



SONiC-OTN CLI utilities introduction

zhengweitang.zwt@alibaba-inc.com

leixin.lei@alibaba-inc.com

guixiaodong.gxd@alibaba-inc.com

Alibaba Cloud

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SONiC Utilities



SONiC Utilities (<https://github.com/sonic-net/sonic-utilities>) is a command line interface implementation based on Click (<https://click.palletsprojects.com/en/8.1.x/>)

It supports all the functionalities for switch devices, such as IP interfaces, BGP , DHCP, LLDP, SONiC installer, etc.

<https://github.com/sonic-net/sonic-utilities/blob/master/doc/Command-Reference.md>

Because 80% CLI commands are not required on the OTN device, we decided to create a new SONiC-OTN utilities python package.

SONiC-OTN CLI manages all OTN device components:

- Chassis
- FAN
- PSU
- Slot
- Transponder client port
- Transponder line port
- EDFA, OSC, OLP, VOA, OCM, OTDR, WSS, etc.

SONiC OTN CLI features



Chassis

- Config Temperature threshold
- Show 15m/24h current and history PM
- In service upgrade
- Show Current and History Alarm
- Show Inventory information

```
config chassis 1 temperature-threshold low-alarm 10
low-warning 15 hi-alarm 70 hi-warning 65

show chassis 1 info

show chassis 1 pm 15 current

show chassis 1 pm 24 history 1

.....
```

System

- | | |
|---------------------|------------------------------|
| AAA and TACACS | NTP |
| IP, BGP, OSPF | Configuration backup/restore |
| Collect system logs | System time, hostname |
| Warm/Cold reboot | Telemetry |
| SNMP-trap | User management |
| Syslog server | |

```
config ntp add 10.10.10.10 prefer

config interface ip add osc2 192.168.1.12/24

config backup saved-configuration 10.10.10.11 22 SONiC_config.tar admin

.....
```

SONiC OTN CLI features



Slot

Show 15m/24h current and history PM
Show Current and History Alarm
Show Inventory information

Config Temperature threshold
Config linecard type, mode
In service upgrade

```
show slot 1 info
show slot 1 config
show slot 1 alarm current
show slot 1 alarm history
```

```
config slot 1 type P230C LA_400G_CA_200GE
config slot 1 power on
config slot 1 type E120C
```

FAN

Show 15m/24h current and history PM
Show Inventory information

Config fan speed

```
show fan all info
show fan all pm 15 current
show fan all pm 24 current
show fan all pm 15 history 1
show fan all pm 24 history 1
```

```
config fan all speed 2300
```

PSU

Show 15m/24h current and history PM
Show Inventory information

```
show psu all info
show psu all pm 15 current
show psu all pm 24 current
show psu all pm 15 history 1
show psu all pm 24 history 1
```

SONiC OTN CLI features



Transponders- Client

Show client transceiver module
Show client transceiver state/config
Show 15m/24h current and history PM
Show client LLDP information
Show client RMON counters

Config FEC mode
Config Admin status
Config Maintenance signal
Config Auto Laser Shutdown
Config LLDP enable
Config Delay measurement
Config Laser ON/OFF

...

```
show slot 1 client all module
show slot 1 client all state
show slot 1 client all config
show slot 1 client all lldp
show slot 1 client all rmon
show slot 1 client all pm 15 current
show slot 1 client all pm 24 current
show slot 1 client all pm 15 history 1
```

```
config slot 1 client all tx-laser on
config slot 1 client all admin maintenance
config slot 1 client all loopback none
config slot 1 client all lldp enable
```

Transponders- Line

Show line transceiver module
Show line transceiver state/config
Show 15m/24h current and history PM

Config Frequency
Config Admin status
Config Optical power
Config TTI message
Config Loopback
Config PRBS
Config Laser ON/OFF

...

```
show slot 1 line all module
show slot 1 line all state
show slot 1 line all config
show slot 1 line all pm 15 current
show slot 1 line all pm 15 history 1
```

```
config slot 1 line 1 admin maintenance
config slot 1 line 1 tx-power -- -13
config slot 1 line 1 frequency 193350000
config slot 1 line 1 tx-laser on
```

...

