Ansible Control

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https://docs.ansible.com/ansible/latest/command_guide/intro_adhoc.html

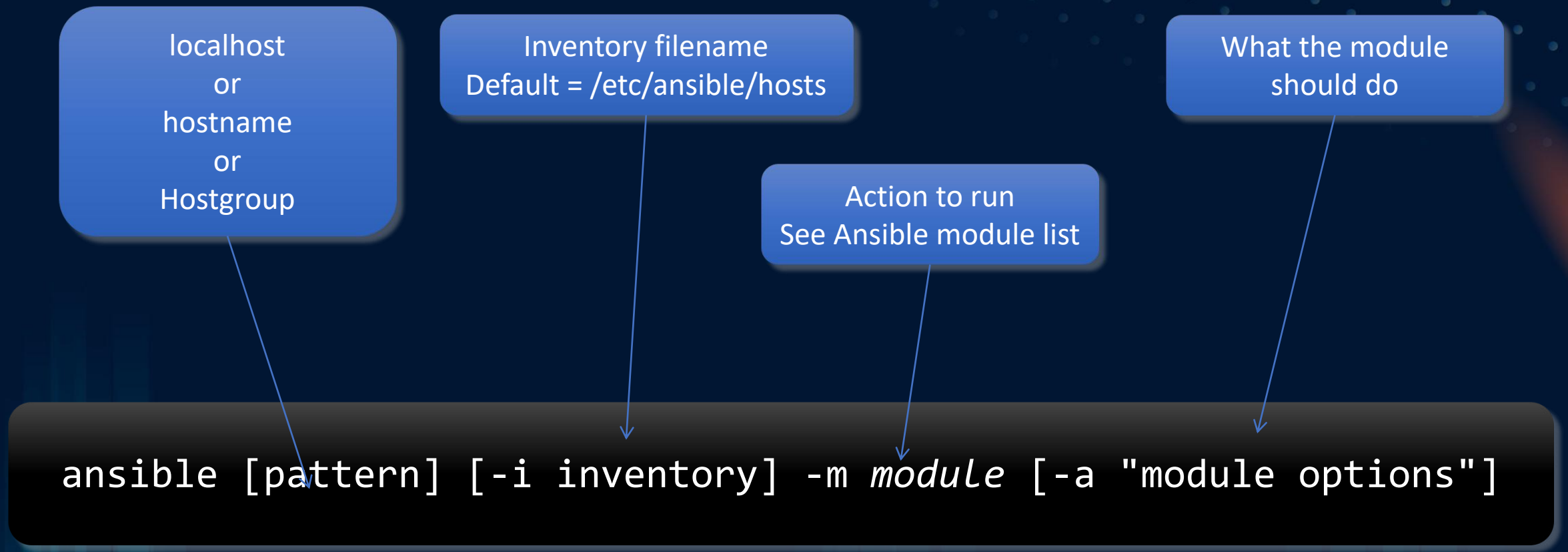
The ansible command

- Used to run ad-hoc commands against your infrastructure

- Requires host(s) to target
  - Single hostname can be specified on the command line
  - Multiple hosts from
    - The hosts config file
    - An inventory file
- Syntax

```
ansible [pattern] -m [module] -a "[module options]"
```

