

# Checker

## Checker



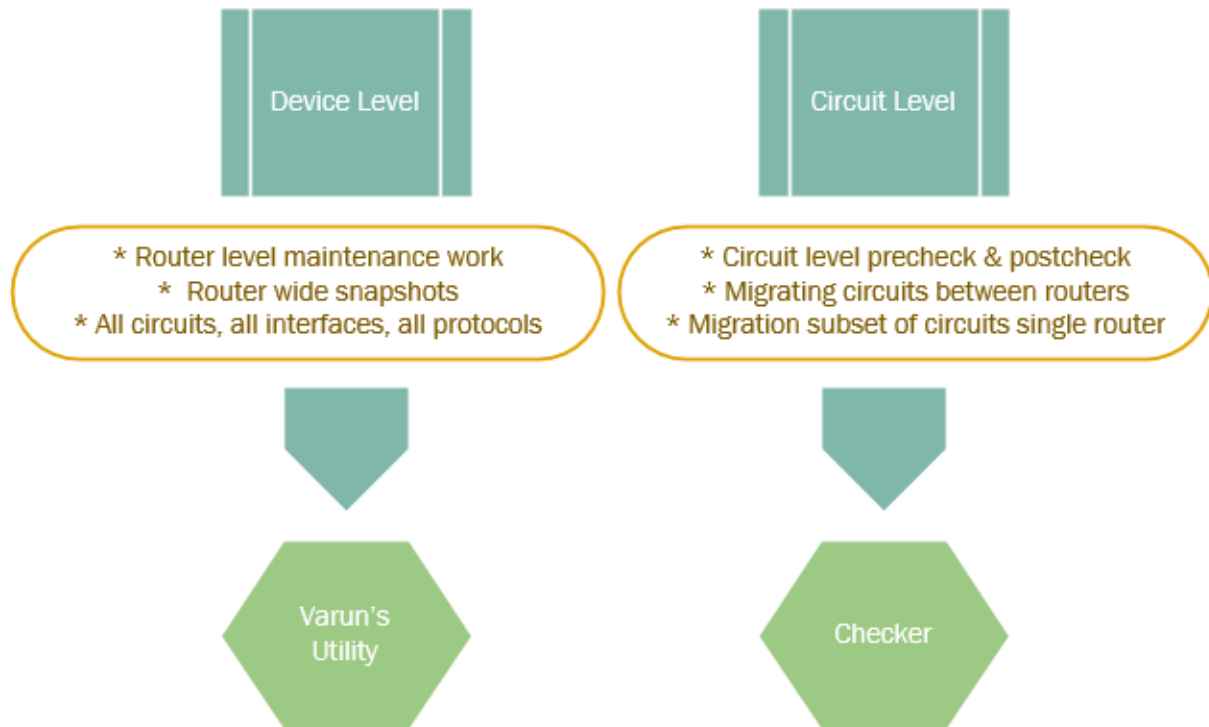
Checker is per circuit precheck and postcheck utility to be used when migrating circuits from one device to another, or when migrating a subset of circuits on a single device. Checker is launched from Jenkins and with a few parameters will log into the network device, check the provided circuits, and email a report with a summary table, per-circuit diff analysis, and a html file containing show command diffs. The initial release supports Juniper MX routers and up to 9 signature profiles covering various circuit types with planned support for future hardware and circuit types.

Checker was developed in Python, is version controlled in GitLab, launched from Jenkins, documented in Confluence, and utilizes a SQLite3 database to store information between precheck and postcheck runs. This Confluence page is divided into a user guide and development guide, feature requests and bug scrubs are listed at the end of the user guide,



# Decision Tree

## What utility to use?




### Table of Contents


- 1 [Sample Email](#)
- 2 [Document Status](#)
- 3 [User Guide](#)
  - 3.1 [Supported Services](#)
    - 3.1.1 [Internet Services](#)
    - 3.1.2 [Ethernet Services](#)
    - 3.1.3 [Hairpin Services](#)
  - 3.2 [Interface Mapping Logic](#)
  - 3.3 [Signature Matching Logic](#)
  - 3.4 [Instruction Guide](#)
    - 3.4.1 [Process Flow](#)
  - 3.5
    - 3.5.1.1 [Test Run](#)
    - 3.5.1.2 [Pre-Maintenance](#)
    - 3.5.1.3 [Maintenance](#)
    - 3.5.1.4 [Post-Maintenance](#)
  - 3.5.2 [Test Run Execution](#)
  - 3.5.3 [Step-by-Step Instructions](#)
- 3.6
- 3.7 [Bug List](#)
- 3.8 [Feature Request](#)
- 4 [Development Guide](#)
  - 4.1 [Supported Services - Detailed Overview](#)
    - 4.1.1 [Internet Services](#)
    - 4.1.2 [ELINE Services](#)
    - 4.1.3 [ELAN Services](#)
    - 4.1.4 [EVPL Services](#)
    - 4.1.5 [Hairpin Services](#)
      - 4.1.5.1 [ELINE](#)
      - 4.1.5.2 [ELAN](#)
      - 4.1.5.3 [EVPL](#)
  - 4.2 [Dependencies](#)
  - 4.3 [Database Schema](#)


- 4.3.1 [Run Table](#)
- 4.3.2 [Circuit Table](#)
- 4.4 [Signature Profiles](#)
- 4.5 [Match Terms](#)
- 4.6 [Profile Definitions](#)
  - 4.6.1 [BGP](#)
  - 4.6.2 [BGP IRB](#)
  - 4.6.3 [Static](#)
  - 4.6.4 [VPLS](#)
  - 4.6.5 [L2VPN](#)
  - 4.6.6 [ELAN/EVPL Hairpin](#)
  - 4.6.7 [ELINE Hairpin](#)
- 4.7 [Matcher Method Inputs](#)
- 4.8 [Diagrams](#)
  - 4.8.1 [Class Layout and Structure](#)
  - 4.8.2
  - 4.8.3 [Code Sequencing and Flow](#)
  - 4.8.4 [Location](#)


## Sample Email


POSTCHECK (60) circuits on NYCXNYGCJ81


 checker@crowncastle.com  
To: Evans, Peter


 If there are problems with how this message is displayed, click here to view it in a web browser.

 outputdiff.html 2 MB

 circuits.txt 2 KB

 debug.txt 325 KB

 Translate message to: English

 Never translate from: Romanian

[Translation preferences](#)

### Messages

#### All Circuit Diff

Data	Precheck	Postcheck
Interfaces Up	60	60
BGP Up	1	1
MAC Count	824	816
ARP Count	12	12
Remote PE Up	105	105

#### Per Circuit Diff

CID	Signature	Router	Interface	Poll 1	Poll 2	Signature	Router	Interface	Poll 1	Poll 2
31041-ip-nyeynyce	Static	NYCXNYGCJ81	ae2.555	ARP=1		Static	NYCXNYGCJ81	ae2.555	ARP=1	
36853-et-nycmnyip-nycxnygc	VPLS	NYCXNYGCJ81	ge-1/0/1	PE=1	MAC=2	VPLS	NYCXNYGCJ81	ge-1/0/1	PE=1	MAC=2
32615-et-nycmnyipv-nymnnyw5	VPLS	NYCXNYGCJ81	ae2.610	PE=1	MAC=2	VPLS	NYCXNYGCJ81	ae2.610	PE=1	MAC=2
32813-ip-nycxnye4	Static	NYCXNYGCJ81	ae2.101	ARP=1		Static	NYCXNYGCJ81	ae2.101	ARP=1	
33092-et-nycmnyip6-nymrnyfl	VPLS	NYCXNYGCJ81	ge-1/0/7.464	PE=2	MAC=3	VPLS	NYCXNYGCJ81	ge-1/0/7.464	PE=2	MAC=3
33460-et-nycxnyeb-nycxnyb0	VPLS	NYCXNYGCJ81	ae2.680	PE=1	MAC=3	VPLS	NYCXNYGCJ81	ae2.680	PE=1	MAC=3
33628-ip-nycxnya3	Static	NYCXNYGCJ81	ae2.142	ARP=1		Static	NYCXNYGCJ81	ae2.142	ARP=1	
33652-et-nymnnye7-nycmnyip6	VPLS	NYCXNYGCJ81	ae2.371	PE=1	MAC=3	VPLS	NYCXNYGCJ81	ae2.371	PE=1	MAC=3

