair, PGM

ACTIVE ALARMS: 29 ALARMS (29 UNREAD)

5 TIMEOUT 2 MAJOR 19 MINOR 2 WARNING 1 NOTICE No RCA filter

Filter

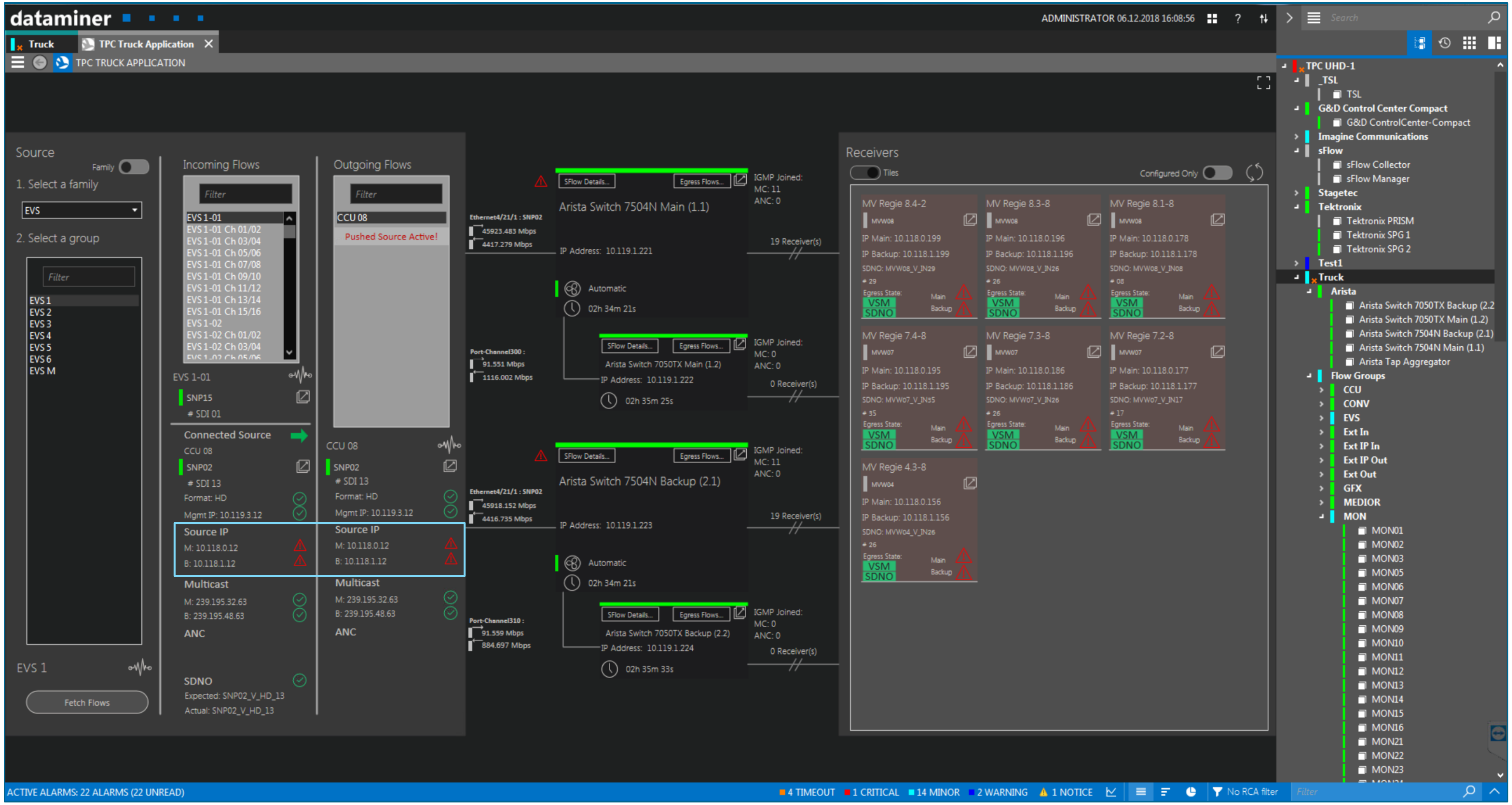
customer example

all systems are in sync

VIDEO SERVICES FORUM

DATAMINER IP MEDIA FLOW MONITORING SOLUTION

CUSTOMER EXAMPLE – STREAM ISSUE



customer example

EVS1 Input1 has no input signal

check input: CCU08 is the connected source

check CCU08 output: ***broadcast controller SDN controller claim that CCU08 is routed to 7 destinations*** but none of them receive any signal

