

# Automated Junos configuration backup on a GIT server

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# SALT PROXY for JUNOS

- For help about Junos automation with SaltStack, you can visit this repository <https://github.com/ksator/junos-automation-with-saltstack>
- SaltStack supports Junos automation with a Salt proxy
  - Proxy controls junos devices without installing salt on device.
  - It uses ZMQ between the Salt master and the proxy
  - It uses NETCONF between the Junos device
- It provides execution modules for Junos so you can run commands on various machines in parallel with a flexible targeting system
  - <https://docs.saltstack.com/en/latest/ref/modules/all/salt.modules.junos.html>
- It provides state modules for Junos so you can apply sls files
  - <https://docs.saltstack.com/en/latest/ref/states/all/salt.states.junos.html>
- Junos facts are stored in salt grains

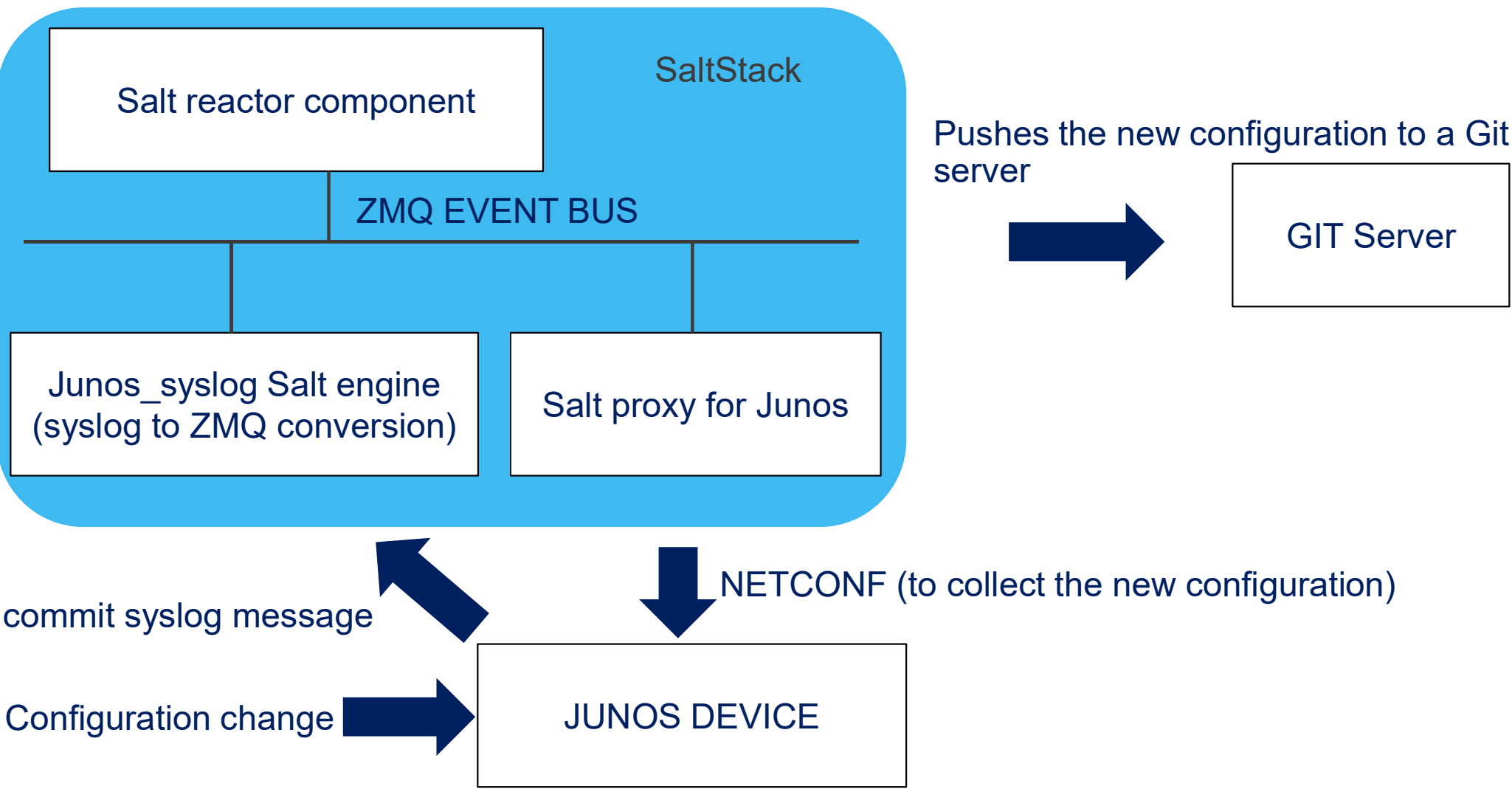
# JUNOS SYSLOG SALT ENGINE

- Listens to syslog events
  - Extracts events information
  - Sends information on the event bus.
  - Control the type of events to be sent.
  - Salt reactors has the ability to take actions according to these events (event driven automation).
- 
- Junos\_syslog engine configuration

```
root@server:~# more /etc/salt/master
...
engines:
  - junos_syslog:
      port: 516
...
```

# OVERVIEW OF THE DEMO

- At each new Junos commit, SaltStack automatically backs up the new Junos configuration file on a GIT server
- Benefits are:
  - Archive automatically new junos configuration files with timestamps and user on a GIT server
  - Provides history of each configuration file, so we can easily compare 2 configuration files
  - Provides who did which change, and when that happens
- Code and documentation  
[https://github.com/ksator/automated\\_junos\\_configuration\\_backup\\_on\\_git\\_with\\_syslog\\_saltstack](https://github.com/ksator/automated_junos_configuration_backup_on_git_with_syslog_saltstack)



