



ANSIBLE  
2.9 → 2.10

# What are we going to discuss today?

- What are the scenarios of the network automation?
- Why Ansible is so popular for network automation?
- What is new in Ansible 2.10?
- How to convert your playbooks from Ansible 2.\* to 2.10?  
[LIVE DEMO]
- What's next?

# About karneliuk.com

## Training services

### Regular trainings:

- Network automation live online
- Network automation self-paced

### Corporate trainings:

- Network automation tailored to company network vendors (e.g. Nokia, Arista, Cisco, Cumulus, etc)

### Individual sessions:

- Ad-hoc consultancy for a specific technologies

## Consulting services

### Network automation:

- Advisory on automation tools
- Development of automation tools and integration in your network

### Network technologies:

- Audit and analysis of your network
- Design and testing (Nokia, Arista, Cisco, Cumulus) for service providers and data centres
- Documentation (design, configuration, slide decks)
- Integration and optimisation

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BUILDING PROACTIVE MANAGED FIBER  
NETWORKS SINCE 2001

## Our expertise





What are the scenarios of the network automation?

# What are the scenarios of the network automation?

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## Basic...

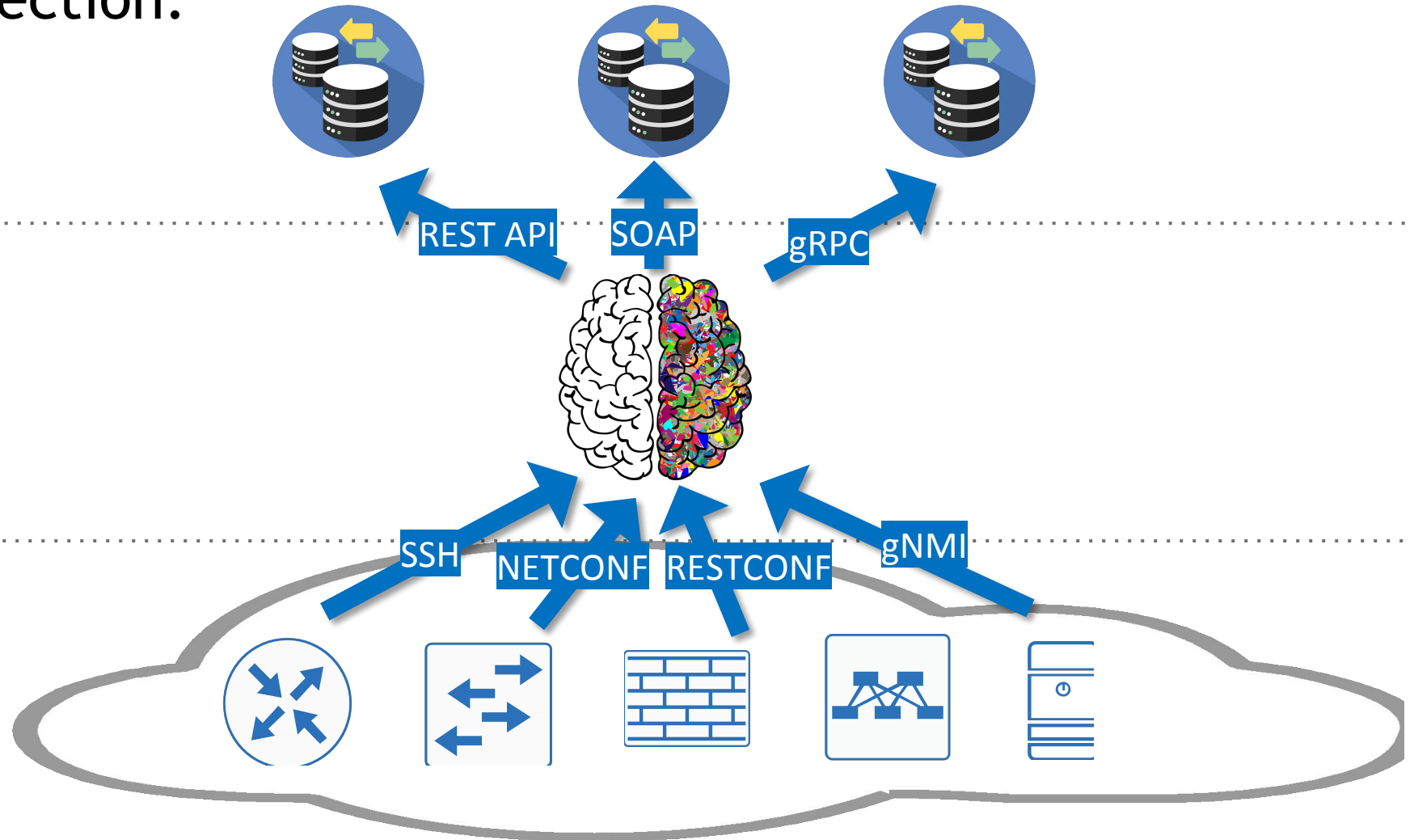
# What are the scenarios of the network automation?

## Information collection:

OSS/BSS stack

Automation engine

IT/Network Infrastructure



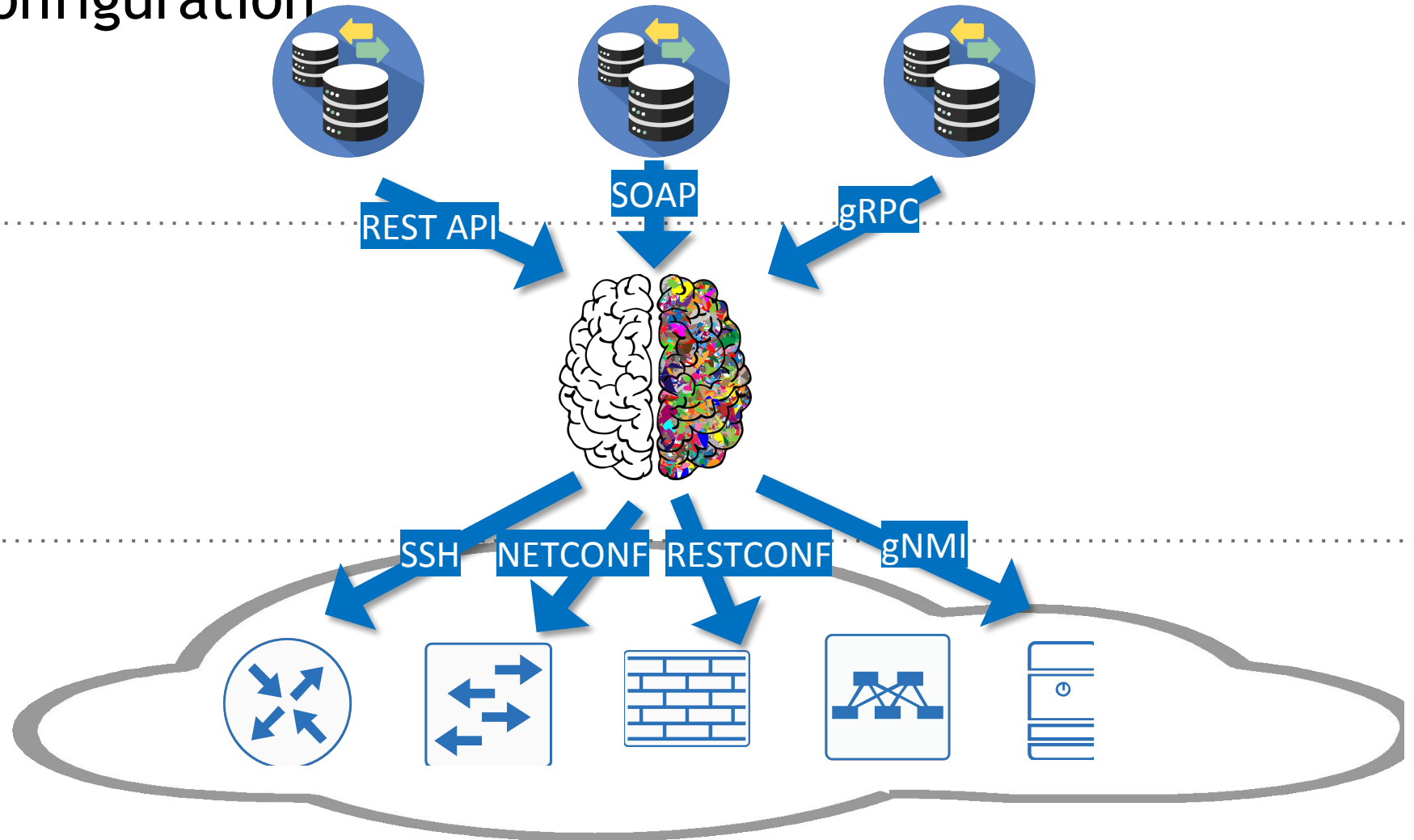
# What are the scenarios of the network automation?

