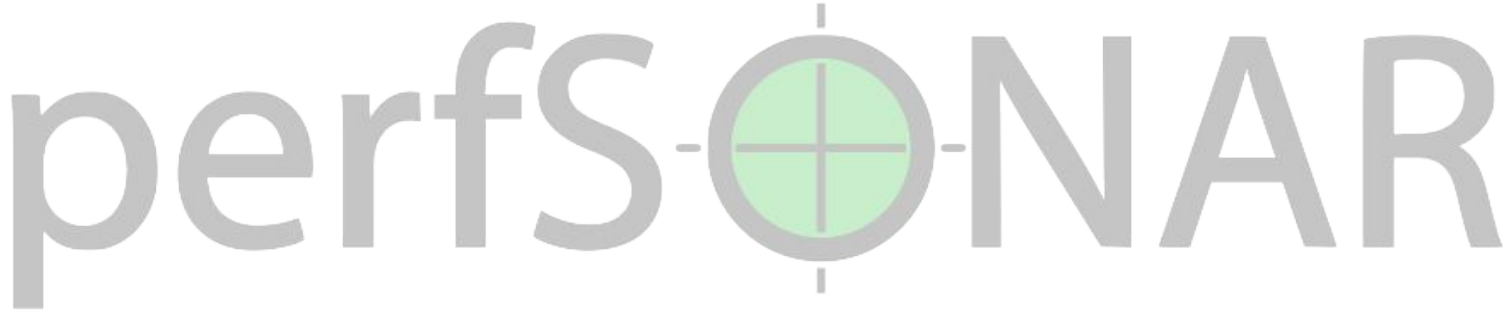

Automated Installation and Configuration via Ansible

Edward Colone <epcjr@umich.edu>
https://github.com/perfsonar/ansible-playbook-perfsonar

First European perfSONAR User Workshop

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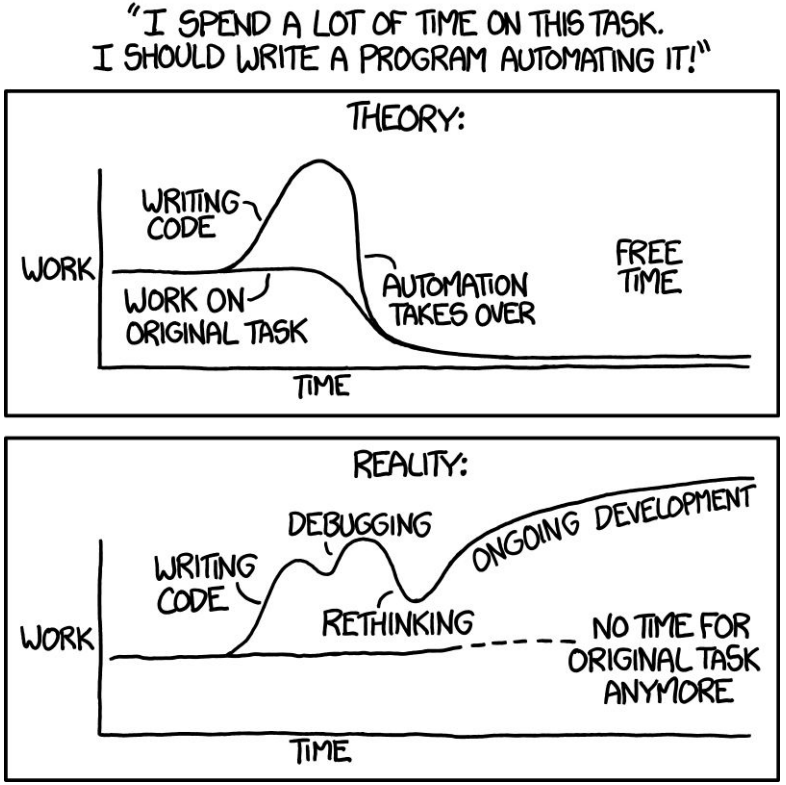

