Manage Windows With Ansible

Technical Deep Dive

Presenter
Presenter Title

Presenter
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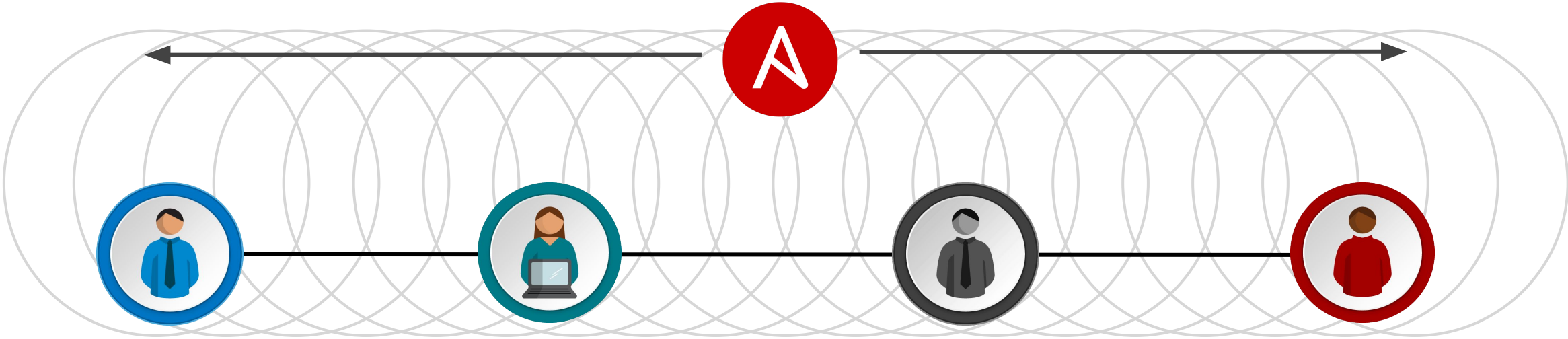
Ansible Is The Universal Language



BUSINESS DEV QA/SECURITY IT OPERATIONS

Ansible is the first automation language that can be read and written across IT.

Ansible is the only automation engine that can automate the entire application lifecycle and continuous delivery pipeline. Including different platforms like Microsoft Windows.

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Ansible Automates Technologies You Use

CLOUD

AWS
Azure
Digital Ocean
Google
OpenStack
Rackspace
+more

VIRT & CONTAINER

Docker
VMware
RHV
OpenStack
OpenShift
+more

OPERATING SYSTEMS

RHEL and Linux
UNIX
Windows
+more

STORAGE

NetApp
Red Hat Storage
Infinidat
+more

WINDOWS

ACLs
Files
Packages
IIS
Regedits
Shares
Services
Configs
Users
Domains
+more

NETWORK

Arista
A10
Cumulus
Bigswitch
Cisco
Cumulus
Dell
F5
Juniper
Palo Alto
OpenSwitch
+more

DEVOPS

Jira
GitHub
Vagrant
Jenkins
Bamboo
Atlassian
Subversion
Slack
Hipchat
+more

MONITORING

Dynatrace
Airbrake
BigPanda
Datadog
LogicMonitor
Nagios
New Relic
PagerDuty
Sensu
StackDriver
Zabbix
+more

