# Université IBM i

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## 19 et 20 novembre 2024

IBM Innovation Studio Paris

## S05 – Automatisation IBM i avec PowerVC et Ansible

19 novembre 11:15 - 12:15

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IBM France

ANSIBLE

IBM i

PowerVC™

IBM

common
FRANCE

# Ansible – Introduction

- Ansible est une plateforme d'automatisation informatique radicalement simple, qui facilite le déploiement de vos applications et systèmes :
  - Application Open source avec possibilité de support payant par Red Hat
  - Agent-less – Pas besoin d'installation et de gestion d'agents
  - Basé sur Python / YAML
  - Grande flexibilité et gestion de la configuration des systèmes
  - Rétablissement de la configuration en cas d'erreur
- Prend en charge les actions suivantes :
  - Configuration des serveurs
  - Déploiement d'applications
  - Intégration continue / Test continu (CI / CD)
  - Déploiement de VM
  - Orchestration
  - Automatisation des tâches
- Une vidéo de démarrage rapide en ligne fournie par Ansible
  - https://www.ansible.com/resources/videos/quick-start-video

# Ansible Architecture

Provisioning

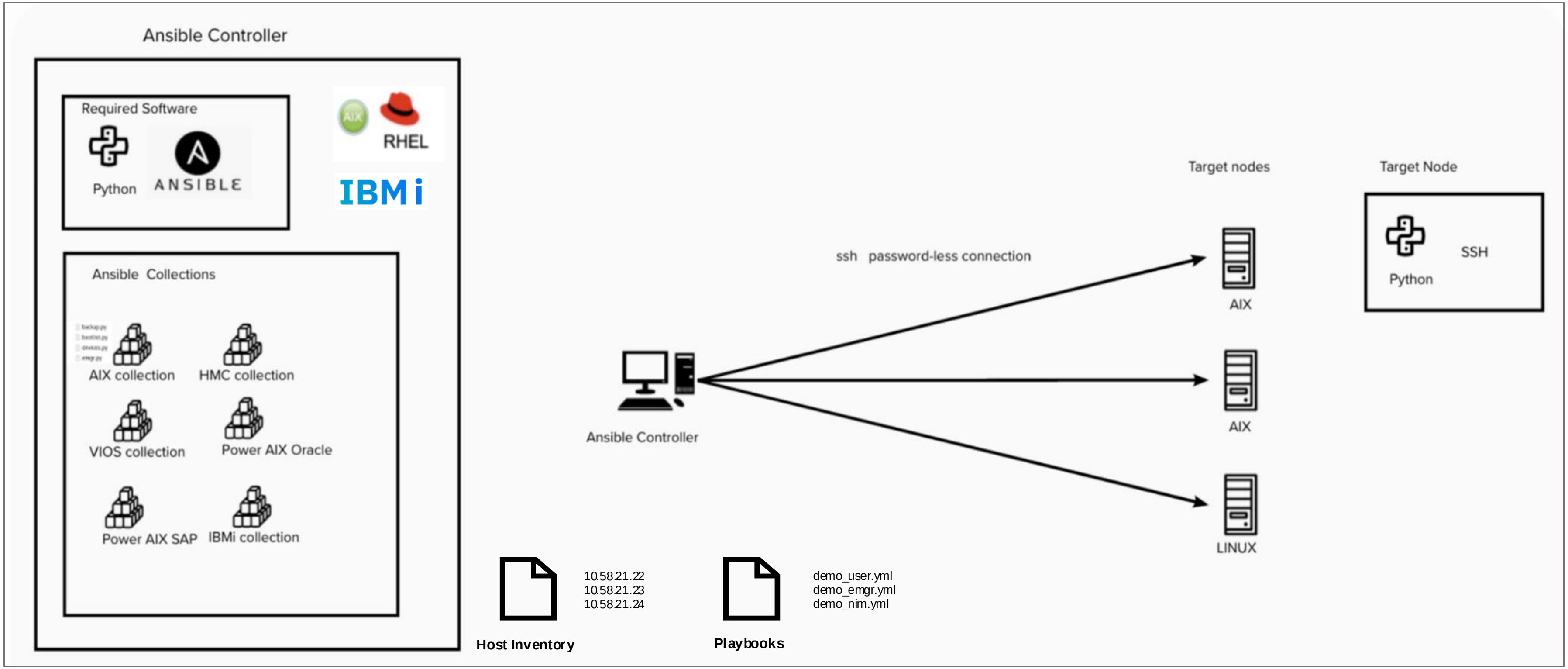
Configuration Management

Application Deployment

Continuous Delivery

Orchestration

Security Automation



Ansible Controller

Required Software

Python

ANSIBLE

RHEL

IBM i

Ansible Collections

AIX collection

HMC collection

VIOS collection

Power AIX Oracle

Power AIX SAP

IBMi collection

ssh password-less connection

Ansible Controller

Target nodes

AIX

AIX

LINUX

Target Node

Python

SSH

Host Inventory

10.58.21.22
10.58.21.23
10.58.21.24

Playbooks

demo_user.yml
demo_emgr.yml
demo_nim.yml

# Ansible – Terminologie

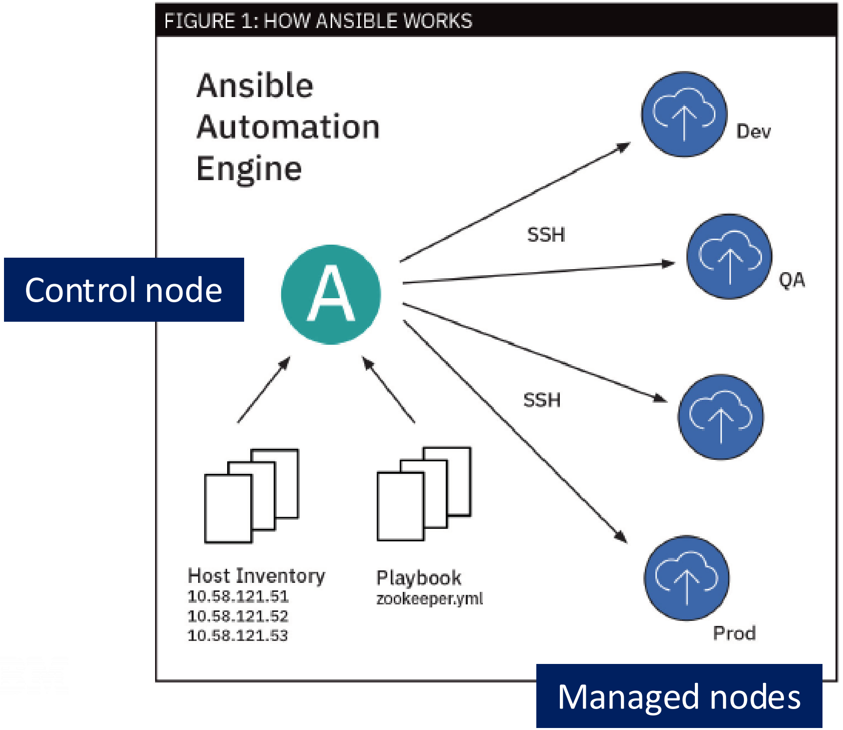


FIGURE 1: HOW ANSIBLE WORKS

**Control node** – VM avec Ansible installé et utilisé pour lancer des playbooks

**Managed node (a.k.a. endpoints)** – machines qui sont gérées par Ansible ( AIX, IBM i, Linux, z/OS, Windows)

**Inventory** – Liste de managed nodes sur lequels Ansible peut lancer des playbook

**Modules** – unité de code que Ansible exécute, il existe des milliers de modules disponibles.

**Tasks** – unité d'action dans un playbook Ansible (utilise des modules pour effectuer une action)

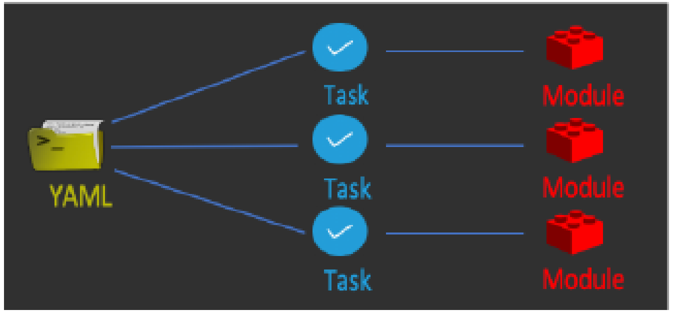
**Playbooks** – liste de tasks et ecrit en YAML

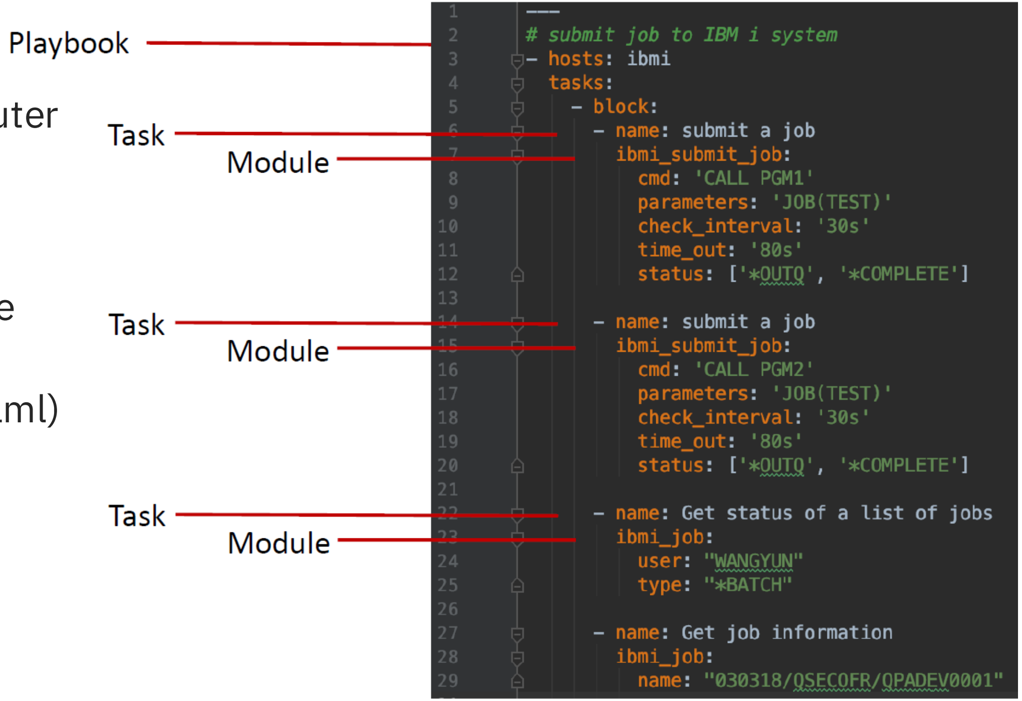
**Plugins** – modules complémentaires aux modules de base (extensions)

**Rôles** – composants réutilisables et autonomes à intégrer dans les playbooks

# Ansible – Terminologie – YAML

- YAML
  - Langage pour définir les tâches à exécuter
- **Playbook**
  - Liste ordonnées de tâches
    - Chaque tâche invoque un module (programme python)
  - En langage YAML – Fichier .yml  (ou .yaml)





```
---
# submit job to IBM i system
- hosts: ibmi
  tasks:
    - block:
      - name: submit a job
        ibmi_submit_job:
          cmd: 'CALL PGM1'
          parameters: 'JOB(TEST)'
          check_interval: '30s'
          time_out: '80s'
          status: ['*OUTQ', '*COMPLETE']

      - name: submit a job
        ibmi_submit_job:
          cmd: 'CALL PGM2'
          parameters: 'JOB(TEST)'
          check_interval: '30s'
          time_out: '80s'
          status: ['*OUTQ', '*COMPLETE']

      - name: Get status of a list of jobs
        ibmi_job:
          user: "WANGYUN"
          type: "*BATCH"

      - name: Get job information
        ibmi_job:
          name: "030318/QSECOFR/QPADEV0001"
```

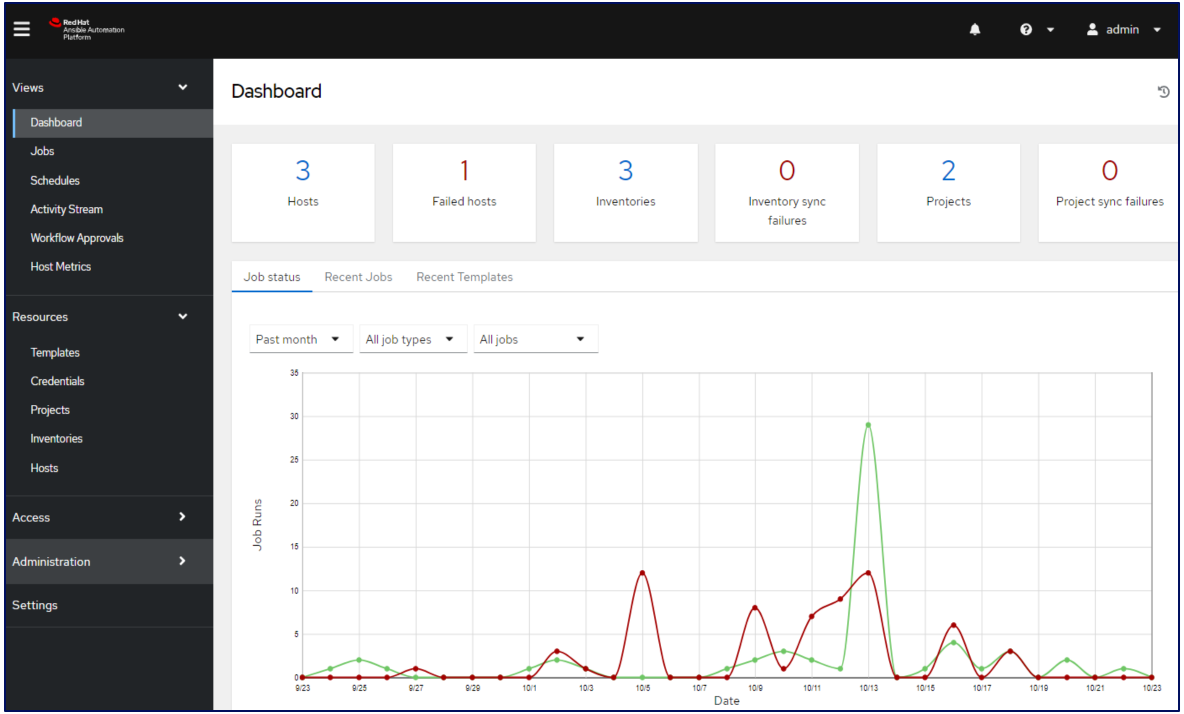
# Red Hat Ansible Automation Platform

Red Hat Ansible Automation Controller est une interface graphique qui rend Ansible plus simple a utiliser.