Output Diff

Static - 31041-ip-nyeynyce			
Show Interface			
Precheck		Postcheck	
1NYCXNYGCJ81> show interfaces ae2.555		1NYCXNYGCJ81> show interfaces ae2.555	
2 Logical interface ae2.555 (Index 527) (SNMP ifIndex 1866)		2 Logical interface ae2.555 (Index 527) (SNMP ifIndex 1866)	
3 Description: 31041-IP-NYEYNYCE		3 Description: 31041-IP-NYEYNYCE	
4 Flags: Up SNMP-Traps 0x0 VLAN-Tag [ 0x8100.555 ] Encaps		4 Flags: Up SNMP-Traps 0x0 VLAN-Tag [ 0x8100.555 ] Encaps	
>ulation: ENET2		>ulation: ENET2	
5 Statistics Packets pps Bytes		5 Statistics Packets pps Bytes	
> bps		> bps	
6 Bundle:		6 Bundle:	
7 Input : 124108395 2 21873191266		7 Input : 124108902 1 21873227296	
> 1200		> 976	
8 Output: 122447677 3 14199482162		8 Output: 122448419 2 14199526868	
> 1728		> 1288	
9 Adaptive Statistics:		9 Adaptive Statistics:	
10 Adaptive Adjusts: 0		10 Adaptive Adjusts: 0	
11 Adaptive Scans : 0		11 Adaptive Scans : 0	
12 Adaptive Updates: 0		12 Adaptive Updates: 0	
13 Protocol inet, MTU: 9174		13 Protocol inet, MTU: 9174	
14 Max nh cache: 75000, New hold nh limit: 75000, Curr nh c		14 Max nh cache: 75000, New hold nh limit: 75000, Curr nh c	
>nt: 1, Curr new hold cnt: 0, NH drop cnt: 0		>nt: 1, Curr new hold cnt: 0, NH drop cnt: 0	
15 Flags: Sendbcst-pkt-to-re		15 Flags: Sendbcst-pkt-to-re	
16 Addresses, Flags: Is-Preferred Is-Primary		16 Addresses, Flags: Is-Preferred Is-Primary	
17 Destination: 64.72.65.36/30, Local: 64.72.65.37, Bro		17 Destination: 64.72.65.36/30, Local: 64.72.65.37, Bro	
>adcast: 64.72.65.39		>adcast: 64.72.65.39	
18 Protocol multiservice, MTU: Unlimited		18 Protocol multiservice, MTU: Unlimited	
Show ARP			
Precheck		Postcheck	
1NYCXNYGCJ81> show arp interface ae2.555 no-resolve		1NYCXNYGCJ81> show arp interface ae2.555 no-resolve	
2MAC Address Address Interface		2MAC Address Address Interface	
>lags		>lags	
388:15:44:3f:4f:5d 64.72.65.38 ae2.555		388:15:44:3f:4f:5d 64.72.65.38 ae2.555	
>one		>one	
VPLS - 36853-et-nycmnyip-nycxnygc			
Show Interface			
Precheck		Postcheck	
1NYCXNYGCJ81> show interface ge-1/0/1 media		1NYCXNYGCJ81> show interface ge-1/0/1 media	
2Physical interface: ge-1/0/1, Enabled, Physical link is Up		2Physical interface: ge-1/0/1, Enabled, Physical link is Up	
3 Interface index: 158, SNMP ifIndex: 517		3 Interface index: 158, SNMP ifIndex: 517	
4 Description: 36853-et-nycmnyip-nycxnygc		4 Description: 36853-et-nycmnyip-nycxnygc	
5 Link-level type: Ethernet-VPLS, MTU: 9192, MRU: 9200, LAN-		5 Link-level type: Ethernet-VPLS, MTU: 9192, MRU: 9200, LAN-	
>PHY mode, Speed: 1000mbps, BFDU Error: None, Loop Detect PDU		>PHY mode, Speed: 1000mbps, BFDU Error: None, Loop Detect PDU	

Document Status

This Confluence page will be renewed twice per year to indicate the information within is up to date and accurate.

Date	Status
January 2025	Renewed
July 2025	
January 2026	
July 2026	
January 2027	
July 2027	

User Guide

Supported Services

Internet Services

Platform	Service	Handoff Type	Protocol	Interface Count
MX	BGP	Physical and Logical	BGP	1 Interface
MX	BGP IRB	Physical and Logical	BGP, VPLS	1 Interface

MX	Static	Physical and Logical		1 Interface
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## Ethernet Services

Platform	Service	Handoff Type	Protocol	Interface Count
MX	E-LINE Multi-Router	Physical and Logical	VPLS, L2VPN	1 Interface
MX	E-LAN Multi-Router	Physical and Logical	VPLS	1 Interface
MX	EVPL Multi-Router	Physical and Logical	VPLS, L2VPN	1 Interface

## Hairpin Services

Platform	Service	Handoff Type	Protocol	Interface Count
MX	E-LINE Single-router	Physical and Logical	VPLS	2 Interfaces
MX	E-LAN Single-Router	Physical and Logical	VPLS	1 Interface
MX	EVPL Single-Router	Physical and Logical	VPLS	1 Interface