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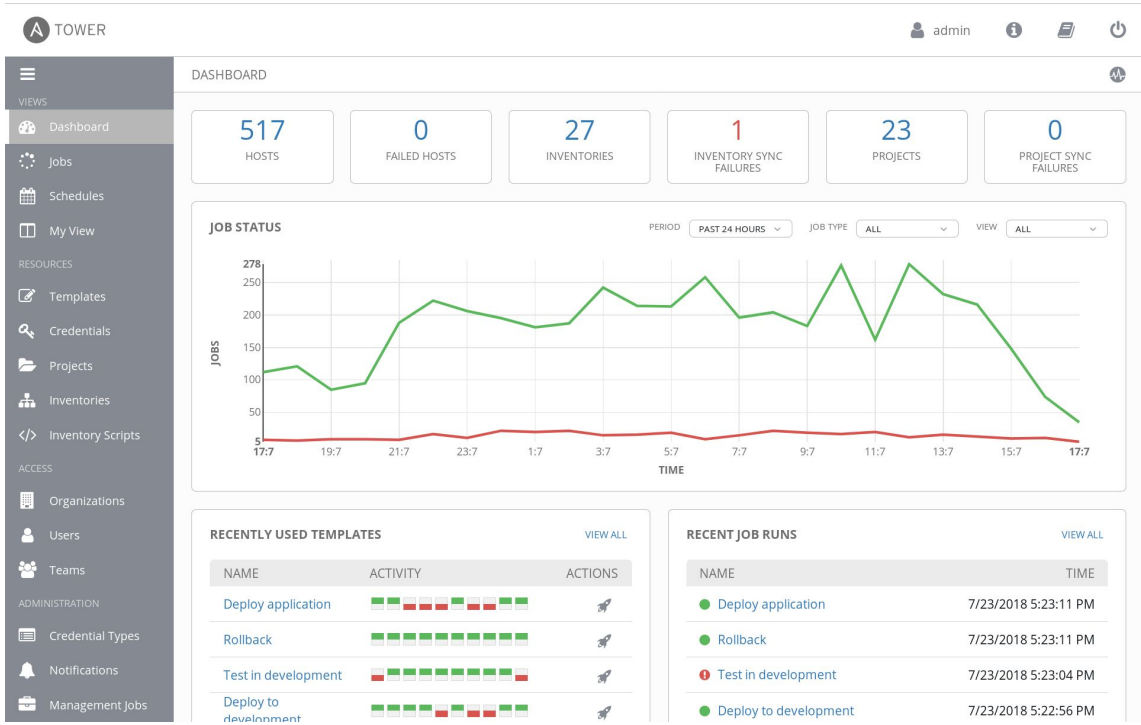
Ansible Tower

Ansible Tower is an enterprise framework for controlling, securing and managing your Ansible automation – with a UI and RESTful API.

- Role-based access control
- Deploy entire applications with push-button deployment access
- All automations are centrally logged
- Works with Linux nodes, networking devices - and of course Windows nodes



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Ansible Windows Automation

Use Ansible to deploy and manage Windows systems and applications.

70+

Windows Modules

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Playbook Example: Windows

```
- hosts: new_servers

  tasks:
  - name: ensure IIS is running
    win_service:
      name: W3Svc
      state: running

    - name: add a domain user
      win_domain_user:
        name: somebody
        upn: somebody@mydomain.local
        groups:
          - Domain Admins
```

