Nokia SRL OS Napalm Driver Summary of Methods

Mapping Document

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1 Introduction

This document details all the napalm methods supported by the Nokia SRL OS driver. We've provided details of which arguments, options and response parameter mapping to SRL OS Yang data model objects are supported for each method.

We've also included any known considerations or limitations per method. If SRL OS does not support an expected response parameter, we've returned the following:

- String = ""
- Boolean = false
- Integer = -1
- Float = -1.0

We welcome suggestions and contributions to the driver. Please contact the Nokia owners of this repository for how to contribute.

2 Configuration Methods

2.1 cli(commands):

Method: JSON-RPC-CLI

- CLI commands provided as input to this method must be in Nokia SRL OS format and will be executed on the target SRL OS as written, and any response or errors will be returned.
- Considerations – use of this method opens a single JSON-RPC session to the SRL OS device. If a

configuration command is used, it is recommended to do so in "exclusive" mode to lock the candidate config from changes by other users. If this mode is used though, the user will need to "commit" the changes within the same session to avoid all changes to the exclusive candidate config being lost once the session is closed.

2.2 commit_config(message=""):

Method: JSON-RPC-CLI

- This command executes a commit on the target SRL OS in the context of which type of candidate config the user is changing. Any response or errors will be returned.

- Limitations:

o Using methods gNMI SET and JSON-RPC Set, the commit operation is implicit.

2.3 compare_config(message=””):

Method: JSON-RPC-CLI

- This command executes a compare on the target SRL OS in the context of the candidate config is in, versus the running config. Any response or errors will be returned.
- Considerations – use of this method atomically would mean the candidate configuration context is the “global” candidate, which may have many changes by many users in it.
- Limitations:

o This method preforms on-box comparisons of config.

2.4 discard_config(message=””):

Method: JSON-RPC-CLI

- This command executes a discard on the target SRL OS in the context of the candidate config context of the session. Any response or errors will be returned.
- Considerations – use of this method atomically would mean the candidate configuration context is the “global” candidate, which may have many changes by many users in it. Our recommendation is to use this as part of a script containing execution of multiple commands such that this discard would be in the same session to the device, and hence in the same “exclusive” candidate config context.

2.5 load_merge_candidate(filename=None, config=None):

Method: JSON-RPC-CLI

- This method adds the provided configuration to candidate datastore.This method accepts JSON formatted config. Any response or errors will be returned.
- This method under the hood uses JSON-RPC CLI method to load the candidate config into the node, Hence make sure the JSON-RPC Server is configured at SRL Node and also the associated port is open in ACLs.
- Explicit commit is needed to apply the candidate config into running config

2.6 load_replace_candidate(filename=None, config=None):

Method: gNMI SET REPLACE

- This method replaces the provided candidate config to the running config. This method needs the config in JSON format. Any response or errors will be returned.
- Consideration: Before pushing the candidate config, this method generates a copy of running config using checkpoint-id 0 as backup.
- Limitation

o This method has implicit commit, when using this command user needs to be careful since the candidate config will be merged with running config along without an explicit commit. Numeric value for the position in the list of the change, and not the ID of the object. The ID of the object is stored as a separate leaf object in the SRL OS Yang models.

2.7 ping(destination, source="", ttl=128, timeout=2, size=100, count=5, vrf=""):

Method: JSON-RPC-CLI

- This method executes a ping command from the base routing or VPN context on the device via JSON RPC-CLI
- Limitation:

o Input parameter ttl – Should be in the range of 1...128

Method Name	Output Parameters with Datatype	SRL OS Path
ping(destination, source="", ttl=128, timeout=2, size=100, count=5, vrf="")	"success": {	
	probes_sent – int	NA
	packet_loss – int	NA
	rtt_min – float	NA
	rtt_max – float	NA
	rtt_avg – float	NA

	rtt_stddev – float	NA
	results – list [	
	ip_address – String	NA
	rtt – float] }	NA
	“error”	“Unknown host {destination}”

2.8 rollback():

Method: JSON-RPC-CLI

- Load_merge and Load_replace will create the checkpoint id 0 before merging or replacing, roll back will revert running configuration back to the checkpoint id 0.