## Interface Mapping Logic

### Interface Mapping

\* Interface mapping is based on circuit number and hyphen

36853-ET-NYCMNYIP-NYCXNYGC

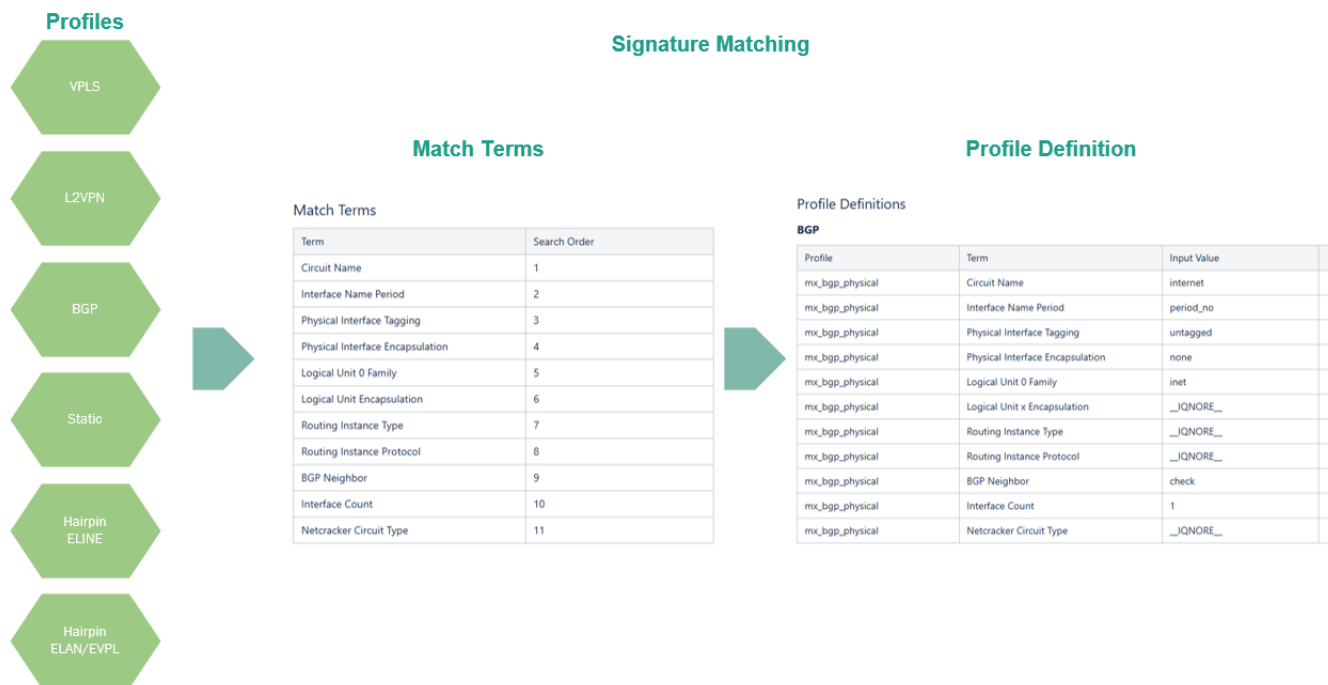
Match

No Match

No Match

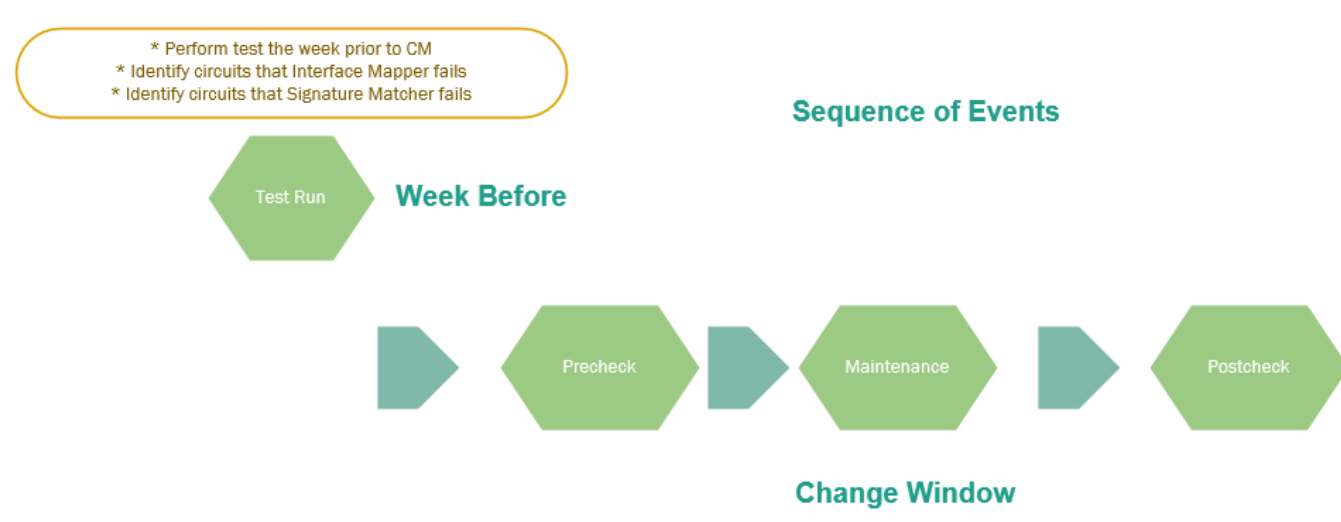
```
set interfaces ge-1/0/6 unit 3867 description 36837-ET-NYCXNYFW-NYCNIFYZ
set interfaces ge-1/0/6 unit 3867 encapsulation vlan-vpls
set interfaces ge-1/0/6 unit 3867 vlan-id 3867
```

## Signature Matching Logic



## Instruction Guide

### Process Flow



#### Test Run

- 1) Perform test run the week prior to change management window to identify circuits that failed on interface mapping or signature matching

#### Pre-Maintenance

- 1) Perform a precheck prior to starting maintenance window

#### Maintenance

- 1) Perform maintenance work

#### Post-Maintenance

1) Perform a postcheck at conclusion of maintenance work

## Test Run Execution

PRECHECK (107) circuits on NYCXNYGCJ81

**Test Run**

checker@crowncastle.com  
To: Evans, Peter

If there are problems with how this message is displayed, click here to view it in a web browser.

outputdiff.html 3 MB    circuits.txt 3 KB    debug.txt 607 KB

**Messages**

```
002: Precheck: Signature Matcher: "33653-et-nycmny42-nymnnye9": Circuit did not match a signature profile see debug log for details
002: Precheck: Signature Matcher: "30851-et-nycmny1-nycmny6": Circuit did not match a signature profile see debug log for details
001: Precheck: Interface Mapper: "112901-et-nycmny1e": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "112905-et-nycmnyw9": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "112986-et-nycmnyw6": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "112989-et-nycmny1w": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "113661-et-nycmny8-nycmnyk3": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "113662-et-nycmny8-nycmnyk3": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "114686-et-nycmny9-nycmnyk3": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "114687-et-nycmny9-nycmnyk3": No interface description containing circuit name was found
001: Precheck: Interface Mapper: "37067-et-nycmny1-mevlnyoc": No interface description containing circuit name was found
002: Precheck: Signature Matcher: "33020-et-nymnny8-syosnygd": Circuit did not match a signature profile see debug log for details
```

**Interface Mapping Problems**

- \* Record issue between NC and device configuration
- \* Circuit number and hyphen could not be found on any description
- \* Either correct device configuration OR precheck/postcheck manually

**Signature Matching Problems**









- \* Circuit did not match to a signature profile
- \* Could require new profile to be build or adjustment to existing profile
- \* Some known signature issues are listed on bug report requiring software fix
- \* Forward to development for investigation and precheck/postcheck manually


## Step-by-Step Instructions



1) Click link to open Checker utility



2) Enter circuit list, select run mode, enter device name, and click build

-  Status
-  Changes
-  Workspace
-  Build with Parameters
-  Configure
-  Delete Project
-  Move
-  Rename

 **Build History** trend ^

 [Atom feed for all](#)  [Atom feed for failures](#)

## Project Checker

This build requires parameters:

### Circuit\_List

31041-IP-NYEYNYCE  
36837-ENET-CCF  
36852-ENET-CCF  
36853-ET-NYCMNYIP-NYCXNYGC  
36922-ENET-CCF  
32615-ET-NYCMNYPV-NYMNNYW5

1) Copy and paste circuit list

### Run\_Mode

precheck

2) Select run mode

### Device\_Name

WRCSMALBJ41

3) Enter device name

 Build

Cancel

4) Click Build

3) Open console output



Status

Changes

Workspace

Build with Parameters

Configure

Delete Project

Move

Rename

Build History trend ^

Atom feed for all Atom feed for failures

## Checker

Full project name: NetEng/Checker

Per circuit precheck / postcheck utility

<https://confluence.nss.crowncastle.com/display/NE/Checker>

<https://gitlab.nss.crowncastle.com/network-engineering/checker>

### Permalinks

1) Right click on "Last Build"

- Last build (#55), 90 ms ago
- Last stable build (#54), 1 day
- Last successful build (#54), 1 day
- Last failed build (#47), 1 day
- Last unsuccessful build (#47), 1 day
- Last completed build (#54), 1 day

Changes

Console Output

Edit Build Information

Delete build '#55'