- Voir les inventaires
- Lancer les playbooks
- Revoir les logs
- Gestion projet et utilisateurs

Forme commerciale de Ansible AWX

AAP 2.4 peut maintenant être installé sur **linux on Power**



Dashboard

3 Hosts

1 Failed hosts

3 Inventories

0 Inventory sync failures

2 Projects

0 Project sync failures

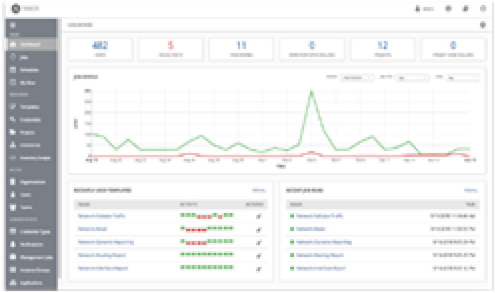
Past month | All job types | All jobs

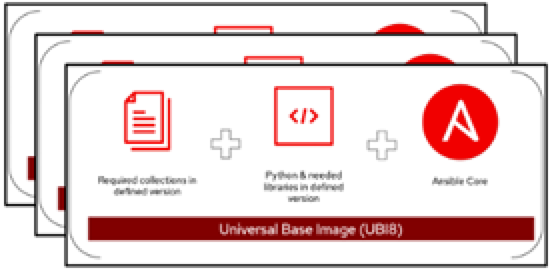
# Ansible Automation Platform 2.x pour IBM Power Systems

Automation Controller

Execution Environments { containerized }

Endpoints




Required collections in defined version
Python & needed libraries in defined version
Ansible Core
Universal Base Image (UBI8)

1 **Ansible Automation Controller**

- Gestion graphique à l'échelle de l'entreprise d'une architecture Ansible multi-plateforme

2 **Ansible Execution Environments**

- Exécution plan pour l'automatisation
- Contient Ansible core, Python et Collections, conteneurisé.

3 **Ansible Endpoints**

- Les modules d'automatisation sont executés ici.

# Ansible pour IBM Power systems

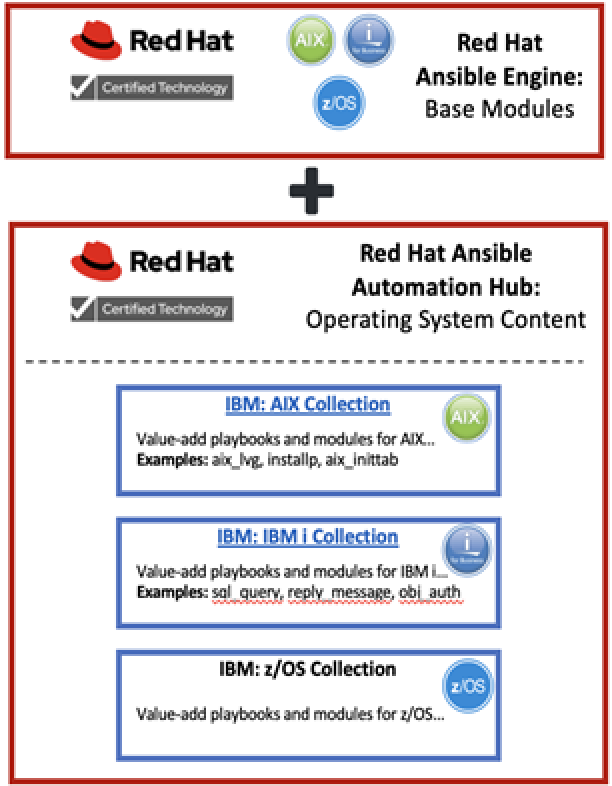
Les collections constituent le moyen standard d'étendre et de compléter le contenu de base d’Ansible — **désormais le contenu AIX et IBM i est disponible** — sous forme communautaire et commerciale.

**COMMUNITY ENABLED: PAS DE CERTIFICATION**

Les collections sont distributées via Ansible Galaxy et bénéficient d'un support au niveau de la communauté (c'est-à-dire, aucun abonnement payant au support d'entreprise de Red Hat)

**ENTERPRISE READY: CONTENU CERTIFIE DE RED HAT**

Les collections peuvent être certifiées par Red Hat en les certifiant et en les plaçant dans Red Hat Ansible Automation Hub mis à disposition via les abonnements Red Hat



Value-add playbooks and modules for AIX…
**Examples:** aix_lvg, installp, aix_inittab

Value-add playbooks and modules for IBM i…
**Examples:** sql_query, reply_message, obj_auth

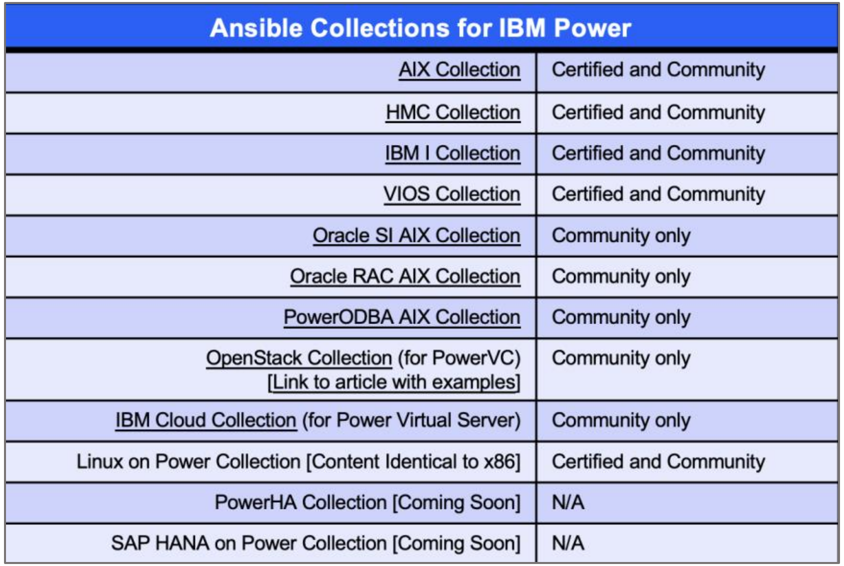
Value-add playbooks and modules for z/OS…

# Intégration de Ansible Automation Platform avec IBM Power

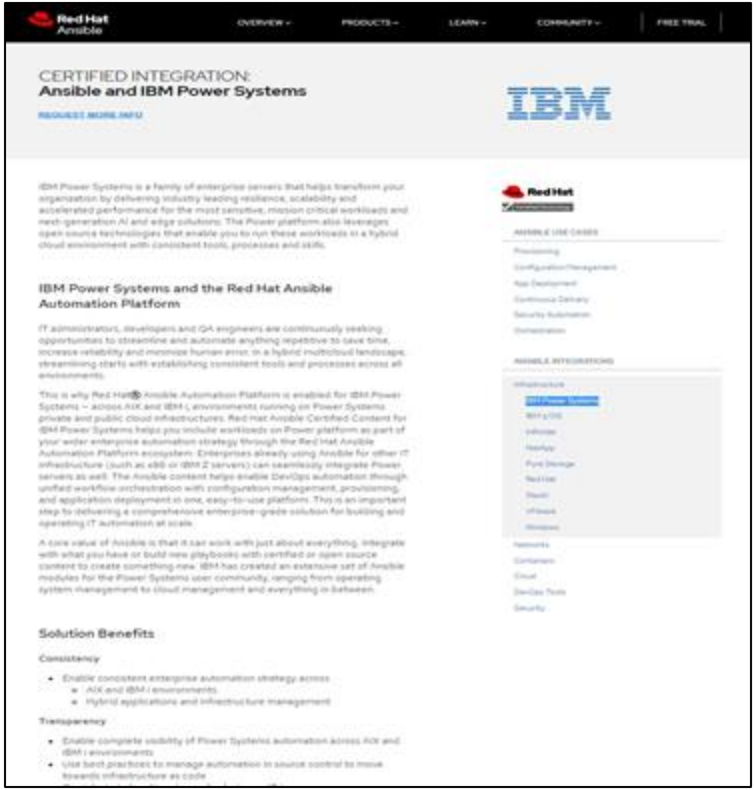
IBM Power a été ajouté à la section Intégrations certifiées du site Web Red Hat Ansible

https://www.ansible.com/integrations/infrastructure/ibm-power-systems

IBM is a Certified Ansible Automation Partner



| Ansible Collections for IBM Power | |
|---|---|
| AIX Collection | Certified and Community |
| HMC Collection | Certified and Community |
| IBM I Collection | Certified and Community |
| VIOS Collection | Certified and Community |
| Oracle SI AIX Collection | Community only |
| Oracle RAC AIX Collection | Community only |
| PowerODBA AIX Collection | Community only |
| OpenStack Collection (for PowerVC)<br>[Link to article with examples] | Community only |
| IBM Cloud Collection (for Power Virtual Server) | Community only |
| Linux on Power Collection [Content Identical to x86] | Certified and Community |
| PowerHA Collection [Coming Soon] | N/A |
| SAP HANA on Power Collection [Coming Soon] | N/A |



CERTIFIED INTEGRATION:
**Ansible and IBM Power Systems**

REQUEST MORE INFO

IBM Power Systems is a family of enterprise servers that helps transform your organization by delivering industry leading resilience, scalability and accelerated performance for the most sensitive, mission critical workloads and next-generation AI and edge solutions. The Power platform also leverages open source technologies that enable you to run these workloads in a hybrid cloud environment with consistent tools, processes and skills.

**IBM Power Systems and the Red Hat Ansible Automation Platform**

IT administrators, developers and QA engineers are continuously seeking opportunities to streamline and automate anything repetitive to save time, increase reliability and minimize human error. In a hybrid multicloud landscape, streamlining starts with establishing consistent tools and processes across all environments.

This is why Red Hat® Ansible Automation Platform is enabled for IBM Power Systems – across AIX and IBM i, environments running on Power Systems private and public cloud infrastructures. Red Hat Ansible Certified Content for IBM Power Systems helps you include workloads on Power platform as part of your wider enterprise automation strategy through the Red Hat Ansible Automation Platform ecosystem. Enterprises already using Ansible for other IT infrastructure (such as x86 or IBM Z servers) can seamlessly integrate Power servers as well. The Ansible content helps enable DevOps automation through unified workflow orchestration with configuration management, provisioning, and application deployment in one, easy-to-use platform. This is an important step to delivering a comprehensive enterprise-grade solution for building and operating IT automation at scale.

A core value of Ansible is that it can work with just about everything. Integrate with what you have or build new playbooks with certified or open source content to create something new. IBM has created an extensive set of Ansible modules for the Power Systems user community, ranging from operating system management to cloud management and everything in between.

**Solution Benefits**

**Consistency**

- Enable consistent enterprise automation strategy across
  - AIX and IBM i environments
  - Hybrid applications and infrastructure management

**Transparency**

- Enable complete visibility of Power Systems automation across AIX and IBM i environments
- Use best practices to manage automation in source control to move towards infrastructure as code

ANSIBLE USE CASES

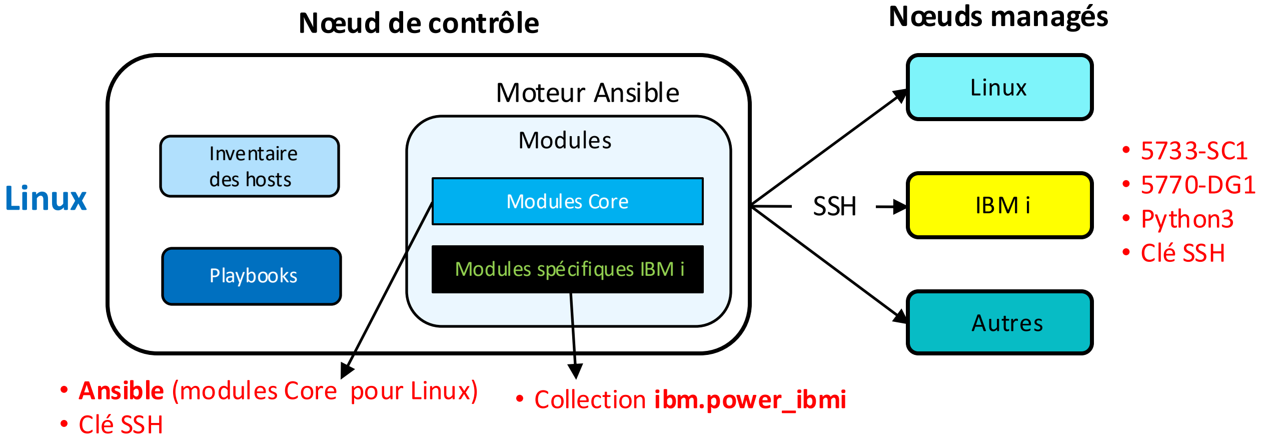
- Provisioning
- Configuration Management
- App Deployment
- Continuous Delivery
- Security Automation
- Orchestration

ANSIBLE INTEGRATIONS

- Infrastructure
  - IBM Power Systems
  - IBM z/OS
  - Infoblox
  - NetApp
  - Pure Storage
  - Red Hat
  - Splunk
  - VMware
  - Windows
- Networks
- Containers
- Cloud
- DevOps Tools
- Security

# Ansible pour IBM i

- Nœud de **contrôle :**
  - Linux
  - Ansible : modules Core + modules IBM i
- Nœud **managé :**
  - IBM i



Nœud de contrôle

Linux

Moteur Ansible

Inventaire des hosts

Playbooks

Modules

Modules Core

Modules spécifiques IBM i

SSH

Nœuds managés

Linux

IBM i

Autres

- 5733-SC1
- 5770-DG1
- Python3
- Clé SSH

- **Ansible** (modules Core pour Linux)
- Clé SSH

- Collection **ibm.power_ibmi**

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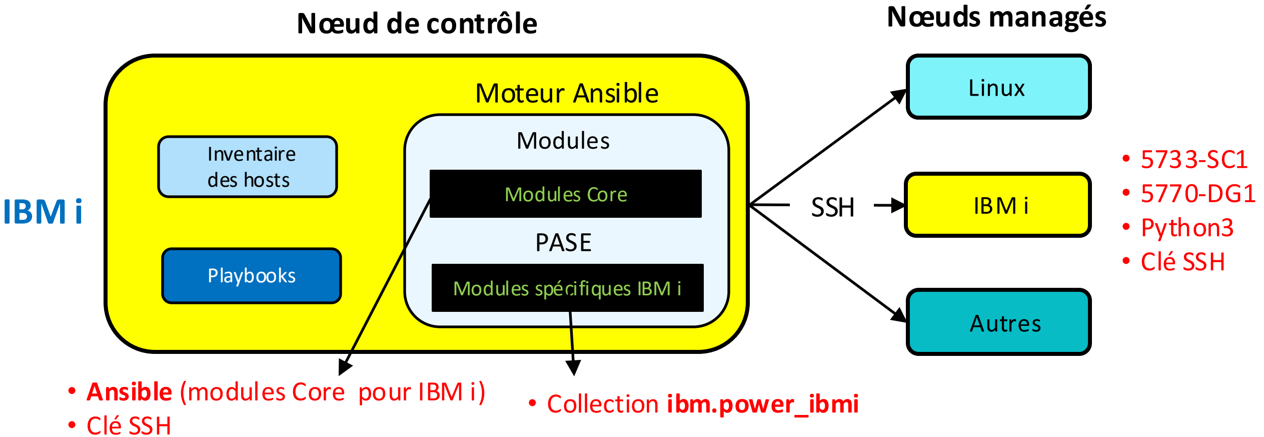