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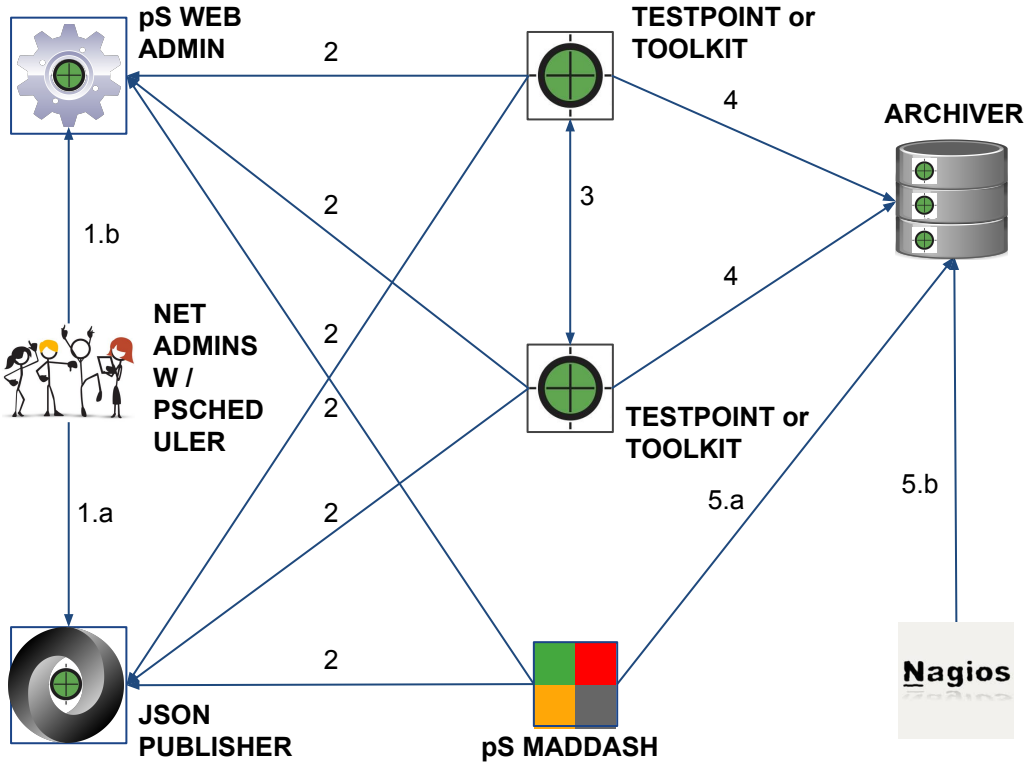
ANSIBLE

perfSONAR: Scheduled Testing Workflow

1. Publish schedules
   a. Raw JSON schedules
   b. pS Web Admin mesh config UI
2. Testpoints, Toolkits, and Dashboards poll schedule publishers
3. Testpoints and Tooklits run scheduled tests
4. Test results go to Archiver
5. Dashboards poll Archiver
   a. Maddash polls direct
   b. Nagios plugins



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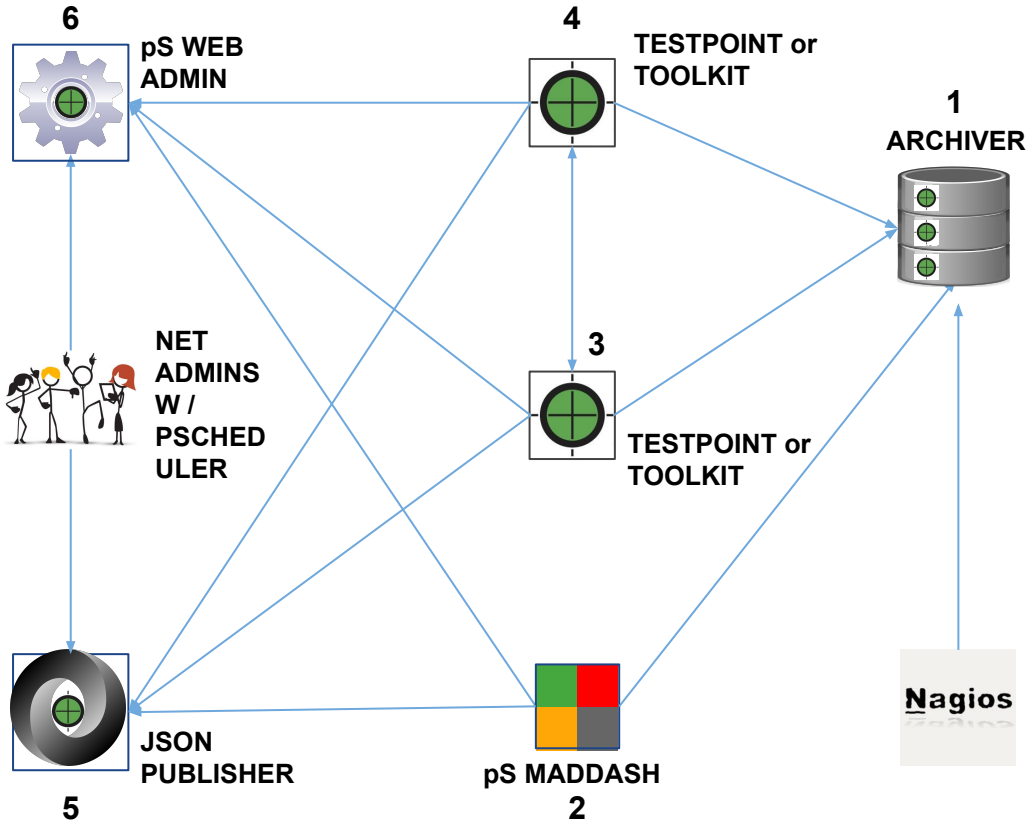
perfSONAR: Provisioning Components

