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ICS Infrastructure Deployment Overview at ESS

ICALEPCS 2019 - WEAPP04

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European Spallation Source ERIC

2019-10-09

- Introduction
- Ansible
- AWX
- CSEntry



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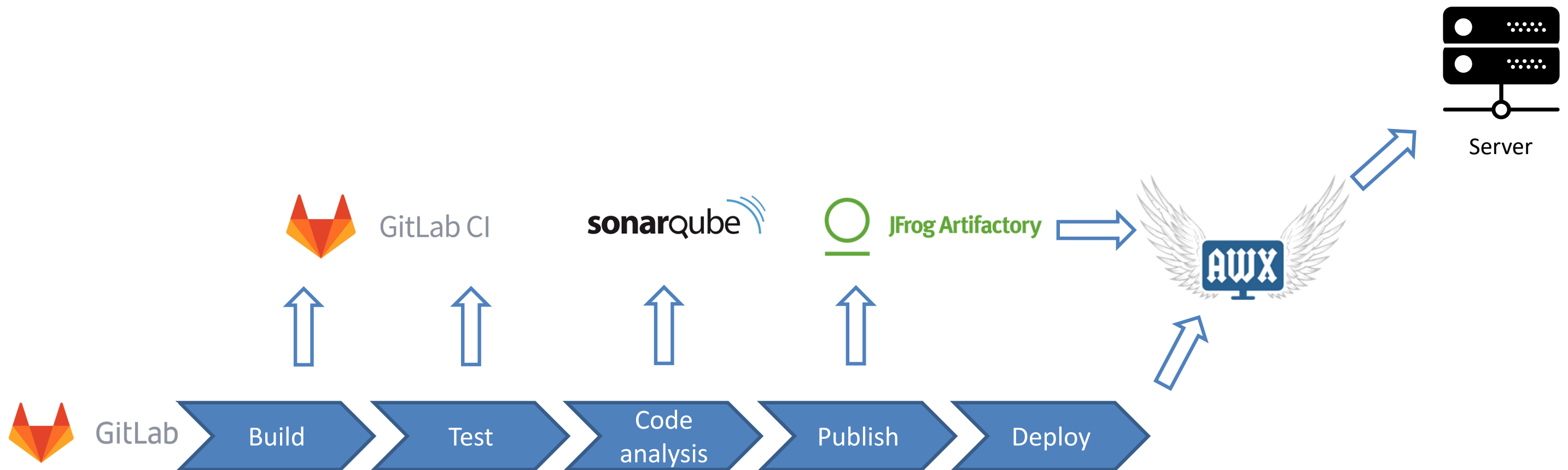
Introduction

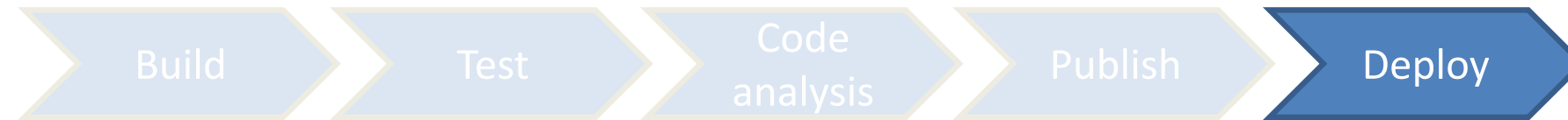
The **Integrated Control System Division (ICS)** is an organisational unit responsible for the control systems within the European Spallation Source (ESS) facility, including control systems for accelerator, target, neutron scattering systems and conventional facilities

Within ICS, the Control System Infrastructure group is in charge to design, implement and operate the IT infrastructure needed to reliably run the EPICS eco-system

- Local & Main Control room
- Data Centre
- Control System Networks
- Software Infrastructure

Continuous Integration & Delivery Pipeline





- Repeatable
- Reproducible
- Reliable



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A ANSIBLE

```
- name: install docker
  yum:
    name:
      - "docker-ce-{{ docker_version }}"
      - "docker-ce-cli-{{ docker_cli_version }}"
      - "containerd.io-{{ docker_containerd_io_version }}"
    state: present

- name: create docker daemon configuration directory
  file:
    path: /etc/docker
    state: directory
    mode: 0700

- name: create docker daemon configuration
  template:
    src: daemon.j2
    dest: /etc/docker/daemon.json
    mode: 0600
  notify:
    - restart docker daemon

- name: start docker daemon
  systemd:
    name: docker
    enabled: true
    state: started
```

- YAML format
- Readable
- Idempotent

```
bash
TASK [ics-ans-role-docker : install docker] *****
changed: [ics-ans-role-docker-pip-installed]
changed: [ics-ans-role-docker-daemon-config]
changed: [ics-ans-role-docker-default]

TASK [ics-ans-role-docker : create docker daemon configuration directory] *****
changed: [ics-ans-role-docker-daemon-config]
changed: [ics-ans-role-docker-pip-installed]
changed: [ics-ans-role-docker-default]

TASK [ics-ans-role-docker : create docker daemon configuration] *****
changed: [ics-ans-role-docker-daemon-config]
changed: [ics-ans-role-docker-pip-installed]
changed: [ics-ans-role-docker-default]

TASK [ics-ans-role-docker : start docker daemon] *****
changed: [ics-ans-role-docker-pip-installed]
changed: [ics-ans-role-docker-daemon-config]
changed: [ics-ans-role-docker-default]
```

Ansible at ESS: playbook

```
ics-ans-jupyterhub/  
├── LICENSE  
├── README.md  
├── group_vars  
│   └── jupyterhub  
├── molecule  
├── playbook.yml  
└── roles  
    └── requirements.yml
```

```
---  
- hosts: jupyterhub  
  become: true  
  roles:  
    - role: ics-ans-role-jupyterhub
```

```
---  
- src: git+https://gitlab.esss.lu.se/ics-ansible-galaxy/ics-ans-role-repository.git  
  version: v0.11.0  
- src: git+https://gitlab.esss.lu.se/ics-ansible-galaxy/ics-ans-role-docker.git  
  version: v1.2.1  
- src: git+https://gitlab.esss.lu.se/ics-ansible-galaxy/ics-ans-role-traefik.git  
  version: v0.8.1  
- src: git+https://gitlab.esss.lu.se/ics-ansible-galaxy/ics-ans-role-jupyterhub.git  
  version: v1.1.0  
- src: git+https://gitlab.esss.lu.se/ics-ansible-galaxy/ics-ans-role-certificate.git  
  version: v0.1.4
```