The ansible command

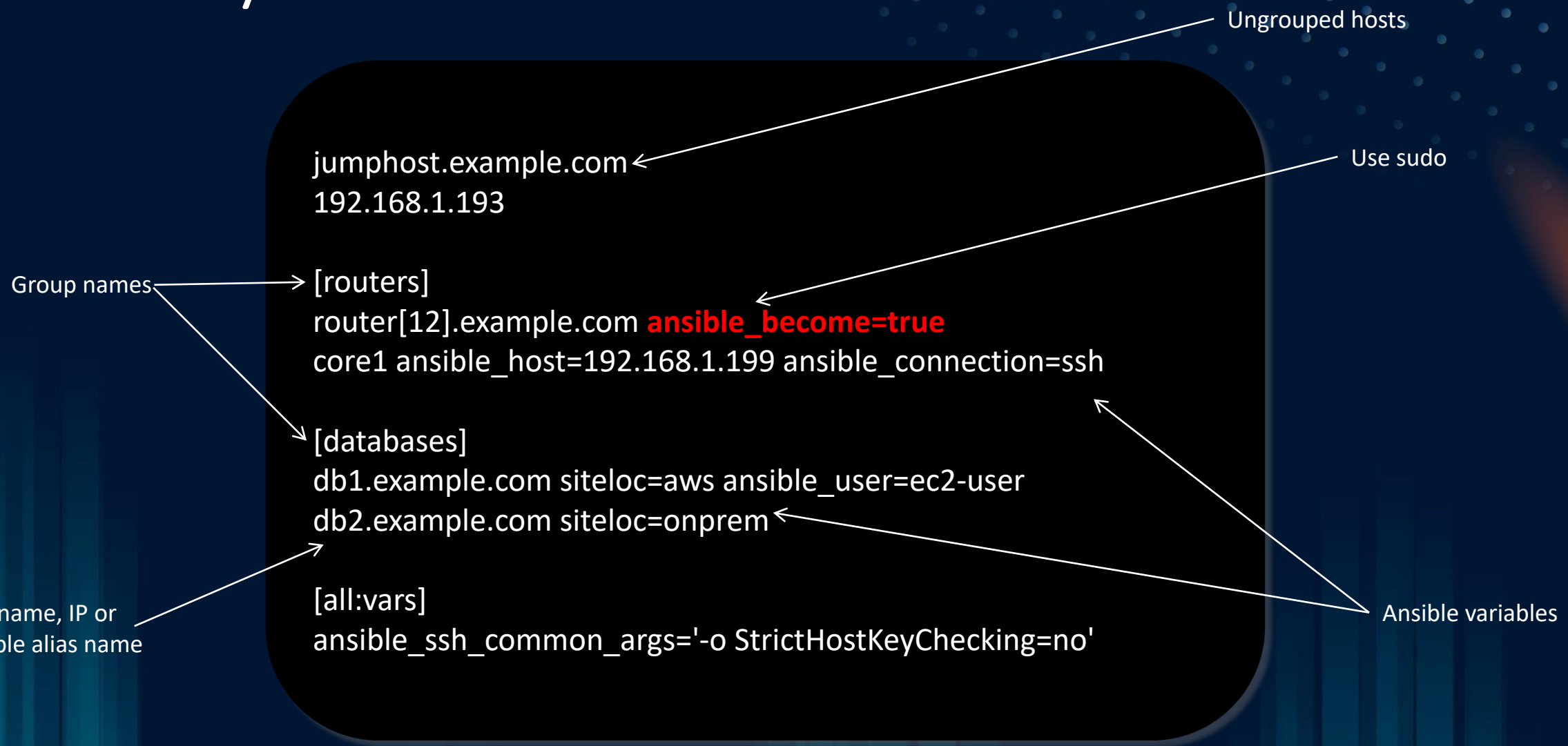


- https://docs.ansible.com/ansible/latest/inventory_guide/intro_patterns.html#intro-patterns
- https://docs.ansible.com/ansible/latest/collections/ansible/builtin/index.html
- https://docs.ansible.com/ansible/2.9/modules/list_of_all_modules.html
- https://linux.die.net/man/1/ansible

The inventory

- A host configuration file
  - ini or yaml format
  - Default is located in /etc/ansible/hosts
- Hosts can be grouped
- Contains the hosntame or IP to connect to
- Attributes about that host - called Ansible variables
  - Connectivity attributes
    - Local or remote connection
    - Username or sudo capabilities
  - Custom metadata
    - Hardware type
    - Server purpose
      - e.g. database, web server

Inventory INI



https://docs.ansible.com/ansible/latest/inventory_guide/intro_inventory.html

Inventory YAML

```
ungrouped:
  hosts:
    jumphost.example.com
    192.168.1.193

routers:
  hosts:
    router[12].example.com:
      ansible_become: true
    core1:
      ansible_host: 192.168.1.199
      ansible_connection: ssh

databases:
  hosts:
    db1.example.com:
      siteloc: aws
      ansible_user: ec2-user
    db2.example.com:
      siteloc: onprem
```

Sequential vs Parallel execution

- Update server concurrently
  - Parallel execution
  - Updating all web servers, or switches at the same time
  - No order in running changes
- Sequential
  - Run each server in turn
  - Slower role out of changes
  - Provide order
  - Easier to debug

Sequential

- Default configuration if no **ansible.cfg** file

```
$ ansible nodes -i inventory.ini -m ping
```

- The above command specifically provides inventory and action
- Will execute without a configuration file

Ansible configuration file

- Required **ansible.cfg**
  - https://docs.ansible.com/ansible/latest/reference_appendices/config.html
- Configuration can come from operating system env vars
  - Variable names begin **ANSIBLE_**
- Configuration location is overriden as below
  - ANSIBLE_CONFIG path if set
  - Current directory where you run the **ansible** commands
  - $HOME/.ansible.cfg
  - /etc/ansible
    - This is the base level