## Infrastructure configuration:

OSS/BSS stack

Automation engine

IT/Network Infrastructure



# What are the scenarios of the network automation?

---

...Advanced



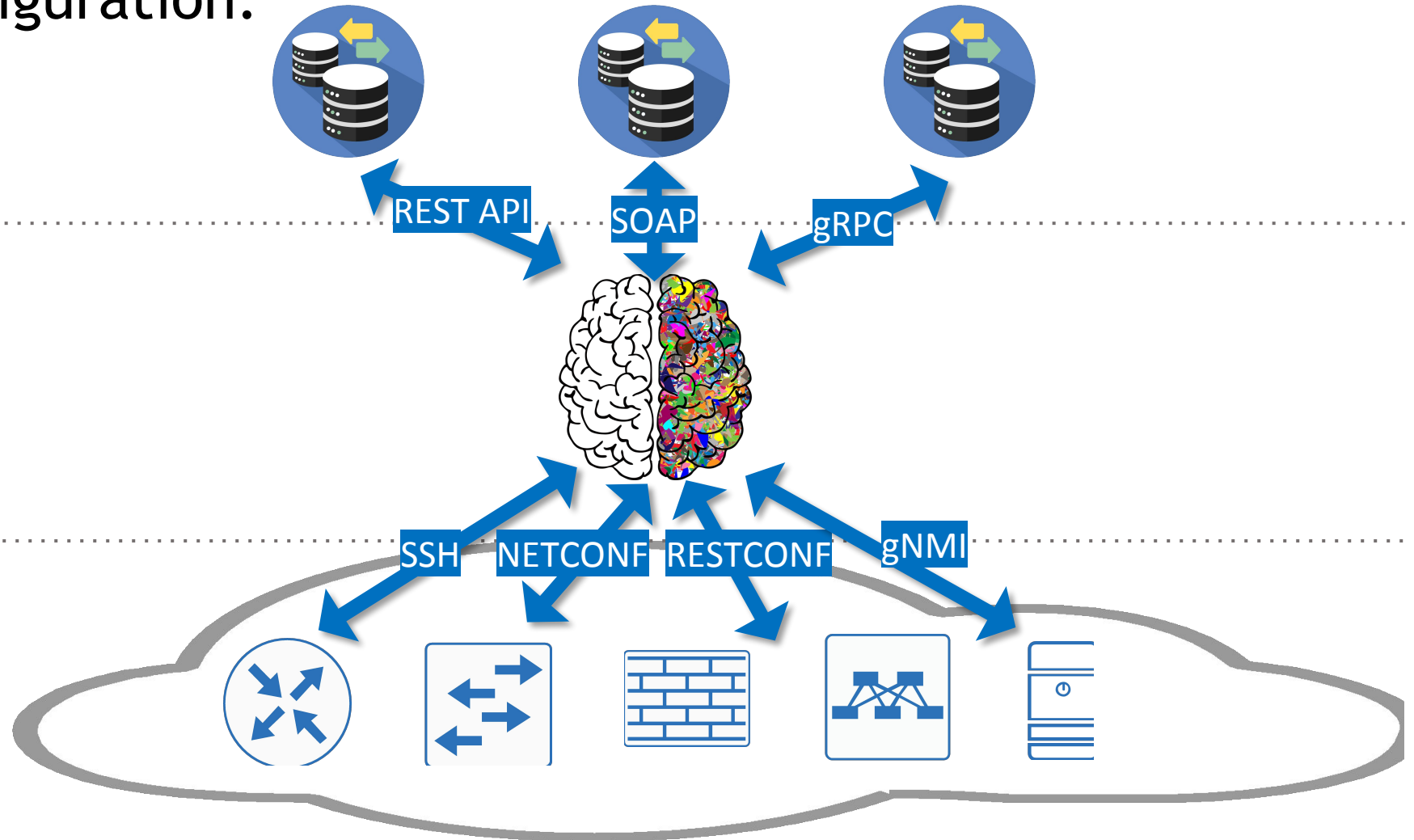
# What are the scenarios of the network automation?

## Fact-based configuration:

OSS/BSS stack

Automation engine

IT/Network Infrastructure



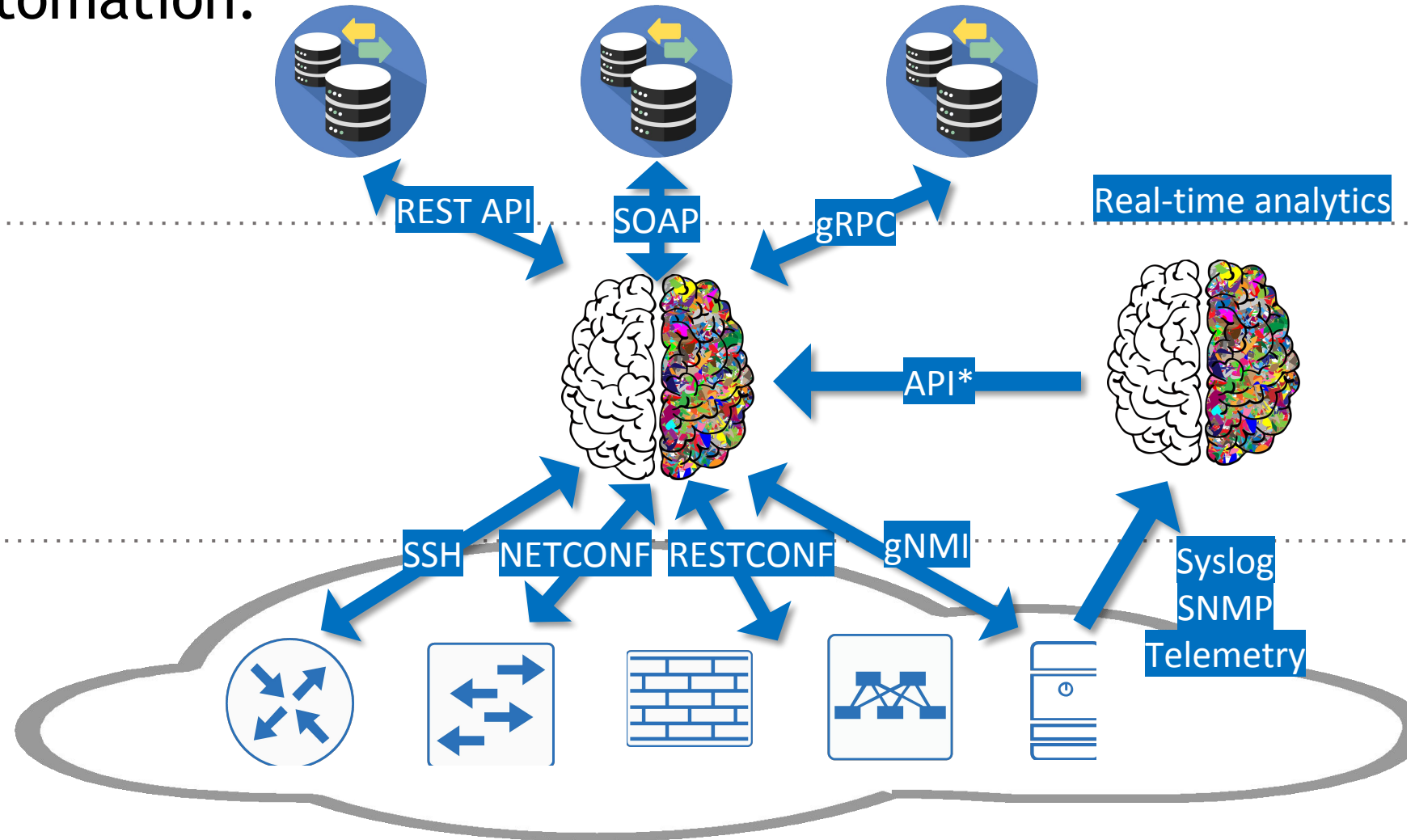
# What are the scenarios of the network automation?