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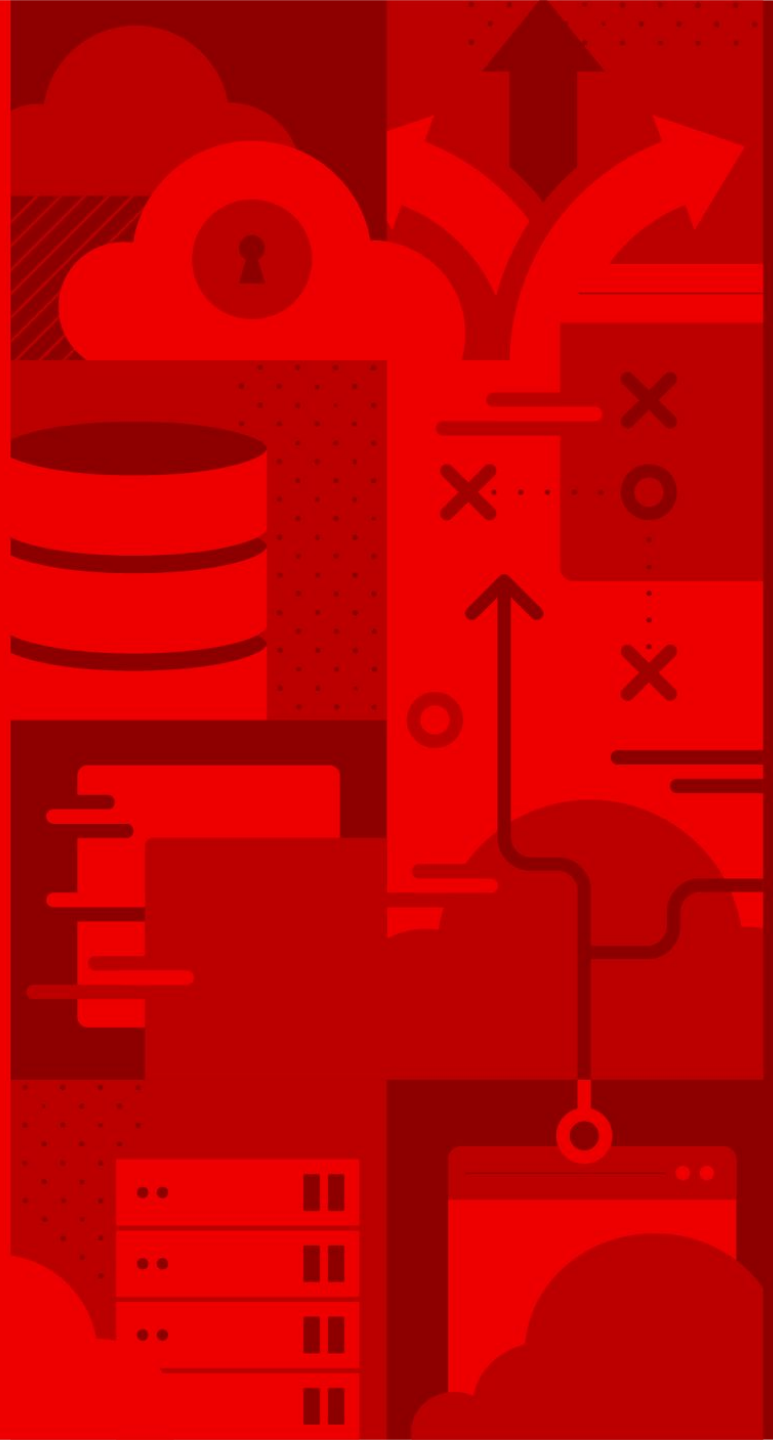

So How Does It Work?

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Not SSH

WinRM (HTTP-based remote shell protocol)

Non-interactive logon

Different connection plugin

Requires pywinrm

Still Not SSH

PSRP support since Ansible 2.7

Faster, better

File transfer

Requires pypsrp

... Microsoft OpenSSH?

Powershell

Unlike Python, "just there" on modern Windows

We can use .NET

Powershell 3+, Windows 7/Server 2008 RC2+

Inventory

Windows has its own connection type

Variable in inventory must be set

Similar to other target platforms

Inventory Example: Windows

```
[windows]
mssqlserver.example.com
iisserver.example.com

[windows:vars]
ansible_connection=winrm
OR
ansible_connection=psrp
```