Nœud de contrôle

IBM i

Moteur Ansible

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IBM i

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- 5733-SC1
- 5770-DG1
- Python3
- Clé SSH

- **Ansible** (modules Core pour IBM i)
- Clé SSH

- Collection **ibm.power_ibmi**

# Ansible pour IBM i – Cas d'usage

- Tâches d'administration
  - Téléchargement et installation de PTF
  - Déploiement de programmes et d'applications
  - Installation de modules open source
  - Gestion des travaux, de la sécurité
  - Exécution de tâches spécifiques par commandes CL et scripts SQL

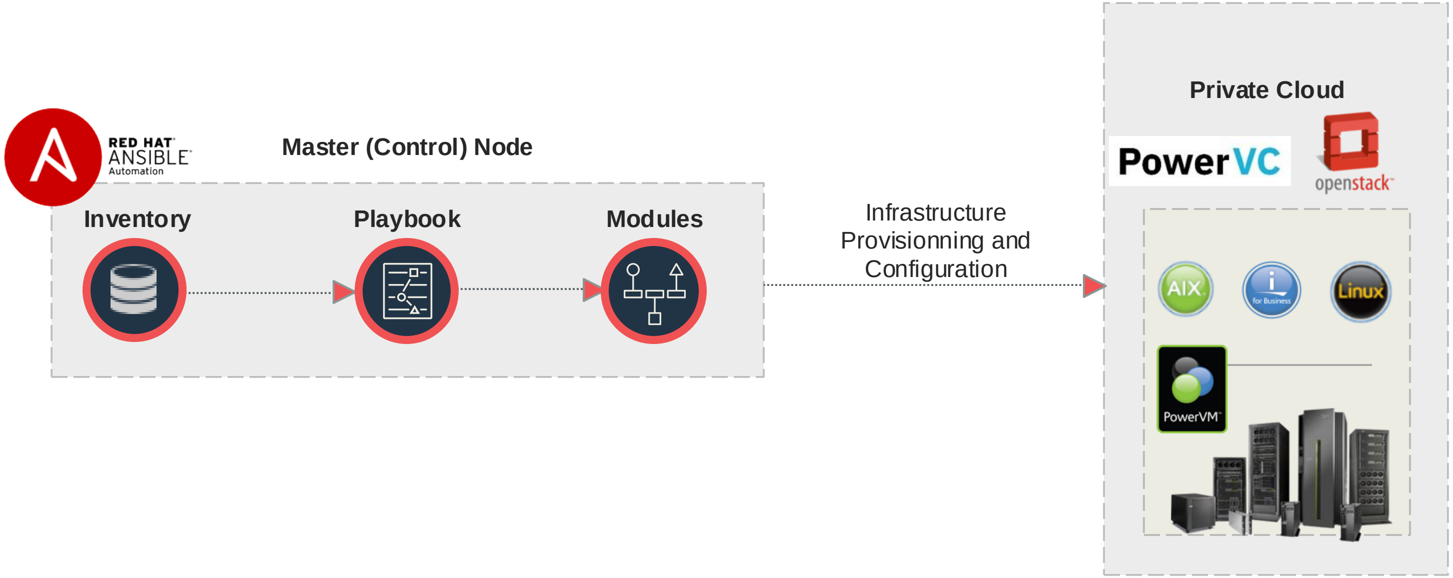
- Tâches de développement
  - Intégration continue, automatisation des builds…
  - Déploiement d'un environnement applicatif Dev > Test > QA > Prod

- Tâches Cloud
  - Clonage / provisionnement de VM et déploiement dans le Cloud (public / privé)

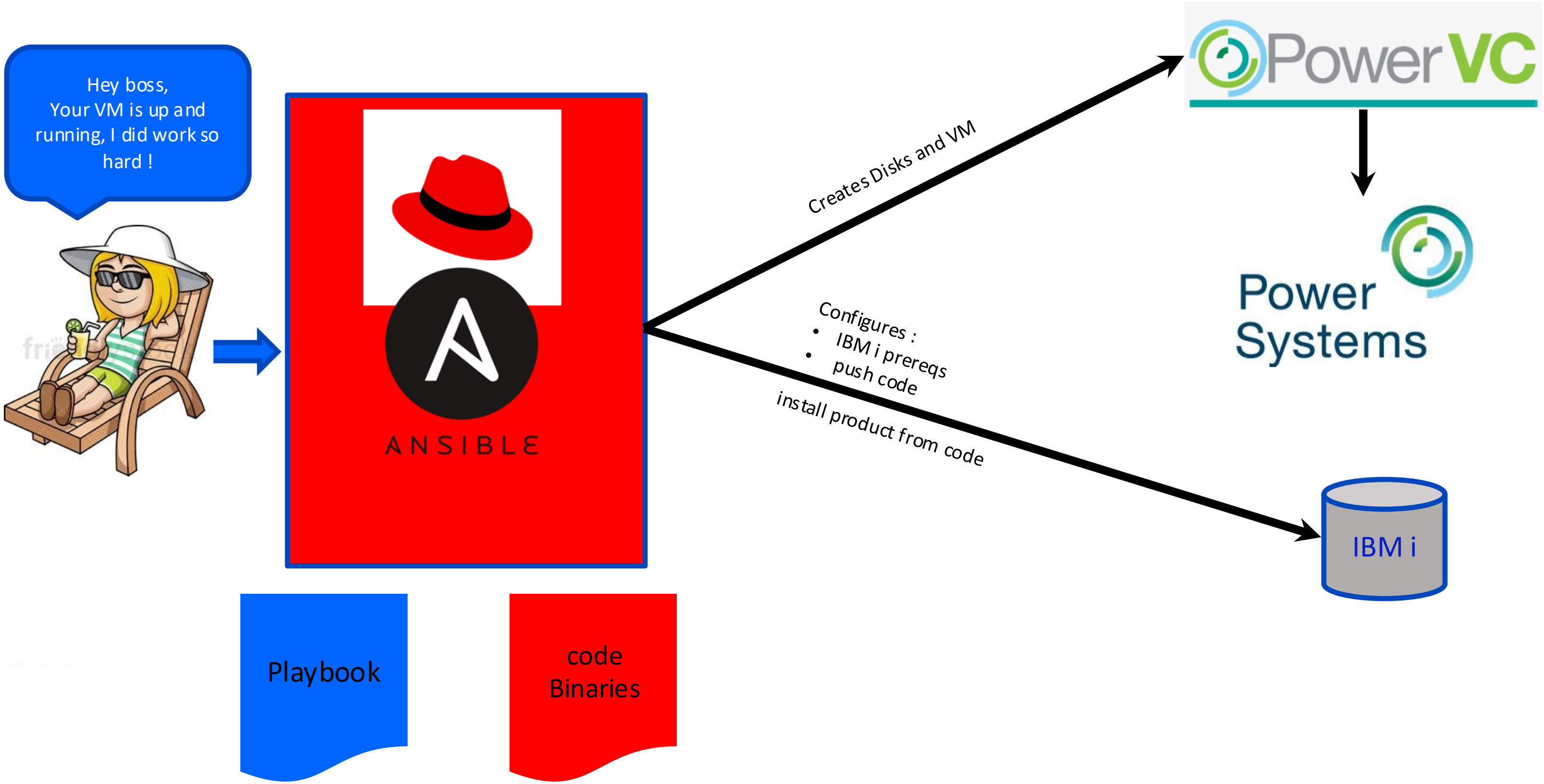
- Vérification de conformité de configuration et de sécurité
  - Vérification d'attributs système, de droits, de profils utilisateur…

# Déploiement automatique Storage & Server – Intégration avec PowerVC via Openstack

- Automatisez le provisionnement des serveurs IBM Power en réponse aux demandes croissantes de ressources provenant d'autres serveurs gérés par Ansible.



# Ansible playbook workflow



# Comment déployer une VM avec PowerVC et Ansible ?

- Comme PowerVC est basé sur OpenStack, vous pouvez utiliser les modules OpenStack disponibles gratuitement dans la collection Openstack.Cloud Ansible.
  - Le module **openstack.cloud.image_info** récupére les informations sur l'image
  - Le module **openstack.cloud.compute_flavor_info** récupére les informations sur la flavor
  - Le module **openstack.cloud.networks_info** récupére les informations sur le réseau
  - Le module **openstack.cloud.server** déploie une nouvelle VM
  - Le module **openstack.cloud.volume** crée un nouveau volume
  - Le module **openstack.cloud.server_volume** attache un volume à une VM

- Tutorial : Automating PowerVC using Ansible
  - https://developer.ibm.com/components/ibm-power/tutorials/automating-powervc-using-ansible/

# Exemple : Retrouver les informations sur une Image

Lancer ce playbook pour avoir une liste des images IBM i disponibles dans PowerVC

```
- name: List available PowerVC IBM i Images
  hosts: localhost
  tasks:
    - name: Retrieve list of all IBM i images
      openstack.cloud.image_info:
        filters:
          os_distro: ibmi  # remove this line to list all images
      register: result
   - name: Print image list
   debug:
         msg: "{{ result | json_query('openstack_image[*].
              {name: name, id: id, os_distro: os_distro, status: status,
              project: location.project.name}') }}“
```

**Result**

```
"id": "2ebd8778-beb7-47d3-86a9-956fe8c32dc0",
"name": "IBMIV73-2disks",
"os_distro": “ibmi",
"status": "active
```

# Retrouver l’information de l’image sur PowerVC UI

- On a bien le même image **id** et **name**

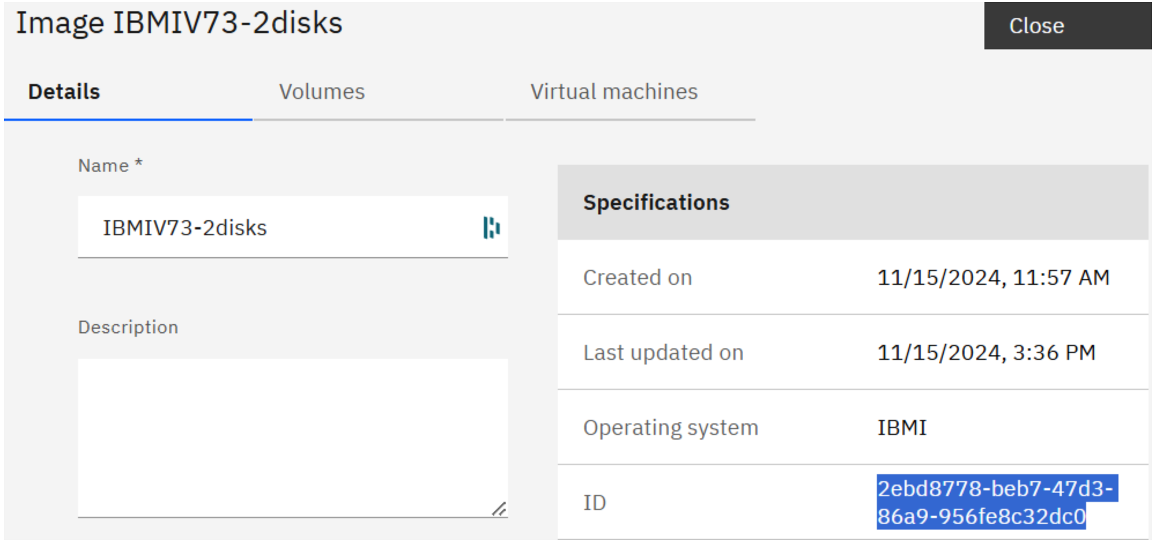


Image IBMIV73-2disks

Name *

IBMIV73-2disks

Description

| Specifications | |
|---|---|
| Created on | 11/15/2024, 11:57 AM |
| Last updated on | 11/15/2024, 3:36 PM |
| Operating system | IBMI |
| ID | 2ebd8778-beb7-47d3-86a9-956fe8c32dc0 |

```
"id": "2ebd8778-beb7-47d3-86a9-956fe8c32dc0",
"name": "IBMIV73-2disks",
"os_distro": “ibmi",
"status": "active
```

# Déployer une VM

- Lancer ce playbook pour déployer une nouvelle VM **thibmi01** à partir de l’image **IBMIV73-2disks** sur le serveur **900941A_78AB740** en utilisant le réseau **ansible**, et la flavor **IBMi**

```
- name: Create a new VM instance
  openstack.cloud.server:
      state: present
      availability_zone: 'power9:900941A_78AB740’
      name: thibmi01
      image: IBMIV73-2disks
timeout: 200
      flavor: IBMi
      nics:
            - net-name: ansible
```

Université IBM i

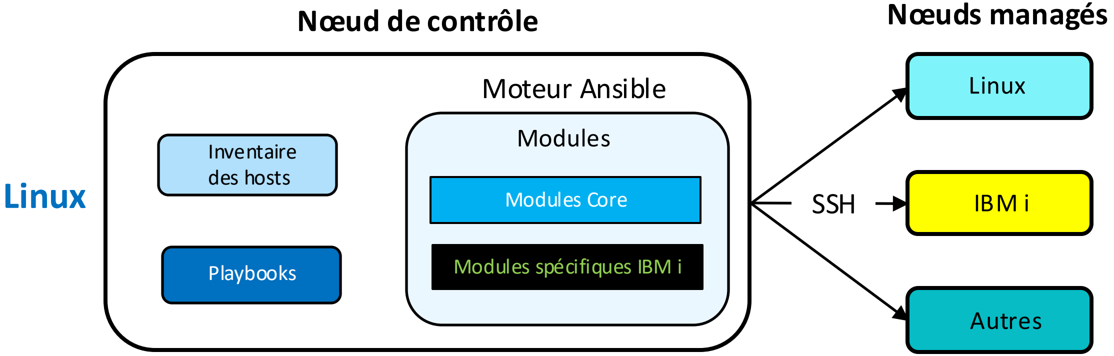
19 et 20 novembre 2024

IBM i
continuous innovation
continuous integration

# IBM i - Ansible
# nœud de controle

# Ansible pour IBM i – Possibilités

- Nœud de **contrôle :**
  - Linux
  - Ansible : modules Core + modules IBM i
- Nœud **managé :**
  - IBM i