SONiC OTN CLI features



OLP

Show inventory, state and config
Show 15m/24h current and history PM

Config reversion workmode
Config Hold-off time
Config Force switch to port
Config Switch threshold
Config Optical LOW threshold

```
show slot 2 olp 1 info
show slot 2 olp 1 config

config slot 2 olp 1 forcetoport none
config slot 2 olp 1 workmode auto-nonreversion
config slot 2 olp 1 relative-diff-threshold 5
config slot 2 olp 1 common-in alarm-threshold -- -15
config slot 2 olp 1 common-out alarm-threshold -- -15
config slot 2 olp 1 primary-in alarm-threshold -- -15
config slot 2 olp 1 primary-out alarm-threshold -- -18
config slot 2 olp 1 secondary-in alarm-threshold -- -15
config slot 2 olp 1 secondary-out alarm-threshold -- -18
```

VOA

Show inventory, state and config
Show 15m/24h current and history PM

Config attenuation

```
show slot 2 voa all info
show slot 2 voa all pm 15 current
show slot 2 voa all pm 24 current
show slot 2 voa all pm 15 history 1
show slot 2 voa all pm 24 history 1

config slot 2 voa 1 att 0
config slot 2 voa 2 att 0
```

OSC

Show inventory, state and config
Show 15m/24h current and history PM
Show OSC LLDP information

Config Enable
Config Optical input and output power threshold

```
show slot 3 osc all info
show slot 3 osc all pm 15 current
show slot 3 osc all pm 24 current
show slot 3 osc all pm 15 history 1
show slot 3 osc all pm 24 history 1
show slot 3 osc all lldp

config slot 3 osc all enable
config slot 3 osc all input low-threshold -- -40
config slot 3 osc all input high-threshold -- -8
config slot 3 osc all output low-threshold -- -5
```


SONiC OTN CLI features



EDFA

Show inventory, state and config
Show 15m/24h current and history PM

Config enable
Config Optical input and output power threshold
Config Auto shutdown enable/disable
Config Gain, tilt
Config APR(Automatic Power Reduction)
...

OCM

Show inventory, state and config
Show spectrum

Config Monitor port
Config Spectrum grid

OTDR

Show inventory, state and config
Show baseline scan information
Show current/history scan information

Config
refractive-index
Reflection threshold
Fiber end threshold
Distance range
Pulse width
Repetition start time, period

.....

CLI Architecture



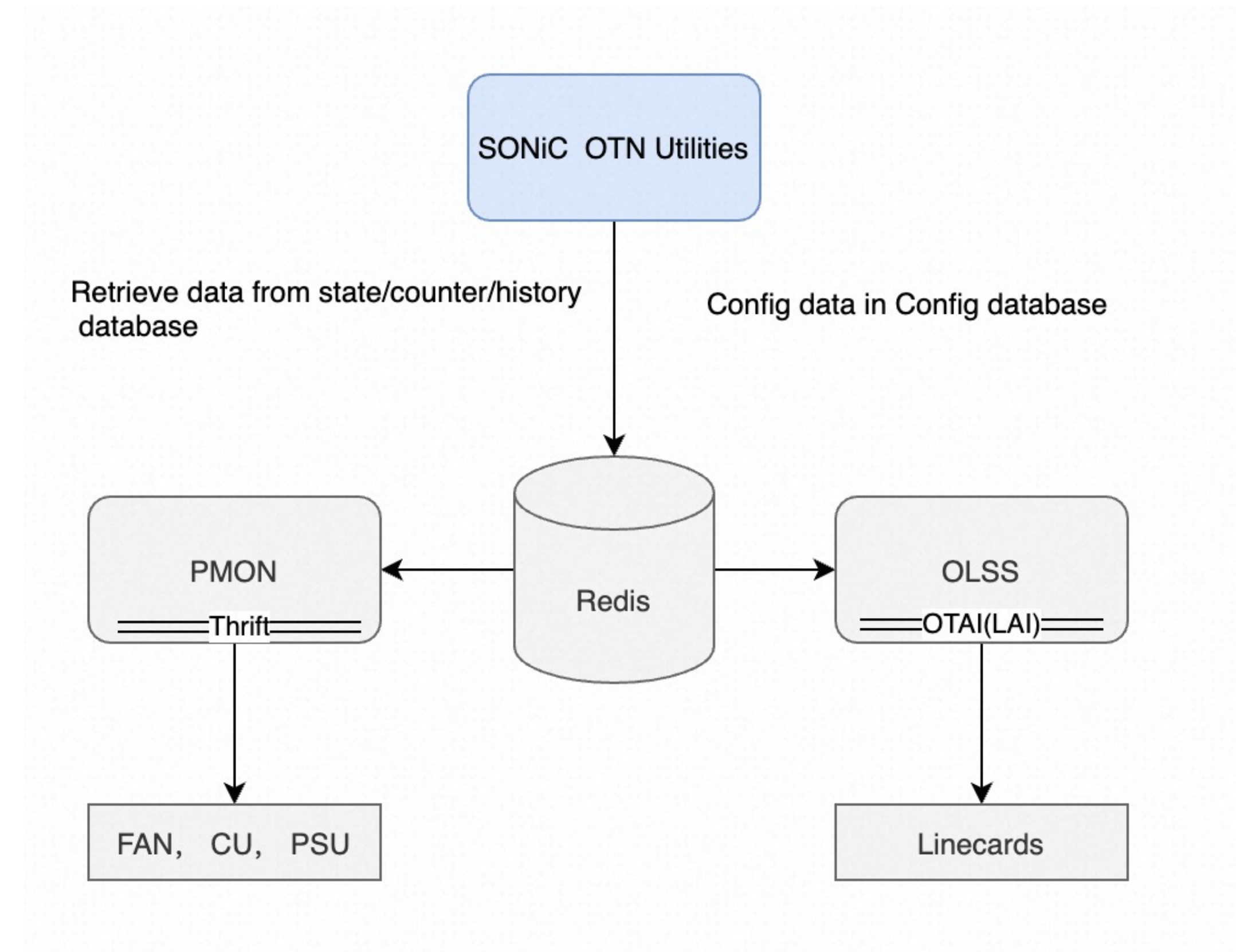
SONiC OTN CLI utilities is a python package, it is installed in the SONiC OS