Parameters

Git Build Data

Lockable resources

2) Click Console Output

4) Monitor console output

 **Jenkins**

Dashboard > NetEng > Checker > #55 > Console Output

Status

Changes

Console Output

Edit Build Information

Delete build '#55'

Parameters

Git Build Data

Lockable resources

Previous Build

### Console Output

Started by user [Evans, Peter](#)  
Running as SYSTEM  
Building remotely on [ccimlbneng01](#) (neteng) in workspace /home/jenkins/workspace/NetEng/Checker  
The recommended git tool is: NONE

```
00311 Circuit processing complete - process_mx_circuits()

00312 Report Generation - generate_report()
00313   Build subject line - _build_subject_line()
00314     Subject line: PRECHECK (4) circuits on NYCXNYGC381 - _build_subject_line()
00315   Build message section - _build_message_section()
00316   Build all circuit diff section - _build_all_circuit_diff()
00317   Build per circuit diff section - _build_per_circuit_diff()
00318   Build output diff section - _build_output_diff_section()

00319 Email Report - _email_report()
00320   To: Peter.Evans@crowncastle.com - _email_report()
00321   From: checker@crowncastle.com - _email_report()
00322   SMTP Server: mailrelay.crowncastle.com - _email_report()
00323   Timestamp: 25-02-07 13:57:24 - _email_report()

00324 Exiting circuit check utility - _exit_utility()
```

Notifying upstream projects of job completion  
Finished: SUCCESS

1) Monitor console output

2) A successful execution will end with Email Report and Exiting utility messages

3) If the script freezes with a Python exception or other problem you may need to perform a manual precheck and postcheck until development can investigate issue

5) Checker will automatically send you a email report which typically arrives in 60 seconds

- All Circuit Diff Table
- Per Circuit Diff Table
- Attached Output Diff
- Attached Circuit List
- Attached Debug for troubleshooting

### POSTCHECK (60) circuits on NYKXNYGCB1

cicler@crowmcastle.com  
to: ● Evans, Peter

if there are problems with how this message is displayed, click here to view it in a web browser.

2 MB

2 KB

325 KB

Translate message to English    Never translate from Romanian    Translation preferences

### Messages

#### All Circuit Diff

Data	Precheck	Postcheck
Interfaces Up	60	60
BGP Up	1	1
MAC Count	824	816
ARP Count	12	12
Remote PE Up	105	105

#### Per Circuit Diff

CID	Signature	Router	Interface	Pol1	Pol2	Signature	Router	Interface	Pol1	Pol2
31041:ip-nygnyce	Static	NYKXNYGCB1	ae2.555	ARP=1		Static	NYKXNYGCB1	ae2.555	ARP=1	
36853:et-nygnyce-nygnyce	VPLS	NYKXNYGCB1	ge-1/0/1	PE=1	MAC=2	VPLS	NYKXNYGCB1	ge-1/0/1	PE=1	MAC=2
32915:et-nygnyce-nygnyce	VPLS	NYKXNYGCB1	ae2.610	PE=1	MAC=2	VPLS	NYKXNYGCB1	ae2.610	PE=1	MAC=2
32913:ip-nygnyce4	Static	NYKXNYGCB1	ae2.101	ARP=1		Static	NYKXNYGCB1	ae2.101	ARP=1	
33092:et-nygnyce6-nygnyce1	VPLS	NYKXNYGCB1	ge-1/0/7.404	PE=2	MAC=3	VPLS	NYKXNYGCB1	ge-1/0/7.404	PE=2	MAC=3
33440:et-nygnyce-nygnyce0	VPLS	NYKXNYGCB1	ae2.680	PE=1	MAC=3	VPLS	NYKXNYGCB1	ae2.680	PE=1	MAC=3
33628:ip-nygnyce3	Static	NYKXNYGCB1	ae2.142	ARP=1		Static	NYKXNYGCB1	ae2.142	ARP=1	
33652:et-nygnyce7-nygnyce0	VPLS	NYKXNYGCB1	ae2.371	PE=1	MAC=3	VPLS	NYKXNYGCB1	ae2.371	PE=1	MAC=3

### Output Diff

State - 31041:ip-nygnyce

Show Interface

```

1 NYKXNYGCB1# show interfaces ae2.555
2 Logical interface ae2.555 (index 527) (BNDP ifindex 1846)
3 Description: 31041:IP-NYGNYCE
4 Flags: Up BNDP-Tag 0x0 VLAN-Tag (0x8100.555) Encapsa
5 Relation: EHE2T
6 Statistics   Packets   pps   Bytes
7 Bundle:
8   Input:    124108902    2   21873701266
9   Output:   122441419    3   1419952064
10
11 Adaptive Statistics:
12   Adaptive Adjuts:    0
13   Adaptive Scans:     0
14   Adaptive Updates:   0
15 Protocol Inet, MTU: 9174
16 Max nh cache: 75000, New hold nh limit: 75000, Curr nh c
17 Opt 1: Curr new hold cnt: 0, NH drop cnt: 0
18 Flags: SendBack-pkt-to-rw
19 Address: 64.72.65.36/30, Local: 64.72.65.37, Bro
20 Destination: 64.72.65.36/30, Local: 64.72.65.37, Bro
21 Adcast: 64.72.65.39
22 Protocol MulticastVip, MTU: Unlimited

```

Postcheck

```

1 NYKXNYGCB1# show interfaces ae2.555
2 Logical interface ae2.555 (index 527) (BNDP ifindex 1846)
3 Description: 31041:IP-NYGNYCE
4 Flags: Up BNDP-Tag 0x0 VLAN-Tag (0x8100.555) Encapsa
5 Relation: EHE2T
6 Statistics   Packets   pps   Bytes
7 Bundle:
8   Input:    124108902    2   21873701266
9   Output:   122441419    3   1419952064
10
11 Adaptive Statistics:
12   Adaptive Adjuts:    0
13   Adaptive Scans:     0
14   Adaptive Updates:   0
15 Protocol Inet, MTU: 9174
16 Max nh cache: 75000, New hold nh limit: 75000, Curr nh c
17 Opt 1: Curr new hold cnt: 0, NH drop cnt: 0
18 Flags: SendBack-pkt-to-rw
19 Address: 64.72.65.36/30, Local: 64.72.65.37, Bro
20 Destination: 64.72.65.36/30, Local: 64.72.65.37, Bro
21 Adcast: 64.72.65.39
22 Protocol MulticastVip, MTU: Unlimited

```

NYKXNYGCB1# show arp interface ae2.555 no-resolve

MAC Address Address Interface

```

1 MAC Address Address Interface
2 108:15:44:3f:4f:5d 64.72.65.38 ae2.555
3 None

```

NYKXNYGCB1# show arp interface ae2.555 no-resolve

MAC Address Address Interface

```

1 MAC Address Address Interface
2 108:15:44:3f:4f:5d 64.72.65.38 ae2.555
3 None

```

VPLS - 36853:et-nygnyce-nygnyce

Show Interface

```

1 NYKXNYGCB1# show interface ge-1/0/1 media
2 Physical interface ge-1/0/1, Enabled, Physical link is Up
3 Interface index: 135, BNDP ifindex: 917
4 Description: 36853:et-nygnyce-nygnyce
5 Link-level type: Ethernet-VPLS, MTU: 9192, HW: 8200, LAN-
6 PHY mode, Speed: 100Mbps, BRC Error: None, Loop Detect Lo

```

Postcheck

```

1 NYKXNYGCB1# show interface ge-1/0/1 media
2 Physical interface ge-1/0/1, Enabled, Physical link is Up
3 Interface index: 135, BNDP ifindex: 917
4 Description: 36853:et-nygnyce-nygnyce
5 Link-level type: Ethernet-VPLS, MTU: 9192, HW: 8200, LAN-
6 PHY mode, Speed: 100Mbps, BRC Error: None, Loop Detect Lo