1. Archivers
2. MadDash / Dashboards
3. Testpoints
4. Toolkits
5. pSconfig raw JSON publishers
6. pSconfig Web Admin



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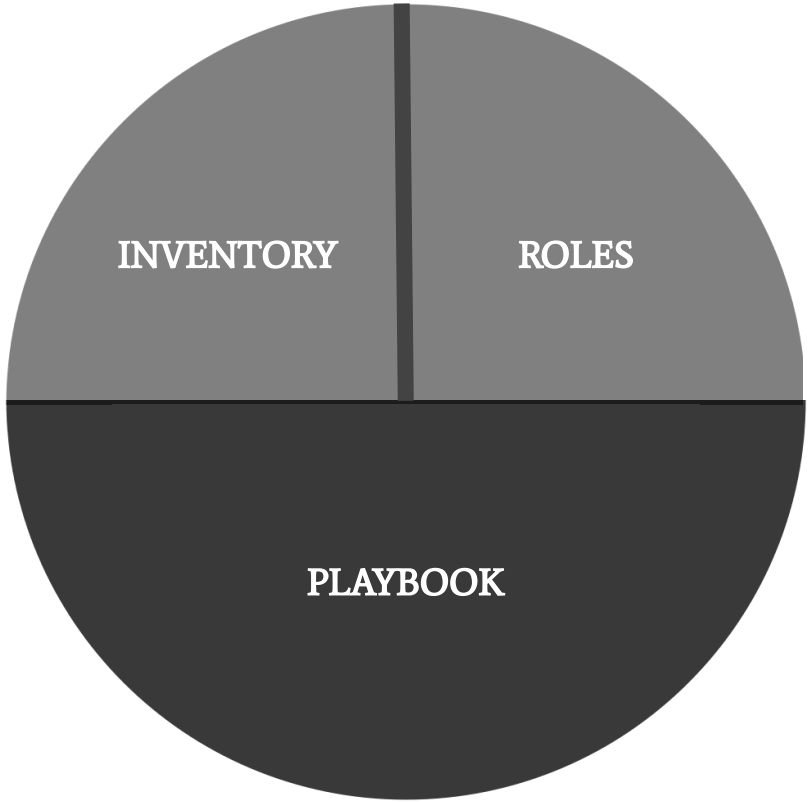
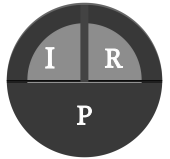
Ansible Modules