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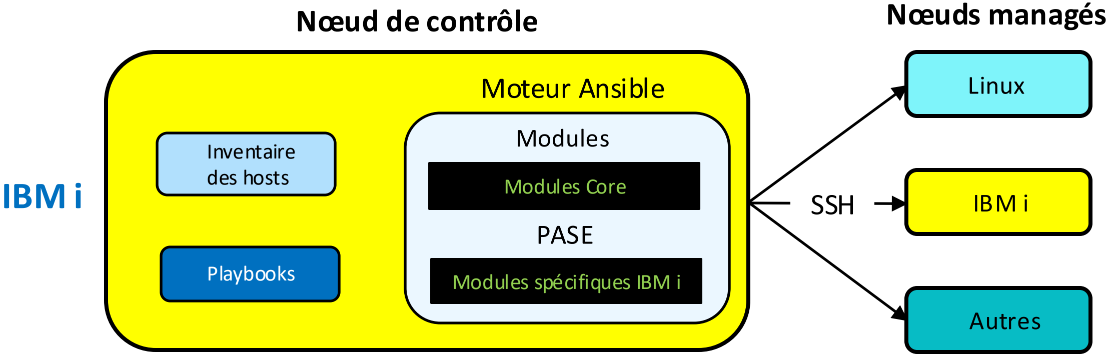
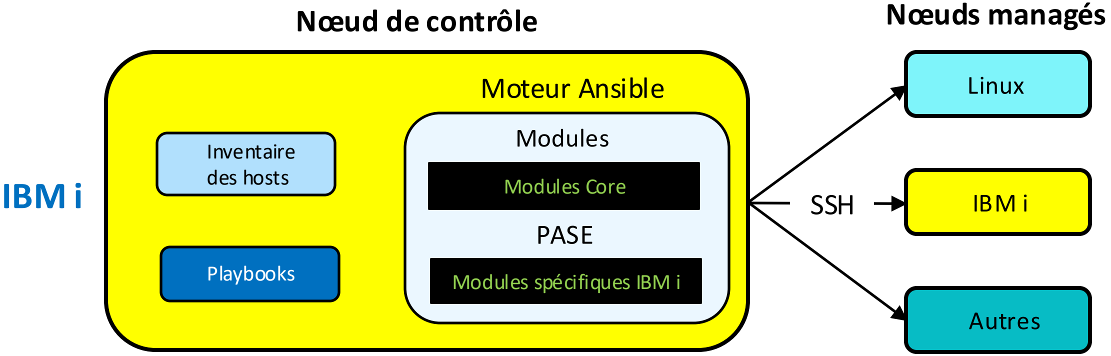
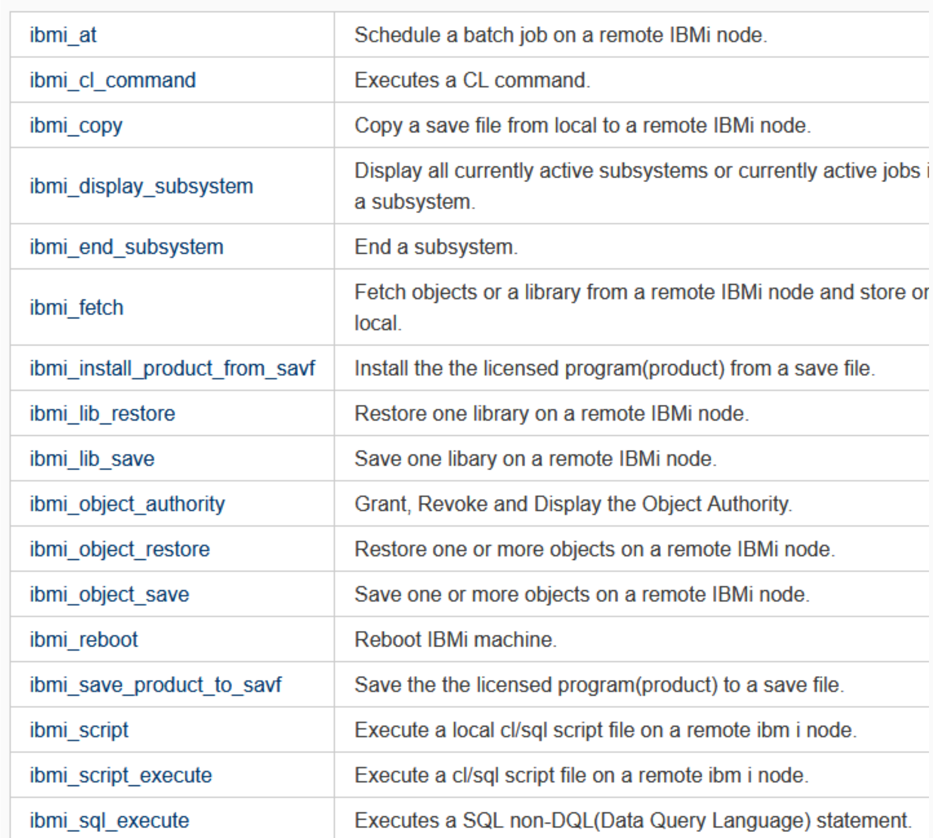


# Ansible pour IBM i – Possibilités

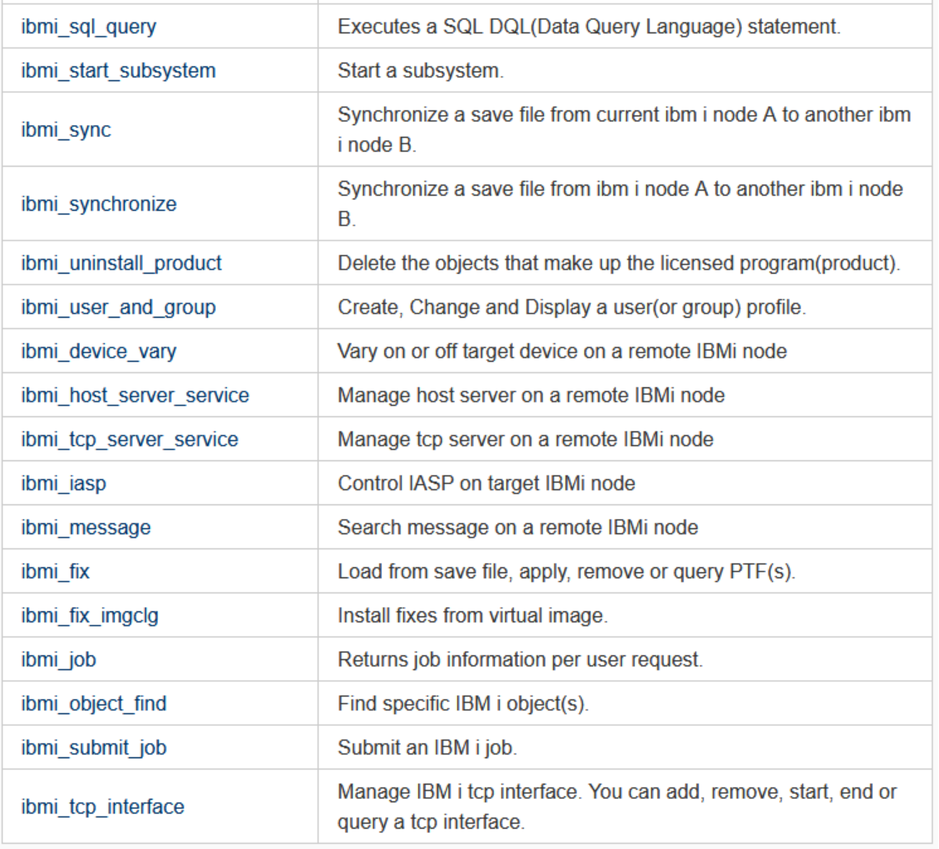
- Nœud de **contrôle** :
  - ⇨ IBM i
  - Ansible : modules Core + modules IBM i
- Nœud **managé** :
  - ⇨ IBM i



# Ansible pour IBM i – Quelques exemples de **modules**



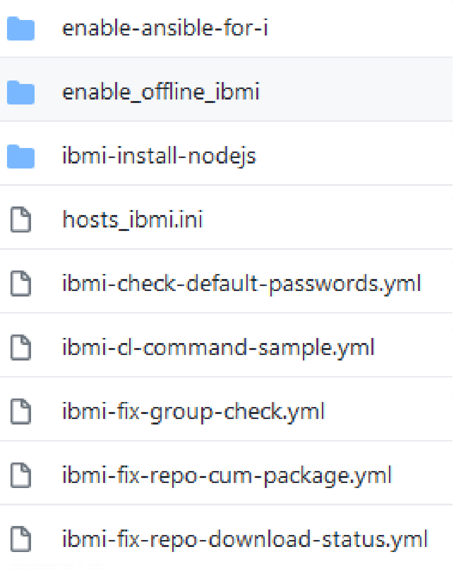
| | |
|---|---|
| ibmi_at | Schedule a batch job on a remote IBMi node. |
| ibmi_cl_command | Executes a CL command. |
| ibmi_copy | Copy a save file from local to a remote IBMi node. |
| ibmi_display_subsystem | Display all currently active subsystems or currently active jobs i a subsystem. |
| ibmi_end_subsystem | End a subsystem. |
| ibmi_fetch | Fetch objects or a library from a remote IBMi node and store or local. |
| ibmi_install_product_from_savf | Install the the licensed program(product) from a save file. |
| ibmi_lib_restore | Restore one library on a remote IBMi node. |
| ibmi_lib_save | Save one libary on a remote IBMi node. |
| ibmi_object_authority | Grant, Revoke and Display the Object Authority. |
| ibmi_object_restore | Restore one or more objects on a remote IBMi node. |
| ibmi_object_save | Save one or more objects on a remote IBMi node. |
| ibmi_reboot | Reboot IBMi machine. |
| ibmi_save_product_to_savf | Save the the licensed program(product) to a save file. |
| ibmi_script | Execute a local cl/sql script file on a remote ibm i node. |
| ibmi_script_execute | Execute a cl/sql script file on a remote ibm i node. |
| ibmi_sql_execute | Executes a SQL non-DQL(Data Query Language) statement. |



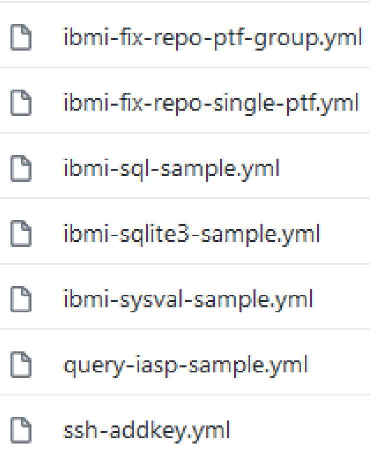
| | |
|---|---|
| ibmi_sql_query | Executes a SQL DQL(Data Query Language) statement. |
| ibmi_start_subsystem | Start a subsystem. |
| ibmi_sync | Synchronize a save file from current ibm i node A to another ibm i node B. |
| ibmi_synchronize | Synchronize a save file from ibm i node A to another ibm i node B. |
| ibmi_uninstall_product | Delete the objects that make up the licensed program(product). |
| ibmi_user_and_group | Create, Change and Display a user(or group) profile. |
| ibmi_device_vary | Vary on or off target device on a remote IBMi node |
| ibmi_host_server_service | Manage host server on a remote IBMi node |
| ibmi_tcp_server_service | Manage tcp server on a remote IBMi node |
| ibmi_iasp | Control IASP on target IBMi node |
| ibmi_message | Search message on a remote IBMi node |
| ibmi_fix | Load from save file, apply, remove or query PTF(s). |
| ibmi_fix_imgclg | Install fixes from virtual image. |
| ibmi_job | Returns job information per user request. |
| ibmi_object_find | Find specific IBM i object(s). |
| ibmi_submit_job | Submit an IBM i job. |
| ibmi_tcp_interface | Manage IBM i tcp interface. You can add, remove, start, end or query a tcp interface. |

# Ansible pour IBM i – Quelques exemples de **playbooks** et **rôles**

## Playbooks

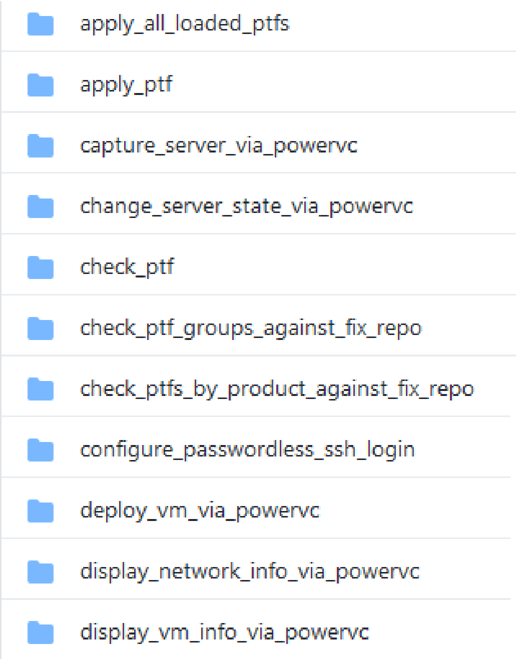


- enable-ansible-for-i
- enable_offline_ibmi
- ibmi-install-nodejs
- hosts_ibmi.ini
- ibmi-check-default-passwords.yml
- ibmi-cl-command-sample.yml
- ibmi-fix-group-check.yml
- ibmi-fix-repo-cum-package.yml
- ibmi-fix-repo-download-status.yml

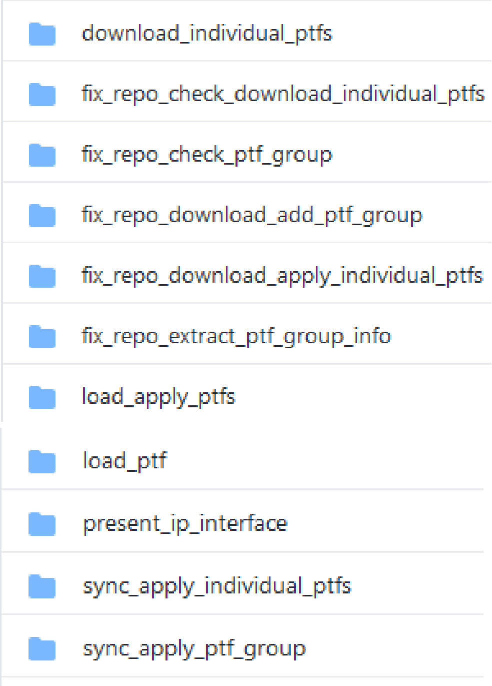


- ibmi-fix-repo-ptf-group.yml
- ibmi-fix-repo-single-ptf.yml
- ibmi-sql-sample.yml
- ibmi-sqlite3-sample.yml
- ibmi-sysval-sample.yml
- query-iasp-sample.yml
- ssh-addkey.yml