2.9 traceroute(destination, source=””, ttl=255, timeout=10, vrf=””):

Method: JSON-RPC-CLI

- This method executes a traceroute command from the base routing or VPN context on the device via JSON-RPC CLI.
- Limitation:

o The Nokia SRL OS napalm driver currently ignores the “timeout” and source optional arguments.

Method Name	Output Parameters with Datatype	SRL OS Path
traceroute(destination, source=””, ttl=255, timeout=10, vrf=””)	“success”: {	
	rtt – float	NA
	ip_address – String	NA
	host_name – String }	NA

	“error”	

3 Get Methods

3.1 get_arp_table(vrf=””):

Method: gNMI GET

- This method returns the arp table in the context of the vrf passed in the method.
- All parameters are retrieved for this method via the SRL OS Yang models from the running config.
- Limitations
  - Retrieval is only for IPv4 entries in the current driver

Method Name	Output Parameters with Datatype	SRL OS Path
get_arp_table(vrf=””)	interface – String	srl_nokia-interface/subinterface/name
	mac – String	srl_nokia-interface/subinterface/ipv4/arp/neighbor/link-layer-address and srl_nokia-interface/subinterface/ipv6/neighbor-discovery/neighbor/link-layer-address
	ip – String	srl_nokia-interface/subinterface/ipv4/arp/neighbor/ipv4-address and srl_nokia-interface/subinterface/ipv6/neighbor-discovery/neighbor/ipv6-address
	age – float	srl_nokia-interface/subinterface/ipv4/arp/timeout and srl_nokia-interface/subinterface/ipv6/neighbor-discovery/reachable-time

3.2 get_bgp_config(group="", neighbor=""):

Method: gNMI GET

- This method returns the bgp config in the context of the group and neighbor passed in the method for both base and VRFs.
- All parameters are retrieved for this method via the SRL OS Yang models for the running config.

Method Name	Output Parameters with Datatype	SRL OS Path
get_bgp_config(group="", neighbor="")	type – String	if local_as == remote_as then internal else external
	description – String	/srl_nokia-network-instance/protocols/bgp/group/description
	apply_groups – String list	Not supported yet
	multihop_ttl – int	Not supported yet
	multipath – Boolean	srl_nokia-network-instance/protocols/bgp/ipv4-unicast/multipath/allow-multiple-as
	local_address – String	srl_nokia-network-instance/protocols/bgp/group/transport/local-address
	local_as – int	srl_nokia-network-instance/protocols/bgp/group/local-as
	remote_as – int	/srl_nokia-network-instance/protocols/bgp/group/peer-as
	import_policy – String list	/srl_nokia-network-instance/protocols/bgp/group/import-policy

	export_policy – String list	/srl_nokia-network-instance/protocols/bgp/group/export-policy
	remove_private_as – Boolean	Not supported yet.
	prefix_limit – dict	"limit": srl_nokia-network-instance/protocols/bgp/group/ipv4-unicast/prefix-limit/max-received-routes and srl_nokia-network-instance/protocols/bgp/group/ipv6-unicast/prefix-limit/max-received-routes. "threshold": srl_nokia-network-instance/protocols/bgp/group/ipv4-unicast/prefix-limit/warning-threshold-pct and srl_nokia-network-instance/protocols/bgp/group/ipv6-unicast/prefix-limit/warning-threshold-pct "timeout": Not Supported yet
	neighbors: {	srl_nokia-network-instance/protocols/bgp/neighbor/peer-group
	description – String	srl_nokia-network-instance/protocols/bgp/neighbor/description
	import_policy – Sting list	srl_nokia-network-instance/protocols/bgp/neighbor/import-policy
	export_policy – String list	srl_nokia-network-instance/protocols/bgp/neighbor/export-policy