# SALTSTACK REACTOR CONFIGURATION

```
root@server:~# salt-run reactor.list
```

```
....
```

```
|_
```

```
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```

```
jnpr/syslog/*/UI_COMMIT_COMPLETED:  
  - /srv/reactor/automate_show_commands.sls
```

This 0MQ is pub by junos\_syslog  
salt engine

This reactor file backup the junos  
configuration on gitlab

# JUNOS SYSLOG CONFIGURATION

- For junos\_syslog engine to receive events, syslog must be set on the junos device:
  - The ip address is the one of the server running the syslog engine
  - The port is the port where the engine is listening for events.

```
jcluser@vMX-1> show configuration system syslog host 100.123.35.1  
any any;  
match UI_COMMIT_COMPLETED;  
port 516;
```

# EVENT DRIVEN AUTOMATION

- A human or a process commits a configuration change on a junos device
  - The junos device sends a UI\_COMMIT\_COMPLETED syslog message to SaltStack
    - The SaltStack junos\_syslog engine publishes a 0MQ message
- The reactor component of the master is subscribing to this 0MQ topic
  - So it executes the /srv/reactor/automate\_show\_commands.sls file
    - This will make the proxy that manage the junos device to collect the new configuration file and to push it to a git repository



# COMMIT A CONFIGURATION CHANGE ON JUNOS

- Commit a configuration change on a junos device:

```
jcluser@VMX-1# set system login message "welcome to this demo"

jcluser@VMX-1# show | compare
[edit system login]
+   message "welcome to this demo";

jcluser@VMX-1# commit and-quit

jcluser@VMX-1> show system commit
0    2018-09-13 09:17:00 UTC by jcluser via cli
```

# TCPDUMP OUTPUT ON JUNOS\_SYSLOG ENGINE

```
root@ubuntu:~# tcpdump -i eth0 port 516 -XX
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes

