

Utilizing Netmiko to Automate Cisco Enterprise Devices



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Agenda



Introducing Netmiko

Collecting network information

Updating device configuration

- Using static snippets
- Using Jinja2 templates



Day 1 Operations

Configuration and verification activities performed immediately after the initial onboarding of a device.



Introducing Netmiko



Simple SSH interface
to network devices



Open-source Python
project by Kirk Byers



Some extra features
like file transfer

Check out "Automating Networks with Python" for more!



Demo



Collecting operational data with Netmiko



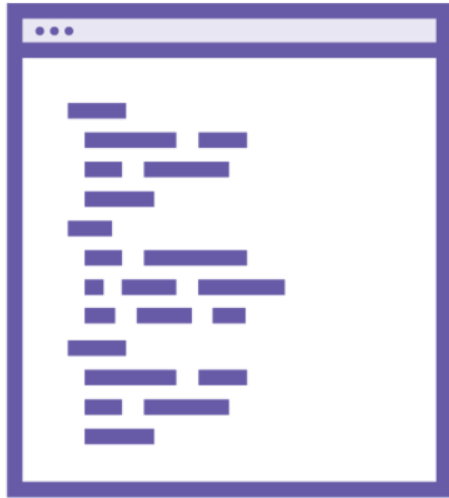
Demo



Applying statics snippets using Netmiko



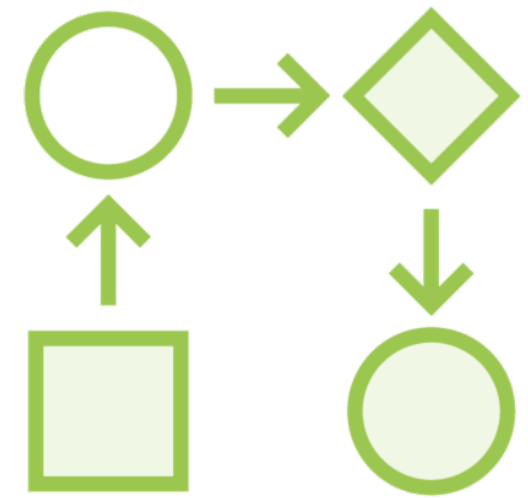
More Flexible Snippet Creation with Jinja2



Text-templating
language



Tight integration with
Python/Python libs



Commonly used for
network automation

```
### Python variables ###
```

```
ntp = {  
    "logging": True,  
    "servers": [  
        "192.0.2.1",  
        "192.0.2.2" ]}
```

```
### ntp_template.j2 ###
```

```
{% if ntp["logging"] %}  
ntp logging  
{% endif %}  
{% for server in ntp["servers"] %}  
ntp server {{ server }}  
{% endfor %}
```

```
### rendered text ###
```

```
ntp logging  
ntp server 192.0.2.1  
ntp server 192.0.2.2
```

◀ Defined some arbitrary variables

◀ Use {% %} for a control block

◀ If true, render text in scope

◀ Loop over all NTP servers

◀ Use {{ }} for variable substitution

◀ Final output text based on rendering the template with sample variables



Demo



Rendering jinja2 templates using Netmiko



Summary



Easy network management

Also: file transfer, timer tuning, and more

Challenge:

- Try Netmiko on ASA, NX-OS, etc.
- Try copying files/network OSes