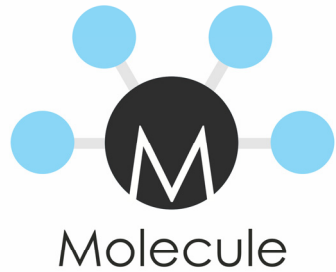
Ansible at ESS: role

ics-ans-role-jupyterhub

- LICENSE
- README.md
- defaults
 - └─ main.yml
- handlers
 - └─ main.yml
- meta
 - └─ main.yml
- molecule
- tasks
 - └─ main.yml
- templates
 - └─ epics_env.sh.j2
 - └─ jupyterhub_config.py.j2
 - └─ jupyterhub_notebook_config.py.j2
- vars
 - └─ main.yml

ics-ans-role-jupyterhub/molecule

- └─ default
 - └─ molecule.yml
 - └─ playbook.yml
 - └─ prepare.yml
 - └─ requirements.yml
 - └─ tests
 - └─ test_default.py



Designed to aid in the development and testing of Ansible roles

- Make it easy to run a playbook in Docker container or Vagrant box for local testing
- Verify role syntax
- Check idempotence
- Run ansible-lint (best practices checker for Ansible)
- Run tests with Testinfra

<https://molecule.readthedocs.io>



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Ansible AWX | JOBS Ansible AWX | DASHBOARD