## Rôles



- apply_all_loaded_ptfs
- apply_ptf
- capture_server_via_powervc
- change_server_state_via_powervc
- check_ptf
- check_ptf_groups_against_fix_repo
- check_ptfs_by_product_against_fix_repo
- configure_passwordless_ssh_login
- deploy_vm_via_powervc
- display_network_info_via_powervc
- display_vm_info_via_powervc



- download_individual_ptfs
- fix_repo_check_download_individual_ptfs
- fix_repo_check_ptf_group
- fix_repo_download_add_ptf_group
- fix_repo_download_apply_individual_ptfs
- fix_repo_extract_ptf_group_info
- load_apply_ptfs
- load_ptf
- present_ip_interface
- sync_apply_individual_ptfs
- sync_apply_ptf_group

# Ansible pour IBM i – Cas d'usage

- Tâches d'administration
  - Téléchargement et installation de PTF
  - Déploiement de programmes et d'applications
  - Installation de modules open source
  - Gestion des travaux, de la sécurité
  - Exécution de tâches spécifiques par commandes CL et scripts SQL

- Tâches de développement
  - Intégration continue, automatisation des builds…
  - Déploiement d'un environnement applicatif Dev > Test > QA > Prod

- Tâches Cloud
  - Clonage / provisionnement de VM et déploiement dans le Cloud (public / privé)

- Vérification de conformité de configuration et de sécurité
  - Vérification d'attributs système, de droits, de profils utilisateur…

# Ansible pour IBM i – Cas d'usage

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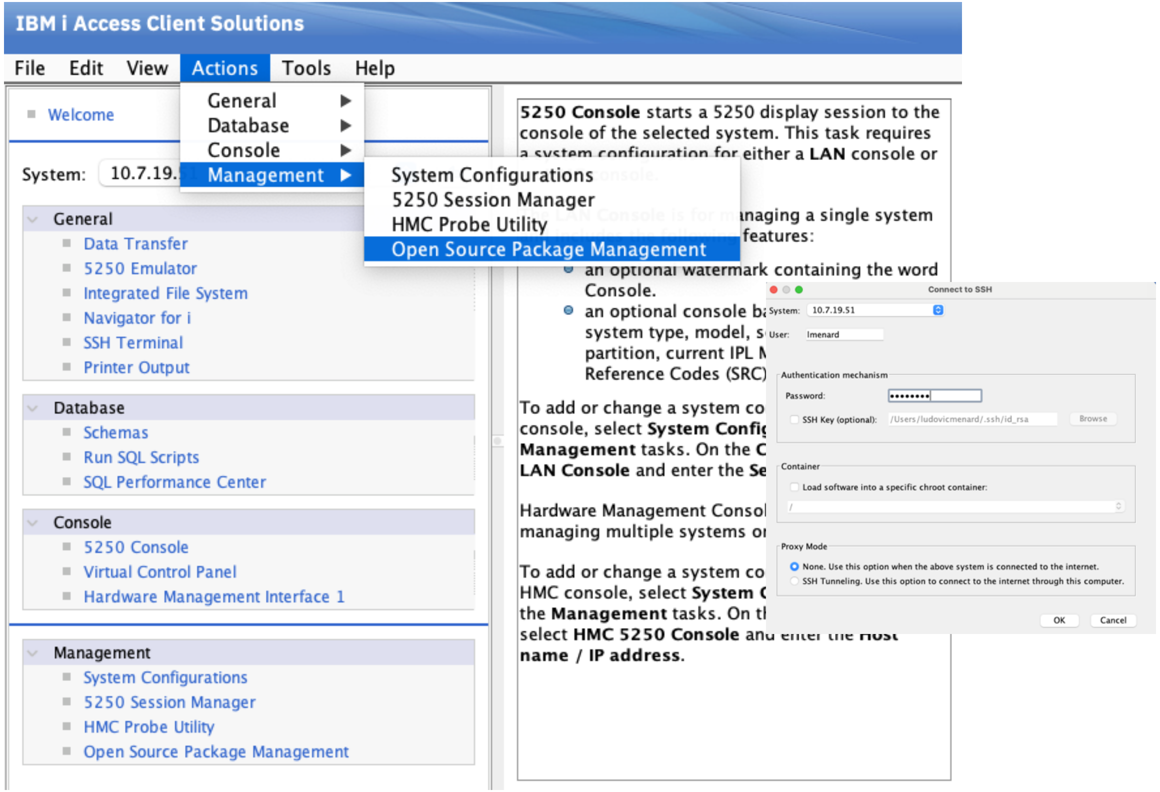
  - Vérification d'attributs système, de droits, de profils utilisateur…

**Et bien d'autres cas**

# IBM Access Client Solution (ACS)



System: 10.7.19.51

General
- Data Transfer
- 5250 Emulator
- Integrated File System
- Navigator for i
- SSH Terminal
- Printer Output

Database
- Schemas
- Run SQL Scripts
- SQL Performance Center

Console
- 5250 Console
- Virtual Control Panel
- Hardware Management Interface 1

Management
- System Configurations
- 5250 Session Manager
- HMC Probe Utility
- Open Source Package Management

**5250 Console** starts a 5250 display session to the console of the selected system. This task requires a system configuration for either a **LAN** console or

…naging a single system … features:

- … an optional watermark containing the word Console.
- an optional console ba… system type, model, s… partition, current IPL M… Reference Codes (SRC)

To add or change a system co… console, select **System Config… Management** tasks. On the C… **LAN Console** and enter the **Se**…

Hardware Management Consol… managing multiple systems o…

To add or change a system co… HMC console, select **System C**… the **Management** tasks. On th… select **HMC 5250 Console** and enter the **Host name / IP address.**

Connect to SSH

System: 10.7.19.51

User: lmenard

Authentication mechanism

Password: ●●●●●●●●●

□ SSH Key (optional): /Users/ludovicmenard/.ssh/id_rsa Browse

Container

□ Load software into a specific chroot container:

/

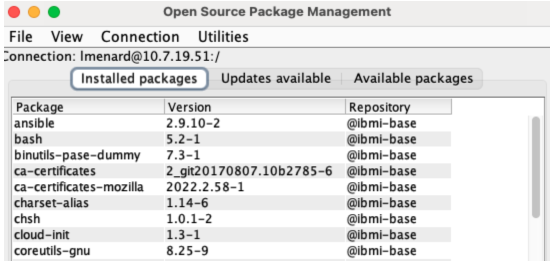
Proxy Mode

● None. Use this option when the above system is connected to the internet.

○ SSH Tunneling. Use this option to connect to the internet through this computer.

OK Cancel

La meilleure façon est d'utiliser ACS pour installer tous les paquets nécessaires pour configurer IBM i en tant que nœud de contrôle et aussi d'utiliser les playbooks Ansible



Connection: lmenard@10.7.19.51:/

| Package | Version | Repository |
|---|---|---|
| ansible | 2.9.10-2 | @ibmi-base |
| bash | 5.2-1 | @ibmi-base |
| binutils-pase-dummy | 7.3-1 | @ibmi-base |
| ca-certificates | 2_git20170807.10b2785-6 | @ibmi-base |
| ca-certificates-mozilla | 2022.2.58-1 | @ibmi-base |
| charset-alias | 1.14-6 | @ibmi-base |
| chsh | 1.0.1-2 | @ibmi-base |
| cloud-init | 1.3-1 | @ibmi-base |
| coreutils-gnu | 8.25-9 | @ibmi-base |

https://www.ibm.com/support/pages/ibm-i-access-client-solutions

# Agenda

- Prérequis IBM i
- Configurer IBM i nœud de contrôle
- Galaxy collection
- Github Ansible for i
- Vérifier si Ansible est sur l’IBM i

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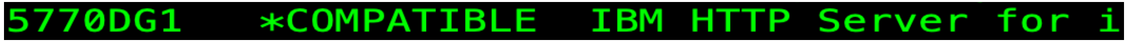
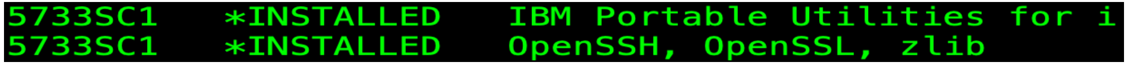
# Prérequis

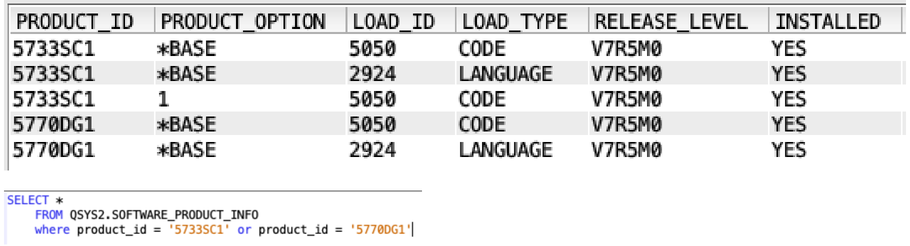
# Prérequis



```
5770DG1    *COMPATIBLE   IBM HTTP Server for i
```



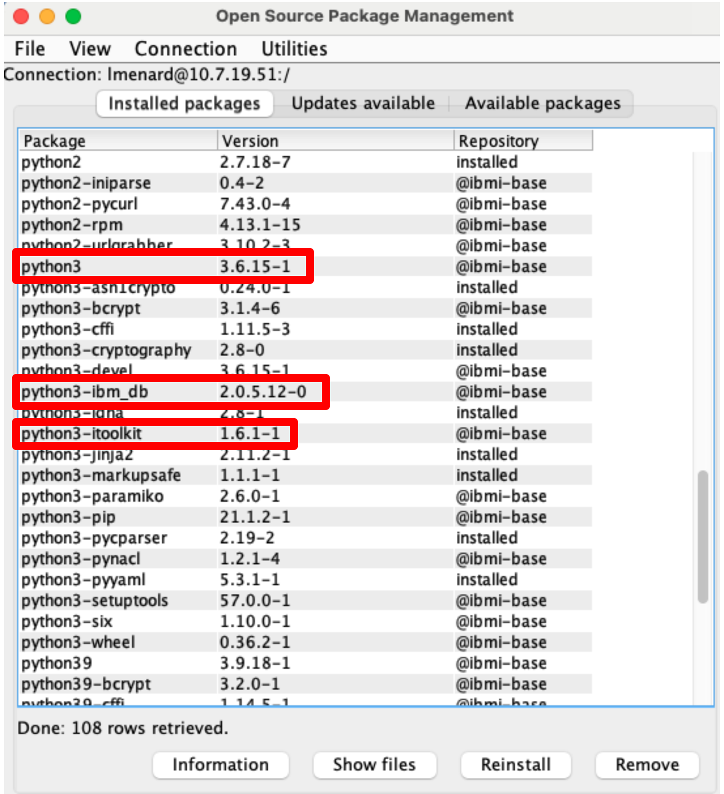
```
5733SC1   *INSTALLED   IBM Portable Utilities for i
5733SC1   *INSTALLED   OpenSSH, OpenSSL, zlib
```



| PRODUCT_ID | PRODUCT_OPTION | LOAD_ID | LOAD_TYPE | RELEASE_LEVEL | INSTALLED |
|---|---|---|---|---|---|
| 5733SC1 | *BASE | 5050 | CODE | V7R5M0 | YES |
| 5733SC1 | *BASE | 2924 | LANGUAGE | V7R5M0 | YES |
| 5733SC1 | 1 | 5050 | CODE | V7R5M0 | YES |
| 5770DG1 | *BASE | 5050 | CODE | V7R5M0 | YES |
| 5770DG1 | *BASE | 2924 | LANGUAGE | V7R5M0 | YES |

```sql
SELECT *
    FROM QSYS2.SOFTWARE_PRODUCT_INFO
    where product_id = '5733SC1' or product_id = '5770DG1'
```

5770DG1
5733SC1 Base & option 1
Packages Python3
Python3-ibm_db
Python3-itoolkit



Open Source Package Management
File View Connection Utilities

Connection: lmenard@10.7.19.51:/

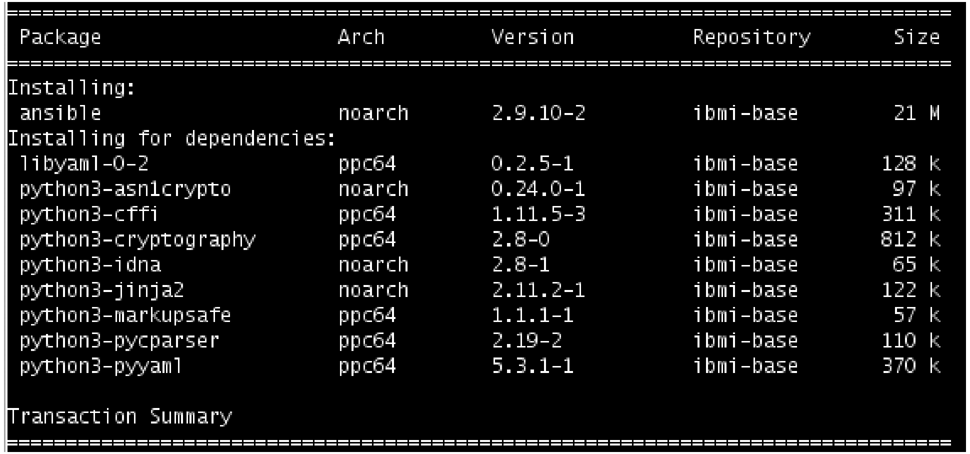
Installed packages
Updates available
Available packages

| Package | Version | Repository |
|---|---|---|
| python2 | 2.7.18-7 | installed |
| python2-iniparse | 0.4-2 | @ibmi-base |
| python2-pycurl | 7.43.0-4 | @ibmi-base |
| python2-rpm | 4.13.1-15 | @ibmi-base |
| python2-urlgrabber | 3.10.2-3 | @ibmi-base |
| python3 | 3.6.15-1 | @ibmi-base |
| python3-asn1crypto | 0.24.0-1 | installed |
| python3-bcrypt | 3.1.4-6 | @ibmi-base |
| python3-cffi | 1.11.5-3 | installed |
| python3-cryptography | 2.8-0 | installed |
| python3-devel | 3.6.15-1 | @ibmi-base |
| python3-ibm_db | 2.0.5.12-0 | @ibmi-base |
| python3-idna | 2.8-1 | installed |
| python3-itoolkit | 1.6.1-1 | @ibmi-base |
| python3-jinja2 | 2.11.2-1 | installed |
| python3-markupsafe | 1.1.1-1 | installed |
| python3-paramiko | 2.6.0-1 | @ibmi-base |
| python3-pip | 21.1.2-1 | @ibmi-base |
| python3-pycparser | 2.19-2 | installed |
| python3-pynacl | 1.2.1-4 | @ibmi-base |
| python3-pyyaml | 5.3.1-1 | installed |
| python3-setuptools | 57.0.0-1 | @ibmi-base |
| python3-six | 1.10.0-1 | @ibmi-base |
| python3-wheel | 0.36.2-1 | @ibmi-base |
| python39 | 3.9.18-1 | @ibmi-base |
| python39-bcrypt | 3.2.0-1 | @ibmi-base |
| python39-cffi | 1.14.5-1 | @ibmi-base |

Done: 108 rows retrieved.