root cause: wrong source IP – IGMPV3 SSM blocks multicast traffic

3RD PARTY STREAM ANALYZERS – PROBLEMS YOU COME ACROSS

- network traffic or dedicated flows need to be analyzed and recorded
- there is no central monitoring port like in the SDI world any more
- IP flow analyzers are more complex to operate than traditional SDI waveform monitors
  - *do I need to enter the multicast-address manually into my analyzer?*
  - *where shall I connect my flow analyzer in a spine-leaf architecture?*
  - *what do I actually measure? Ingress or egress traffic?*
  - *which of my ST2110-x / ST2022-7 streams do I want to measure?*
  - *how do I record traffic of a complete interface or a single media flow?*

Tektronix

PacketStorm™ Communications, Inc.

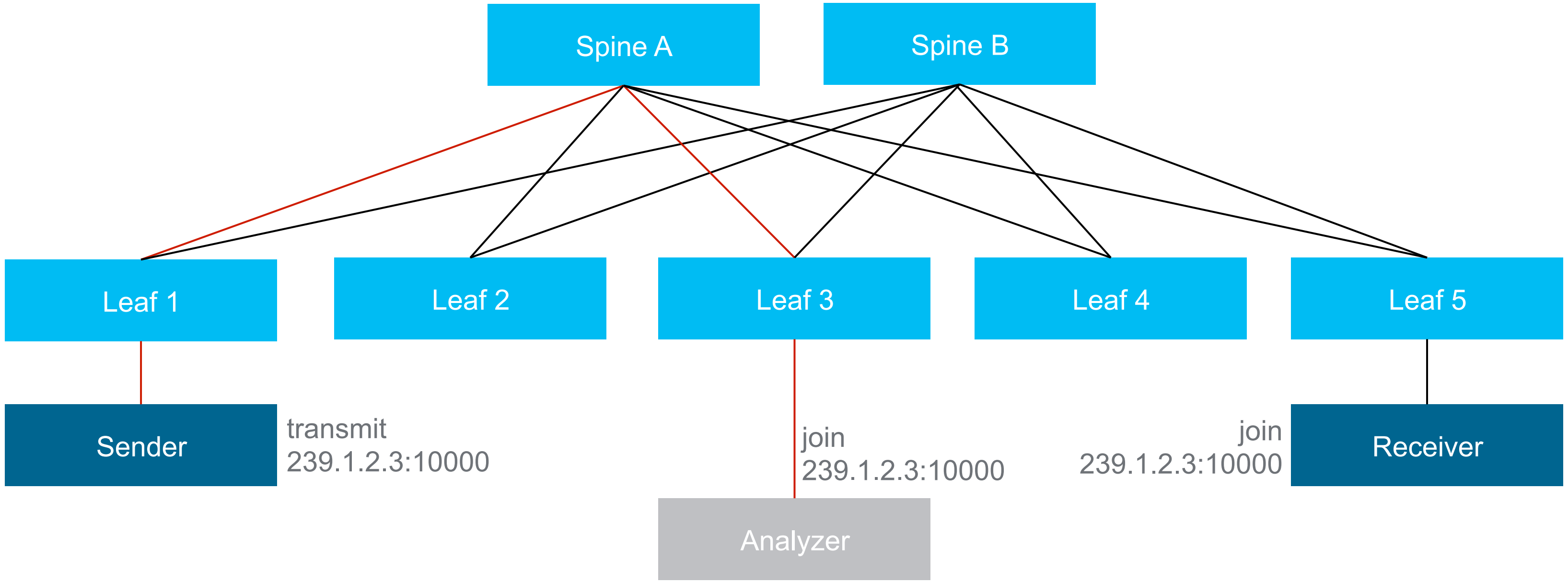
BRIDGE TECHNOLOGIES™

PHABRIX®

WIRESHARK©

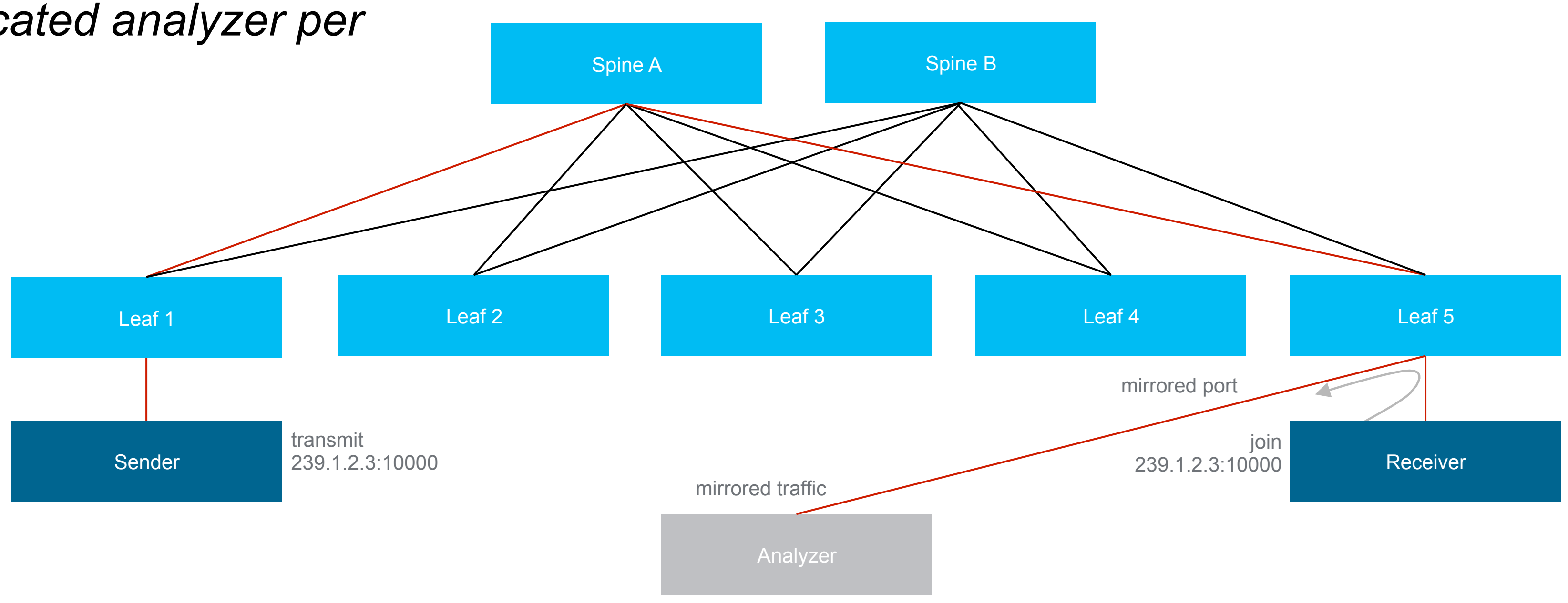
WHERE TO CONNECT MY STREAM ANALYZER?

- remember: you measure traffic between sender and analyzer
  - *how to measure actual traffic which goes to the receiver?*



WHERE TO CONNECT MY STREAM ANALYZER?

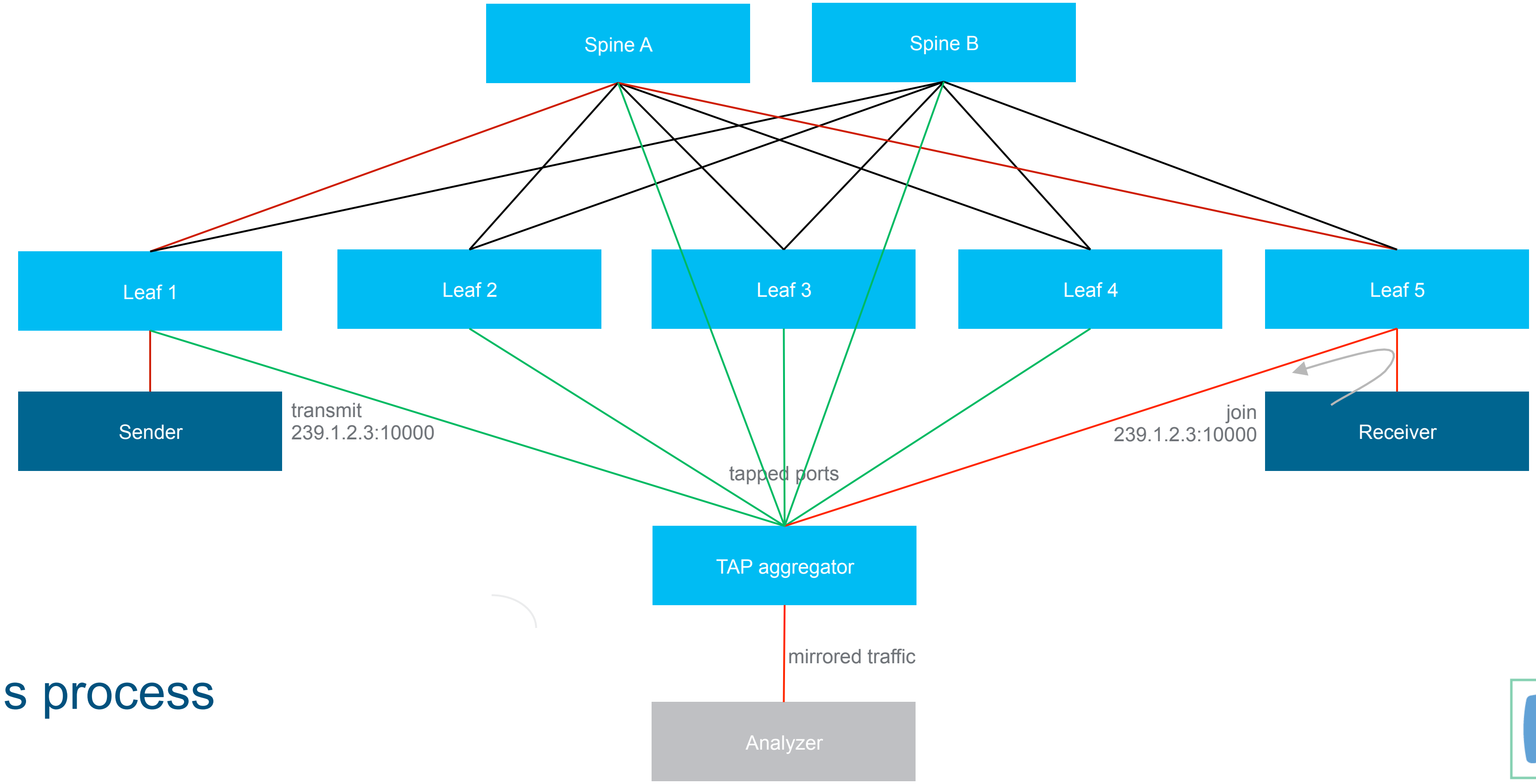
- use port mirroring
  - *needs to be configured via CLI*
  - *do I need one dedicated analyzer per switch?*