	local_address – String	srl_nokia-network-instance/protocols/bgp/neighbor/transport/local-address
	local_as – int	/srl_nokia-network-instance/protocols/bgp/neighbor/local-as/as-number
	remote_as – int	srl_nokia-network-instance/protocols/bgp/neighbor/peer-as
	authentication_key – String	srl_nokia-network-instance/protocols/bgp/neighbor/authentication/keychain
	prefix_limit – dict	"limit": srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/prefix-limit/max-received-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/prefix-limit/max-received-routes "threshold": srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/prefix-limit/warning-threshold-pct and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/prefix-limit/warning-threshold-pct.
	route_reflector_client – Boolean	srl_nokia-network-instance/protocols/bgp/neighbor/route-reflector/client
	nhs – Boolean	srl_nokia-network-instance/protocols/bgp/neighbor/next-hop-self

3.3 get_bgp_neighbors():

Method: gNMI GET

- This method returns the bgp neighbors' information from the SRL OS config and state Yang datastores for the running config for base routing and all VRFs.
- All parameters are retrieved for this method via the SRL OS Yang models.

Method Name	Output Parameters with Datatype	SRL OS Path
get_bgp_neighbors()	router_id – String	srl_nokia-network-instance/router-id
	"peers" : {	
	ip-address : {	srl_nokia-network-instance/protocols/bgp/neighbor/peer-address
	local_as – int	/srl_nokia-network-instance/protocols/bgp/neighbor/local-as/as-number
	remote_as – int	srl_nokia-network-instance/protocols/bgp/neighbor/peer-as
	remote_id – String	srl_nokia-network-instance/protocols/bgp/neighbor/peer-address
	is_up – Boolean	if srl_nokia-network-instance/protocols/bgp/neighbor/session-state == "established"
	is_enabled – Boolean	srl_nokia-network-instance/protocols/bgp/neighbor/admin-state
	description – String	srl_nokia-network-instance/protocols/bgp/neighbor/description
	uptime – int	srl_nokia-system/information/current-datetime -- srl_nokia-network-instance/protocols/bgp/neighbor/last-established

	“address_family”: {	
	ipv4/ipv6 : {	
	received_prefixes – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/recieved-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/recieved-routes
	sent_prefixes – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/sent-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/sent-routes
	accepted_prefixes – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/active-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/active-routes

3.4 get_bgp_neighbors_detail(neighbor_address=””):

Method: gNMI GET

This method returns the bgp neighbor information details from the SRL OS config and state Yang data stores for the running config for the provided neighbor address in base routing or VRFs.

- Parameters are retrieved for this method via the SRL OS Yang models.

Method Name	Output Parameters with Datatype	SRL OS Path
get_bgp_neighbors_detail (neighbor_address=””)	vrf – String	

	peer_as: [{	srl_nokia-network-instance/protocols/bgp/neighbor/peer-as
	up – Boolean	if srl_nokia-network-instance/protocols/bgp/neighbor/session-state == "established"
	local_as – int	/srl_nokia-network-instance/protocols/bgp/neighbor/local-as/as-number
	remote_as – int	srl_nokia-network-instance/protocols/bgp/neighbor/peer-as
	router_id – String	srl_nokia-network-instance/router-id
	local_address – String	srl_nokia-network-instance/protocols/bgp/neighbor/transport/local-address
	routing_table – String	srl_nokia-netinst:network-instance/srl_nokia-netinst:protocols/srl_nokia-bgp:bgp/srl_nokia-bgp:neighbor/srl_nokia-bgp:peer-group
	ocal_address_configured – Boolean	True if srl_nokia-network-instance/protocols/bgp/neighbor/transport/local-address == "" else False
	local_port – int	srl_nokia-network-instance/protocols/bgp/neighbor/transport/local-port
	remote_address – String	srl_nokia-network-instance/protocols/bgp/neighbor/peer-address
	remote_port – int	srl_nokia-network-instance/protocols/bgp/neighbor/transport/remote-port

