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

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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?
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• Requirements:
  • Secure communication
  • Easy deployment
  • Easy management
  • Robustness
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TOOLS
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- 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...

<table>
<thead>
<tr>
<th>Filtered SLS</th>
<th>Non-Filtered SLS</th>
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</thead>
<tbody>
<tr>
<td>wifi_ssid: Pass The Salt Filtered</td>
<td>wifi_ssid: Pass The Salt</td>
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<tr>
<td>wifi_pass: secretpass</td>
<td>wifi_pass: newsecretpass</td>
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- Zabbix
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- OpenVPN
  - All connected devices on VPN
  - One account
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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- https://tech.occrp.org
- Git: https://git.occrp.org/libre/salt-routers

**img sources:**

- Salt master-minion icon:
  https://docs.saltstack.com/en/getstarted/images/basic-comm.png
Thank You!