## Event-driven automation:

OSS/BSS stack

Automation engine

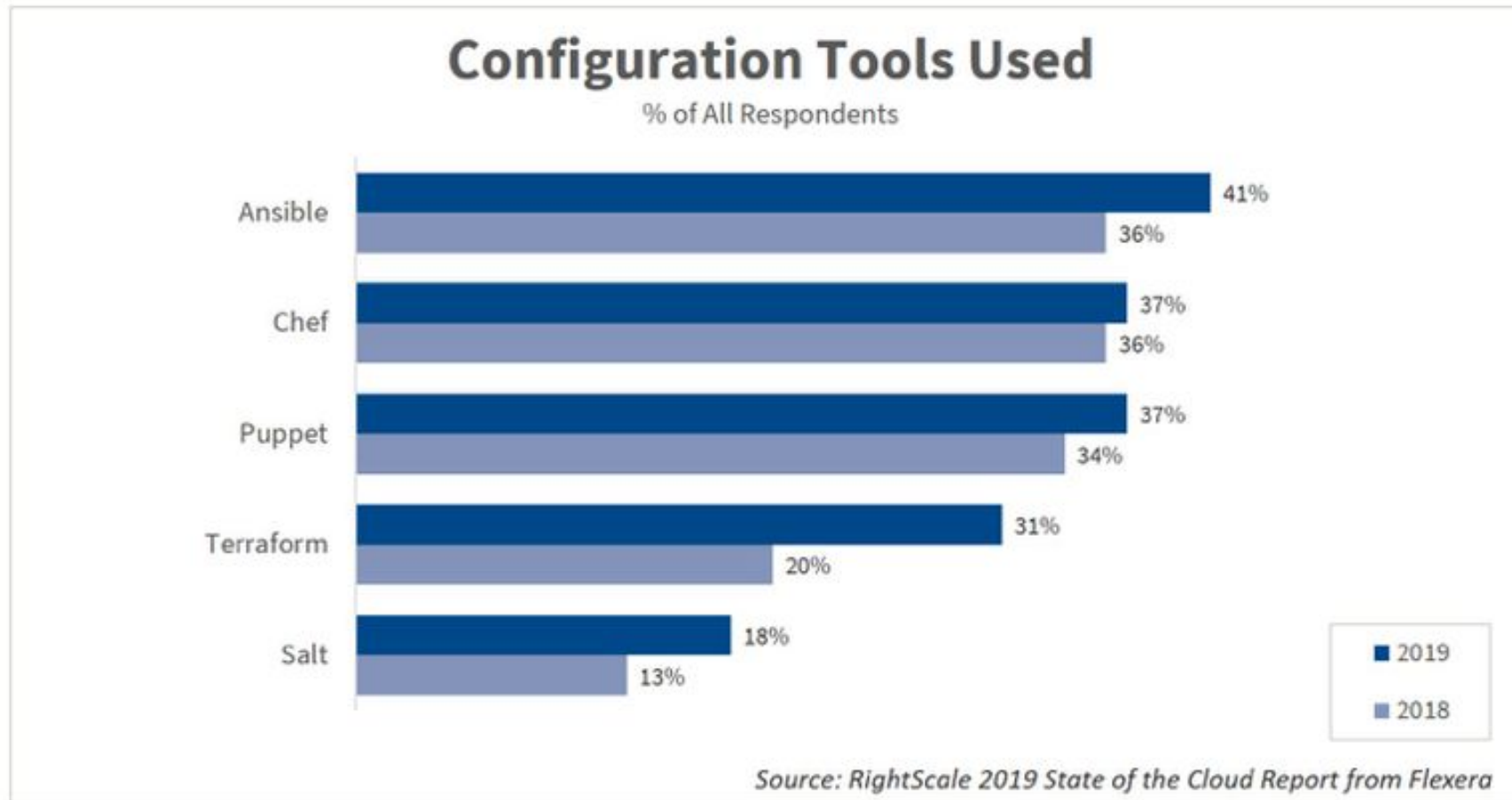
IT/Network Infrastructure



# Why Ansible is so popular for network automation?

# Why Ansible is so popular for network automation?

Popularity of the configuration management tools:





# Why Ansible is so popular for network automation?

Why Ansible is so popular:

Huge amount of modules



Open source



Free of charge



Great community



Agentless



Extended features and paid support (if needed)



# Why Ansible is so popular for network automation?

Ansible vs Terraform for network automation:



> 50 vendors supported  
~ 1000 modules

[https://docs.ansible.com/ansible/2.9/modules/list\\_of\\_network\\_modules.html](https://docs.ansible.com/ansible/2.9/modules/list_of_network_modules.html)



7 vendors supported  
7 providers

<https://www.terraform.io/docs/providers/type/network-index.html>

# Why Ansible is so popular for network automation?

And not only networks...