	multihop – Boolean	Not supported yet
	multipath – Boolean	Not supported yet
	remove_private_as – Boolean	Not supported yet
	import_policy – Sting list	srl_nokia-network-instance/protocols/bgp/neighbor/import-policy
	export_policy – String list	srl_nokia-network-instance/protocols/bgp/neighbor/export-policy
	input_messages – int	srl_nokia-network-instance/protocols/bgp/neighbor/received-messages/total-messages
	output_messages – int	srl_nokia-network-instance/protocols/bgp/neighbor/sent-messages/total-messages
	input_updates – int	srl_nokia-network-instance/protocols/bgp/neighbor/received-messages/total-updates
	output_updates – int	srl_nokia-network-instance/protocols/bgp/neighbor/sent-messages/total-updates
	messages_queued_out – int	srl_nokia-network-instance/protocols/bgp/neighbor/sent-messages/queue-depth
	connection_state – String	srl_nokia-network-instance/protocols/bgp/neighbor/session-state
	previous_connection_state – String	srl_nokia-network-instance/protocols/bgp/neighbor/last-state

	last_event – String	srl_nokia-network-instance/protocols/bgp/neighbor/last-event
	suppress_4byte_as – Boolean	Not supported yet
	local_as_prepend – Boolean	/srl_nokia-network-instance/protocols/bgp/neighbor/local-as/prepend-local-as
	holdtime – int	srl_nokia-network-instance/protocols/bgp/neighbor/timers/hold-time
	configured_holdtime – int	srl_nokia-network-instance/protocols/bgp/neighbor/timers/negotiatedhold-time
	keepalive – int	srl_nokia-network-instance/protocols/bgp/neighbor/timers/keepalive-interval
	configured_keepalive – int	srl_nokia-network-instance/protocols/bgp/neighbor/timers/negotiated-keepalive-interval
	active_prefix_count – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/active-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/active-routes
	received_prefix_count – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/recieved-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/recieved-routes
	accepted_prefix_count – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/active-routes and srl_nokia-

		network-instance/protocols/bgp/neighbor/ipv6-unicast/active-routes
	supressed_prefix_count – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/rejected-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/rejected-routes
	advertised_prefix_count – int	srl_nokia-network-instance/protocols/bgp/neighbor/ipv4-unicast/sent-routes and srl_nokia-network-instance/protocols/bgp/neighbor/ipv6-unicast/sent-routes
	flap_count – int	Not supported yet

3.5 get_ config(retrieve="all", full=False, sanitized=False):

Method: gNMI GET

- This method returns the running configuration from the SRL OS device.
- Parameters are retrieved for this method via gNMI Get method.
- Limitations:

o The Nokia SRL OS napalm driver currently ignores the "full" optional argument and will always return the full config.

Method Name	Output Parameters with Datatype	SRL OS Path
get_config(retrieve="all", full=False, sanitized=False)	running – String	--type config get --path /
	candidate – String	Not supported yet
	startup – String	Not supported yet

3.6 get_environment():

Method: gNMI GET

- This method returns the environment information details from the SRL OS config and state Yang data stores for the running config.
- Limitations:
  - If the device is virtual, limited information will be available.

Method Name	Output Parameters with Datatype	SRL OS Path
get_environment()	“fans”: {	
	location– String {	srl_nokia-platform/fan-tray/id
	status – Boolean }	True if srl_nokia-platform/fan-tray/oper-state == "UP"
	“temperature”: {	
	Location –String :{	srl_nokia-platform/control/slot
	temperature – float	srl_nokia-platform/control/temperature/instant
	is_alert – Boolean	srl_nokia-platform/control/temperature/alarm-status
	is_critical – Boolean }	Not supported yet
	“power”: {	
	PSUid - String:{	srl_nokia-platform/power-supply/id
	status – Boolean	True if srl_nokia-platform/power-supply/oper-state == "UP"
	capacity – float	srl_nokia-platform/power-supply/capacity

	output – float }	Not supported yet
	“cpu” : {	
	Id:{ - String	srl_nokia-platform/control/cpu/index
	%usage – float	srl_nokia-platform/control/cpu/total/instant
	“memory” : {	
	available_ram – int	srl_nokia-platform/control/memory/physical
	used_ram – int	srl_nokia-platform/control/memory/physical - srl_nokia-platform/control/memory/free

3.7 get_facts():