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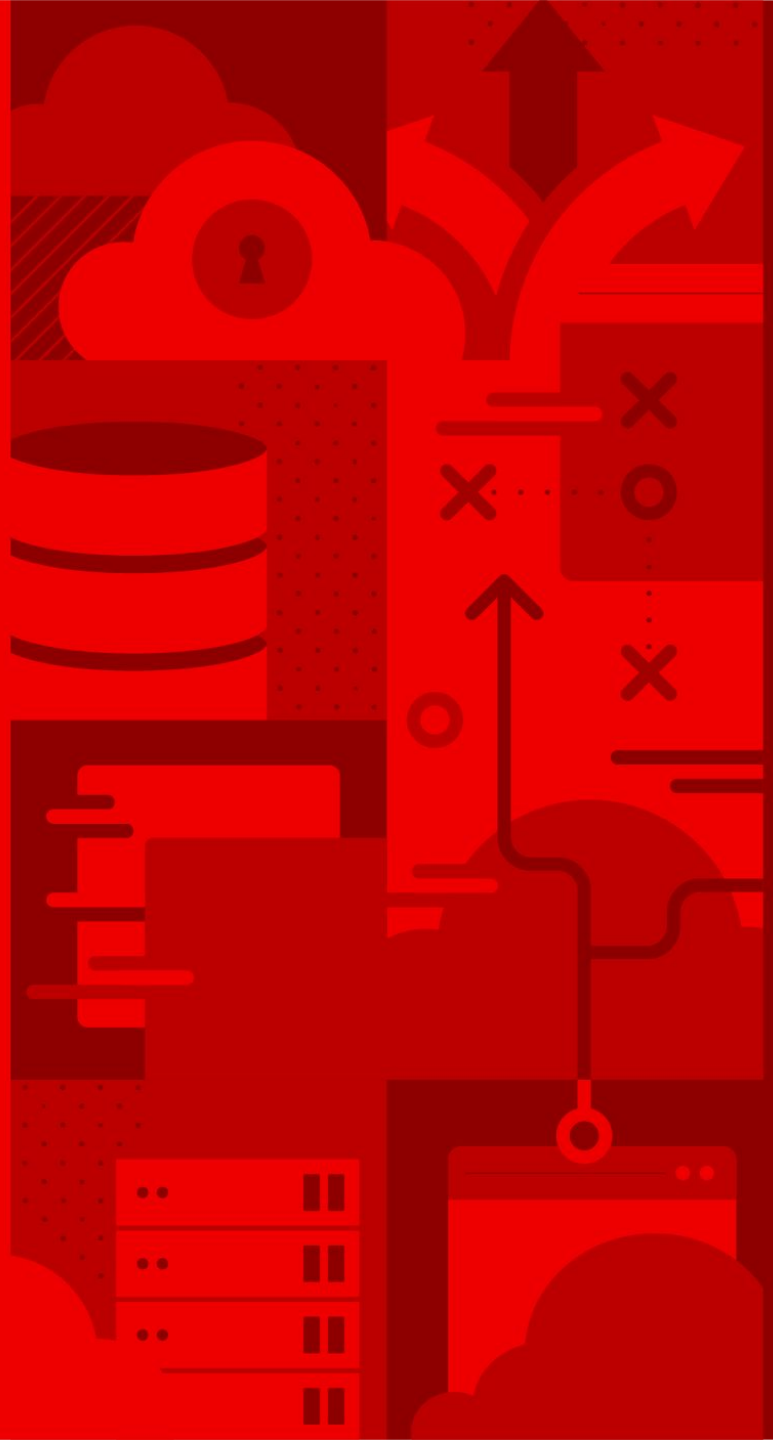

What We Can Do Next Week!

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Monday:

Commands & Scripts

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Windows Command

Simply executes a command

Not run through shell → no shell variables, no shell specific commands

Quite secure

No real idempotency

Windows Command

```
- name: run a cmd command
  win_command: cmd.exe /c mkdir C:\temp

- name: run a vbs script
  win_command: cscript.exe script.vbs

- name: run from specific folder, skip when condition already met
  win_command: wbadmin -backupTarget:C:\backup\
  args:
    chdir: C:\somedir\
    creates: C:\backup\
```

Windows Shell

Executes within a PowerShell

Use PowerShell commands, variables, etc.

Even multi-line scripts possible

Less secure!

No real idempotency

Windows Shell

```
- name: run command through the shell
  win_shell: Write-Host Hello world

- name: run multi-lined shell commands
  win_shell: |
    $value = Test-Path -Path C:\temp
    if ($value) {
        Remove-Item -Path C:\temp -Force
    }
    New-Item -Path C:\temp -ItemType Directory
```

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Script

Works on Linux and Windows

Transfers and executes a script

Local copy can still be templated!

Only use in cases where the other modules don’t work

No real idempotency

Script

```
- name: run a script
  script: /tmp/myscript.bat
```

Tuesday:

Software Management

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Application Installation

Ways To Install Software	
win_package	The default module to install MSI or EXE
win_chocolatey	If possible, use Chocolatey! A package management framework for Windows - like the app stores on mobile phones, homebrew or the repositories on Linux distributions. Community driven.
win_feature	Installs or uninstalls Windows Roles or Features on Windows Server using the Add/Remove-WindowsFeature Cmdlets on Windows 2008 R2 and Install/Uninstall-WindowsFeature Cmdlets on Windows 2012.
win_update	Manage updates: install KBs, install all updates from a certain category and blacklist what does not fit your current setup.
win_hotfix	Install or remove windows hotfixes.