```

Date	Status	Bug ID	Description
2/19/2025	New	100	EVPL signature profile will not match EVPL circuit with a protect path
2/19/2025	New	101	EVPL signature profile will not match when EVPL node is on same box with EVPL head and there is also remote EVPL nodes. Discovered Checker Review EA 02-14-2025 11-00-AM.
2/19/2025	New	102	ELAN interface mapping will not map when ELAN is split out using VLAN's in aggregation stack passing over a single aggregation stack interface to MX
2/19/2025	New	103	ELINE hairpin output diff is only showing interface 1
2/19/2025	New	104	Poll data maybe incorrect if interface is in a deactivated routing instance
2/19/2025	New	105	Utility will quit with Python exception if a IPB circuit is included in list. Discovered Checker Review AP 02-14-2025 11-20-AM
2/20/2025	New	106	Circuit names with spaces are being broken into separate circuits only the first string is matching the remaining cause log messages

Date	Status	Request ID	Description
2/19/2025	New	100	Add support for IPB
2/19/2025	New	101	Add support for aggregation trunk
2/19/2025	New	102	Add support for CPE trunk
2/19/2025	New	103	Add support for customer NNI



								Number of Remote PE's Up
MX	Customer Circuit	E-LAN	Multi Router	1 Circuit to 1 Interface	Tagged	VPLS	mx_vpls	Logical Interface Status
								MAC Count
								Number of Remote PE's Up

EVPL Services

Platform	Category	Service Type	Router Count	Circuit to Interface	Physical Interface	Protocol	Signature Profile	Polling Data
MX	Customer Circuit	EVPL	Multi Router	1 Circuit to 1 Interface	Untagged	VPLS	mx_vpls	Physical Interface Status
								MAC Count
								Number of Remote PE's Up
MX	Customer Circuit	EVPL	Multi Router	1 Circuit to 1 Interface	Tagged	VPLS	mx_vpls	Logical Interface Status
								MAC Count
								Number of Remote PE's Up

Hairpin Services

ELINE

Platform	Category	Service Type	Router Count	Interface Count	Physical Interface	Protocol	Signature Profile	Polling Data
MX	Customer Circuit	E-LINE	Single Router	1 Circuit to 2 Interfaces	Untagged	VPLS	mx_eline_hairpin	Physical Interface Status
								MAC Count
MX	Customer Circuit	E-LINE	Single Router	1 Circuit to 2 Interfaces	Tagged	VPLS	mx_eline_hairpin	Logical Interface Status
								MAC Count

ELAN

Platform	Category	Service Type	Router Count	Interface Count	Physical Interface	Protocol	Signature Profile	Polling Data
MX	Customer Circuit	E-LAN	Single Router	1 Circuit to 1 Interface	Untagged	VPLS	mx_elan_evpl_hairpin	Physical Interface Status
								MAC Count
MX	Customer Circuit	E-LAN	Single Router	1 Circuit to 1 Interface	Tagged	VPLS	mx_elan_evpl_hairpin	Logical Interface Status
								MAC Count

EVPL

Platform	Category	Service Type	Router Count	Interface Count	Physical Interface	Protocol	Signature Profile	Polling Data
MX	Customer Circuit	EVPL	Single Router	1 Circuit to 1 Interface	Untagged	VPLS	mx_elan_evpl_hairpin	Physical Interface Status
								MAC Count
MX	Customer Circuit	EVPL	Single Router	1 Circuit to 1 Interface	Tagged	VPLS	mx_elan_evpl_hairpin	Logical Interface Status
								MAC Count

Dependencies

SMTP Server	<a href="mailto:mailrelay.crowncastle.com">mailrelay.crowncastle.com</a>
NSS Microservices	<a href="http://grpcui.nss.crowncastle.com:9090">grpcui.nss.crowncastle.com:9090</a>
Netcracker REST API	10.48.0.61
Neteng Server	ccimlbneng01
Jenkins	<a href="http://jenkins.nss.crowncastle.com">jenkins.nss.crowncastle.com</a>
Gitlab	<a href="http://gitlab.nss.crowncastle.com">gitlab.nss.crowncastle.com</a>
Netcracker	
NE Automation Account	zccfautobot

Database Schema

Run Table

Table Column	Data Type
row_id	Primary Key
user_run_mode	String
user_email_address	String
user_circuit_list	JSON encoded list
device_name	String
device_model	String
time	String
date	String
mx_interface_polls_precheck	JSON encoded dictionary
mx_interface_polls_postcheck	JSON encoded dictionary

## Circuit Table

Table Column	Data Type
row_id	Primary Key
run_table_row_id_last_precheck	Foreign key
run_table_row_id_last_postcheck	Foreign key
circuit_name	String
service_type_precheck	String
service_type_postcheck	String
device_name_precheck	String
device_name_postcheck	String
device_model_precheck	String
device_model_postcheck	String
mx_circuit_interfaces_precheck	JSON encoded dictionary
mx_circuit_interfaces_postcheck	JSON encoded dictionary
mx_bgp_neighbor_state_precheck	String
mx_bgp_show_neighbor_state_precheck	String
mx_bgp_neighbor_state_postcheck	String
mx_bgp_show_neighbor_state_postcheck	String
mx_bgp_igrb_neighbor_state_precheck	String
mx_bgp_igrb_show_neighbor_state_precheck	String
mx_bgp_igrb_neighbor_state_postcheck	String
mx_bgp_igrb_show_neighbor_state_postcheck	String
mx_static_arp_count_precheck	String
mx_static_show_arp_count_precheck	String
mx_static_arp_count_postcheck	String
mx_static_show_arp_count_postcheck	String
mx_vpls_number_remote_pe_up_precheck	String
mx_vpls_show_number_remote_pe_up_precheck	String

mx_vpls_number_remote_pe_up_postcheck	String
mx_vpls_show_number_remote_pe_up_postcheck	String
mx_vpls_mac_count_precheck	String
mx_vpls_show_mac_count_precheck	String
mx_vpls_mac_count_postcheck	String
mx_vpls_show_mac_count_postcheck	String
mx_l2vpn_number_remote_pe_up_precheck	String
mx_l2vpn_show_number_remote_pe_up_precheck	String
mx_l2vpn_number_remote_pe_up_postcheck	String
mx_l2vpn_show_number_remote_pe_up_postcheck	String
mx_hairpin_eline_mac_count_precheck	String
mx_hairpin_eline_show_mac_count_precheck	String
mx_hairpin_eline_mac_count_postcheck	String
mx_hairpin_eline_show_mac_count_postcheck	String
mx_hairpin_elan_evpl_mac_count_precheck	String
mx_hairpin_elan_evpl_show_mac_count_precheck	String
mx_hairpin_elan_evpl_mac_count_postcheck	String
mx_hairpin_elan_evpl_show_mac_count_postcheck	String

## Signature Profiles

Profile Name	Search Order
mx_vpls_logical	1
mx_static_logical	2
mx_bgp_logical	3
mx_eline_hairpin	4
mx_elan_evpl_hairpin_logical	5
mx_l2vpn_logical	6
mx_bgp_irb_vpls_logical	7
mx_vpls_physical	8
mx_static_physical	9
mx_bgp_physical	10
mx_elan_evpl_hairpin_physical	11
mx_l2vpn_physical	12
mx_bgp_irb_vpls_physical	13

## Match Terms

Term	Search Order
Circuit Name	1
Interface Name Period	2
Physical Interface Tagging	3