Method: gNMI GET

- This method returns the basic facts from the SRL OS config Yang data store for the running config of the device.
- Consideration – this method will always return “Nokia” as the vendor string

Method Name	Output Parameters with Datatype	SRL OS Path
get facts	uptime – float	srl_nokia-system/system/srl_nokia-system-info:information/srl_nokia-system-info:uptime
	vendor – String	Nokia
	model – String	srl_nokia-platform/platform/srl_nokia-platform-chassis:chassis/srl_nokia-platform-chassis:type

	hostname – String	srl_nokia-system/system/srl_nokia-system-name:name/srl_nokia-system-name:host-name
	fqdn – String	srl_nokia-system/system/srl_nokia-system-name:name/srl_nokia-system-name:host-name
	serial_number-String	srl_nokia-platform/platform/srl_nokia-platform-chassis:chassis/srl_nokia-platform-chassis:serial-number
	os_version-String	srl_nokia-system/system/srl_nokia-system-info:information/srl_nokia-system-info:version
	interface_list – List	srl_nokia-interfaces/interface/name

3.8 get_interfaces():

Method: gNMI GET

- This method returns the physical port/interface (layer 2) AND logical interface (layer 3) information from the SRL OS config and state Yang data stores for the running config of the device.

Method Name	Output Parameters with Datatype	SRL OS Path
get_interfaces	is_up – Boolean	srl_nokia-interfaces/interface/oper_state == "up"
	is_enabled – Boolean	srl_nokia-interfaces/interface/admin_state == "enable"
	description – String	srl_nokia-interfaces/interface/description

	last_flapped – float	srl_nokia-interfaces/interface/last-change
	speed – int	srl_nokia-interface/ethernet/port-speed
	MTU – Bytes	srl_nokia-interfaces/interface/mtu
	mac_address – String	srl_nokia-interfaces/interface/ethernet/hw-mac-address

3.9 get_ interfaces_counters():

Method: gNMI GET

- This method returns the physical port/interface (layer 2) AND logical interface (layer 3) stats from the SRL OS state Yang datastore for the device

Method Name	Output Parameters with Datatype	SRL OS Path
get_interfaces_counters	tx_errors – int	srl_nokia-interfaces/interface/subinterface/statistics/out-error-packets
	rx_errors – int	srl_nokia-interfaces/interface/subinterface/statistics/in-error-packets
	tx_discards – int	srl_nokia-interfaces/interface/subinterface/statistics/in-discarded-packets
	rx_discards – int	srl_nokia-interfaces/interface/subinterface/statistics/in-discarded-packets
	tx_octets – int	srl_nokia-interfaces/interface/subinterface/statistics/out-octets

	rx_octets – int	srl_nokia-interfaces/interface/subinterface/statistics/in-octets
	tx_unicast_packets – int	srl_nokia-interfaces/interface/statistics/out-unicast-packets
	rx_unicast_packets – int	srl_nokia-interfaces/interface/statistics/in-unicast-packets
	tx_multicast_packets – int	srl_nokia-interfaces/interface/statistics/out-multicast-packets
	rx_multicast_packets – int	srl_nokia-interfaces/interface/statistics/in-multicast-packets
	tx_broadcast_packets – int	srl_nokia-interfaces/interface/statistics/out-broadcast-packets
	rx_broadcast_packets – int	srl_nokia-interfaces/interface/statistics/in-broadcast-packets

3.10 get_interfaces_ip():

Method: gNMI GET

- This method returns the logical IP4 and IPv6 interface details from the SRL OS config and state Yang data store of the base routing context and all configured L3 VPNs of the device.

Method Name	Output Parameters with Datatype	SRL OS Path
get_interfaces_ip()	interface_name – String {	srl_nokia-interfaces/interface/subinterface/name
	“ipv4/ipv6” : {	
	ip_address – String {	srl_nokia-interfaces/interface/subinterface/ipv4/address/ip-prefix and srl_nokia-interfaces/interface/subinterface/ipv6/address/ip-prefix
	prefix_length – int	srl_nokia-interfaces/interface/subinterface/ipv4/address/ip-prefix and srl_nokia-interfaces/interface/subinterface/ipv6/address/ip-prefix

3.11 get_ ipv6_neighbors_table():

Method: gNMI GET

- This method returns the IPv6 neighbor details from the SRL OS for the base routing context and all configured VPNs of the device.