Not Secure | torn.tn.ess.lu.se/#/home

benjaminbertrand

DASHBOARD

3554

HOSTS

559

FAILED HOSTS

30

INVENTORIES

1

INVENTORY SYNC FAILURES

165

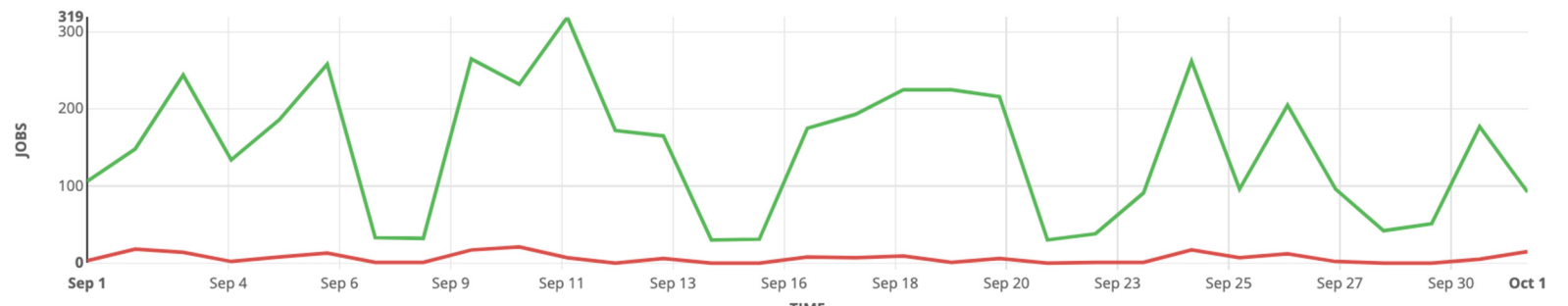
PROJECTS

1

PROJECT SYNC FAILURES

JOB STATUS

PERIOD: PAST MONTH JOB TYPE: ALL VIEW: ALL

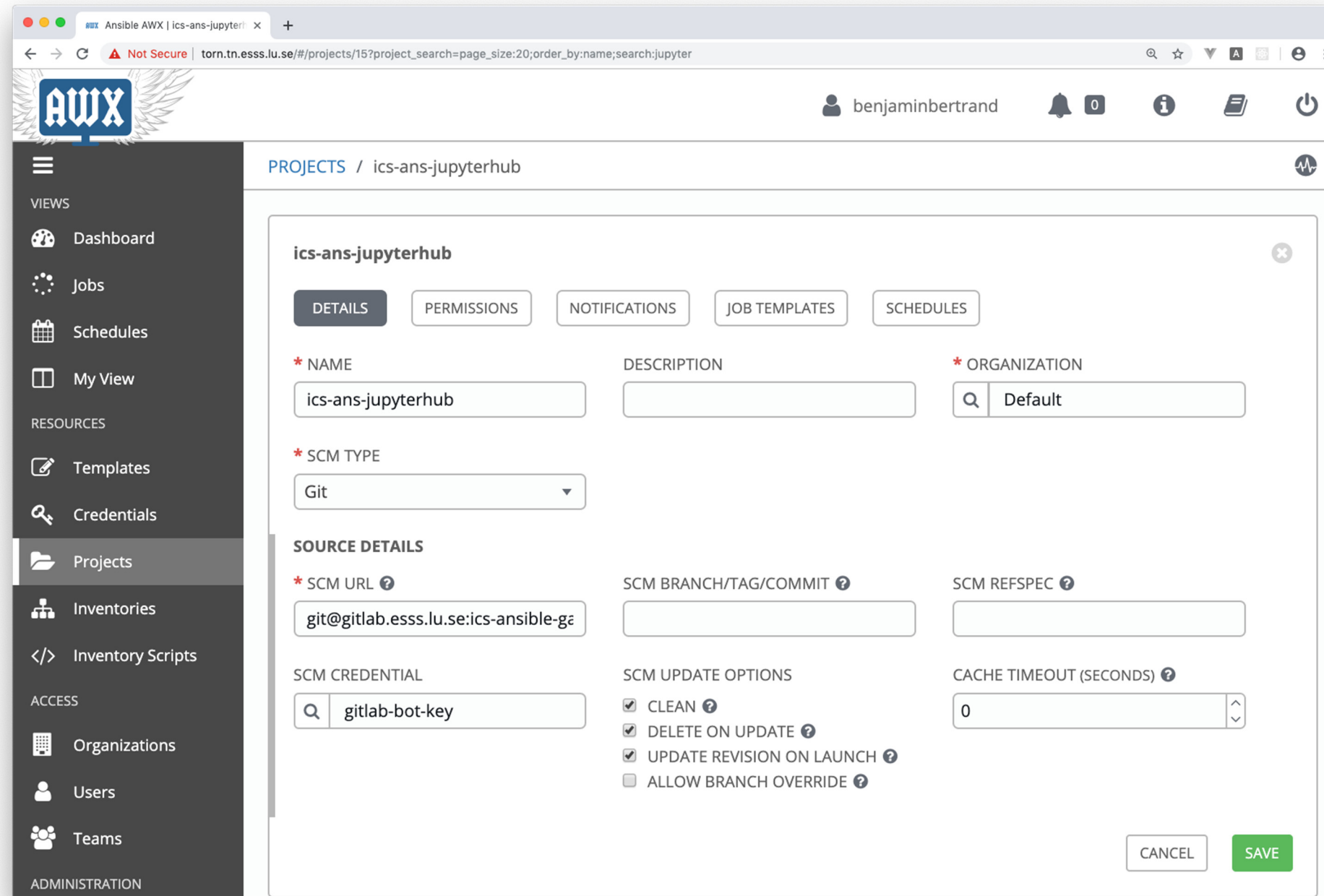


RECENTLY USED TEMPLATES

| NAME | ACTIVITY | ACTIONS |
|---|--|---------|
| ics-ans-juniper-link | <div style="display: flex; gap: 2px;"><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div><div style="width: 10px; height: 10px; background-color: gray;"></div></div> | |
| pss-sendemail | <div style="display: flex; gap: 2px;"><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div></div> | |
| deploy-safety-firewall | <div style="display: flex; gap: 2px;"><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div></div> | |
| update-prometheus | <div style="display: flex; gap: 2px;"><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: red;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div></div> | |
| update-dhcp-dns-radius-workflow | <div style="display: flex; gap: 2px;"><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div><div style="width: 10px; height: 10px; background-color: green;"></div></div> | |

RECENT JOB RUNS

| NAME | TIME |
|---|--------------------|
| ● ics-ans-juniper-link | 1/10/2019 15:48:43 |
| ● pss-sendemail | 1/10/2019 15:48:08 |
| ● pss-sendemail | 1/10/2019 15:40:13 |
| ● deploy-safety-firewall | 1/10/2019 15:39:00 |
| ● deploy-safety-firewall | 1/10/2019 15:33:29 |

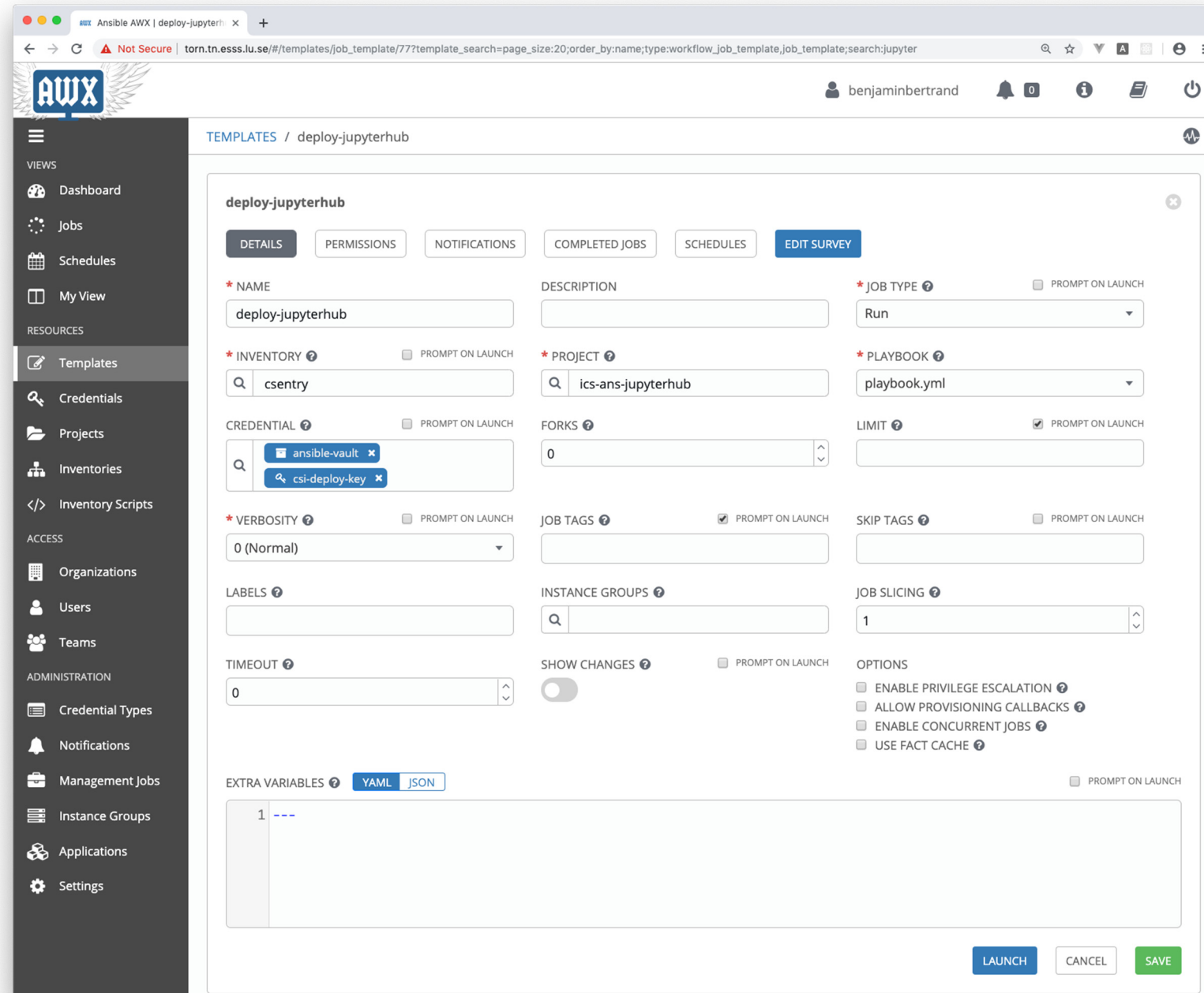


The screenshot shows the AWX web interface. The browser address bar indicates the URL: `torn.tn.esss.lu.se/#/projects/15?project_search=page_size:20;order_by:name;search:jupyter`. The user is logged in as `benjaminbertrand`. The main content area displays the configuration for the project `ics-ans-jupyterhub`. The configuration is organized into several sections:

- DETAILS** (selected):
 - * NAME**: `ics-ans-jupyterhub`
 - DESCRIPTION**: (empty)
 - * ORGANIZATION**: `Default`
 - * SCM TYPE**: `Git`
- SOURCE DETAILS**:
 - * SCM URL**: `git@gitlab.esss.lu.se:ics-ansible-gz`
 - SCM BRANCH/TAG/COMMIT**: (empty)
 - SCM REFSPEC**: (empty)
- SCM CREDENTIAL**: `gitlab-bot-key`
- SCM UPDATE OPTIONS**:
 - CLEAN**
 - DELETE ON UPDATE**
 - UPDATE REVISION ON LAUNCH**
 - ALLOW BRANCH OVERRIDE**
- CACHE TIMEOUT (SECONDS)**: `0`

At the bottom right, there are **CANCEL** and **SAVE** buttons.

AWX job template



The screenshot displays the AWX web interface for configuring a job template. The browser address bar shows the URL: `tor.tn.ess.lu.se/#/templates/job_template/77?template_search=page_size:20;order_by:name;type:workflow_job_template,job_template;search:jupyter`. The user is logged in as `benjaminbertrand`.

The main content area is titled `TEMPLATES / deploy-jupyterhub`. It features a navigation sidebar on the left with sections: VIEWS (Dashboard, Jobs, Schedules, My View), RESOURCES (Templates, Credentials, Projects, Inventories, Inventory Scripts), ACCESS (Organizations, Users, Teams), and ADMINISTRATION (Credential Types, Notifications, Management Jobs, Instance Groups, Applications, Settings).

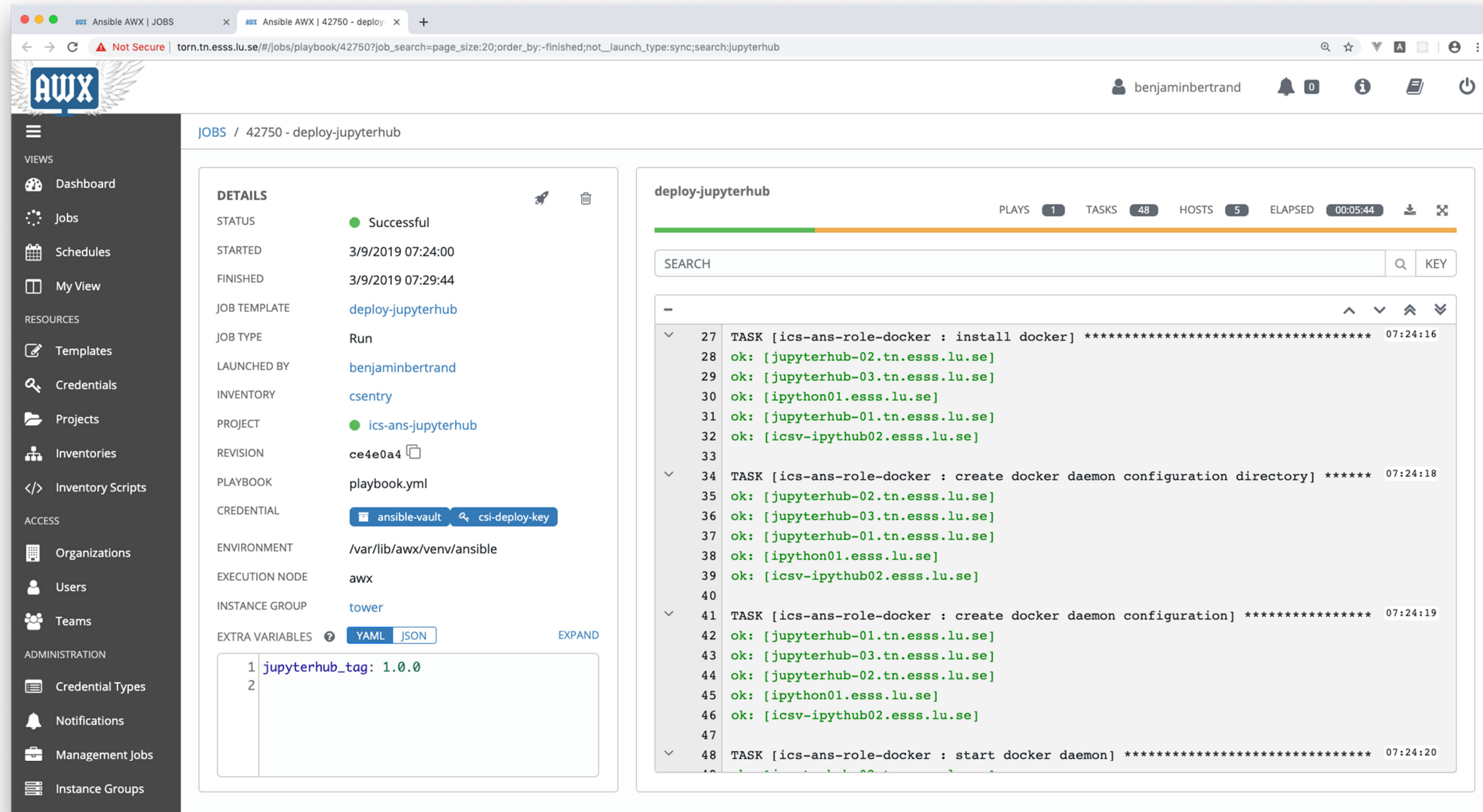
The configuration page for the `deploy-jupyterhub` job template includes the following fields and options:

- DETAILS** (selected), PERMISSIONS, NOTIFICATIONS, COMPLETED JOBS, SCHEDULES, EDIT SURVEY
- * NAME**: `deploy-jupyterhub`
- DESCRIPTION**: (empty)
- * JOB TYPE**: `Run` (with PROMPT ON LAUNCH)
- * INVENTORY**: `cscopy` (with PROMPT ON LAUNCH)
- * PROJECT**: `ics-ans-jupyterhub`
- * PLAYBOOK**: `playbook.yml`
- CREDENTIAL**: `ansible-vault` and `csi-deploy-key` (with PROMPT ON LAUNCH)
- FORKS**: `0`
- LIMIT**: (empty) (with PROMPT ON LAUNCH)
- * VERBOSITY**: `0 (Normal)` (with PROMPT ON LAUNCH)
- JOB TAGS**: (empty) (with PROMPT ON LAUNCH)
- SKIP TAGS**: (empty) (with PROMPT ON LAUNCH)
- LABELS**: (empty)
- INSTANCE GROUPS**: (empty)
- JOB SLICING**: `1`
- TIMEOUT**: `0`
- SHOW CHANGES**: (toggle off) (with PROMPT ON LAUNCH)
- OPTIONS**:
 - ENABLE PRIVILEGE ESCALATION
 - ALLOW PROVISIONING CALLBACKS
 - ENABLE CONCURRENT JOBS
 - USE FACT CACHE
- EXTRA VARIABLES**: (YAML | JSON) (with PROMPT ON LAUNCH)

The EXTRA VARIABLES field contains the following content:

```
1 ---
```

At the bottom right, there are three buttons: **LAUNCH** (blue), **CANCEL** (white), and **SAVE** (green).



The screenshot displays the AWX web interface for a job named "42750 - deploy-jupyterhub". The interface is divided into several sections:

- Navigation Sidebar:** Includes sections for VIEWS (Dashboard, Jobs, Schedules, My View), RESOURCES (Templates, Credentials, Projects, Inventories, Inventory Scripts), ACCESS (Organizations, Users, Teams), and ADMINISTRATION (Credential Types, Notifications, Management Jobs, Instance Groups).
- Job Details Panel:**
 - STATUS:** Successful
 - STARTED:** 3/9/2019 07:24:00
 - FINISHED:** 3/9/2019 07:29:44
 - JOB TEMPLATE:** deploy-jupyterhub
 - JOB TYPE:** Run
 - LAUNCHED BY:** benjaminbertrand
 - INVENTORY:** csenry
 - PROJECT:** ics-ans-jupyterhub
 - REVISION:** ce4e0a4
 - PLAYBOOK:** playbook.yml
 - CREDENTIAL:** ansible-vault, csi-deploy-key
 - ENVIRONMENT:** /var/lib/awx/venv/ansible
 - EXECUTION NODE:** awx
 - INSTANCE GROUP:** tower
 - EXTRA VARIABLES:** jupyterhub_tag: 1.0.0
- Task Execution Log Panel:** Titled "deploy-jupyterhub", it shows a progress bar and a list of tasks:
 - Task 27:** [ics-ans-role-docker : install docker] - Completed at 07:24:16. Output: ok: [jupyterhub-02.tn.esss.lu.se], ok: [jupyterhub-03.tn.esss.lu.se], ok: [ipython01.esss.lu.se], ok: [jupyterhub-01.tn.esss.lu.se], ok: [icsv-ipythub02.esss.lu.se]
 - Task 34:** [ics-ans-role-docker : create docker daemon configuration directory] - Completed at 07:24:18. Output: ok: [jupyterhub-02.tn.esss.lu.se], ok: [jupyterhub-03.tn.esss.lu.se], ok: [jupyterhub-01.tn.esss.lu.se], ok: [ipython01.esss.lu.se], ok: [icsv-ipythub02.esss.lu.se]
 - Task 41:** [ics-ans-role-docker : create docker daemon configuration] - Completed at 07:24:19. Output: ok: [jupyterhub-01.tn.esss.lu.se], ok: [jupyterhub-03.tn.esss.lu.se], ok: [jupyterhub-02.tn.esss.lu.se], ok: [ipython01.esss.lu.se], ok: [icsv-ipythub02.esss.lu.se]
 - Task 48:** [ics-ans-role-docker : start docker daemon] - Completed at 07:24:20.