Physical Interface Encapsulation	4
Logical Unit 0 Family	5
Logical Unit Encapsulation	6
Routing Instance Type	7
Routing Instance Protocol	8
BGP Neighbor	9
Interface Count	10
Netcracker Circuit Type	11

## Profile Definitions

### BGP

Profile	Term	Input Value	Profile	Term	Input Value
mx_bgp_physical	Circuit Name	internet	mx_bgp_logical	Circuit Name	internet
mx_bgp_physical	Interface Name Period	period_no	mx_bgp_logical	Interface Name Period	period_yes
mx_bgp_physical	Physical Interface Tagging	untagged	mx_bgp_logical	Physical Interface Tagging	tagged
mx_bgp_physical	Physical Interface Encapsulation	none	mx_bgp_logical	Physical Interface Encapsulation	[flexible-ethernet-services,vlan-vpls]
mx_bgp_physical	Logical Unit 0 Family	inet	mx_bgp_logical	Logical Unit 0 Family	__IGNORE__
mx_bgp_physical	Logical Unit x Encapsulation	__IGNORE__	mx_bgp_logical	Logical Unit x Encapsulation	none
mx_bgp_physical	Routing Instance Type	__IGNORE__	mx_bgp_logical	Routing Instance Type	__IGNORE__
mx_bgp_physical	Routing Instance Protocol	__IGNORE__	mx_bgp_logical	Routing Instance Protocol	__IGNORE__
mx_bgp_physical	BGP Neighbor	check	mx_bgp_logical	BGP Neighbor Check	check
mx_bgp_physical	Interface Count	1	mx_bgp_logical	Interface Count	1
mx_bgp_physical	Netcracker Circuit Type	__IGNORE__	mx_bgp_logical	Netcracker Circuit Type	__IGNORE__

### BGP IRB

Profile	Term	Input Value	Profile	Term	Input Value
mx_bgp_irb_vpls_physical	Circuit Name	internet	mx_bgp_irb_vpls_logical	Circuit Name	internet
mx_bgp_irb_vpls_physical	Physical Interface Tagging	untagged	mx_bgp_irb_vpls_logical	Physical Interface Tagging	tagged
mx_bgp_irb_vpls_physical	Physical Interface Encapsulation	ethernet-vpls	mx_bgp_irb_vpls_logical	Physical Interface Encapsulation	[flexible-ethernet-services,vlan-vpls]
mx_bgp_irb_vpls_physical	Logical Unit 0 Family	vpls	mx_bgp_irb_vpls_logical	Logical Unit 0 Family	__IGNORE__
mx_bgp_irb_vpls_physical	Logical Unit x Encapsulation	__IGNORE__	mx_bgp_irb_vpls_logical	Logical Unit x Encapsulation	vlan-vpls
mx_bgp_irb_vpls_physical	Routing Instance Type	__IGNORE__	mx_bgp_irb_vpls_logical	Routing Instance Type	__IGNORE__
mx_bgp_irb_vpls_physical	Routing Instance Protocol	__IGNORE__	mx_bgp_irb_vpls_logical	Routing Instance Protocol	__IGNORE__
mx_bgp_irb_vpls_physical	BGP Neighbor	__IGNORE__	mx_bgp_irb_vpls_logical	BGP Neighbor	__IGNORE__
mx_bgp_irb_vpls_physical	Interface Count	1	mx_bgp_irb_vpls_logical	Interface Count	1
mx_bgp_irb_vpls_physical	Netcracker Circuit Type	__IGNORE__	mx_bgp_irb_vpls_logical	Netcracker Circuit Type	__IGNORE__

### Static

Profile	Term	Input Value	Profile	Term	Input Value
---------	------	-------------	---------	------	-------------

mx_static_physical	Circuit Name	internet		mx_static_logical	Circuit Name	internet
mx_static_physical	Physical Interface Tagging	untagged		mx_static_logical	Physical Interface Tagging	tagged
mx_static_physical	Physical Interface Encapsulation	none		mx_static_logical	Physical Interface Encapsulation	[flexible-ethernet-services]
mx_static_physical	Logical Unit 0 Family	inet		mx_static_logical	Logical Unit 0 Family	__IGNORE__
mx_static_physical	Logical Unit x Encapsulation	__IGNORE__		mx_static_logical	Logical Unit x Encapsulation	none
mx_static_physical	Routing Instance Type	__IGNORE__		mx_static_logical	Routing Instance Type	__IGNORE__
mx_static_physical	Routing Instance Protocol	__IGNORE__		mx_static_logical	Routing Instance Protocol	__IGNORE__
mx_static_physical	BGP Neighbor	__IGNORE__		mx_static_logical	BGP Neighbor	__IGNORE__
mx_static_physical	Interface Count	1		mx_static_logical	Interface Count	1
mx_static_physical	Netcracker Circuit Type	__IGNORE__		mx_static_logical	Netcracker Circuit Type	__IGNORE__

## VPLS

Profile	Term	Input Value		Profile	Term	Input Value
mx_vpls_physical	Circuit Name	ethernet		mx_vpls_logical	Circuit Name	ethernet
mx_vpls_physical	Interface Name Period	period_no		mx_vpls_logical	Interface Name Period	period_yes
mx_vpls_physical	Physical Interface Tagging	untagged		mx_vpls_logical	Physical Interface Tagging	tagged
mx_vpls_physical	Physical Interface Encapsulation	ethernet-vpls		mx_vpls_logical	Physical Interface Encapsulation	[flexible-ethernet-services,vlan-vpls]
mx_vpls_physical	Logical Unit 0 Family	vpls		mx_vpls_logical	Logical Unit 0 Family	__IGNORE__
mx_vpls_physical	Logical Unit x Encapsulation	__IGNORE__		mx_vpls_logical	Logical Unit x Encapsulation	vlan-vpls
mx_vpls_physical	Routing Instance Type	vpls		mx_vpls_logical	Routing Instance Type	vpls
mx_vpls_physical	Routing Instance Protocol	vpls		mx_vpls_logical	Routing Instance Protocol	vpls
mx_vpls_physical	BGP Neighbor	__IGNORE__		mx_vpls_logical	BGP Neighbor	__IGNORE__
mx_vpls_physical	Interface Count	1		mx_vpls_logical	Interface Count	1
mx_vpls_physical	Netcracker Circuit Type	__IGNORE__		mx_vpls_logical	Netcracker Circuit Type	__IGNORE__

## L2VPN

Profile	Term	Input Value		Profile	Term	Input Value
mx_l2vpn_physical	Circuit Name	ethernet		mx_l2vpn_logical	Circuit Name	ethernet
mx_l2vpn_physical	Physical Interface Tagging	untagged		mx_l2vpn_logical	Physical Interface Tagging	tagged
mx_l2vpn_physical	Physical Interface Encapsulation	ethernet-ccc		mx_l2vpn_logical	Physical Interface Encapsulation	[flexible-ethernet-services,vlan-ccc]
mx_l2vpn_physical	Logical Unit 0 Family	ccc		mx_l2vpn_logical	Logical Unit 0 Family	__IGNORE__
mx_l2vpn_physical	Logical Unit x Encapsulation	__IGNORE__		mx_l2vpn_logical	Logical Unit x Encapsulation	vlan-ccc
mx_l2vpn_physical	Routing Instance Type	l2vpn		mx_l2vpn_logical	Routing Instance Type	l2vpn
mx_l2vpn_physical	Routing Instance Protocol	l2vpn		mx_l2vpn_logical	Routing Instance Protocol	l2vpn
mx_l2vpn_physical	BGP Neighbor	__IGNORE__		mx_l2vpn_logical	BGP Neighbor	__IGNORE__
mx_l2vpn_physical	Interface Count	1		mx_l2vpn_logical	Interface Count	1
mx_l2vpn_physical	Netcracker Circuit Type	__IGNORE__		mx_l2vpn_logical	Netcracker Circuit Type	__IGNORE__