Method Name	Output Parameters with Datatype	SRL OS Path
get_ipv6_neighbors_table()	interface – String	srl_nokia-interfaces/interface/subinterface/name

	mac – String	srl_nokia-interface/subinterface/ipv6/neighbor-discovery/neighbor/link-layer-address
	ip – String	srl_nokia-interface/subinterface/ipv6/neighbor-discovery/neighbor/ipv6-address
	age – float	srl_nokia-interface/subinterface/ipv6/neighbor-discovery/neighbor/next-state-time
	state – String	srl_nokia-interface/subinterface/ipv6/neighbor-discovery/neighbor/current-state

3.12 get_lldp_neighbors():

Method: gNMI GET

- This method returns a list of lldp neighbors from the SRL OS Yang state datastores for the device

Method Name	Output Parameters with Datatype	SRL OS Path
get_lldp_neighbors()	Local_port_name – String: {	srl_nokia-system/lldp/interface/name
	hostname – String	srl_nokia-system/lldp/interface/neighbor/system-name
	port – String	srl_nokia-system/lldp/interface/neighbor/port-id

3.13 get_lldp_neighbors_detail():

Method: gNMI GET

- This method returns lldp neighbor details from the SRL OS Yang state datastores for the device

Method Name	Output Parameters with Datatype	SRL OS Path
get_lldp_neighbors_detail(interface="")	interface – String: [{	srl_nokia-system/lldp/interface/name
	parent_interface – String	srl_nokia-system/lldp/interface/name
	remote_port – String	srl_nokia-system/lldp/interface/neighbor/port-id
	remote_port_description – String	srl_nokia-system/lldp/interface/neighbor/port-description
	remote_chassis_id – String	srl_nokia-system/lldp/interface/neighbor/chassis-id
	remote_system_name - String	srl_nokia-system/lldp/interface/neighbor/system-name
	remote_system_description –String	srl_nokia-system/lldp/interface/neighbor/system-description
	remote_system_capab – String list	srl_nokia-system/lldp/interface/neighbor/capability/name
	remote_system_enabled_capab – String list	srl_nokia-system/lldp/interface/neighbor/capability/enabled

3.14 get_mac_address_table():

Method: gNMI GET

- This method returns a list of learnt MACs from the SRL OS device via retrieval by Get Method.

Method Name	Output Parameters with Datatype	SRL OS Path
get_mac_address_table()	mac – String	srl_nokia-interface/subinterface/bridge-table/mac-table/mac
	interface – String	srl_nokia-interface/subinterface/name
	vlan – int	srl_nokia-interface/subinterface/vlan/encap/single-tagged/vlan-id
	active – Boolean	Not supported yet
	static – Boolean	srl_nokia-interface/subinterface/bridge-table/mac-table/mac/type
	moves – int	Not supported yet
	last_move – float	Not supported yet

3.15 get_network_instances(name=""):

Method: gNMI GET

- This method returns a list of all L2 (vpls) and L3 (vprn) network instances (including base and mgmt) for the SRL OS device from the Yang configuration and state datastores

Method Name	Output Parameters with Datatype	SRL OS Path
get_network_instances(name=" ")	name – String {	srl_nokia-network-instance/network-instance/name

	name – String	srl_nokia-network-instance/network-instance/name
	type – String	srl_nokia-network-instance/network-instance/type
	“state” {	
	route-distinguisher –String	Not supported yet
	“interfaces” {	
	“interface” {	
	interface-name – String}}}	srl_nokia-network-instance/network-instance/interface/name

3.16 get_ntp_peers():

Method: gNMI GET

- This method returns a list of all ntp peers for the SRL OS device from the Yang state data stores

Method Name	Output Parameters with Datatype	SRL OS Path
get_ntp_peers()	ip-address – String	srl_nokia-system/system/ntp/server/address

3.17 get_ntp_servers():

Method: gNMI GET

- This method returns a list of all ntp servers for the SRL OS device from the Yang state data stores

Method Name	Output Parameters with Datatype	SRL OS Path

get_ntp_servers()	ip-address – String	Not supported yet

3.18 get_ntp_stats():

Method: gNMI GET

- This method returns all ntp stats for the SRL OS device from the Yang config and state data stores and via Get method.