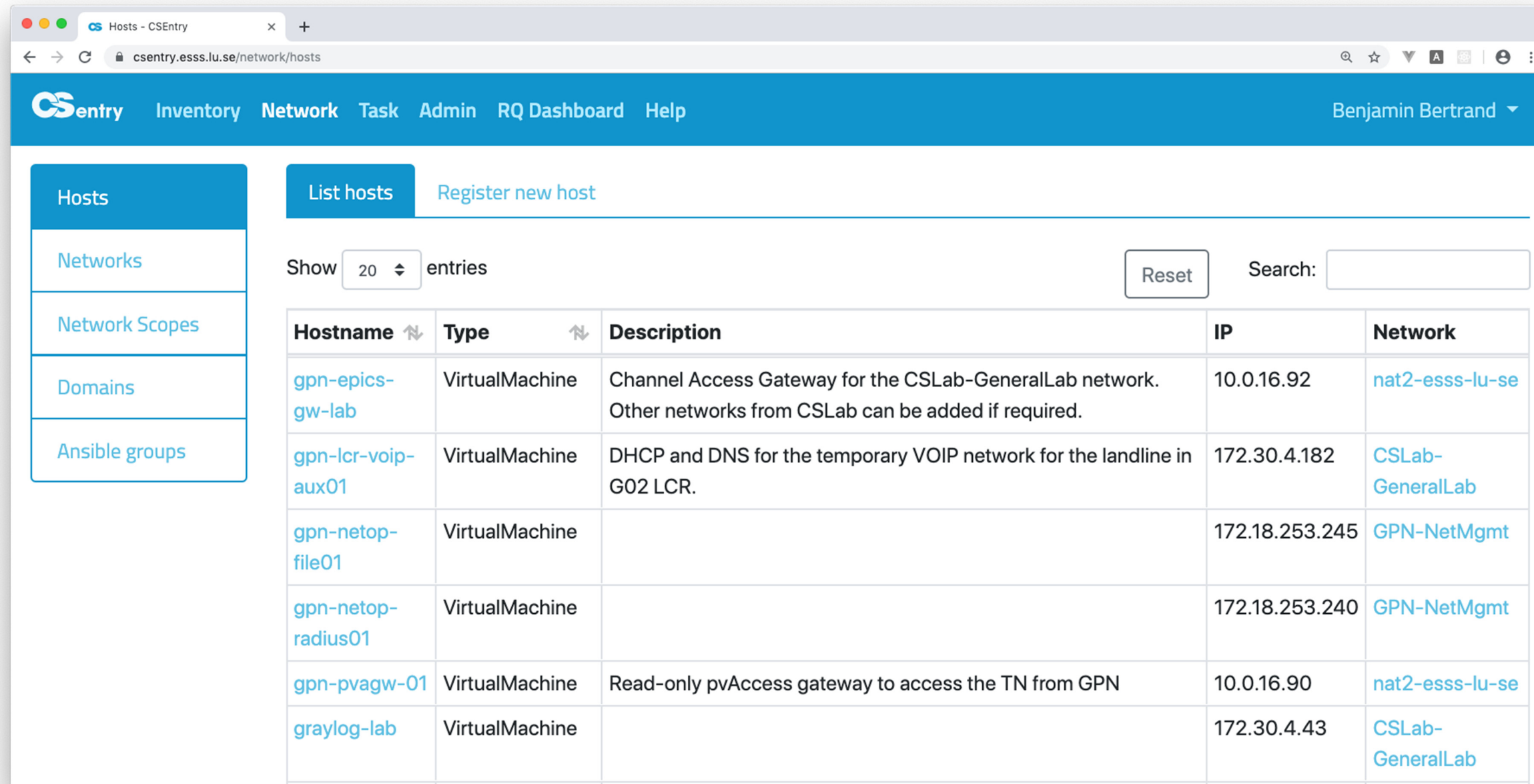


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CSentry

CSEntry

Ansible inventory

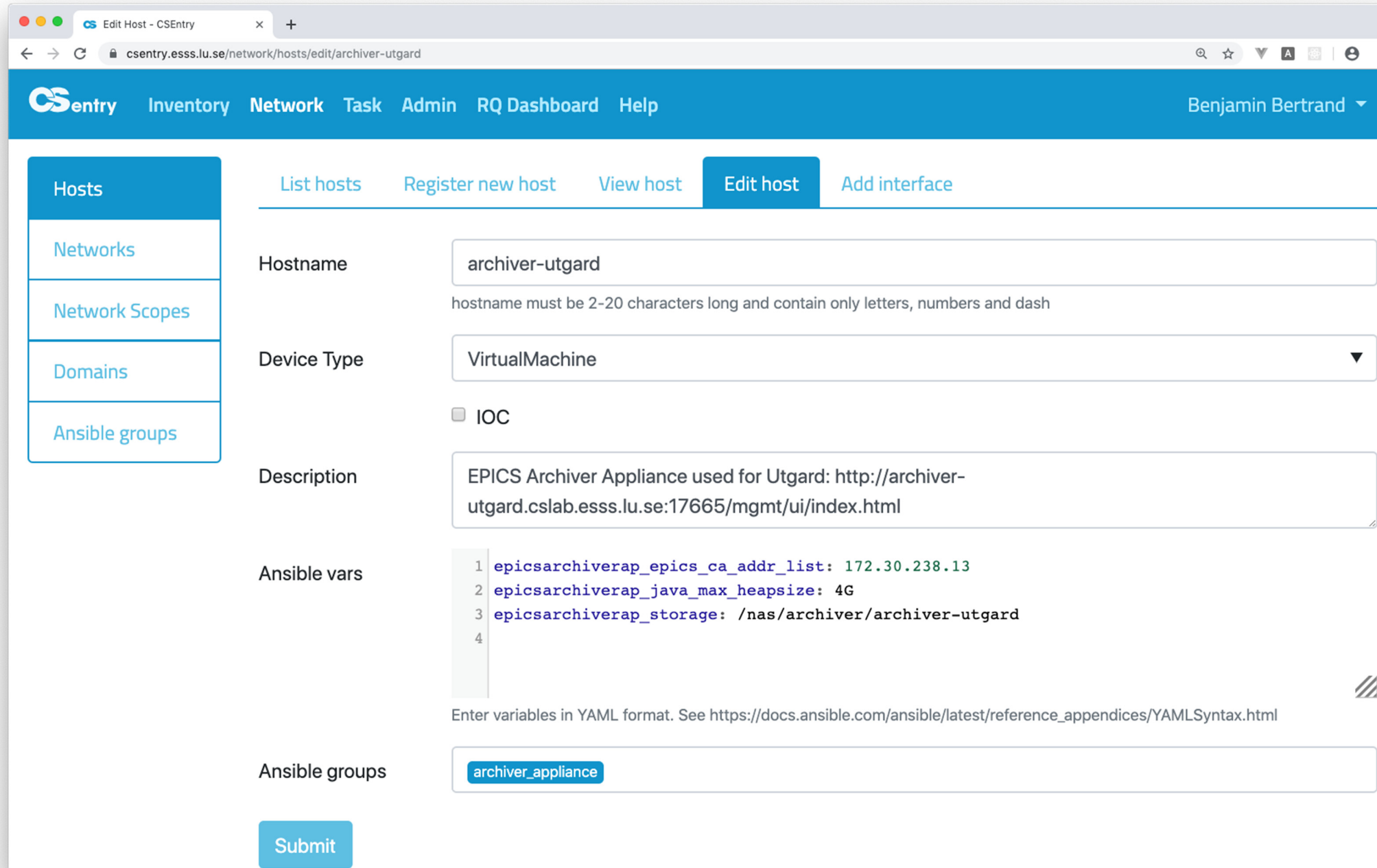


The screenshot shows the CSEntry web interface. The browser address bar displays `csentry.ess.lu.se/network/hosts`. The navigation menu includes **CSEntry**, **Inventory**, **Network**, **Task**, **Admin**, **RQ Dashboard**, and **Help**. The user **Benjamin Bertrand** is logged in. The left sidebar contains a menu with **Hosts** (selected), **Networks**, **Network Scopes**, **Domains**, and **Ansible groups**. The main content area has two tabs: **List hosts** (active) and **Register new host**. Below the tabs, there is a "Show 20 entries" control with a "Reset" button and a search input field. A table lists the hosts with columns for Hostname, Type, Description, IP, and Network.