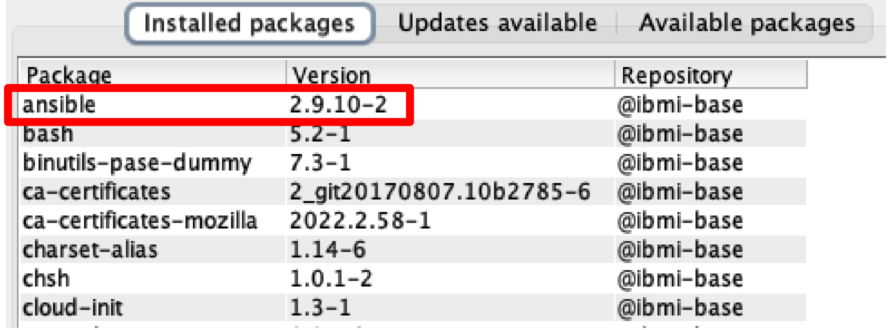
# Installation d’Ansible

## Dépendances

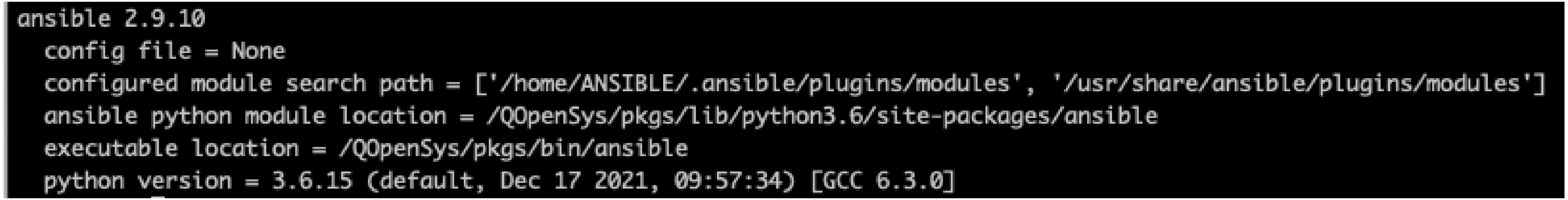


```
================================================================================
 Package                    Arch          Version           Repository      Size
================================================================================
Installing:
 ansible                    noarch        2.9.10-2          ibmi-base       21 M
Installing for dependencies:
 libyaml-0-2                ppc64         0.2.5-1           ibmi-base      128 k
 python3-asn1crypto         noarch        0.24.0-1          ibmi-base       97 k
 python3-cffi               ppc64         1.11.5-3          ibmi-base      311 k
 python3-cryptography       ppc64         2.8-0             ibmi-base      812 k
 python3-idna               noarch        2.8-1             ibmi-base       65 k
 python3-jinja2             noarch        2.11.2-1          ibmi-base      122 k
 python3-markupsafe         ppc64         1.1.1-1           ibmi-base       57 k
 python3-pycparser          ppc64         2.19-2            ibmi-base      110 k
 python3-pyyaml             ppc64         5.3.1-1           ibmi-base      370 k

Transaction Summary
================================================================================
```



| Package | Version | Repository |
|---|---|---|
| ansible | 2.9.10-2 | @ibmi-base |
| bash | 5.2-1 | @ibmi-base |
| binutils-pase-dummy | 7.3-1 | @ibmi-base |
| ca-certificates | 2_git20170807.10b2785-6 | @ibmi-base |
| ca-certificates-mozilla | 2022.2.58-1 | @ibmi-base |
| charset-alias | 1.14-6 | @ibmi-base |
| chsh | 1.0.1-2 | @ibmi-base |
| cloud-init | 1.3-1 | @ibmi-base |



```
ansible 2.9.10
  config file = None
  configured module search path = ['/home/ANSIBLE/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /QOpenSys/pkgs/lib/python3.6/site-packages/ansible
  executable location = /QOpenSys/pkgs/bin/ansible
  python version = 3.6.15 (default, Dec 17 2021, 09:57:34) [GCC 6.3.0]
```

# Prérequis ++

- ✓ yum install vim
- ✓ yum install bash
- ✓ yum install openssh
- ✓ yum install python3-devel (pip)

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# Configurer IBM i comme nœud de contrôle

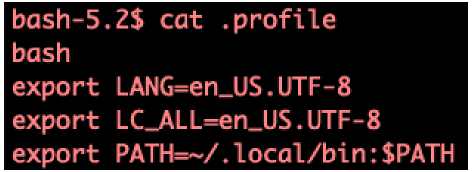
# Configurer IBM i comme nœud de contrôle

- ✓ yum install git
- ✓ yum install python39-cryptography
- ✓ yum install python39-paramiko
- ✓ yum install pase-utf8-locale
- ✓ yum install sshpass

**Python v3.9+**

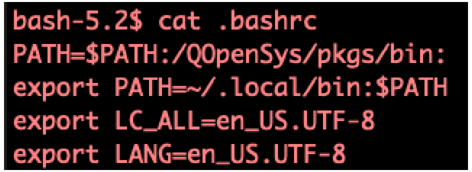
Ou utiliser ACS  Open Source Package Management

**.profile**



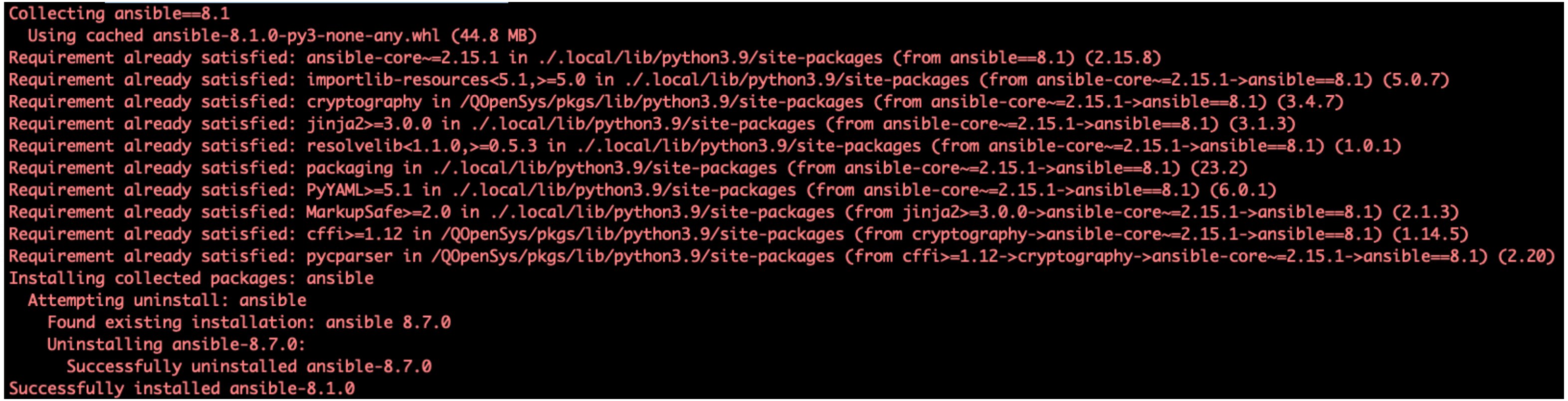
```
bash-5.2$ cat .profile
bash
export LANG=en_US.UTF-8
export LC_ALL=en_US.UTF-8
export PATH=~/.local/bin:$PATH
```

**.bashrc**



```
bash-5.2$ cat .bashrc
PATH=$PATH:/QOpenSys/pkgs/bin:
export PATH=~/.local/bin:$PATH
export LC_ALL=en_US.UTF-8
export LANG=en_US.UTF-8
```

**python3 -m pip install --user ansible==8.1**

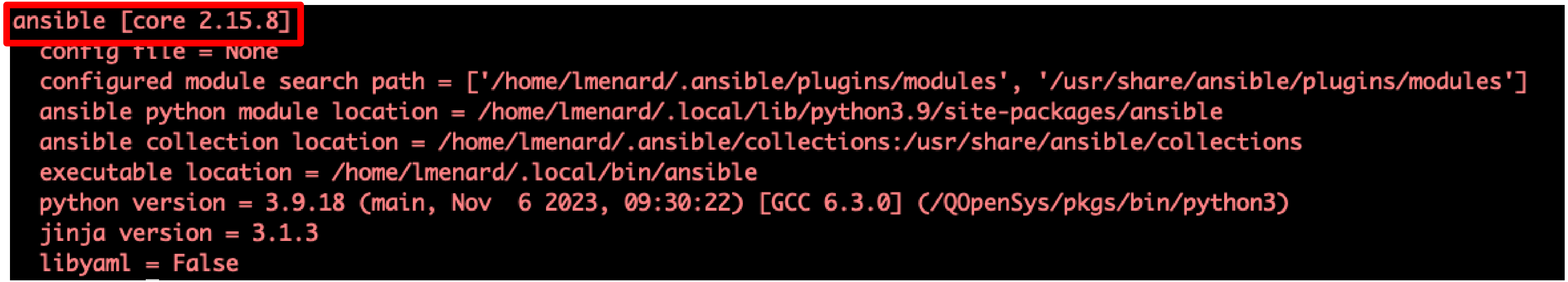


```
Collecting ansible==8.1
  Using cached ansible-8.1.0-py3-none-any.whl (44.8 MB)
Requirement already satisfied: ansible-core~=2.15.1 in ./.local/lib/python3.9/site-packages (from ansible==8.1) (2.15.8)
Requirement already satisfied: importlib-resources<5.1,>=5.0 in ./.local/lib/python3.9/site-packages (from ansible-core~=2.15.1->ansible==8.1) (5.0.7)
Requirement already satisfied: cryptography in /QOpenSys/pkgs/lib/python3.9/site-packages (from ansible-core~=2.15.1->ansible==8.1) (3.4.7)
Requirement already satisfied: jinja2>=3.0.0 in ./.local/lib/python3.9/site-packages (from ansible-core~=2.15.1->ansible==8.1) (3.1.3)
Requirement already satisfied: resolvelib<1.1.0,>=0.5.3 in ./.local/lib/python3.9/site-packages (from ansible-core~=2.15.1->ansible==8.1) (1.0.1)
Requirement already satisfied: packaging in ./.local/lib/python3.9/site-packages (from ansible-core~=2.15.1->ansible==8.1) (23.2)
Requirement already satisfied: PyYAML>=5.1 in ./.local/lib/python3.9/site-packages (from ansible-core~=2.15.1->ansible==8.1) (6.0.1)
Requirement already satisfied: MarkupSafe>=2.0 in ./.local/lib/python3.9/site-packages (from jinja2>=3.0.0->ansible-core~=2.15.1->ansible==8.1) (2.1.3)
Requirement already satisfied: cffi>=1.12 in /QOpenSys/pkgs/lib/python3.9/site-packages (from cryptography->ansible-core~=2.15.1->ansible==8.1) (1.14.5)
Requirement already satisfied: pycparser in /QOpenSys/pkgs/lib/python3.9/site-packages (from cffi>=1.12->cryptography->ansible-core~=2.15.1->ansible==8.1) (2.20)
Installing collected packages: ansible
  Attempting uninstall: ansible
    Found existing installation: ansible 8.7.0
    Uninstalling ansible-8.7.0:
      Successfully uninstalled ansible-8.7.0
Successfully installed ansible-8.1.0
```

# Configurer IBM i comme nœud de contrôle

## Vérifier la version Ansible

Ansible --version



```
ansible [core 2.15.8]
  config file = None
  configured module search path = ['/home/lmenard/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /home/lmenard/.local/lib/python3.9/site-packages/ansible
  ansible collection location = /home/lmenard/.ansible/collections:/usr/share/ansible/collections
  executable location = /home/lmenard/.local/bin/ansible
  python version = 3.9.18 (main, Nov  6 2023, 09:30:22) [GCC 6.3.0] (/QOpenSys/pkgs/bin/python3)
  jinja version = 3.1.3
  libyaml = False
```

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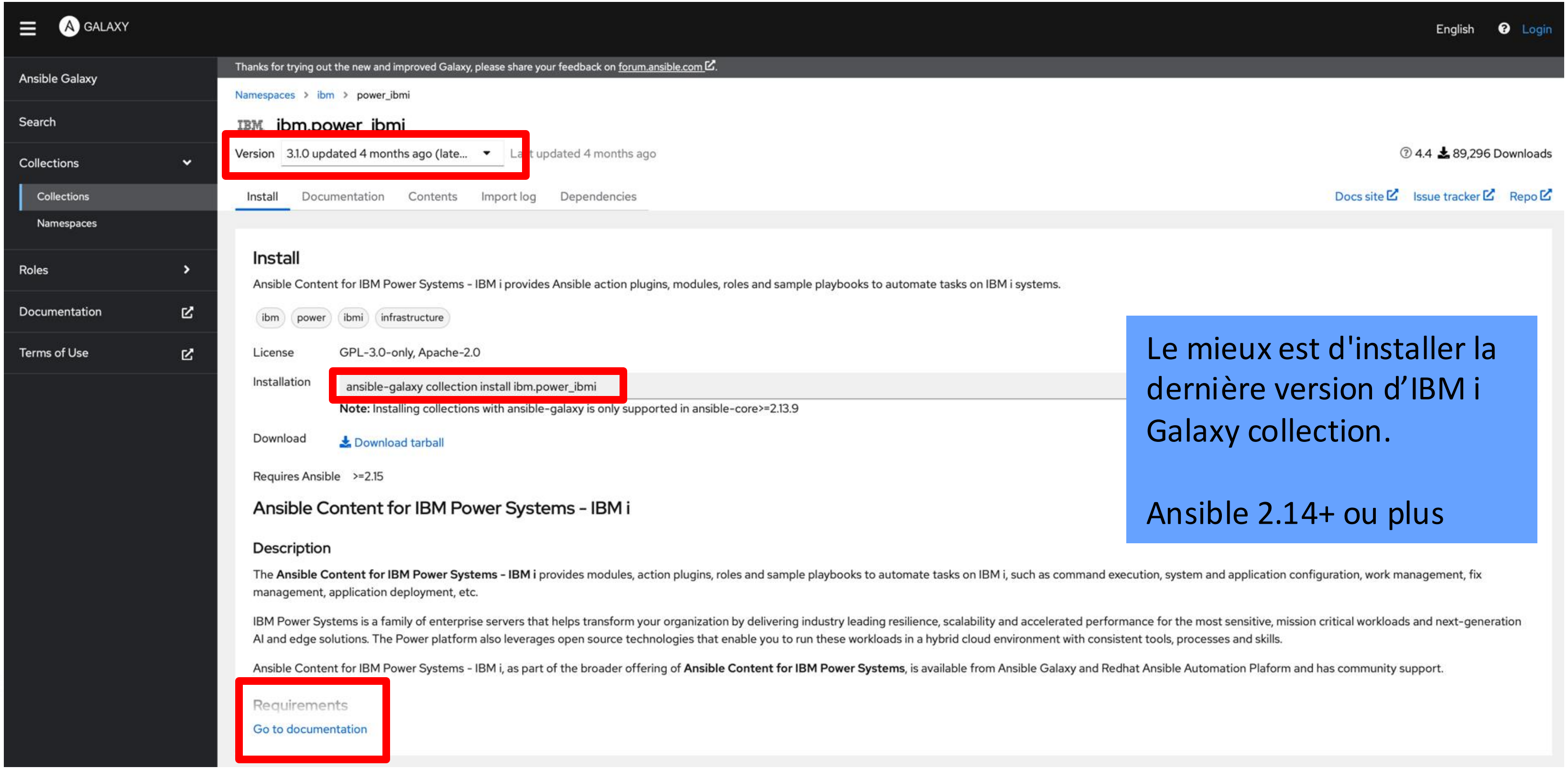
# Galaxy collection

# Galaxy collection



Thanks for trying out the new and improved Galaxy, please share your feedback on forum.ansible.com.