## Networks



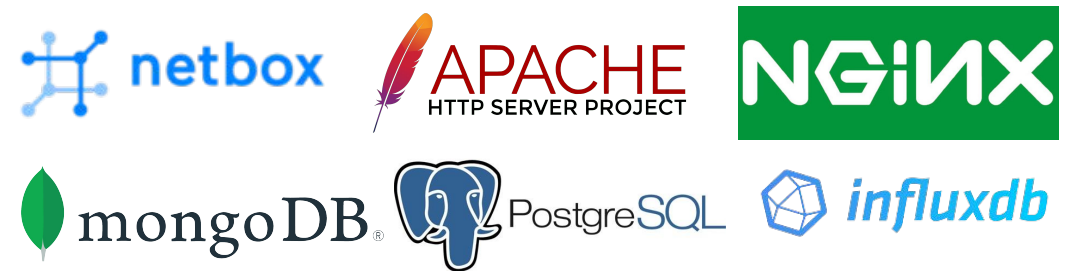
## Infrastructure



## Clouds



## Applications

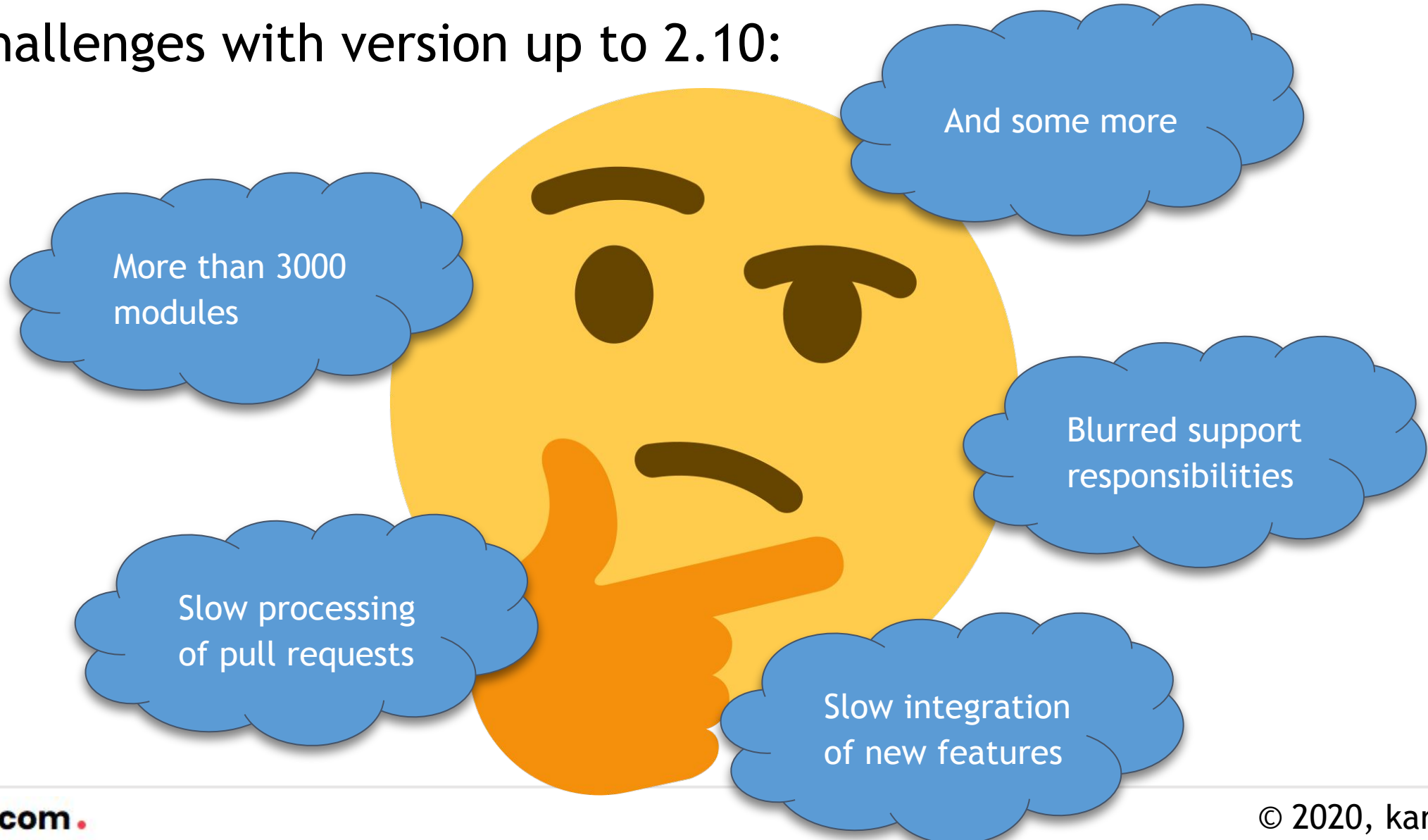


# What is new in Ansible 2.10?



# What is new in Ansible 2.10?

Challenges with version up to 2.10:



# What is new in Ansible 2.10?

Solution for challenges - divide and conquer:

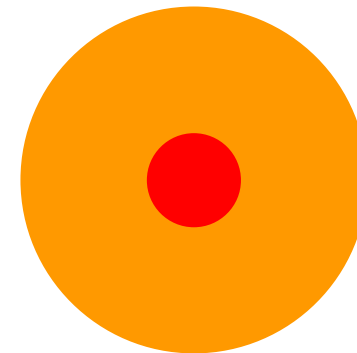
## Core part (Ansible base)

- “Engine only”
- Core functionality
- Long-term stability
- Unbundle non-essential modules



## Extended part (Community-driven additions)

- “All extra you need”
- Any functionality you need
- Quick and frequent updates
- Support by collection authors



# What is new in Ansible 2.10?

## Collection and roles:

### Roles

Same as ordinary roles, just easier to distribute and reuse

```
site.yml
webservers.yml
fooservers.yml
roles/
  common/
    tasks/
    handlers/
    files/
    templates/
    vars/
    defaults/
    meta/
  webservers/
    tasks/
    defaults/
    meta/
```

### Collections

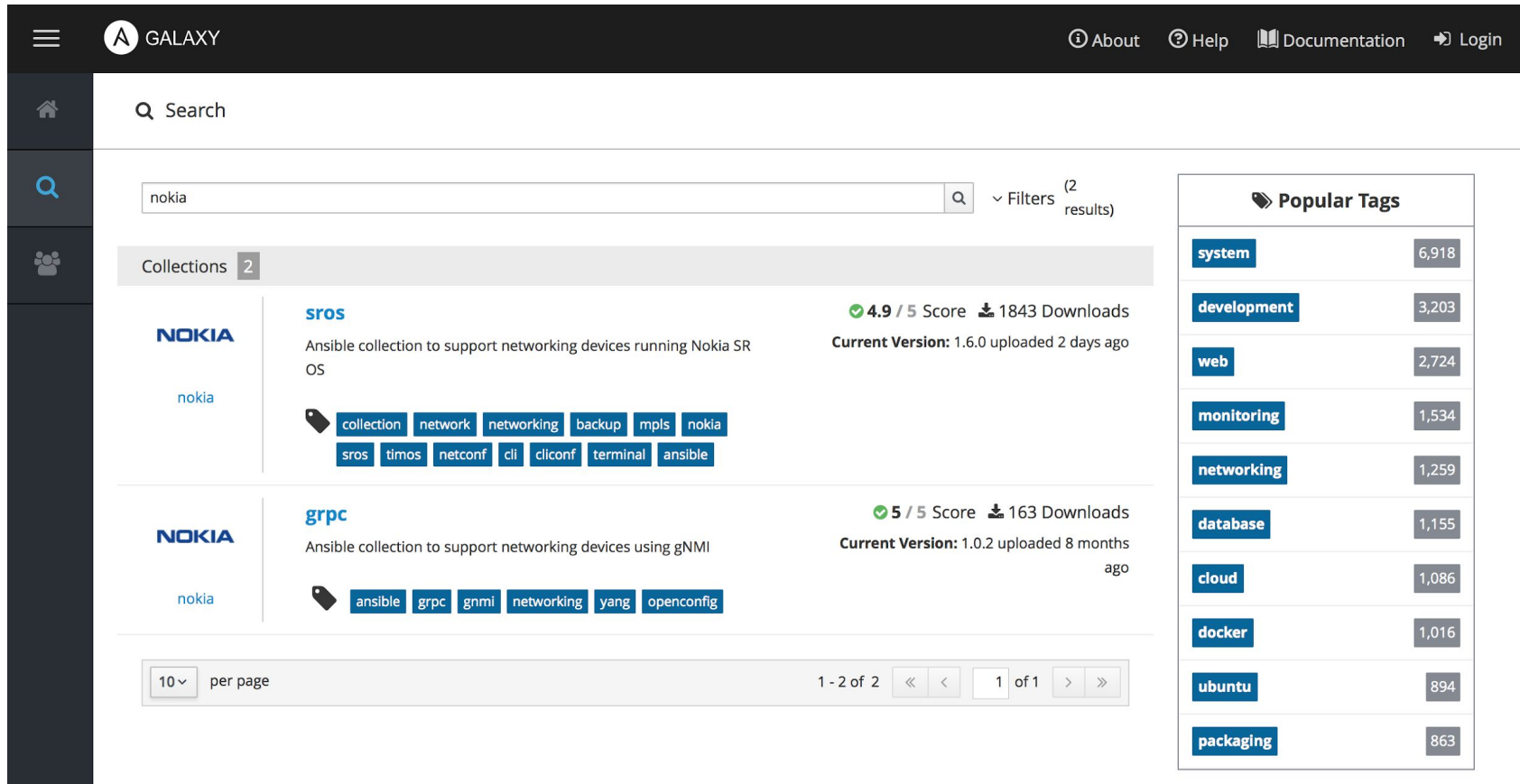
Collections are a distribution format for Ansible content that can include playbooks, roles, modules, and plugins.

```
collection/
├── docs/
├── galaxy.yml
├── plugins/
│   ├── modules/
│   │   └── module1.py
│   ├── inventory/
│   └── .../
├── README.md
├── roles/
│   ├── role1/
│   ├── role2/
│   └── .../
├── playbooks/
│   ├── files/
│   ├── vars/
│   ├── templates/
│   └── tasks/
└── tests/
```