Method Name	Output Parameters with Datatype	SRL OS Path
get_ntp_stats()	remote – String	srl_nokia-system/system/ntp/server/address
	referenceid – String	Not supported yet
	synchronized – Boolean	srl_nokia-system/ntp/synchronized
	stratum – int	srl_nokia-system/ntp/server/stratum
	type – String	Not supported yet
	when – String	Not supported yet
	hostpoll – int	srl_nokia-system/ntp/server/poll-interval
	reachability – int	Not supported yet
	delay – float	Not supported yet
	offset – float	srl_nokia-system/ntp/server/offset
	jitter – float	srl_nokia-system/ntp/server/jitter

3.19 get_optics():

Method: gNMI GET

- This method returns all optics state and stats for the SRL OS device from the Yang config and state datastores.

Method Name	Output Parameters with Datatype	SRL OS Path
get_optics()	intf_name – String {	srl_nokia-interface/name
	“physical_channels”	
	“channels”: [	
	index - int	srl_nokia-interface/transceiver/channel/index
	“state” {	
	“input_power” {	
	“instant” – float	srl_nokia-interface/transceiver/channel/input-power/latest_value
	“avg” – float	Not supported yet
	“min” – float	Not supported yet
	“max” – float }	Not supported yet
	“output_power” {	
	“instant” – float	srl_nokia-interface/transceiver/channel/output-power/latest_value
	“avg” – float	Not supported yet
	“min” – float	Not supported yet
	“max” – float }	Not supported yet

	“laser_bias_current” {	
	“instant” – float	srl_nokia-interface/transceiver/channel/laser-bias-current/latest_value
	“avg” – float	Not supported yet
	“min” – float	Not supported yet
	“max” – float }	Not supported yet

3.20 get_probes_config():

Not currently available

3.21 get_probes_results():

Not currently available

3.22 get_route_to(destination="", protocol="", longer=False):

Method: gNMI GET

- This method returns the get_route_to results based on the provided inputs, for the SRL OS device from the Yang config and state datastores and Get method.
- Limitations:
  - The Nokia SRL OS napalm driver currently not supporting the “longer” optional argument.

Method Name	Output Parameters with Datatype	SRL OS Path
get_route_to(destination="", protocol="", longer=False)	destination – String {	
	protocol – String	srl_nokia-network-instance/route-table/ipv4-unicast/route/owner

	current_active – Boolean	srl_nokia-network-instance/route-table/ipv4-unicast/route/active
	last_active – Boolean	Not supported yet
	age – int	srl_nokia-system/information/current-datetime - srl_nokia-network-instance/route-table/ipv4-unicast/route/last-app-update
	next_hop – String	srl_nokia-netinst:network-instance/srl_nokia-netinst:route-table/srl_nokia-ip-route-tables:next-hop/srl_nokia-ip-route-tables:ip-address
	outgoing_interface – String	srl_nokia-netinst:network-instance/srl_nokia-netinst:route-table/srl_nokia-ip-route-tables:next-hop/srl_nokia-ip-route-tables:subinterface
	selected_next_hop – Boolean	if next hop then true else false
	preference – int	srl_nokia-network-instance/route-table/ipv4-unicast/route/preference
	inactive_reason – String	Not supported yet
	routing_table – String	srl_nokia-network-instance/name
	“protocol_attributes”: {	
	If BGP:	
	local_as – int	
	remote_as – int	srl_nokia-netinst:network-instance/srl_nokia-netinst:protocols/srl_nokia-bgp:bgp/srl_nokia-bgp:neighbor/srl_nokia-bgp:peer-as