WHERE TO CONNECT MY STREAM ANALYZER?

> use TAP aggregators to centralize your monitoring

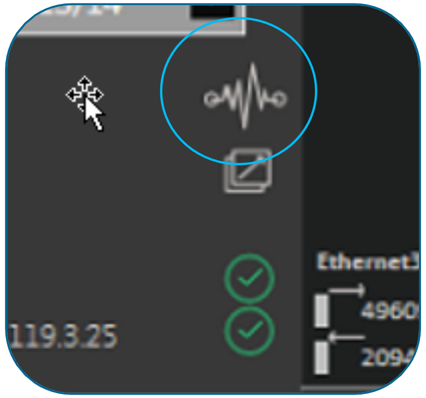
> *how do I configure all that?*

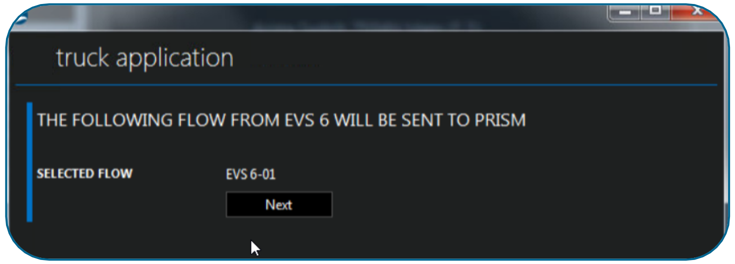


automate this process

EASY TO USE INTERACTIVE, CUSTOMIZABLE WIZARDS

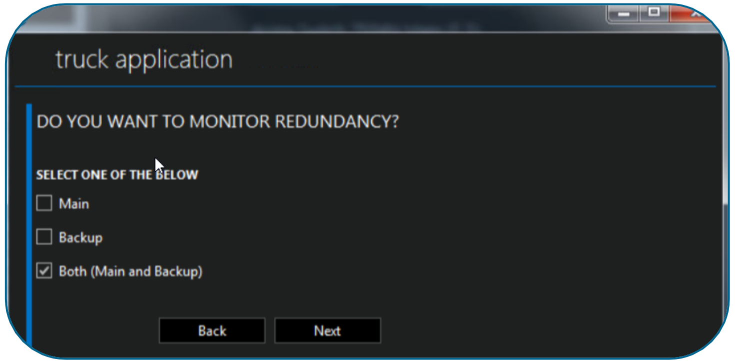
embedded within DataMiner Flow Monitoring Solution