[https://docs.ansible.com/ansible/latest/galaxy/user\\_guide.html](https://docs.ansible.com/ansible/latest/galaxy/user_guide.html)

# What is new in Ansible 2.10?

## Home for roles and collections - Ansible Galaxy:



The screenshot shows the Ansible Galaxy website interface. At the top, there's a navigation bar with the 'GALAXY' logo and links for 'About', 'Help', 'Documentation', and 'Login'. Below this is a search bar with the text 'nokia' and a search icon. To the right of the search bar, it says 'Filters (2 results)'. The main content area displays two collections under the 'NOKIA' namespace:

- sros**: An Ansible collection to support networking devices running Nokia SR OS. It has a 4.9 / 5 Score and 1843 Downloads. The current version is 1.6.0, uploaded 2 days ago. Tags include: collection, network, networking, backup, mpls, nokia, sros, timos, netconf, cli, clicnf, terminal, and ansible.
- grpc**: An Ansible collection to support networking devices using gNMI. It has a 5 / 5 Score and 163 Downloads. The current version is 1.0.2, uploaded 8 months ago. Tags include: ansible, grpc, gnmi, networking, yang, and openconfig.

At the bottom of the collection list, there's a pagination bar showing '10 per page' and '1 - 2 of 2'.

On the right side, there's a 'Popular Tags' section with a list of tags and their respective counts:

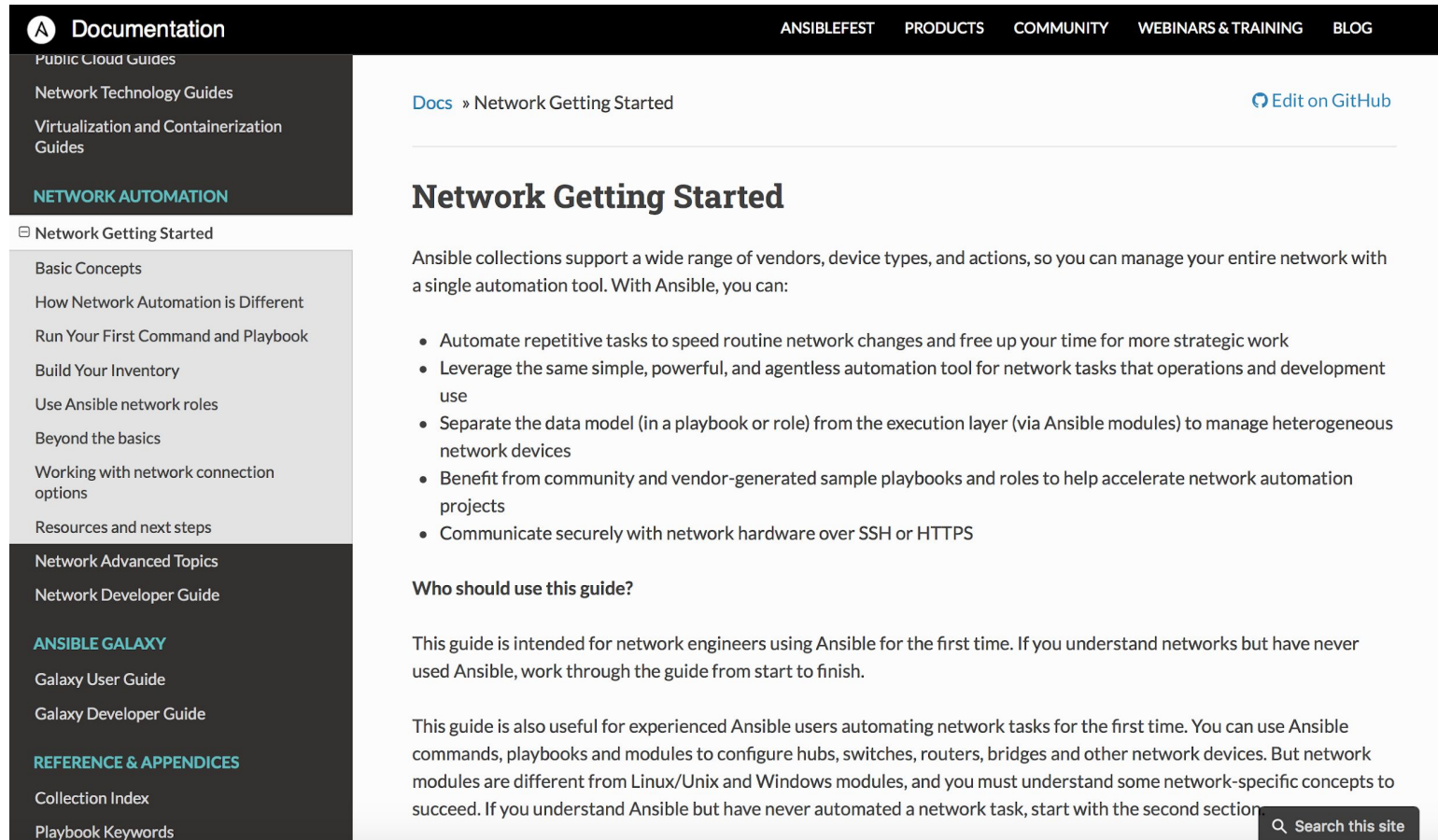
Popular Tags	Count
system	6,918
development	3,203
web	2,724
monitoring	1,534
networking	1,259
database	1,155
cloud	1,086
docker	1,016
ubuntu	894
packaging	863

<http://galaxy.ansible.com>



# What is new in Ansible 2.10?

## New documentation structure:



The screenshot shows the Ansible documentation website. The top navigation bar includes links for ANSIBLEFEST, PRODUCTS, COMMUNITY, WEBINARS & TRAINING, and BLOG. The left sidebar is divided into sections: Documentation (with sub-links for Public Cloud Guides, Network Technology Guides, and Virtualization and Containerization Guides), NETWORK AUTOMATION (highlighted), and a list of topics under Network Getting Started (Basic Concepts, How Network Automation is Different, Run Your First Command and Playbook, Build Your Inventory, Use Ansible network roles, Beyond the basics, Working with network connection options, Resources and next steps). Below these are Network Advanced Topics and Network Developer Guide. The main content area is titled 'Network Getting Started' and includes a list of bullet points: Automate repetitive tasks to speed routine network changes and free up your time for more strategic work; Leverage the same simple, powerful, and agentless automation tool for network tasks that operations and development use; Separate the data model (in a playbook or role) from the execution layer (via Ansible modules) to manage heterogeneous network devices; Benefit from community and vendor-generated sample playbooks and roles to help accelerate network automation projects; and Communicate securely with network hardware over SSH or HTTPS. The page also includes a 'Who should use this guide?' section and a search bar at the bottom right.