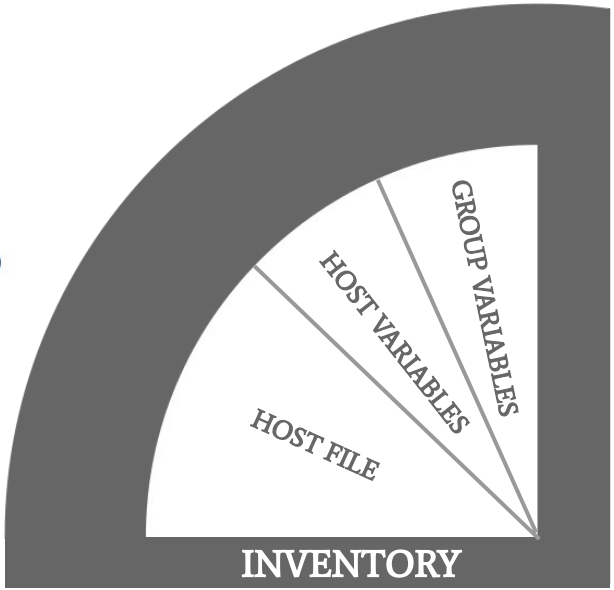




Ansible Inventory: variable precedence

From least to most important

- role defaults
- inventory file or script group vars
- inventory group_vars/all
- playbook group_vars/all
- inventory group_vars/*
- playbook group_vars/*
- inventory file or script host vars
- inventory host_vars/*
- playbook host_vars/*
- host facts
- play vars
- play vars_prompt
- play vars_files
- role vars (defined in role/vars/main.yml)
- block vars (only for tasks in block)
- task vars (only for the task)
- role (and include_role) params
- include params
- include_vars
- set_facts / registered vars
- extra vars (always win precedence)



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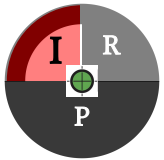
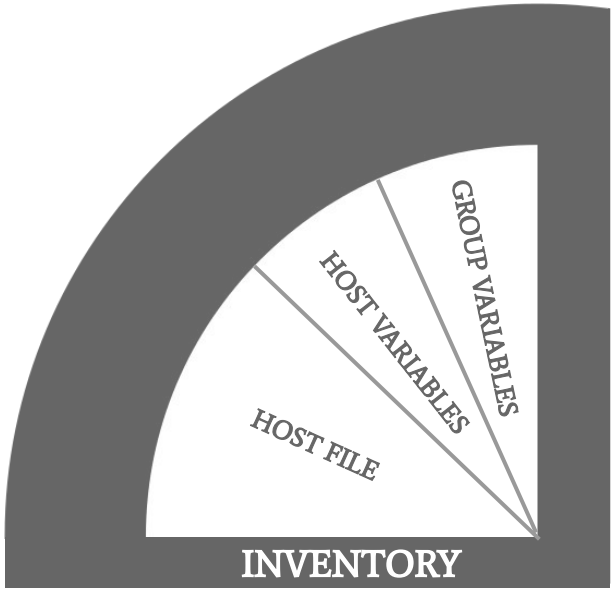
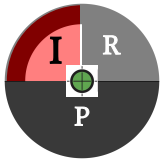


Ansible Inventory: hosts file

```
[all:vars]

[ps-testpoints]

[ps-toolkits]

[ps-archives]

[ps-maddash]

[ps-psconfig-publishers]

[ps-psconfig-web-admin]
```