CLI commands interact with Redis database docker, disaggregate with PMON and OLSS containers

Config data in config database, and check the response for each operation, roll back configuration in case of a failure.

Retrieve data from state, counter, and history database, if user show inventory, PM, Alarms.

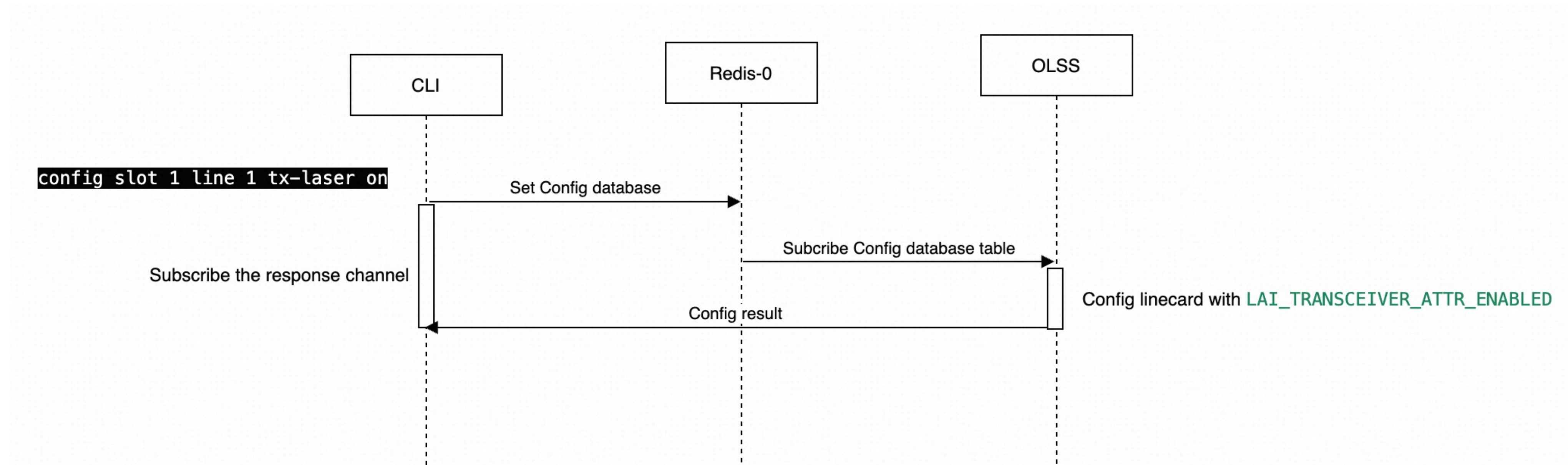
PMON and OLSS containers manage the FAN , PSU , CU and linecards.