| Hostname | Type | Description | IP | Network |
|------------------------------------|----------------|--|----------------|----------------------------------|
| gpn-epics-gw-lab | VirtualMachine | Channel Access Gateway for the CSLab-GeneralLab network. Other networks from CSLab can be added if required. | 10.0.16.92 | nat2-esss-lu-se |
| gpn-lcr-voip-aux01 | VirtualMachine | DHCP and DNS for the temporary VOIP network for the landline in G02 LCR. | 172.30.4.182 | CSLab-GeneralLab |
| gpn-netop-file01 | VirtualMachine | | 172.18.253.245 | GPN-NetMgmt |
| gpn-netop-radius01 | VirtualMachine | | 172.18.253.240 | GPN-NetMgmt |
| gpn-pvagw-01 | VirtualMachine | Read-only pvAccess gateway to access the TN from GPN | 10.0.16.90 | nat2-esss-lu-se |
| graylog-lab | VirtualMachine | | 172.30.4.43 | CSLab-GeneralLab |

CSEntry

Ansible variables



The screenshot shows the CSEntry web interface for editing a host. The browser address bar shows `csentry.esss.lu.se/network/hosts/edit/archiver-utgard`. The navigation menu includes **CSentry**, Inventory, Network, Task, Admin, RQ Dashboard, and Help. The user **Benjamin Bertrand** is logged in. The left sidebar has a menu with **Hosts** (selected), Networks, Network Scopes, Domains, and Ansible groups. The main content area has tabs for **List hosts**, Register new host, View host, **Edit host**, and Add interface. The form fields are:

- Hostname:** `archiver-utgard`. A note below states: "hostname must be 2-20 characters long and contain only letters, numbers and dash".
- Device Type:** `VirtualMachine` (dropdown menu).
- IOC:** (unchecked).
- Description:** `EPICS Archiver Appliance used for Utgard: http://archiver-utgard.cslab.esss.lu.se:17665/mgmt/ui/index.html`
- Ansible vars:** A text area containing:

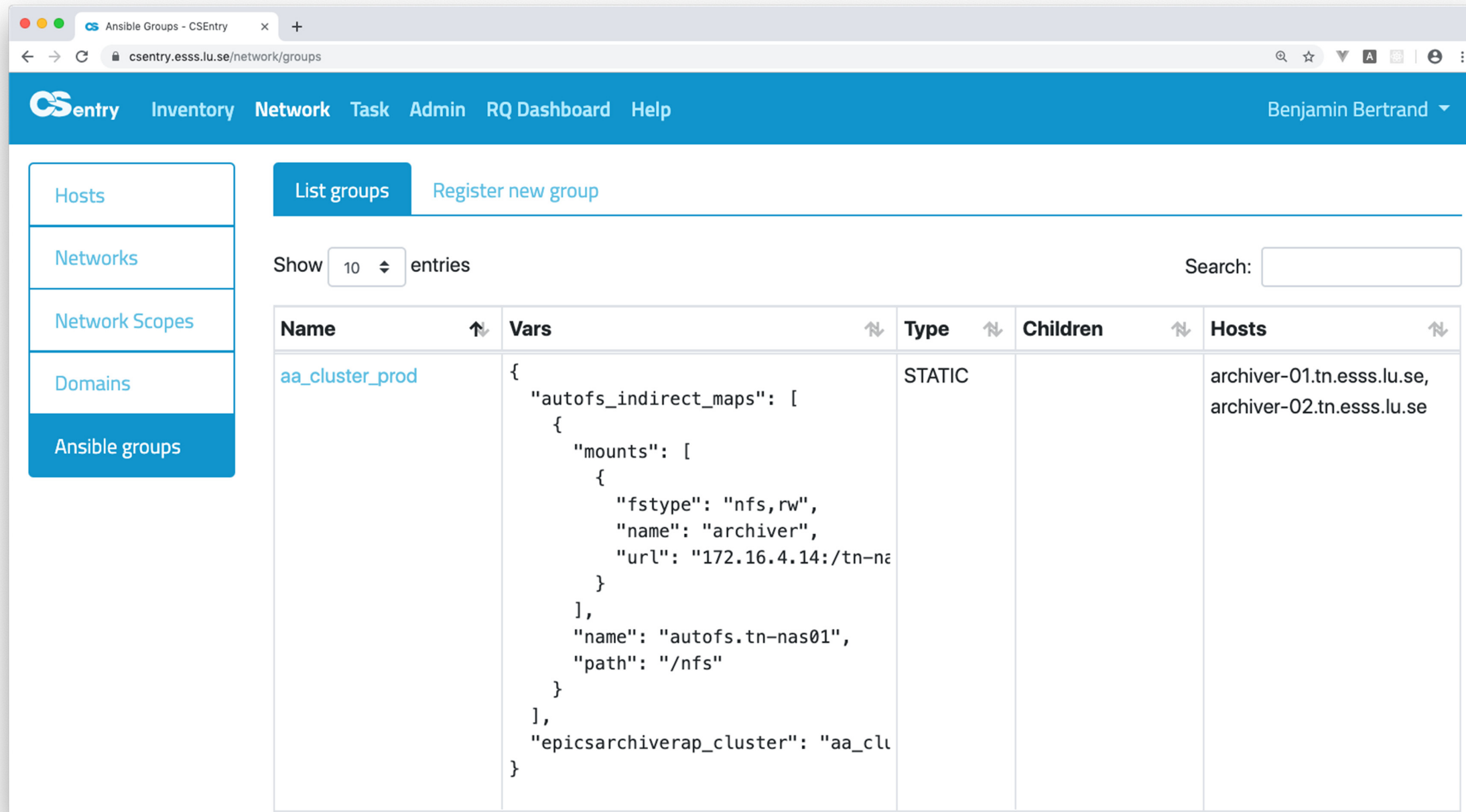
```
1 epicsarchiverap_epics_ca_addr_list: 172.30.238.13
2 epicsarchiverap_java_max_heapsize: 4G
3 epicsarchiverap_storage: /nas/archiver/archiver-utgard
4
```

A note below states: "Enter variables in YAML format. See https://docs.ansible.com/ansible/latest/reference_appendices/YAMLSyntax.html".
- Ansible groups:** `archiver_appliance` (tagged).