Application Installation With win_package

```
- name: Install Visual C thingy
  win_package:
    path: http://download.microsoft.com/.../vcredist_x64.exe
    product_id: '{CF2BEA3C-26EA-32F8-AA9B-331F7E34BA97}'
    arguments:
    - /install
    - /passive
    - /norestart
```

Application Installation With win_chocolatey

```
- name: Install multiple packages
  win_chocolatey:
    name:
    - procexp
    - putty
    - windirstat
    state: present
```

Windows Feature

```
- name: Install IIS
  win_feature:
    name: Web-Server
    state: present

- name: Install IIS with sub features and management tools
  win_feature:
    name: Web-Server
    state: present
    include_sub_features: yes
    include_management_tools: yes
```

Windows Updates

Basic, synchronous updates - win_updates

Uses configured source (Windows Update/WSUS)

(New in 2.5): transparent SYSTEM + auto reboot

Windows Updates

```
- name: install critical updates except blacklisted
  win_updates:
   category_names: CriticalUpdates
   reboot: yes # <--- new in 2.5!
   blacklist: # <--- new in 2.5!
   - KB4056892
```

Reboots

win_reboot action makes managed reboots trivial

wait_for_connection is just the second half

Reboots

```
# Apply updates and reboot if necessary
- win_updates:
  register: update_result
- win_reboot:
  when: update_result.reboot_required

# Reboot a slow machine that might have lots of updates to apply
- win_reboot:
    shutdown_timeout: 3600
    reboot_timeout: 3600
```

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Wednesday:

Configuration Management & Services

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Registry

Manage individual key/value (win_regedit)

Manage idempotent bulk import (win_regmerge)

Registry

```
- name: ensure registry value
  win_regedit:
    path: HKLM\Software\Microsoft\Windows
    name: SomeValueName
    value: 0x12345

- name: merge registry data
  win_regmerge:
    path: ComplexRegData.reg
```

ACLs

More granular than Linux permissions

SDDL?!

More like SELinux ACLs

ACLs

```
- name: ensure owner recursively
  win_owner:
    path: C:\Program Files\SomeApp
    user: Administrator
    recurse: true

- name: ensure complex ACLs
  win_acl:
    path: C:\Temp
    user: Users
    rights: ReadAndExecute,Write,Delete
    inherit: ContainerInherit,ObjectInherit
```

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Services

win_service looks/acts like Linux service module

Provides fine control over complex service behavior config in Windows SCM (who/what/when/how)

Services

```
- name: ensure IIS is running
  win_service:
    name: W3Svc
    state: running

- name: ensure firewall service is stopped/disabled
  win_service:
    name: MpsSvc
    state: stopped
    start_mode: disabled
```

Thursday:

Domains & Credentials

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Domains

Enterprise identity management

Makes auth complex

Ansible can do "throwaway" domains easily

Promote/depromote Domain Controllers

Joining/leaving domain is simple

Manage basic domain objects

Domains

```
- name: create a domain
  win_domain:
    dns_domain_name: mydomain.local
    safe_mode_password: ItsASecret

- name: add a domain user
  win_domain_user:
    name: somebody
    upn: somebody@mydomain.local
    groups:
      - Domain Admins
```

Become

Run with full privileges that are available to remote user

Uses runas user

Ansible >= 2.5, else UAC and SeTcbPrivilege

become_user: local or domain user account, local service accounts like System or NetworkService

Become

```
- win_whoami:

- win_whoami:
  become: yes

- win_whoami:
  become: yes
  become_user: System
```

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Authentication

Option	Local Accounts	Active Directory	Credential Delegation
Basic	Yes	No	No
Certificate	Yes	No	No
NTLM	No	Yes	Yes
Kerberos	Yes	Yes	No
CredSSP	Yes	Yes	Yes

Authentication

Pick the one right for your use case

Some are more secure; some are easier to set up

Be aware of weaknesses of each type

Authentication

```
ansible_user: username@MY.DOMAIN.COM
ansible_password: Password
ansible_connection: winrm
ansible_winrm_transport: kerberos

ansible_connection: winrm
ansible_winrm_cert_pem: /path/to/certificate/public/key.pem
ansible_winrm_cert_key_pem: /path/to/certificate/private/key.pem
ansible_winrm_transport: certificate
```

Friday:

DSC, Anyone?

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What About DSC?