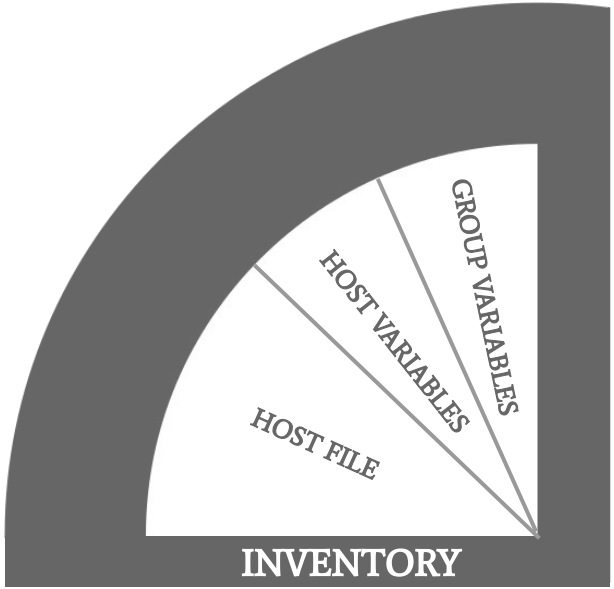




Ansible Inventory: Group & Host variables

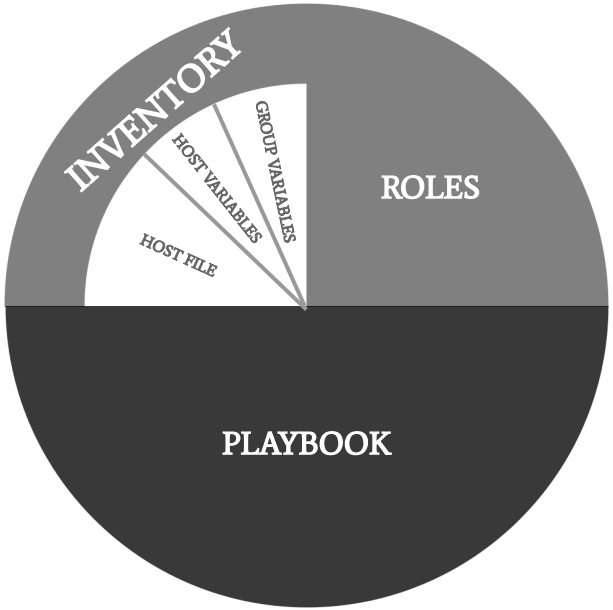
Directory structure

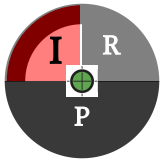
- inventory/group_vars/all/perfsonar/
- inventory/host_vars/example.hostname.org/



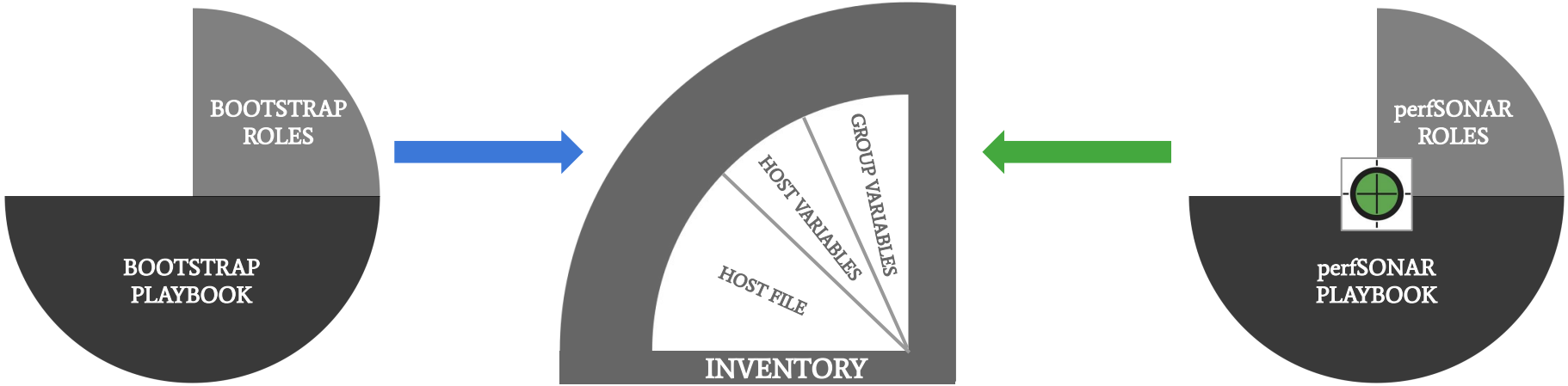
Ansible Inventory: Local

- Quick to implement
- Bundled with playbook's git repository





Ansible Inventory: Shared



- Multiple playbooks use single inventory
- Discreet git repository for inventory
- ansible.cfg inventory directive

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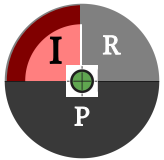
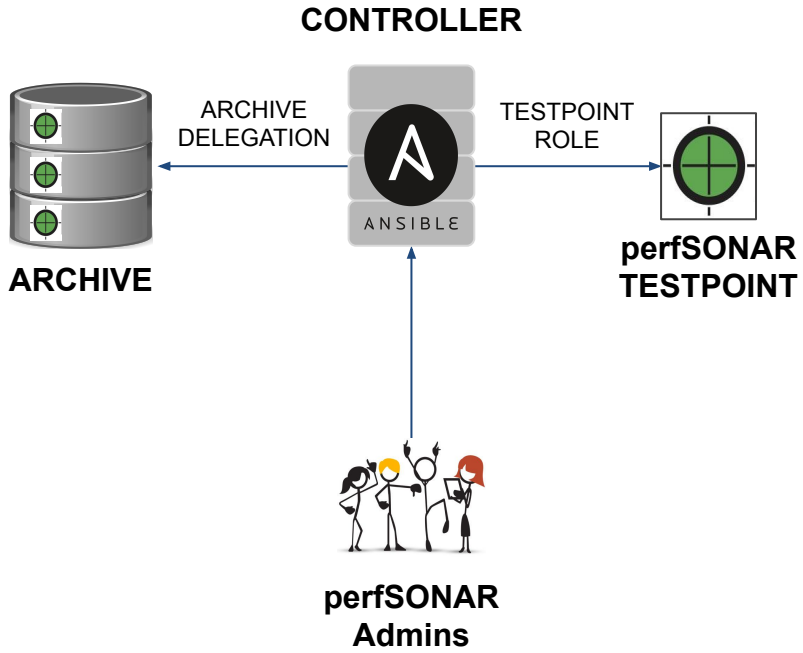