**Documentation**

- Public Cloud Guides
- Network Technology Guides
- Virtualization and Containerization Guides
- NETWORK AUTOMATION**
- Network Getting Started
  - Basic Concepts
  - How Network Automation is Different
  - Run Your First Command and Playbook
  - Build Your Inventory
  - Use Ansible network roles
  - Beyond the basics
  - Working with network connection options
  - Resources and next steps
- Network Advanced Topics
- Network Developer Guide
- ANSIBLE GALAXY**
- Galaxy User Guide
- Galaxy Developer Guide
- REFERENCE & APPENDICES**
- Collection Index
- Playbook Keywords

**Network Getting Started**

Ansible collections support a wide range of vendors, device types, and actions, so you can manage your entire network with a single automation tool. With Ansible, you can:

- Automate repetitive tasks to speed routine network changes and free up your time for more strategic work
- Leverage the same simple, powerful, and agentless automation tool for network tasks that operations and development use
- Separate the data model (in a playbook or role) from the execution layer (via Ansible modules) to manage heterogeneous network devices
- Benefit from community and vendor-generated sample playbooks and roles to help accelerate network automation projects
- Communicate securely with network hardware over SSH or HTTPS

**Who should use this guide?**

This guide is intended for network engineers using Ansible for the first time. If you understand networks but have never used Ansible, work through the guide from start to finish.

This guide is also useful for experienced Ansible users automating network tasks for the first time. You can use Ansible commands, playbooks and modules to configure hubs, switches, routers, bridges and other network devices. But network modules are different from Linux/Unix and Windows modules, and you must understand some network-specific concepts to succeed. If you understand Ansible but have never automated a network task, start with the second section

[Edit on GitHub](#)

Search this site

[https://docs.ansible.com/ansible/latest/network/getting\\_started/index.html](https://docs.ansible.com/ansible/latest/network/getting_started/index.html)

# What is new in Ansible 2.10?

## New installation approach:



ANSIBLE

You need first uninstall your current version (if lower than Ansible 2.10)  
Install the new package as **ansible-base**.

**NOTE:** \* In CentOS it is available only via **pip**.

\*\* multiple modules are not being installed by default (e.g. paramiko, sshpass),  
so you need to install them via pip or dnf on your own

```
# Removing existing Ansible (e.g. 2.9)
$ sudo dnf remove ansible

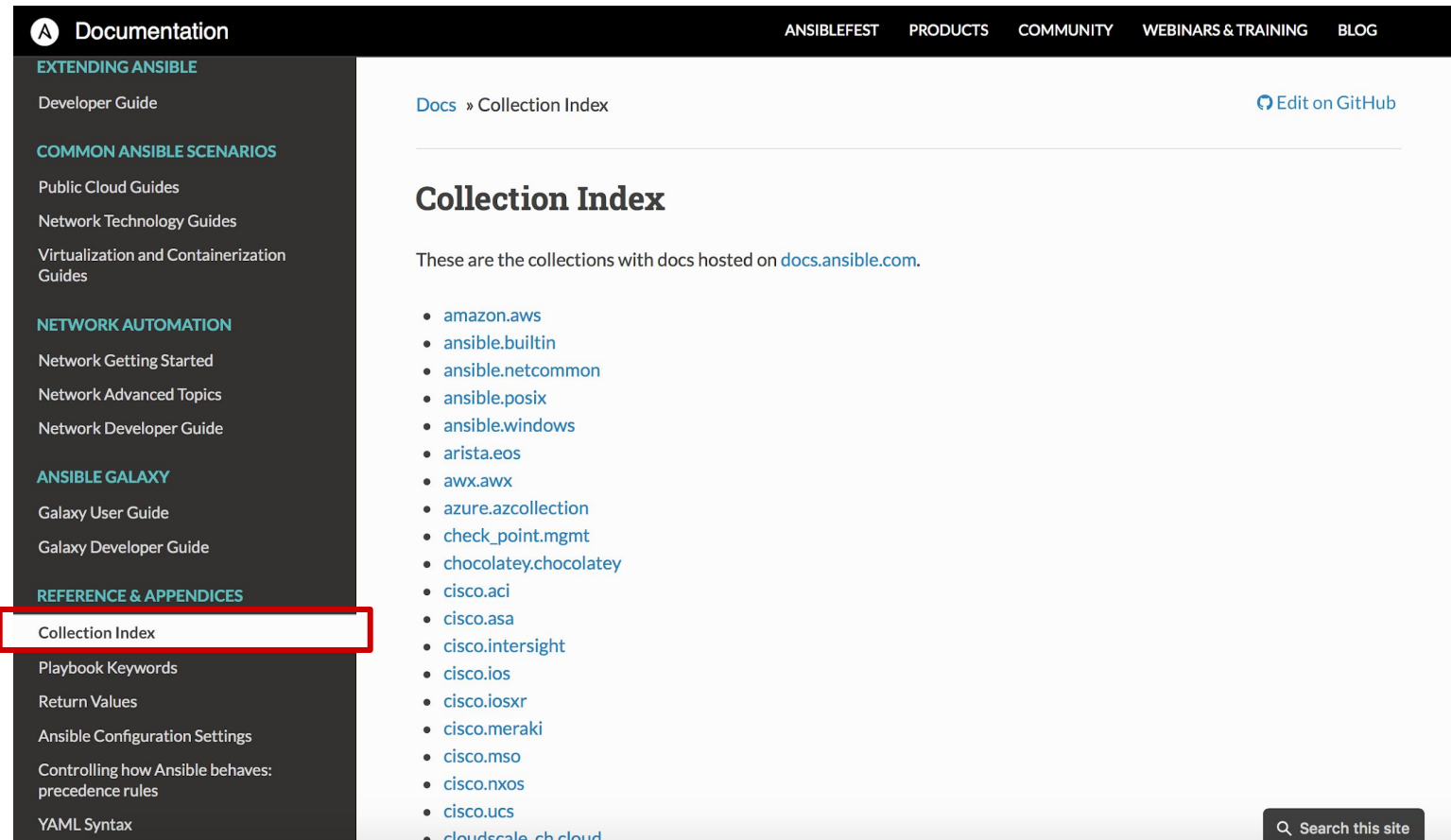
# Installing Ansible 2.10
$ pip install ansible-base

$ ansible --version
ansible 2.10.2
  config file = None
  configured module search path = ['/home/aaa/.ansible/plugins/modules',
'/usr/share/ansible/plugins/modules']
```

[https://docs.ansible.com/ansible/latest/installation\\_guide/intro\\_installation.html](https://docs.ansible.com/ansible/latest/installation_guide/intro_installation.html)

# What is new in Ansible 2.10?

New naming conventions (modules → collections):



There are no modules,  
only collections now

<https://docs.ansible.com/ansible/latest/collections/index.html>

# What is new in Ansible 2.10?

## New naming conventions (network operating systems):

Settings by Platform					
		ansible_connection: settings available			
Network OS	ansible_network_os:	network_cli	netconf	httpapi	local
Arista EOS [†]	arista.eos.eos	✓		✓	✓
Ciena SAOS6	ciena.saos6.saos6	✓			✓
Cisco ASA [†]	cisco.asa.asa	✓			✓
Cisco IOS [†]	cisco.ios.ios	✓			✓
Cisco IOS XR [†]	cisco.iosxr.iosxr	✓			✓
Cisco NX-OS [†]	cisco.nxos.nxos	✓		✓	✓
Cloudengine OS	community.network.ce	✓	✓		✓
Dell OS6	dellemc.os6.os6	✓			✓
Dell OS9	dellemc.os9.os9	✓			✓
Dell OS10	dellemc.os10.os10	✓			✓
Ericsson ECCLI	community.network.eric_eccli	✓			✓
Extreme EXOS	community.network.exos	✓		✓	

[https://docs.ansible.com/ansible/latest/network/user\\_guide/platform\\_index.html](https://docs.ansible.com/ansible/latest/network/user_guide/platform_index.html)



# What is new in Ansible 2.10?

## New and old naming conventions (plugins):



ANSIBLE

Use built-in documentation to get information about plugins

```
(venv) [aaa@nnat new_ansible]$ ansible-doc -t connection -l
ansible.netcommon.httpapi      Use httpapi to run command on network appliances
ansible.netcommon.napalm      Provides persistent connection using NAPALM
ansible.netcommon.netconf      Provides a persistent connection using the netconf
protocol
ansible.netcommon.network_cli  Use network_cli to run command on network appliances
ansible.netcommon.persistent   Use a persistent unix socket for connection
local                          execute on controller
paramiko_ssh                   Run tasks via python ssh (paramiko)
psrp                           Run tasks over Microsoft PowerShell Remoting Protocol
ssh                            connect via ssh client binary
winrm                           Run tasks over Microsoft's WinRM
```

<https://docs.ansible.com/ansible/latest/plugins/connection.html#plugin-list>

How the convert your playbooks from Ansible 2.\* to 2.10?