Configurations

Declarative Powershell Scripts

Define And Configure Instances

Of Resources

Dsc Will Simply “Make It So”

Idempotent

Resources

"Make It So" Part Of Dsc

Contain The Code

Files, Windows Processes,

Vm Running In Azure, Etc.

Why Use Ansible & Dsc Together?

Embed DSC in a broader automation approach

Cover more than just Windows

Tasks which are not idempotent by design

Why Use Ansible & Dsc Together?

Use Tower features via Ansible to govern DSC execution

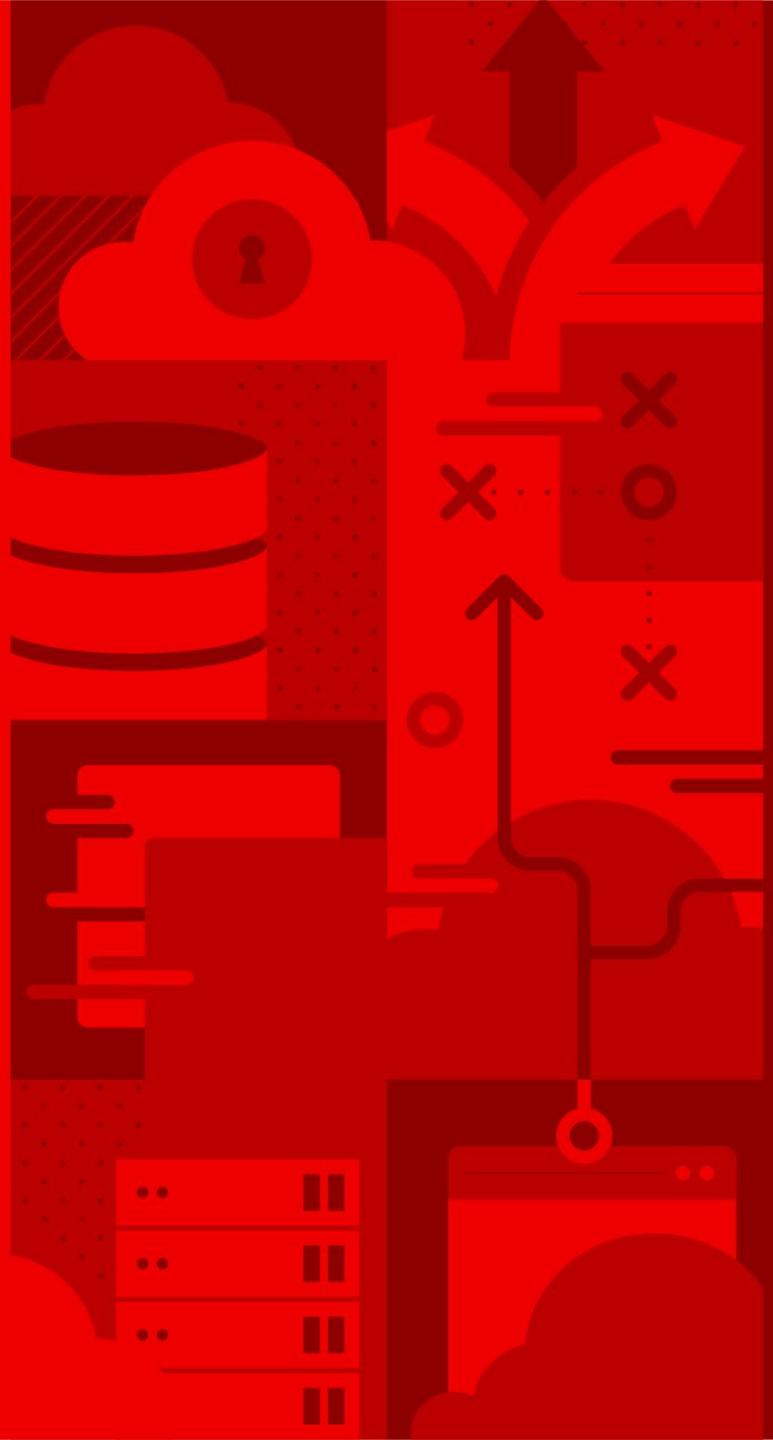
Manage DSC resources

Free form module

Ansible & Dsc - We Have Modules For That!

```
- name: install xDNSServer DSC module on target
  win_psmodule:
    name: xDnsServer

- name: create DNS zone
  win_dsc:
    resource_name: xDnsServerPrimaryZone
    name: createdbyansible.com
```



Wrap-Up

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Windows is a first class citizen within the Ansible ecosystem!