## ELAN/EVPL Hairpin

Profile	Term	Input Value		Profile	Term	Input Value
mx_elan_evpl_hairpin_physical	Circuit Name	ethernet		mx_elan_evpl_hairpin_logical	Circuit Name	ethernet
mx_elan_evpl_hairpin_physical	Physical Interface Tagging	untagged		mx_elan_evpl_hairpin_logical	Physical Interface Tagging	tagged
mx_elan_evpl_hairpin_physical	Physical Interface Encapsulation	ethernet-vpls		mx_elan_evpl_hairpin_logical	Physical Interface Encapsulation	[flexible-ethernet-services,vlan-vpls]
mx_elan_evpl_hairpin_physical	Logical Unit 0 Family	vpls		mx_elan_evpl_hairpin_logical	Logical Unit 0 Family	__IGNORE__



mx_elan_evpl_hairpin_physical	Logical Unit x Encapsulation	__IGNORE__	mx_elan_evpl_hairpin_logical	Logical Unit x Encapsulation	vlan-vpls
mx_elan_evpl_hairpin_physical	Routing Instance Type	vpls	mx_elan_evpl_hairpin_logical	Routing Instance Type	vpls
mx_elan_evpl_hairpin_physical	Routing Instance Protocol	none	mx_elan_evpl_hairpin_logical	Routing Instance Protocol	none
mx_elan_evpl_hairpin_physical	BGP Neighbor	__IGNORE__	mx_elan_evpl_hairpin_logical	BGP Neighbor	__IGNORE__
mx_elan_evpl_hairpin_physical	Interface Count	1	mx_elan_evpl_hairpin_logical	Interface Count	1
mx_elan_evpl_hairpin_physical	Netcracker Circuit Type	elan, evpl	mx_elan_evpl_hairpin_logical	Netcracker Circuit Type	elan, evpl

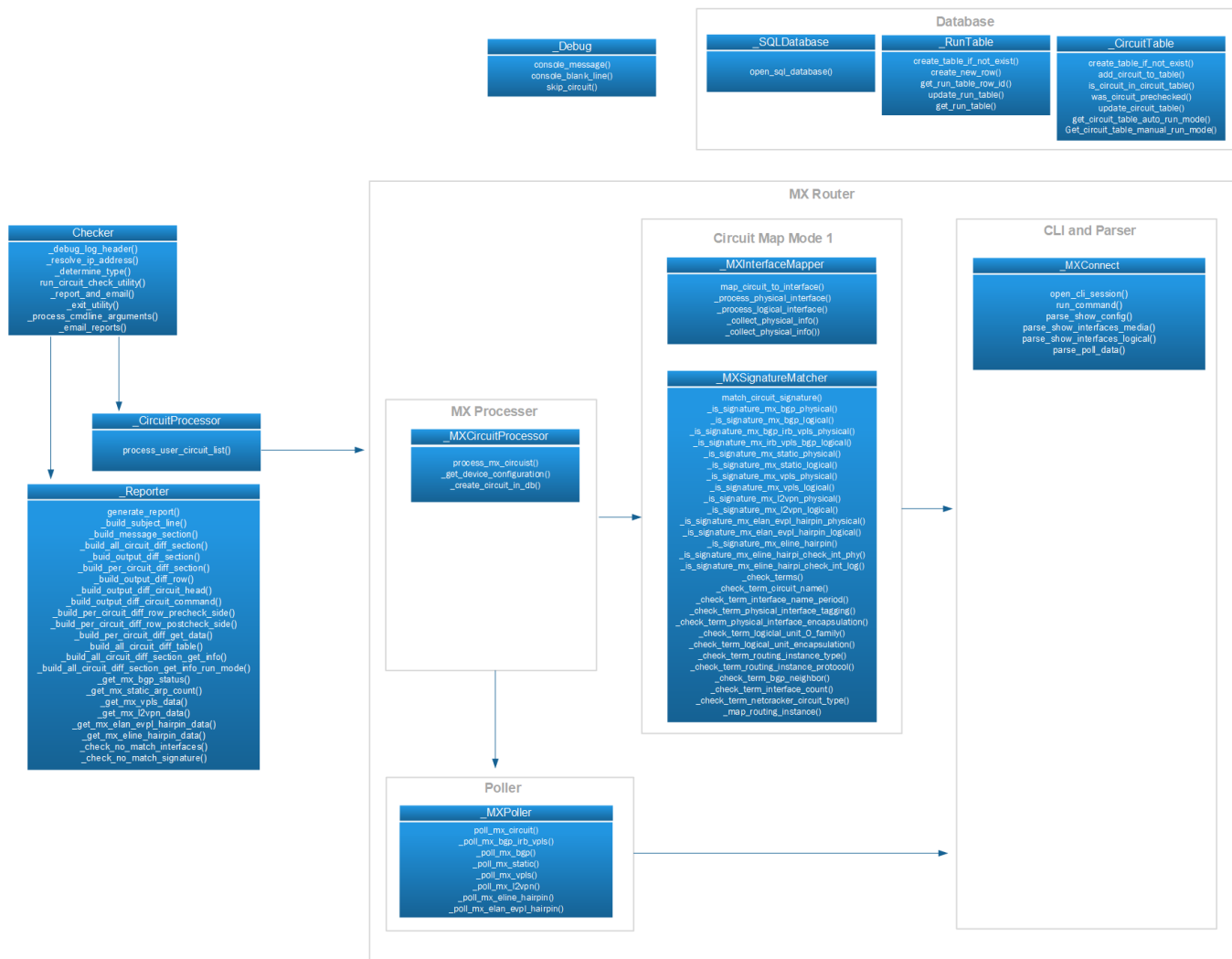
## ELINE Hairpin

Profile	Term	Input Value
mx_eline_hairpin	Circuit Name	ethernet
mx_eline_hairpin	Physical Interface Tagging	untagged
mx_eline_hairpin	Physical Interface Encapsulation	ethernet-vpls
mx_eline_hairpin	Logical Unit 0 Family	vpls
mx_eline_hairpin	Logical Unit x Encapsulation	__IGNORE__
mx_eline_hairpin	Routing Instance Type	none
mx_eline_hairpin	Routing Instance Protocol	none
mx_eline_hairpin	BGP Neighbor	__IGNORE__
mx_eline_hairpin	Interface Count	2
mx_eline_hairpin	Netcracker Circuit Type	[eline]

## Matcher Method Inputs

## Diagrams

## Class Layout and Structure



## Code Sequencing and Flow

## Main

```
main()
    CircuitCheck.run_circuit_check_utility()
    CircuitCheck._get_user_input()
    _MXConnect.open_cli_session()
    _SQLDatabase.open_sql_database()
    _RunTable.create_table_if_not_exist()
    _RunTable.create_new_row()
    _CircuitTable.create_table_if_not_exist()
```

## Circuit Processor

```
_CircuitProcessor.process_user_circuit_list()
```

### Process MX Device Circuits

```
_MXCircuitProcessor.process_mx_circuits()
_MXCircuitProcessor._get_device_configuration()
_MXConnect.show_config()
_MXConnect.show_config()
_MXConnect.show_config()
_MXConnect.parse_show_config()
IF - Parsed interface section is blank
```

### Circuit Loop

```
LOOP - User circuit list
```

#### Create Circuit

```
_create_circuit_in_db()
_CircuitTable.is_circuit_in_circuit_table()
IF - Circuit not in table
    _CircuitTable.add_circuit_to_table()
_RunTable.get_run_table_row_id()
_CircuitTable.update_circuit_table() - run_table_row_id_last
_CircuitTable.update_circuit_table() - router_name
_CircuitTable.update_circuit_table() - router_model
```