SONiC-OTN CLI architecture

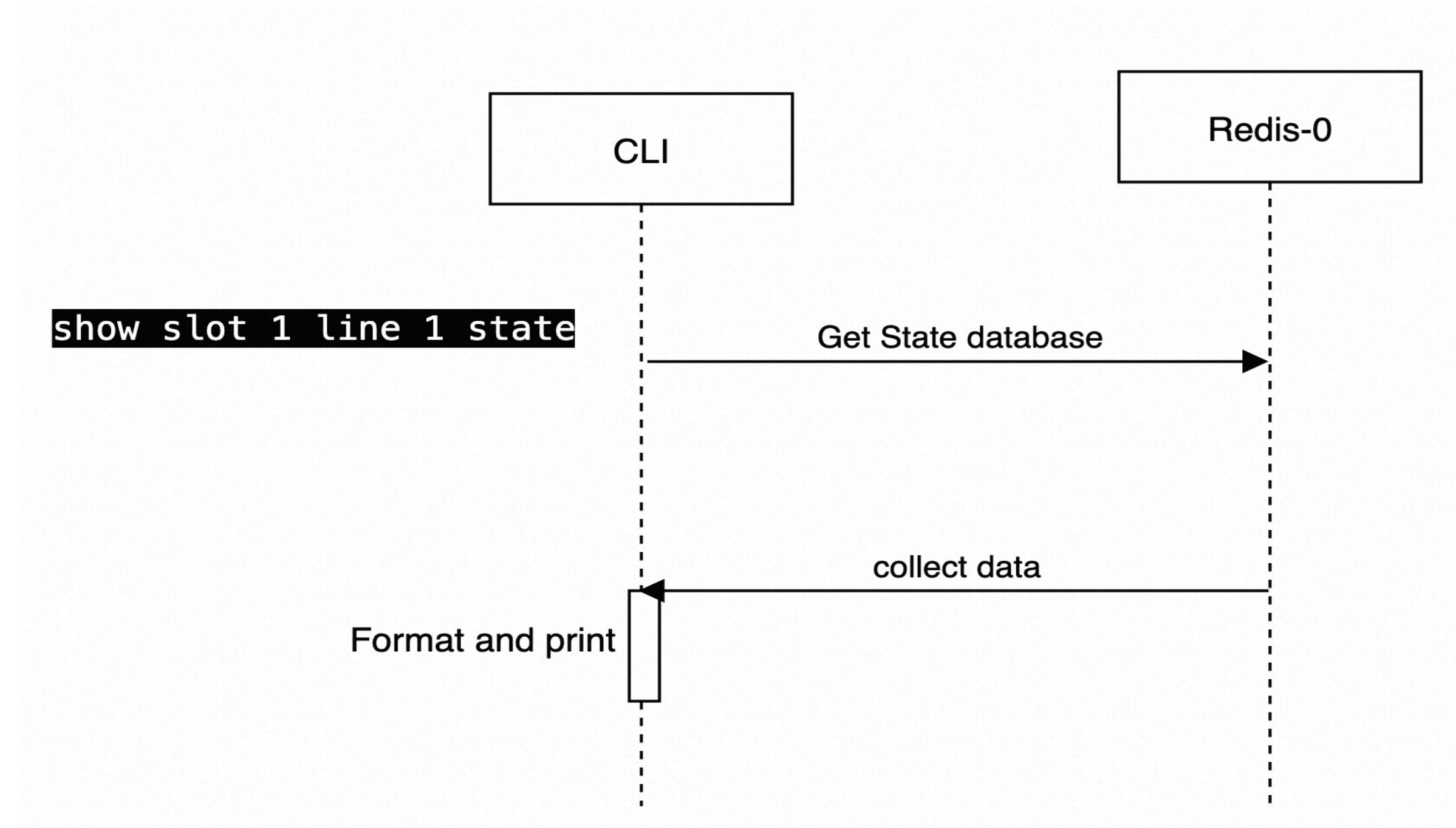
CLI example: Config transceiver tx-laser

1. User run 'config slot 1 line 1 tx-laser on' command
2. CLI set redis-0, config database, table 'TRANSCEIVER|TRANSCEIVER-1-1-L1', field enabled to true
3. OLSS config the line transceiver via LAI API LAI_TRANSCEIVER_ATTR_ENABLED, and publish result to channel
4. CLI subscribe the configuration result channel and echo the result



CLI example: Get transceiver status

1. User run 'show slot 1 line all state' command
2. CLI retrieve data in redis-0, state database, table 'TRANSCEIVER|TRANSCEIVER-1-1-L1'
3. CLI format the data and print it out



KLISH CLI



Issue with SONiC utilities

- User run the CLI command in the UNIX shell, not a CISCO-like CLI
- The syntax restriction, config slot 1 line 1 tx-power -- -13

The klish is a framework for implementing a CISCO-like CLI on a UNIX systems. It is configurable by XML files.

<https://src.libcode.org/download/klish/>

SONiC provide a demo on how to implement KLISH CLI in mgmt-framework module

Refer to [src/sonic-mgmt-framework/CLI/clitree/cli-xml](#)

```
<CLISH_MODULE xmlns="http://www.w3.org/sonic/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xi="http://www.w3.org/2001/XInclude">
```

```
<VIEW name="configure-view">
<COMMAND name="show alarm" help="show alarm" />
<COMMAND name="show alarm current" help="show alarm current">
<ACTION>show alarm current</ACTION>
</COMMAND>
```

```
</COMMAND>
</VIEW>
</CLISH_MODULE>
```

Alarm.xml

Thanks !

Q&A