Do Next

Get Started

- Try Tower for free
  ansible.com/tower-trial
- Three steps to start right off
  ansible.com/get-started
- Want to learn more?
  ansible.com/resources

Focus On Windows

- Connect to your hosts
  ansible.com/blog/connecting-to-a-windows-host
- Check out roles for Windows platform
  on galaxy.ansible.com
- Start with Ansible and Azure
  docs.microsoft.com/en-us/azure/ansible/

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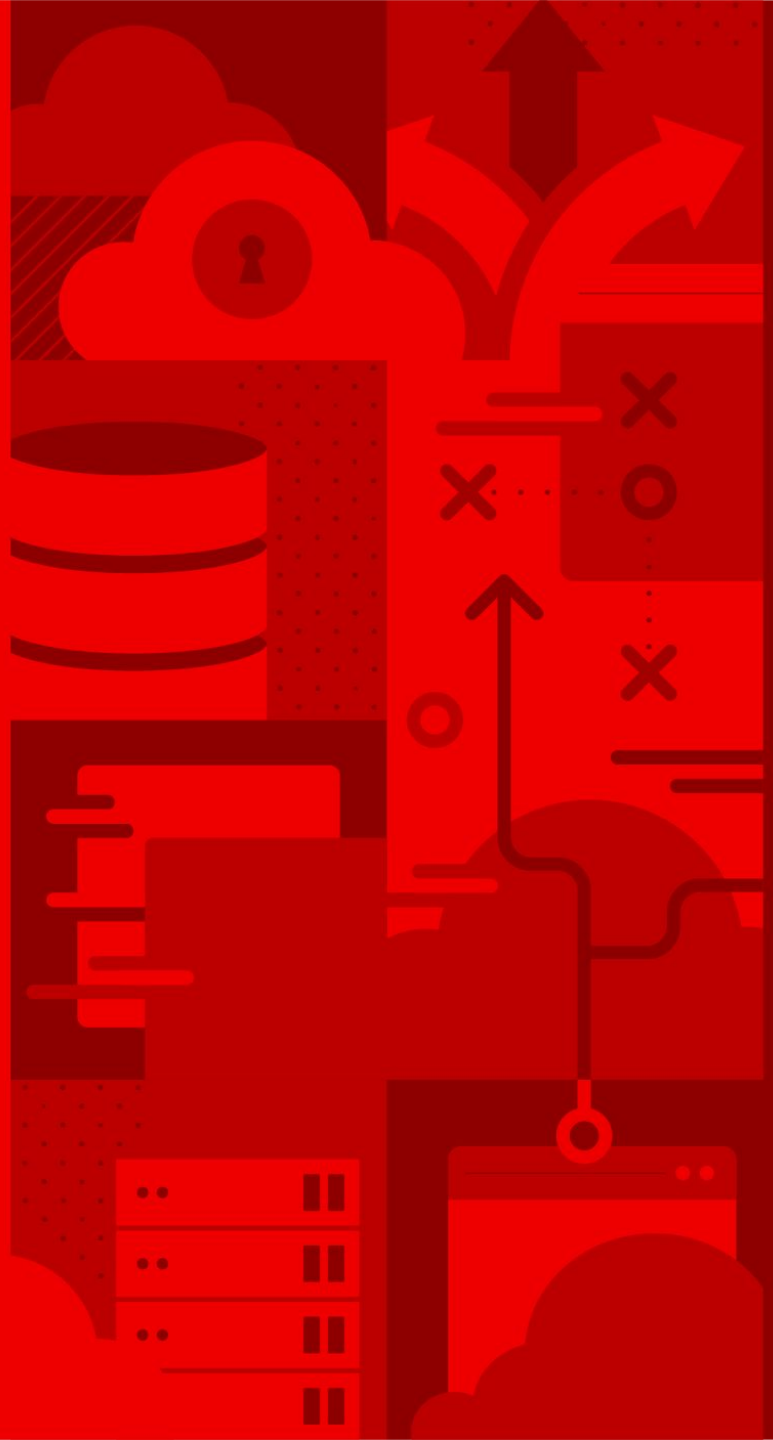

Hint:
How To Code Best!