	peer_id – String	srl_nokia-netinst:network-instance/srl_nokia-netinst:protocols/srl_nokia-bgp:bgp/srl_nokia-bgp:neighbor/srl_nokia-bgp:peer-address
	as_path – String	srl_nokia-netinst:network-instance/srl_nokia-rib-bgp-routes:bgp-rib/srl_nokia-rib-bgp-routes:attr-sets/srl_nokia-rib-bgp-routes:attr-set/srl_nokia-rib-bgp-routes:as-path/srl_nokia-rib-bgp-routes:segment/srl_nokia-rib-bgp-routes:member
	communities – String list	srl_nokia-netinst:network-instance/srl_nokia-rib-bgp-routes:bgp-rib/srl_nokia-rib-bgp-routes:attr-sets/srl_nokia-rib-bgp-routes:attr-set/srl_nokia-rib-bgp-routes:communities/srl_nokia-rib-bgp-routes:community
	local_preference – int	srl_nokia-netinst:network-instance/srl_nokia-rib-bgp-routes:bgp-rib/srl_nokia-rib-bgp-routes:attr-sets/srl_nokia-rib-bgp-routes:attr-set/srl_nokia-rib-bgp-routes:local-pref
	preference2 – int	Not Supported yet
	metric – int	srl_nokia-netinst:network-instance/srl_nokia-netinst:route-table/srl_nokia-ip-route-tables:ipv4-unicast/srl_nokia-ip-route-tables:route/srl_nokia-ip-route-tables:metric
	metric2 – int	Not Supported yet
	If ISIS:	

	level – int	srl_nokia-netinst:network-instance/srl_nokia-netinst:protocols/srl_nokia-isis:isis/srl_nokia-isis:instance/srl_nokia-isis:level-capability

3.23 get_snmp_information():

Method: gNMI GET

- This method returns the snmp configuration for the SRL OS device from the Yang config datastore.
- Consideration – the community acl parameter will be returned as a hashed value

Method Name	Output Parameters with Datatype	SRL OS Path
get_snmp_information()	chassis_id – String	Not supported yet
	"community": {	Not Supported yet
	acl – String	Not Supported yet
	mode – String	Ro
	contact – String	srl_nokia-system/information/contact
	location – String	srl_nokia-system/information/location

3.24 get_users():

Method: gNMI GET

- This method returns the configured users for the SRL OS device from the Yang config datastore.
- Considerations:

o SRL OS does not support the "level" parameter but does support users being members of groups inheriting the same user privileges. A mapping table is provided in the SRL OS napalm driver for operators to map the privilege group names they configure in SRL OS at

/configure/system/security/aaa/local-profiles/profile to 0-15 integer levels. The default is 0.

o The method maps the level parameter based on parsing the profile name, looking for an integer value between 0-15 and maps this integer accordingly. eg Profile name Level-7 maps to 7

o The password will always be returned in hashed form for security purposes.

Method Name	Output Parameters with Datatype	SRL OS Path
get_users()	username – String {	srl_nokia-system:system/srl-aaa:aaa/srl-aaa:authentication/srl-aaa:admin-user/srl-aaa:username
	level – int	Not supported Yet
	password – String	srl_nokia-system:system/srl-aaa:aaa/srl-aaa:authentication/srl-aaa:admin-user/srl-aaa:password
	sshkeys – String list	Not supported Yet

3.25 is_alive():

is_alive()

Method: gNMI GET

• This method returns True if NETCONF connection is open or SSH connection is open for the SRL OS device.

Method Name	Output Parameters with Datatype	SRL OS Path
is_alive()		Returns True if NETCONF connection is open aswell as SSH connection is open

3.26 Outbox_diff tool:

Method: Customer python libraries with JSON lib

- A diff tool is attached, as private function to the driver. This tool will return the difference between new configuration file and old configuration file.

3.27 Usage:

- _diff(newconfiguration_file_path,oldconfiguration_file_path)
- All the args of the driver , can optionally be given as none when using diff function alone.

This concludes the documentation of the Nokia SRL OS napalm methods.

Any questions or concerns can be directed to the owners of the repository and we will do our best to respond quickly.

Thanks for your support, from the Nokia ION team.