truck application

THE FOLLOWING FLOW FROM EVS 6 WILL BE SENT TO PRISM

SELECTED FLOW EVS 6-01


truck application

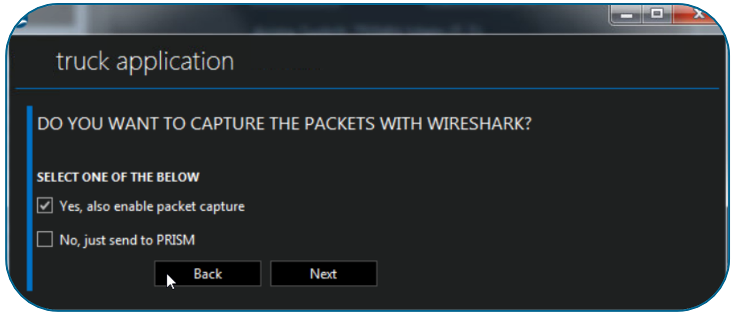
DO YOU WANT TO MONITOR REDUNDANCY?

SELECT ONE OF THE BELOW

☐ Main

☐ Backup

☑ Both (Main and Backup)

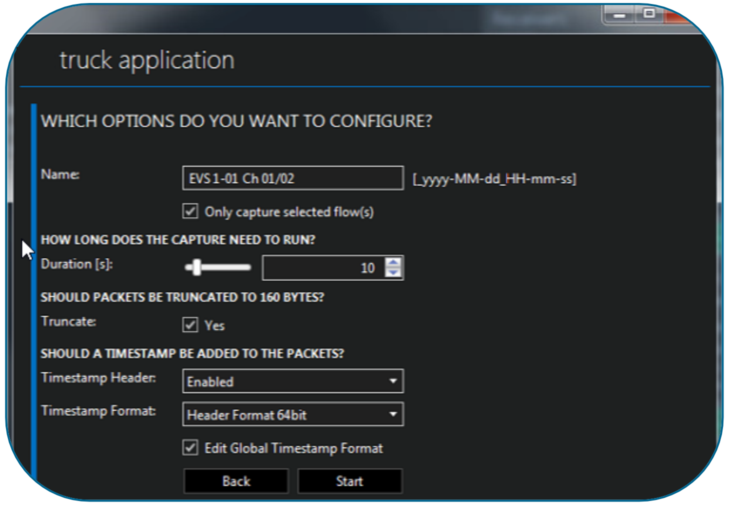

truck application

DO YOU WANT TO CAPTURE THE PACKETS WITH WIRESHARK?

SELECT ONE OF THE BELOW

☑ Yes, also enable packet capture

☐ No, just send to PRISM


truck application

WHICH OPTIONS DO YOU WANT TO CONFIGURE?

Name: EVS 1-01 Ch 01/02 [_yyyy-MM-dd_HH-mm-ss]

☑ Only capture selected flow(s)

HOW LONG DOES THE CAPTURE NEED TO RUN?

Duration [s]: 10

SHOULD PACKETS BE TRUNCATED TO 160 BYTES?

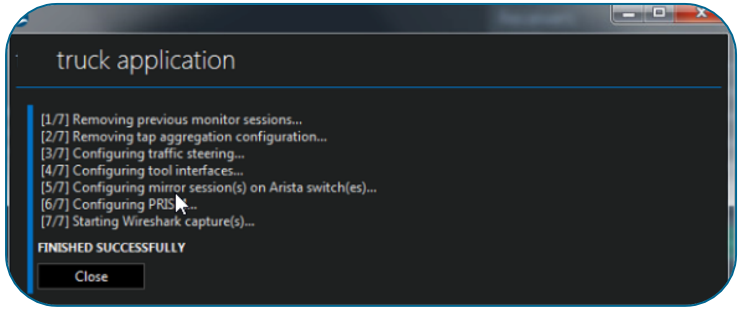
Truncate: ☑ Yes

SHOULD A TIMESTAMP BE ADDED TO THE PACKETS?

Timestamp Header: Enabled

Timestamp Format: Header Format 64bit

☑ Edit Global Timestamp Format


truck application

```
[1/7] Removing previous monitor sessions...
[2/7] Removing tap aggregation configuration...
[3/7] Configuring traffic steering...
[4/7] Configuring tool interfaces...
[5/7] Configuring mirror session(s) on Arista switch(es)...
[6/7] Configuring PRISM...
[7/7] Starting Wireshark capture(s)...
```

FINISHED SUCCESSFULLY

SUMMARY

MONITOR AND MANAGE YOUR PTP INFRASTRUCTURE WITH CARE

TRACK YOUR UNCOMPRESSED MEDIA FLOWS IN REAL-TIME

THANK YOU

skyline communications

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