#### Mode 1 Mapper

```
_MXInterfaceMapper.circuit_map_mode1()
```

#### Interface Mapper

```
_MXInterfaceMapper.map_circuit_to_interface()
LOOP - All interfaces on router
    IF - No description on interface continue to next interface
    IF - Circuit name found in description
        IF - Period not found in circuit name
            _MXInterfaceMapper._process_physical_interface()
            _MXInterfaceMapper._collect_physical()
            IF - Interface was already collected then return
            IF - Interface has a description
            IF - Interface does not have a description
            IF - Interface has encapsulation
            IF - Interface does not have encapsulation
            IF - Interface has vlan-tagging
            IF - Interface does not have vlan-tagging
            IF - Interface has a flexible-vlan-tagging
            IF - Interface does not have flexible-vlan-tagging
            _MXConnect.run_command()
            IF - Device not found error message
            _MXConnect.parse_show_interfaces_media()
            IF - Op status found in parsed output
            IF - Op status not found in parsed output
            IF - Unit 0 found in parsed output
            _MXInterfaceMapper._collect_logical()
            IF - Interface was already collected then return
            IF - Interface has a description
            IF - Interface does not have a description
            IF - Interface has encapsulation
            IF - Interface does not have encapsulation
            IF - Interface has family
            IF - Interface does not have family
            IF - Interface has IP
            IF - Interface does not have IP
            IF - Interface has mask
            IF - Interface does not have mask
            _MXConnect.run_command()
            IF - Device not found error message
            _MXConnect.parse_show_interfaces_logical()
            IF - Flag status found in parsed output
            IF - Flag status not found in parsed output
            IF - Period found in circuit name
                _MXInterfaceMapper._process_logical_interface()
```

\_MXInterfaceMapper\_collect\_logical()

IF - Interface was already collected then return

IF - Interface has a description

IF - Interface does not have a description

IF - Interface has encapsulation

IF - Interface does not have encapsulation

IF - Interface has family

IF - Interface does not have family

IF - Interface has IP

IF - Interface does not have IP

IF - Interface has mask

IF - Interface does not have mask

\_MXConnect.run\_command()

IF - Device not found error message

\_MXConnect.parse\_show\_interfaces\_logical()

IF - Flag status found in parsed output

IF - Flag status not found in parsed output

\_MXInterfaceMapper\_collect\_physical()

IF - Interface was already collected then return

IF - Interface has a description

IF - Interface does not have a description

IF - Interface has encapsulation

IF - Interface does not have encapsulation

IF - Interface has vlan-tagging

IF - Interface does not have vlan-tagging

IF - Interface has a flexible-vlan-tagging

IF - Interface does not have flexible-vlan-tagging

\_MXConnect.run\_command()

IF - Device not found error message

\_MXConnect.parse\_show\_interfaces\_media()

IF - Op status found in parsed output

IF - Op status not found in parsed output

## Signature Matcher

MXSignatureMatcher\_match\_circuit\_signature()

\_is\_signature\_mx\_vpls\_physical()

\_check\_terms()

\_check\_circuit\_name()

\_check\_physical\_interface\_tagging()

\_check\_physical\_interface\_encapsulation()

\_check\_logical\_unit\_O\_family()

\_check\_logical\_unit\_encapsulation()

\_check\_routing\_instance\_type()

\_check\_routing\_instance\_protocol()

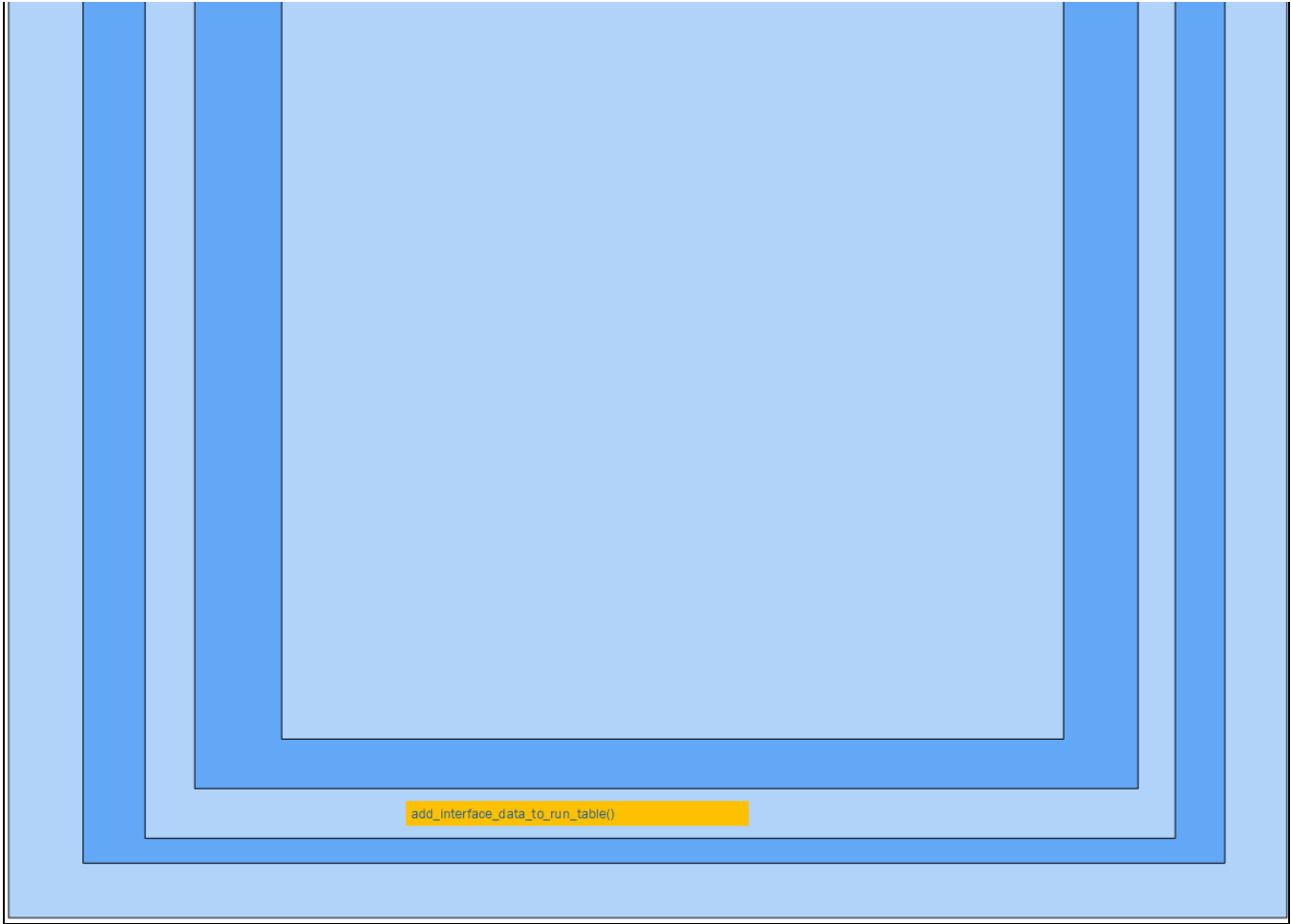
\_check\_bgp\_neighbor()

\_check\_interface\_count()

\_check\_nettracker\_circuit\_type()

add\_interface\_data\_to\_circuit\_table()

## Poller



**Location**

All the Visio diagrams on this page can be found in the following file on sharepoint.

[Checker Diagrams.vsd](#)