

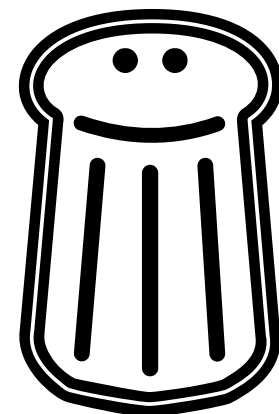
Managing a growing fleet of WiFi routers combining OpenWRT, WireGuard, Salt and Zabbix

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OCCRP

ORGANIZED CRIME AND CORRUPTION
REPORTING PROJECT



Managing a growing fleet of WiFi routers combining OpenWRT, WireGuard, Salt and Zabbix

- Problems
- Requirements
- Toolset
- Issues and difficulties (+solutions)
- Future plans

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What do you do when you have 20 routers in a different country with no techie there and ISP you don't trust?

Managing a growing fleet of WiFi routers combining OpenWRT, WireGuard, Salt and Zabbix

- Requirements:
 - Secure communication
 - Easy deployment
 - Easy management
 - Robustness

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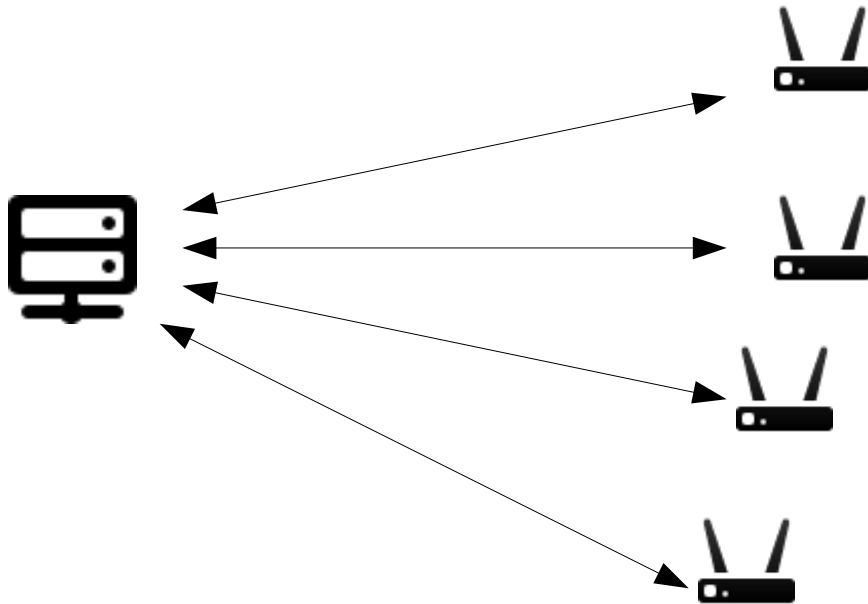
TOOLS

Managing a growing fleet of WiFi routers combining OpenWRT, WireGuard, Salt and Zabbix

- OpenWRT
 - 3000+ packages available
 - Regular updates
 - Open Source

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- WireGuard

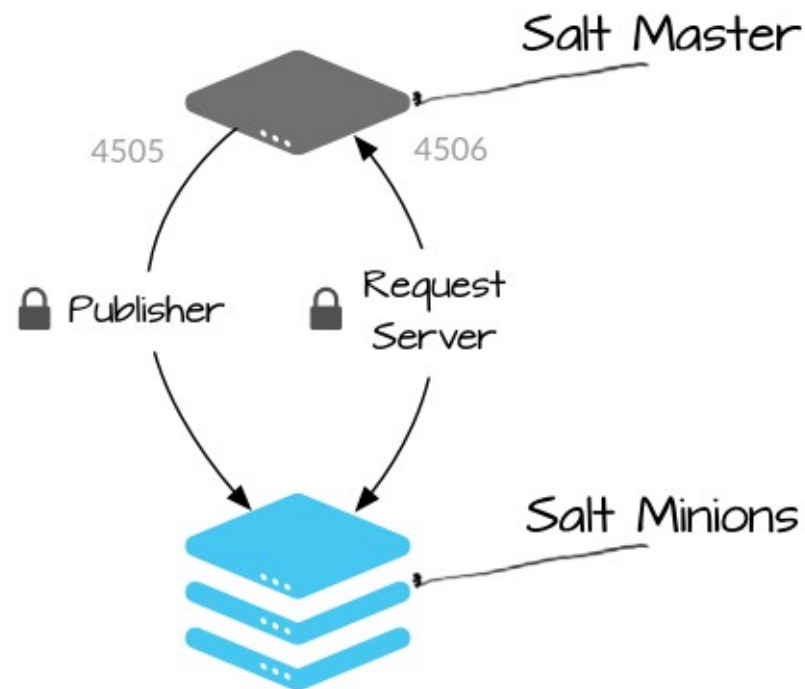


- Remote access
- Encrypted connection
- Easy to use

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- SaltStack

- Execute commands across all managed systems
- Scalable
- Secure
- Standardize



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- States
 - Design system configurations
 - One state for all devices
 - wifi.sls

```
salt-ssh '*' state.apply wifi
```

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nodegroup:

pass-the-salt:

- router-1
- router-2
- router-n

```
salt-ssh -N pass-the-salt state.apply wifi
```

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- Pillars
 - Makes states reusable
 - Store credentials, variables...

filtered.sls

wifi_ssid: Pass The Salt Filtered
wifi_pass: secretpass

non-filtered.sls

wifi_ssid: Pass The Salt
wifi_pass: newsecretpass

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- Zabbix



Managing a growing fleet of WiFi routers combining OpenWRT, WireGuard, Salt and Zabbix

- OpenVPN
 - All connected devices on VPN
 - One account

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Issues and difficulties (+solutions)

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- Salt client (minion) on OpenWRT?
 - None
 - Salt-ssh

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- Limited space on the flash memory?
 - USB flash drive
 - Exroot configuration
 - Automated (install_requirements.sh)

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- **OSError: Cannot locate OpenSSL libcrypto**
 - Python can't find it
 - `fix_oserror.sh`

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- Firmware upgrade
 - Removes ALL user installed packages (no WireGuard)
 - Keeps configuration (there is hope)
 - `upgrade.sls`

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- Configuration messed up!!!
 - Remove USB flash drive
 - Reboot
 - Plug it back in
 - Run `install_requirements.sh`

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- `setup.sh`
 - `wireguard-config.conf`
 - `router_config.sh`
 - Change password
 - Install and configure WireGuard
 - `install_requirements.sh`
 - Exroot configuration
 - `fix_oserror.sh`
 - `salt-ssh $SALT_NAME state.apply`

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- Future plans:
 - QoS
 - Outline VPN

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- kenan@occrp.org
- tech@occrp.org
- <https://tech.occrp.org>
- Git: <https://git.occrp.org/libre/salt-routers>

img sources:

- Router icons: https://findicons.com/files/icons/2652/gentleface/48/wifi_router_icon.png
- Server icon: https://findicons.com/files/icons/2652/gentleface/48/wifi_router_icon.png
- Salt master-minion icon:
<https://docs.saltstack.com/en/getstarted/images/basic-comm.png>

Thank You!