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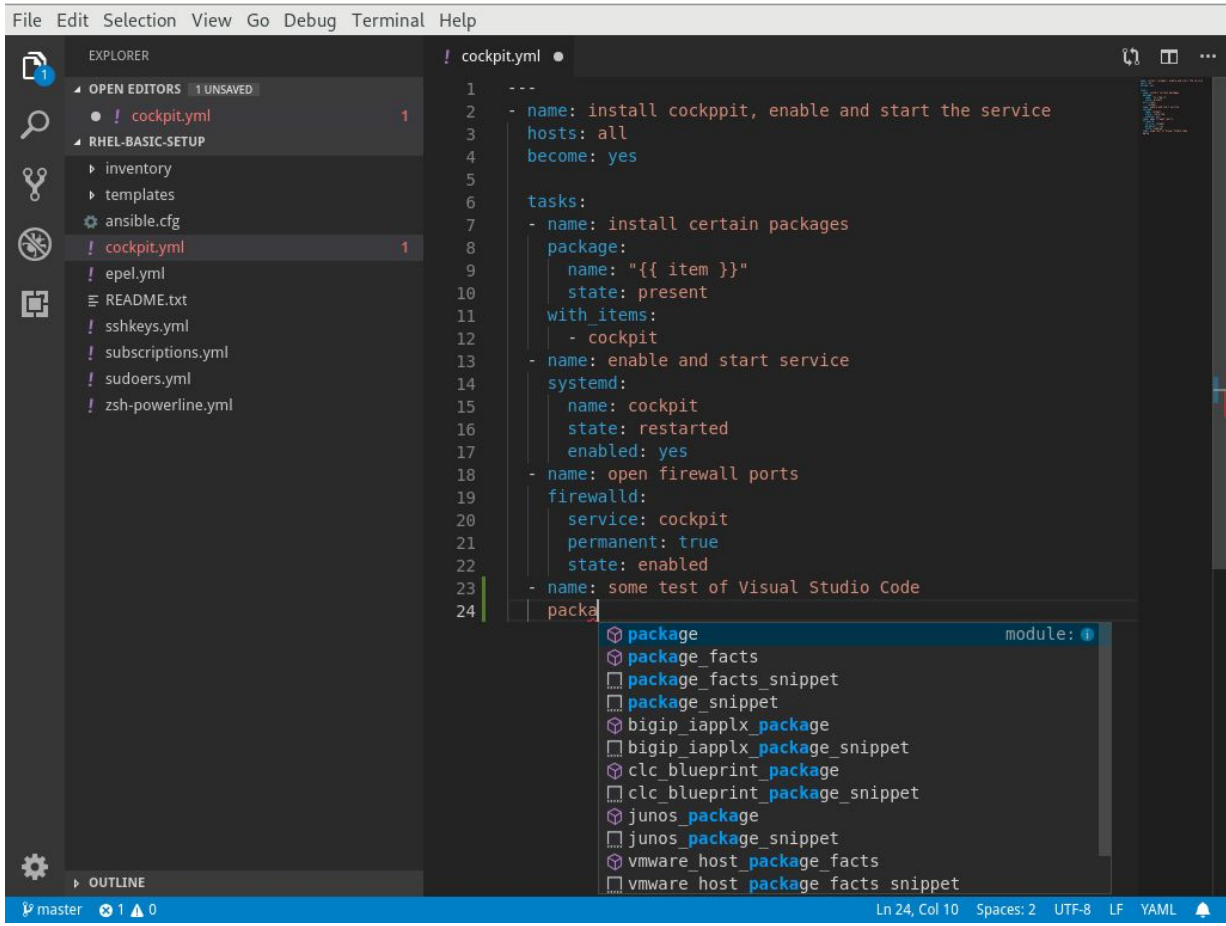
Use Visual Studio Code!

Lightweight but powerful open source editor. And a rich Ansible extension is available - provided by Microsoft.

- Code completion
- Syntax highlighting
- Run playbooks
- Shows Microsoft's commitment to Ansible



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Thank you!

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