Ansible Task Delegation

```
- name: auth interfaces with measurement archives
  tags: [ 'ps::config' ]
  command: >
    /usr/sbin/esmond_manage add_user_ip_address
    "{{ perfsonar_archive_uid }}" "{{ item[0] }}"
  delegate_to: "{{ item[1] }}"
  loop: >
    {{ perfsonar_archive_auth_interfaces |
    product(perfsonar_archive_hosts) |
    list }}
```



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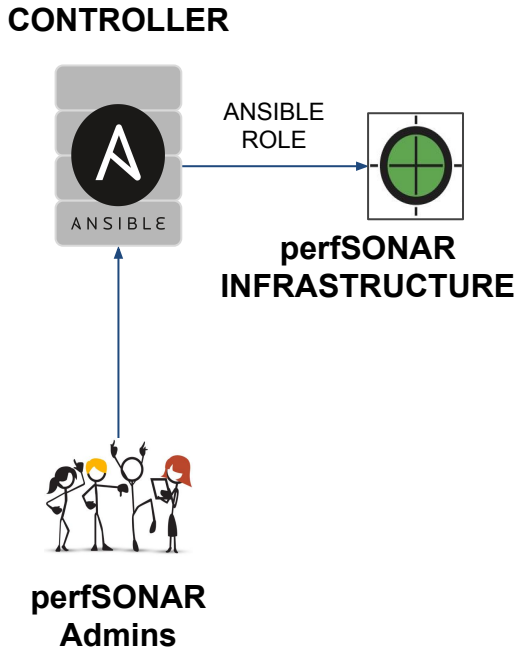
Ansible Controller

- Secure
  - VPN
  - 2-Factor
- Ansible installed
- ssh keys to target infrastructure



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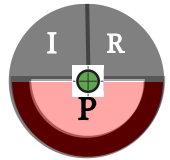
Target Bootstrapping

Today's Demo Target Environment:

- CentOS Minimal
  - Configured Networking & DNS
- Secured
  - Root account ssh disabled, user accounts added
  - ssh restricted to keys from a specific bastion host



perfSONAR Playbook Quickstart

- git clone https://github.com/perfsonar/ansible-playbook-perfsonar
- ansible-galaxy install -i -r requirements.yml
- ./defaults.sh
- vi inventory/hosts
- vi inventory/groups/all/perfsonar/*
- For testpoints and toolkits:
  - cp inventory/lsregistration.yml inventory/host_vars/myhostname.yml
  - vi inventory/host_vars/myhostname.yml
- ansible-playbook --ask-become-pass perfsonar.yml

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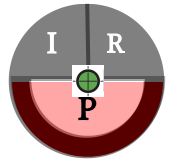
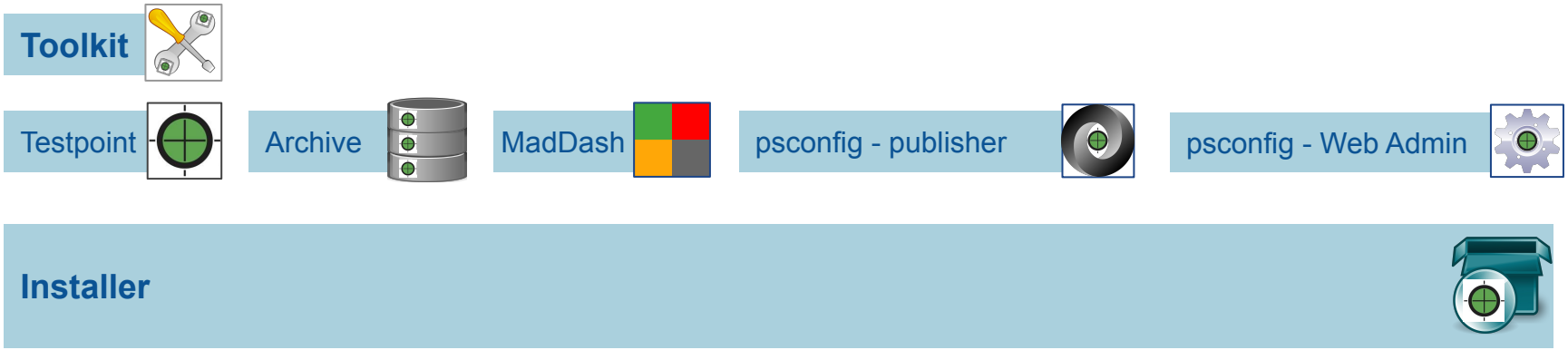