# How to convert your playbooks from Ansible 2.\* to 2.10?

## Step #1: Check if your playbook is still working (1)

### EXAMPLE

```
$ cat legacy.yml
---
- name: ANSIBLE 2.9 PLAYBOOK FORMAT
  hosts: net
  connection: network_cli
  gather_facts: no

  tasks:
    - name: COLLECTING INFORMATION FROM {{ ansible_network_os }}
      eos_command:
        commands:
          - show hostname
      register: temp_vars

    - name: VALIDATING INFO
      debug:
        msg: "{{ temp_vars }}"

...
```

# How to convert your playbooks from Ansible 2.\* to 2.10?

## Step #1: Check if your playbook is still working (2)

```
$ ansible-playbook legacy.yml -i hosts
PLAY [ANSIBLE 2.9 PLAYBOOK FORMAT] *****

TASK [COLLECTING INFORMATION FROM eos] *****
ok: [EOS425]

TASK [SECOND TEST TASK] *****
ok: [EOS425] => {
  "msg": {
    "ansible_facts": {
      "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "failed": false,
    "stdout": [
      "Hostname: EOS425\nFQDN:      EOS425"
    ],
    "stdout_lines": [
      [
        "Hostname: EOS425",
        "FQDN:      EOS425"
      ]
    ]
  }
}

PLAY RECAP *****
EOS425 : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

# How to convert your playbooks from Ansible 2.\* to 2.10?

## Step #2: Check what is the name of network operating system

### Ansible 2.9

```
$ cat host_vars/EOS425.yml
---
ansible_ssh_host: 10.0.2.100
ansible_user: aaa
ansible_password: aaa
ansible_network_os: eos
...
```

### Ansible 2.10

```
$ cat host_vars/EOS425.yml
---
ansible_ssh_host: 10.0.2.100
ansible_user: aaa
ansible_password: aaa
ansible_network_os: arista.eos.eos
...
```

Collection namespace



# How to convert your playbooks from Ansible 2.\* to 2.10?

## Step #3: Check which collections are needed

The screenshot shows the 'Collection Index' page on the Ansible documentation website. The left sidebar contains navigation links under 'Documentation', including 'EXTENDING ANSIBLE', 'COMMON ANSIBLE SCENARIOS', 'NETWORK AUTOMATION', 'ANSIBLE GALAXY', and 'REFERENCE & APPENDICES'. The main content area is titled 'Collection Index' and lists various collections. Annotations with red arrows and blue boxes group these collections:

- Ansible native collections:** Includes `amazon.aws`, `ansible.builtin`, `ansible.netcommon`, `ansible.posix`, `ansible.windows`, and `arista.eos`.
- Arista collection:** Points to the `arista.eos` collection.
- Cisco collections:** Includes `cisco.aci`, `cisco.asa`, `cisco.intersight`, `cisco.ios`, `cisco.iosxr`, `cisco.meraki`, `cisco.mso`, `cisco.nxos`, `cisco.ucs`, and `cloudscale.ch.cloud`.

The page also includes a search bar at the bottom right and a link to 'Edit on GitHub'.

Looking further? Go to: <http://galaxy.ansible.com>

# How to convert your playbooks from Ansible 2.\* to 2.10?

## Step #4: Check if the collection is available or install it

```
# Removing existing Ansible (e.g. 2.9)
$ ls -l ~/.ansible/collections/ansible_collections/
total 0
drwxrwxr-x. 3 aaa aaa 23 Jul 23 22:26 ansible
drwxrwxr-x. 3 aaa aaa 17 Jul 23 22:26 arista
drwxrwxr-x. 3 aaa aaa 19 Oct 24 22:23 cisco
drwxrwxr-x. 3 aaa aaa 18 Jul 21 21:10 nokia

# Installing the collection
$ ansible-galaxy collection install arista.eos
Starting galaxy collection install process
Process install dependency map
Starting collection install process
Skipping 'arista.eos' as it is already installed
```

# How to convert your playbooks from Ansible 2.\* to 2.10?

## Step #5: Rewriting playbook

### Ansible 2.9

```
$ cat legacy.yml
---
- name: ANSIBLE 2.9 PLAYBOOK FORMAT
  hosts: net
  connection: network_cli
  gather_facts: no

  tasks:
    - name: COLLECTING INFORMATION
      eos_command:
        commands:
          - show hostname
      register: temp_vars

    - name: SECOND TEST TASK
      debug:
        msg: "{{ temp_vars }}"

...
```

Add collection namespace

Add collection namespace

Add collection namespace

### Ansible 2.10

```
$ cat new.yml
---
- name: ANSIBLE 2.10 PLAYBOOK FORMAT
  hosts: net
  connection: ansible.netcommon.network_cli
  gather_facts: no

  tasks:
    - name: COLLECTING INFORMATION FROM
      arista.eos.eos_command:
        commands:
          - show hostname
      register: temp_vars

    - name: VALIDATING INFO
      ansible.builtin.debug:
        msg: "{{ temp_vars }}"

...
```

# How to convert your playbooks from Ansible 2.\* to 2.10?

## Step #6: Running new playbook

```
$ ansible-playbook new.yml -i hosts
PLAY [ANSIBLE 2.10 PLAYBOOK FORMAT] *****

TASK [COLLECTING INFORMATION FROM arista.eos.eos] *****
ok: [EOS425]

TASK [VALIDATING INFO] *****
ok: [EOS425] => {
  "changed": false,
  "msg": {
    "ansible_facts": {
      "discovered_interpreter_python": "/usr/libexec/platform-python"
    },
    "changed": false,
    "failed": false,
    "stdout": [
      "Hostname: EOS425\nFQDN:      EOS425"
    ],
    "stdout_lines": [
      [
        "Hostname: EOS425",
        "FQDN:      EOS425"
      ]
    ]
  }
}