03:34:38.117310 IP 100.123.1.1.syslog > 100.123.35.1.516: SYSLOG
local7.warning, length: 75
    0x0000:  0050 5601 2301 0050 5601 0101 0800 4500  .PV.#..PV.....E.
    0x0010:  0067 a78e 0000 4011 e5ff 647b 0101 647b  .g....@...d{..d{
    0x0020:  2301 0202 0204 0053 8009 3c31 3838 3e53  #.....S...<188>S
    0x0030:  6570 2031 3320 3130 3a33 343a 3339 2076  ep.13.10:34:39.v
    0x0040:  4d58 2d31 206d 6764 5b31 3537 3339 5d3a  MX-1.mgd[15739]:
    0x0050:  2055 495f 434f 4d4d 4954 5f43 4f4d 504c  .UI_COMMIT_COMPL
    0x0060:  4554 4544 3a20 636f 6d6d 6974 2063 6f6d  ETED:.commit.com
    0x0070:  706c 6574 65                                     plete
```

# EVENT PUBLISHED BY JUNOS\_SYSLOG SALT ENGINE

```
jnpr/syslog/vMX-1/UI_COMMIT_COMPLETED  {
  "_stamp": "2018-09-13T09:16:58.976955",
  "daemon": "mgd",
  "event": "UI_COMMIT_COMPLETED",
  "facility": 23,
  "hostip": "100.123.1.1",
  "hostname": "vMX-1",
  "message": "commit complete",
  "pid": "14555",
  "priority": 188,
  "raw": "<188>Sep 13 09:17:00 vMX-1 mgd[14555]: UI_COMMIT_COMPLETED: commit
complete",
  "severity": 4,
  "timestamp": "2018-09-13 02:16:58"
}
```

# ENTIRE CONFIGURATION IS PLACED INTO GITLAB

demo\_ops > junos\_backups > Repository

master


junos\_backups / vsrx / **config**

Find file


Blame



History



Permalink

 Commit to vsrx

ksator committed about 2 hours ago

df118e77 

 **config** 3.45 KB 

  Edit Replace **Delete**

```
1
2  ## Last commit: 2017-11-05 21:58:59 by ksator
3  version 15.1X49-D100.6;
4  system {
5      host-name vsrx;
6      root-authentication {
7          encrypted-password "$5$AYsZK4lz$uS.ROBPA1QNQnEP1M4IUf5ai2KAHQHs7aKqgiq1nR.9"; ## SECRET-DATA
8      }
9      login {
10         message "welcome to J-EDI demo";
11         user SaltStack {
12             uid 2003;
13             class super-user;
14             authentication {
15                 encrypted-password "$5$MtUvVWao$0gGYVgdmf0bgsoscZp/d9y03mmytLkcuckZUA0E9j5/"; ## SECRET-DATA
16             }
17         }
18         user ksator {
19             uid 2000;
20             class super-user;
21             authentication {
```

# BACKUP HISTORY INTO GITLAB

- Backup history shows the configuration change details and the timestamp and the user

Showing 1 changed file ▾ with 2 additions and 1 deletions

Hide whitespace changes

Inline

Side-by-side

▼  vsrx/config 



View file @ df118e77

1	1	
2		- ## Last commit: 2017-11-05 21:32:52 by ksator
	2	+ ## Last commit: 2017-11-05 21:58:59 by ksator
3	3	version 15.1X49-D100.6;
4	4	system {
5	5	host-name vsrx;
...	...	@@ -7,6 +7,7 @@ system {
7	7	encrypted-password "\$5\$AYsZK4lz\$uS.ROBPAlQNQnEP1M4IUf5ai2kAHQHs7aKqgiq1nR.9"; ## SECRET-DATA
8	8	}
9	9	login {
	10	+ message "welcome to J-EDI demo";
10	11	user SaltStack {
11	12	uid 2003;
12	13	class super-user;
...	...	

# JUNOS AUTOMATION RESOURCES

If you are looking for more details about Junos automation, you can visit these repositories

<https://github.com/ksator?tab=repositories>

<https://gitlab.com/users/ksator/projects>

<https://gist.github.com/ksator/>

# Thank you