Roles

- https://github.com/perfsonar/ansible-role-perfsonar-**archive**
- https://github.com/perfsonar/ansible-role-perfsonar-**installer**
- https://github.com/perfsonar/ansible-role-perfsonar-**maddash**
- https://github.com/perfsonar/ansible-role-perfsonar-**testpoint**
- https://github.com/perfsonar/ansible-role-perfsonar-**toolkit**
- https://github.com/perfsonar/ansible-role-perfsonar-**psconfig-publisher**
- https://github.com/perfsonar/ansible-role-perfsonar-**psconfig-web-admin**

perfSONAR Roles: Inheritance



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Role: Installer

https://github.com/perfsonar/ansible-role-perfsonar-installer

- Install base OS updates
- Configure repos
- Install main software bundle
- Install any additional dependencies or optional packages

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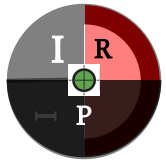

Role: Testpoint

https://github.com/perfsonar/ansible-role-perfsonar-testpoint

- Add optional packages:
  - perfsonar-toolkit-ntp
  - perfsonar-toolkit-security
  - perfsonar-toolkit-servicewatcher
  - perfsonar-toolkit-sysctl
  - perfsonar-toolkit-systemenv-testpoint
- Ensure our FQDN isn't pointing to localhost in /etc/hosts
- Configure additional NTP servers
- Disable root ssh access
- Add any defined remote psconfig schedules
- Authorize IP Interfaces to Archivers
- Check for running processes
- Pscheduler troubleshoot to verify functionality

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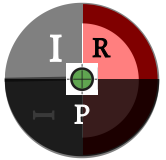

Role: Toolkit

https://github.com/perfsonar/ansible-role-perfsonar-toolkit

- All optional packages from testpoint are included by default
- Set up perfSONAR web user & passwd

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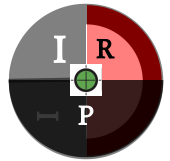

Role: Archiver

https://github.com/perfsonar/ansible-role-perfsonar-archive

- Configure esmond DB for perfSONAR
- Add static list of IP Addrs for write access auth

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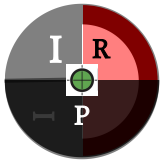

Role: MadDash

https://github.com/perfsonar/ansible-role-perfsonar-maddash

- Start MadDash agent
- Manage remote meshes

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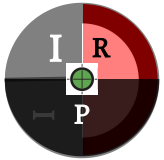

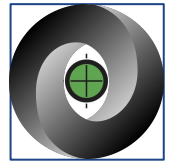

Role: pSconfig JSON Publisher

https://github.com/perfsonar/ansible-role-perfsonar-psconfig-publisher

- copy JSON schedules to publisher
- Publish schedules
- Update testpoints with psconfig add URL

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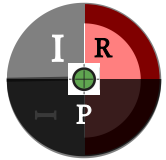

Role: pSconfig Web Admin

https://github.com/perfsonar/ansible-role-perfsonar-psconfig-web-admin

- Install & configure PWA Docker ecosystem

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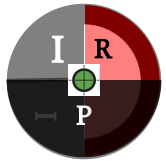

Future Development

- Process management for all roles
- Improved PWA management
  - psconfig add meshes on testpoints
  - User management
- Expanded MadDash configuration & management
- Better Documentation
- pSconfig module
- 4.3 per-role firewall rules
- Improved Deployment Troubleshooting
- Support for optional test/tool bundles

Questions?

Thank you

Edward Colone <epcjr@umich.edu>