Namespaces > ibm > power_ibmi

## ibm.power_ibmi

Version 3.1.0 updated 4 months ago (late... Last updated 4 months ago

4.4 89,296 Downloads

### Install

Ansible Content for IBM Power Systems - IBM i provides Ansible action plugins, modules, roles and sample playbooks to automate tasks on IBM i systems.

ibm power ibmi infrastructure

License GPL-3.0-only, Apache-2.0

Installation

```
ansible-galaxy collection install ibm.power_ibmi
```

**Note:** Installing collections with ansible-galaxy is only supported in ansible-core>=2.13.9

Download: Download tarball

Requires Ansible >=2.15

### Ansible Content for IBM Power Systems - IBM i

#### Description

The **Ansible Content for IBM Power Systems - IBM i** provides modules, action plugins, roles and sample playbooks to automate tasks on IBM i, such as command execution, system and application configuration, work management, fix management, application deployment, etc.

IBM Power Systems is a family of enterprise servers that helps transform your organization by delivering industry leading resilience, scalability and accelerated performance for the most sensitive, mission critical workloads and next-generation AI and edge solutions. The Power platform also leverages open source technologies that enable you to run these workloads in a hybrid cloud environment with consistent tools, processes and skills.

Ansible Content for IBM Power Systems - IBM i, as part of the broader offering of **Ansible Content for IBM Power Systems**, is available from Ansible Galaxy and Redhat Ansible Automation Plaform and has community support.

Requirements

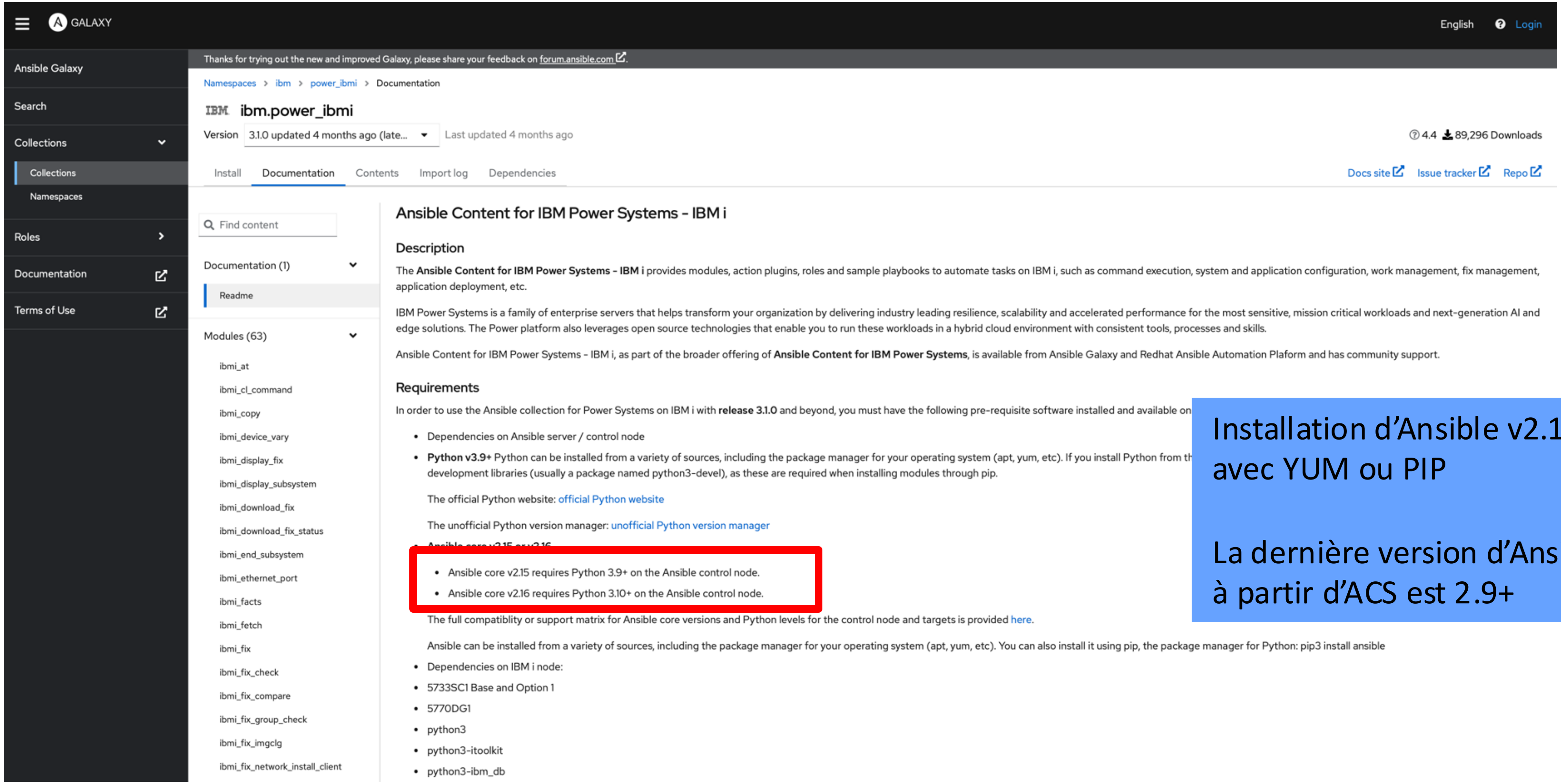
Go to documentation

Le mieux est d'installer la dernière version d’IBM i Galaxy collection.

Ansible 2.14+ ou plus

https://galaxy.ansible.com/ui/repo/published/ibm/power_ibmi/

# Galaxy collection



GALAXY
English
Login
Thanks for trying out the new and improved Galaxy, please share your feedback on forum.ansible.com.
Ansible Galaxy
Search
Collections
Collections
Namespaces
Roles
Documentation
Terms of Use
Namespaces > ibm > power_ibmi > Documentation

IBM ibm.power_ibmi

Version 3.1.0 updated 4 months ago (late... Last updated 4 months ago

4.4 89,296 Downloads

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### Requirements

In order to use the Ansible collection for Power Systems on IBM i with **release 3.1.0** and beyond, you must have the following pre-requisite software installed and available on

- Dependencies on Ansible server / control node
- **Python v3.9+** Python can be installed from a variety of sources, including the package manager for your operating system (apt, yum, etc). If you install Python from th development libraries (usually a package named python3-devel), as these are required when installing modules through pip.

  The official Python website: official Python website

  The unofficial Python version manager: unofficial Python version manager
- Ansible core v2.15 or v2.16
  - Ansible core v2.15 requires Python 3.9+ on the Ansible control node.
  - Ansible core v2.16 requires Python 3.10+ on the Ansible control node.

  The full compatiblity or support matrix for Ansible core versions and Python levels for the control node and targets is provided here.

  Ansible can be installed from a variety of sources, including the package manager for your operating system (apt, yum, etc). You can also install it using pip, the package manager for Python: pip3 install ansible
- Dependencies on IBM i node:
- 5733SC1 Base and Option 1
- 5770DG1
- python3
- python3-itoolkit
- python3-ibm_db

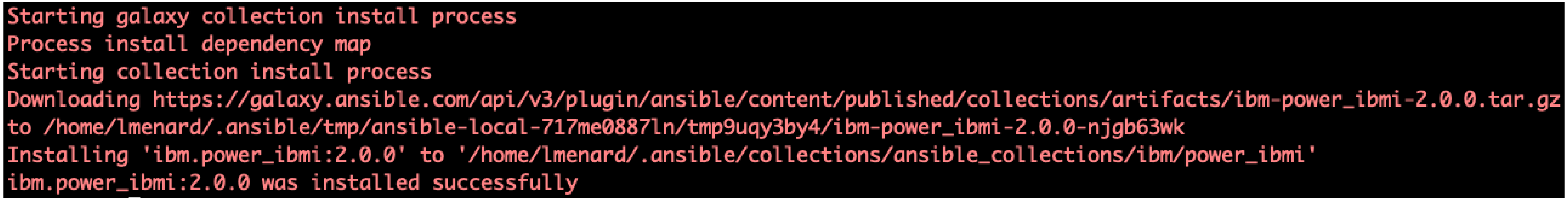
Installation d’Ansible v2.14+ avec YUM ou PIP

La dernière version d’Ansible à partir d’ACS est 2.9+

https://galaxy.ansible.com/ui/repo/published/ibm/power_ibmi/docs/

# Installation de la collection IBM i

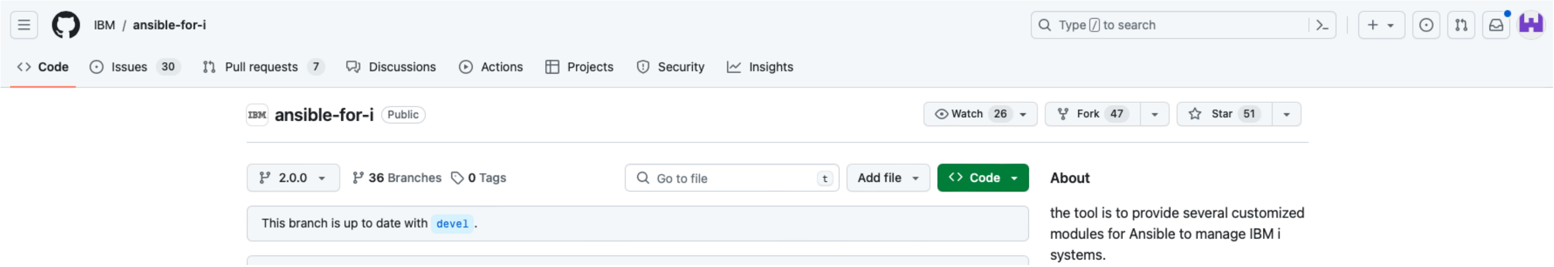
ansible-galaxy collection install ibm.power_ibmi



```
Starting galaxy collection install process
Process install dependency map
Starting collection install process
Downloading https://galaxy.ansible.com/api/v3/plugin/ansible/content/published/collections/artifacts/ibm-power_ibmi-2.0.0.tar.gz
to /home/lmenard/.ansible/tmp/ansible-local-717me0887ln/tmp9uqy3by4/ibm-power_ibmi-2.0.0-njgb63wk
Installing 'ibm.power_ibmi:2.0.0' to '/home/lmenard/.ansible/collections/ansible_collections/ibm/power_ibmi'
ibm.power_ibmi:2.0.0 was installed successfully
```

# Github ansible-for-i

# Github ansible for i

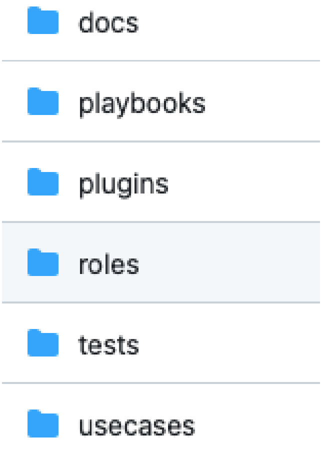


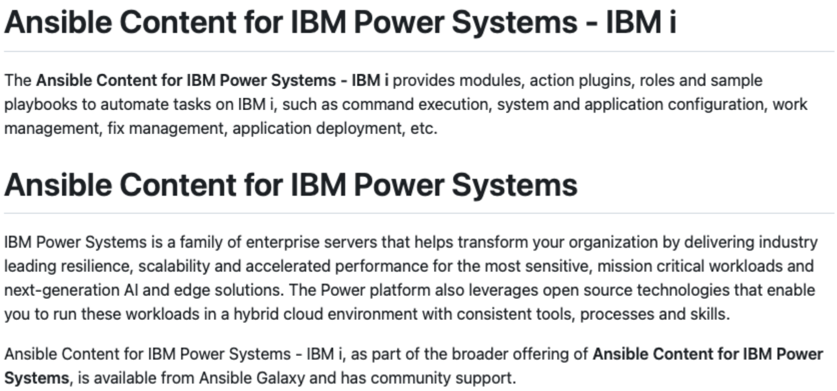
ansible-for-i Public

This branch is up to date with `devel` .

**About**

the tool is to provide several customized modules for Ansible to manage IBM i systems.





## Ansible Content for IBM Power Systems - IBM i

The **Ansible Content for IBM Power Systems - IBM i** provides modules, action plugins, roles and sample playbooks to automate tasks on IBM i, such as command execution, system and application configuration, work management, fix management, application deployment, etc.

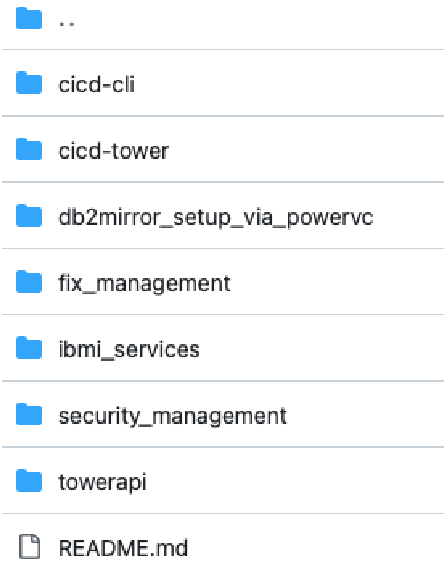
## Ansible Content for IBM Power Systems

IBM Power Systems is a family of enterprise servers that helps transform your organization by delivering industry leading resilience, scalability and accelerated performance for the most sensitive, mission critical workloads and next-generation AI and edge solutions. The Power platform also leverages open source technologies that enable you to run these workloads in a hybrid cloud environment with consistent tools, processes and skills.