PLAY RECAP *****
EOS425 : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

# How the convert your playbooks from Ansible 2.\* to 2.10?

**[LIVE DEMO]** Converting Playbook from Ansible 2.9 to 2.10



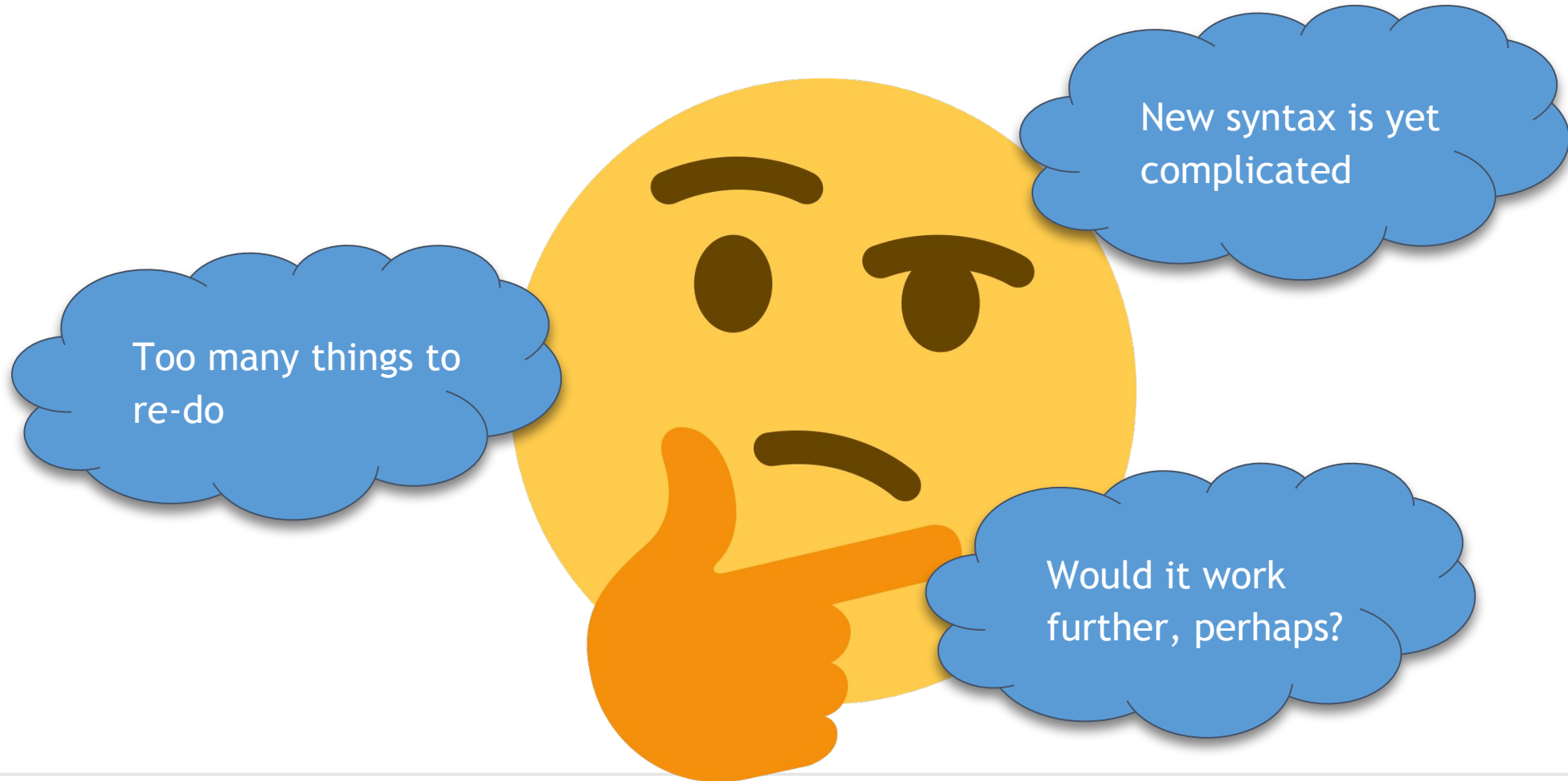
Time to get hands dirty!



What's next?

# What's next?

Challenge - Should I change now, if playbook still works

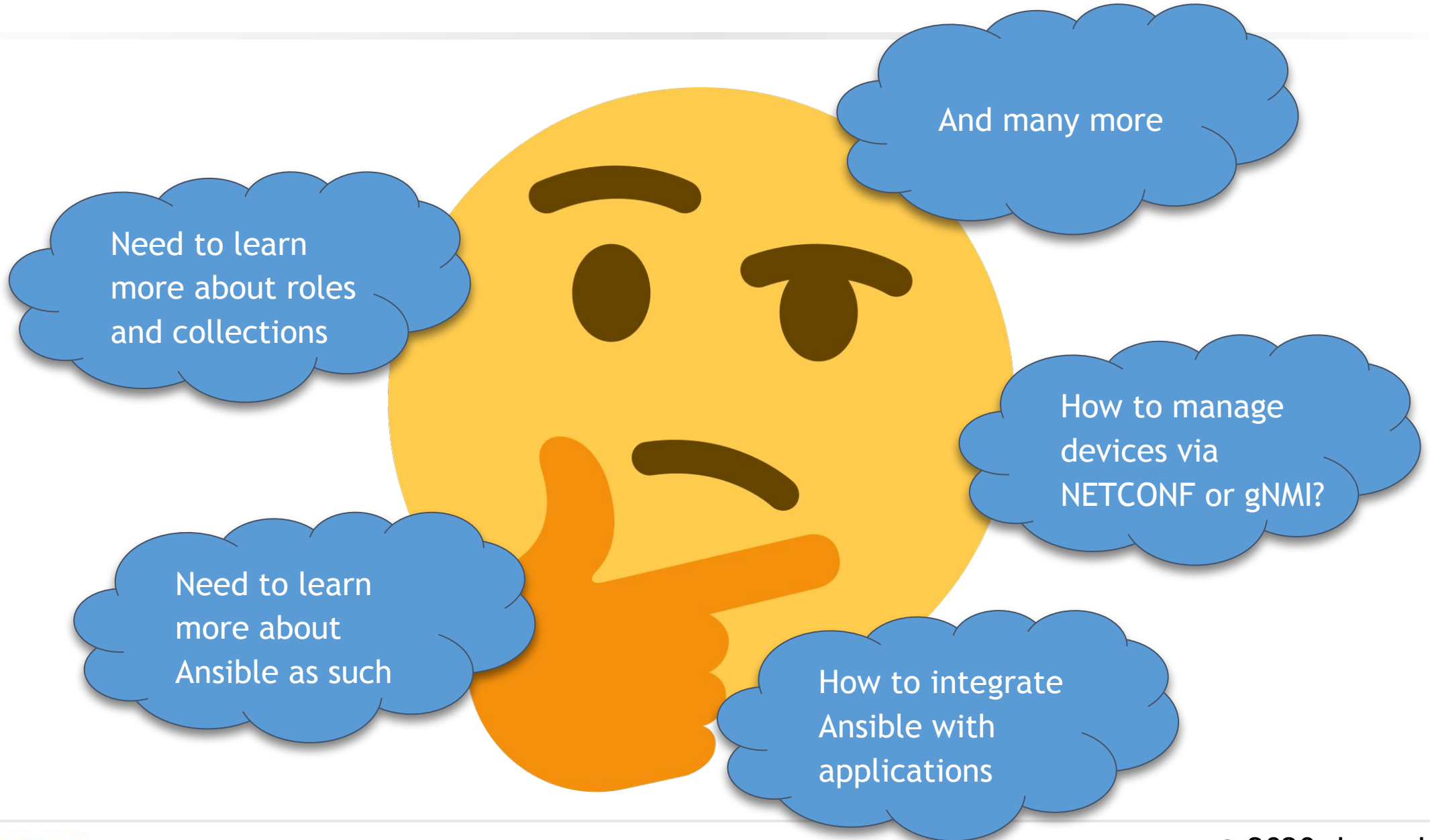


# What's next?

---

Challenge - Start changes now

# What's next?





# What's next?

Join us to learn much more about network automaton:



Self-paced training  
**2020 - 2021**  
Start anytime



Live online training  
**2021**

From 09/01 @ 09:00 GMT  
From 13/01 @ 19:00 GMT



<https://training.karneliuk.com>



Thank you very much for your  
attention!

You can reach us on:

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Mail: [training@karneliuk.com](mailto:training@karneliuk.com)

Phone: +44 7752 159339

# About karneliuk.com

## Training services

### Regular trainings:

- Network automation live online
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### Corporate trainings:

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## Our happy customers

**NOKIA** CityFibre



**Viasat**



**Fiber Internet Center**  
BUILDING PROACTIVE MANAGED FIBER  
NETWORKS SINCE 2001

## Our expertise