Order of override

Parallel execution

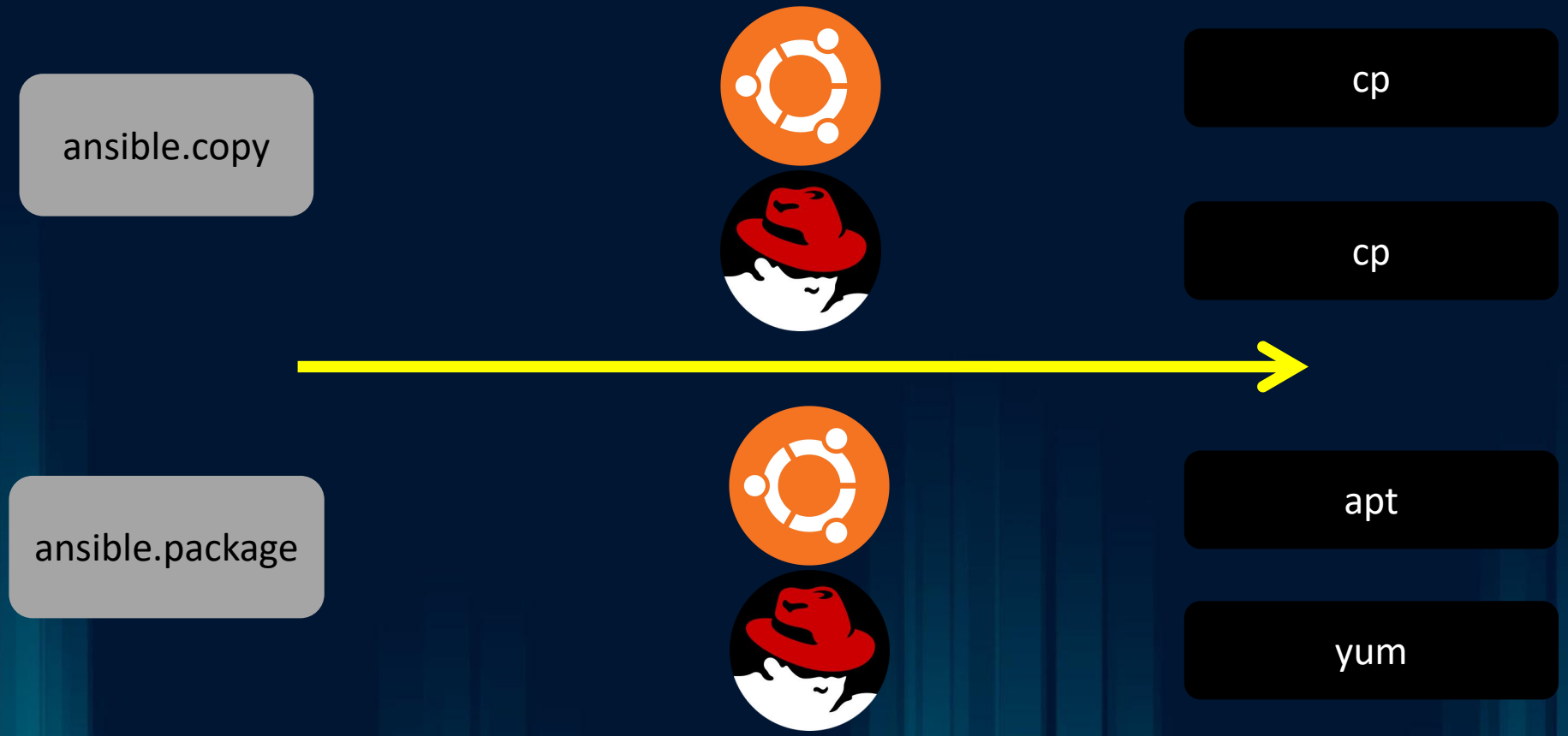
- Example configuration file with parallel execution

```
[defaults]
retry_files_enabled = False
timeout = 60
connection = smart
interpreter_python = auto
forks = 10
inventory = inventory.ini
# roles_path = project/roles:/usr/share/ansible/roles
remote_user = ansible
host_key_checking = False
command_warnings = False
deprecation_warnings = False
```

Parallel execution

Ansible modules

- The commands that provide the abstract layer
  - https://docs.ansible.com/ansible/2.9/modules/list_of_all_modules.html



Module syntax

- **module name**
  - The module/command you want to perform on the target host
- attributes
  - The specific attributes for the module/command
  - The would be things such as
    - File name for source and destination
    - User name for the file
    - Whether the file or package should be installed or removed

```
ansible [pattern] -m [module] -a "[module options]"

ansible nodes -m package -a "name=cowsay state=present"
```

Questions