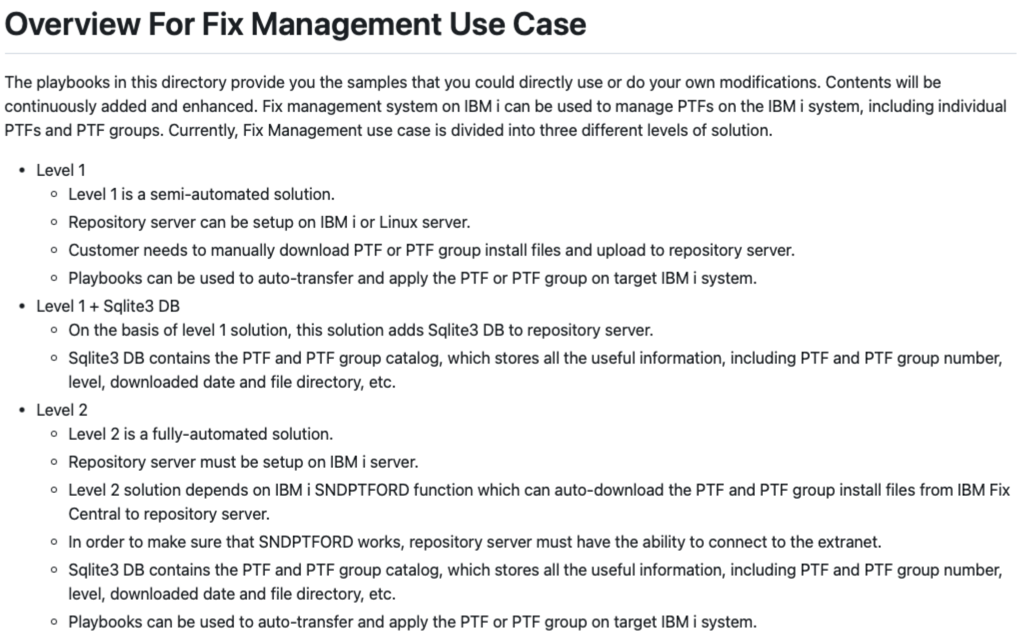
Ansible Content for IBM Power Systems - IBM i, as part of the broader offering of **Ansible Content for IBM Power Systems**, is available from Ansible Galaxy and has community support.

https://github.com/IBM/ansible-for-i

# Github ansible for i : usecases



- ..
- cicd-cli
- cicd-tower
- db2mirror_setup_via_powervc
- fix_management
- ibmi_services
- security_management
- towerapi
- README.md

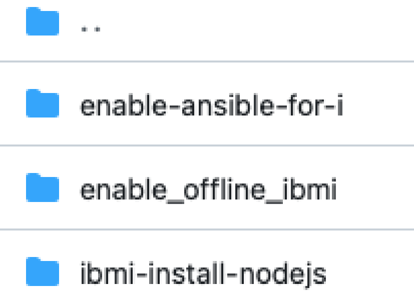


## Overview For Fix Management Use Case

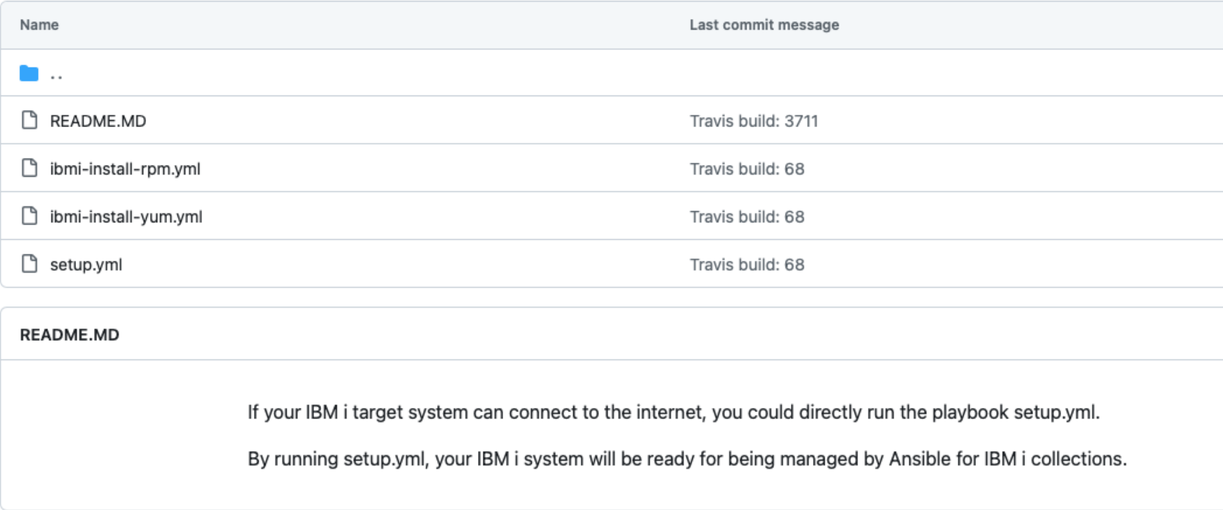
The playbooks in this directory provide you the samples that you could directly use or do your own modifications. Contents will be continuously added and enhanced. Fix management system on IBM i can be used to manage PTFs on the IBM i system, including individual PTFs and PTF groups. Currently, Fix Management use case is divided into three different levels of solution.

- Level 1
  - Level 1 is a semi-automated solution.
  - Repository server can be setup on IBM i or Linux server.
  - Customer needs to manually download PTF or PTF group install files and upload to repository server.
  - Playbooks can be used to auto-transfer and apply the PTF or PTF group on target IBM i system.
- Level 1 + Sqlite3 DB
  - On the basis of level 1 solution, this solution adds Sqlite3 DB to repository server.
  - Sqlite3 DB contains the PTF and PTF group catalog, which stores all the useful information, including PTF and PTF group number, level, downloaded date and file directory, etc.
- Level 2
  - Level 2 is a fully-automated solution.
  - Repository server must be setup on IBM i server.
  - Level 2 solution depends on IBM i SNDPTFORD function which can auto-download the PTF and PTF group install files from IBM Fix Central to repository server.
  - In order to make sure that SNDPTFORD works, repository server must have the ability to connect to the extranet.
  - Sqlite3 DB contains the PTF and PTF group catalog, which stores all the useful information, including PTF and PTF group number, level, downloaded date and file directory, etc.
  - Playbooks can be used to auto-transfer and apply the PTF or PTF group on target IBM i system.

# Github ansible for i : enable Ansible IBM i



- ..
- enable-ansible-for-i
- enable_offline_ibmi
- ibmi-install-nodejs



| Name | Last commit message |
|---|---|
| .. | |
| README.MD | Travis build: 3711 |
| ibmi-install-rpm.yml | Travis build: 68 |
| ibmi-install-yum.yml | Travis build: 68 |
| setup.yml | Travis build: 68 |

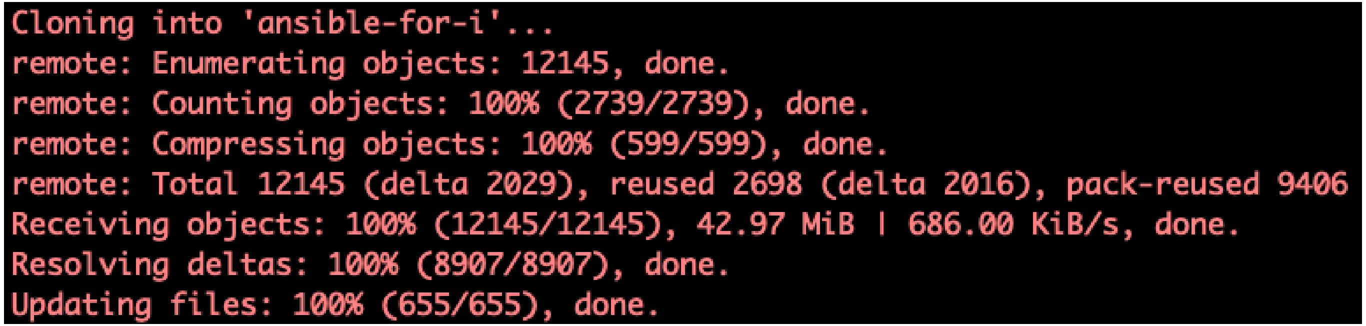
**README.MD**

If your IBM i target system can connect to the internet, you could directly run the playbook setup.yml.

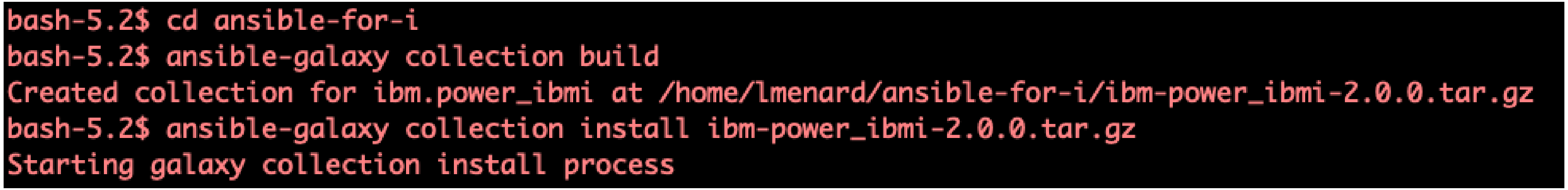
By running setup.yml, your IBM i system will be ready for being managed by Ansible for IBM i collections.

# Installation de la collection IBM i

**git clone https://github.com/IBM/ansible-for-i.git**



```
Cloning into 'ansible-for-i'...
remote: Enumerating objects: 12145, done.
remote: Counting objects: 100% (2739/2739), done.
remote: Compressing objects: 100% (599/599), done.
remote: Total 12145 (delta 2029), reused 2698 (delta 2016), pack-reused 9406
Receiving objects: 100% (12145/12145), 42.97 MiB | 686.00 KiB/s, done.
Resolving deltas: 100% (8907/8907), done.
Updating files: 100% (655/655), done.
```



```
bash-5.2$ cd ansible-for-i
bash-5.2$ ansible-galaxy collection build
Created collection for ibm.power_ibmi at /home/lmenard/ansible-for-i/ibm-power_ibmi-2.0.0.tar.gz
bash-5.2$ ansible-galaxy collection install ibm-power_ibmi-2.0.0.tar.gz
Starting galaxy collection install process
```

Université IBM i

19 et 20 novembre 2024

IBM i
continuous innovation
continuous integration

# Vérifier l’activation d’ansible sur l’IBM i

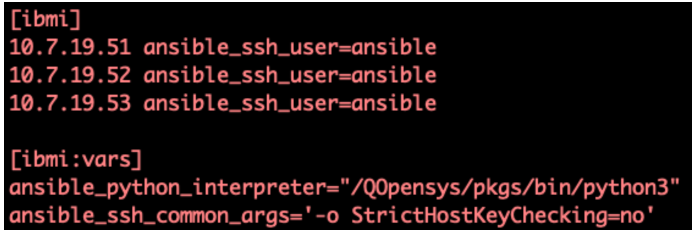
# Vérifier Ansible sur IBM i

ansible-playbook -i hosts .ansible/collections/ansible_collections/ibm/power_ibmi/playbooks/enable-ansible-for-i/setup.yml

ou

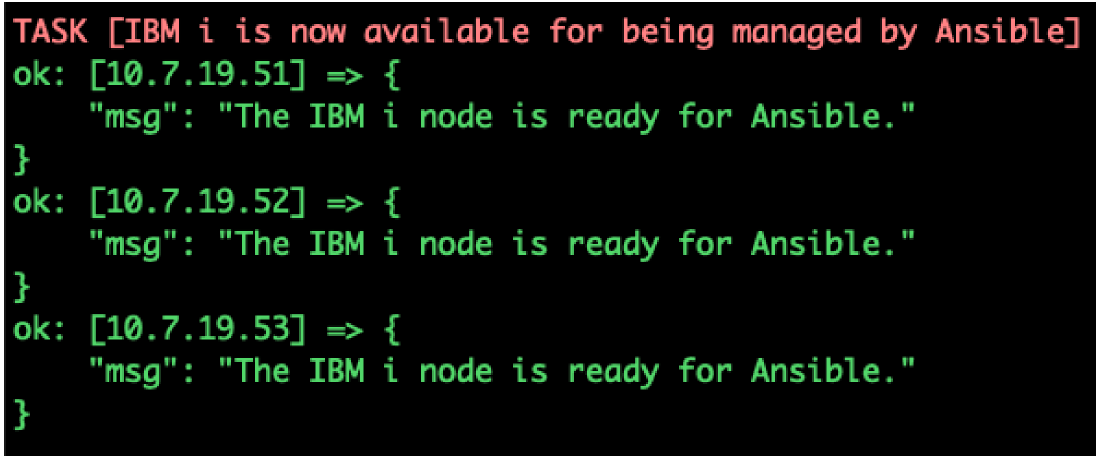
ansible-playbook -i hosts ansible-for-i/playbooks/enable-ansible-for-i/setup.yml

cat hosts



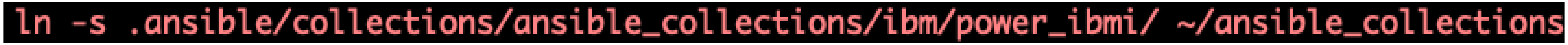
```
[ibmi]
10.7.19.51 ansible_ssh_user=ansible
10.7.19.52 ansible_ssh_user=ansible
10.7.19.53 ansible_ssh_user=ansible

[ibmi:vars]
ansible_python_interpreter="/QOpensys/pkgs/bin/python3"
ansible_ssh_common_args='-o StrictHostKeyChecking=no'
```



```
TASK [IBM i is now available for being managed by Ansible]
ok: [10.7.19.51] => {
    "msg": "The IBM i node is ready for Ansible."
}
ok: [10.7.19.52] => {
    "msg": "The IBM i node is ready for Ansible."
}
ok: [10.7.19.53] => {
    "msg": "The IBM i node is ready for Ansible."
}
```

Lien Symbolique



```
ln -s .ansible/collections/ansible_collections/ibm/power_ibmi/ ~/ansible_collections
```

# Démonstration

IBM i

# Soyez proactif et non réactif

# MERCI