A **Submit** button is located at the bottom left of the form.

CSEntry

Ansible groups



Ansible Groups - CSEntry

csentry.esss.lu.se/network/groups

CSEntry Inventory Network Task Admin RQ Dashboard Help Benjamin Bertrand

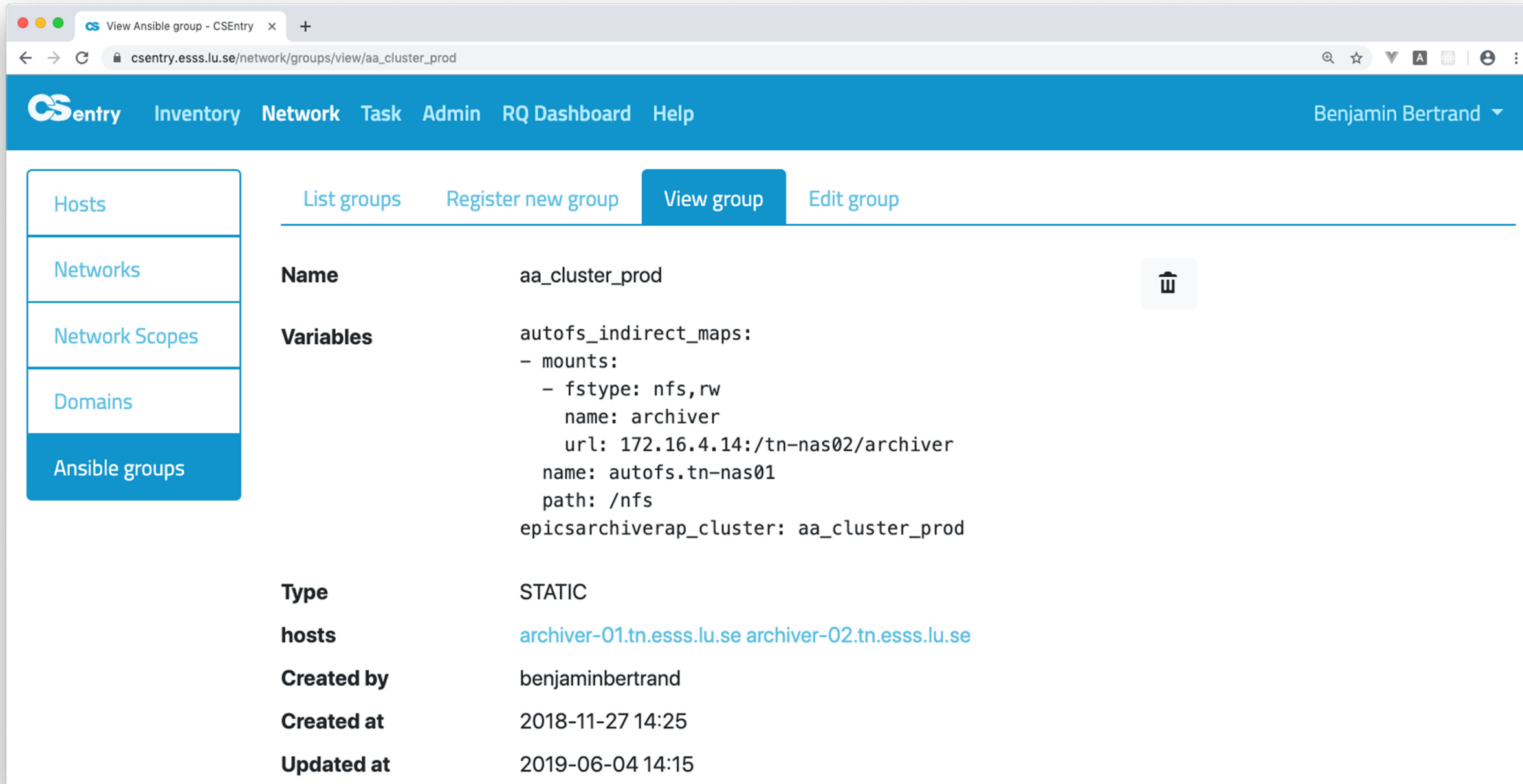
List groups Register new group

Show 10 entries Search:


| Name | Vars | Type | Children | Hosts |
|-----------------|--|--------|----------|---|
| aa_cluster_prod | <pre>{ "autofs_indirect_maps": [{ "mounts": [{ "fstype": "nfs,rw", "name": "archiver", "url": "172.16.4.14:/tn-na }], "name": "autofs.tn-nas01", "path": "/nfs" }], "epicsarchiverap_cluster": "aa_clu }</pre> | STATIC | | archiver-01.tn.esss.lu.se, archiver-02.tn.esss.lu.se |

CSEntry

Static Groups



The screenshot shows the CSEntry web interface. The browser address bar displays the URL `csentry.esss.lu.se/network/groups/view/aa_cluster_prod`. The navigation menu includes **CSEntry**, [Inventory](#), [Network](#), [Task](#), [Admin](#), [RQ Dashboard](#), and [Help](#). The user **Benjamin Bertrand** is logged in. The left sidebar contains a menu with [Hosts](#), [Networks](#), [Network Scopes](#), [Domains](#), and **Ansible groups**. The main content area has tabs for [List groups](#), [Register new group](#), **View group**, and [Edit group](#). The details for the group `aa_cluster_prod` are as follows:

| | | |
|-------------------|--|---|
| Name | aa_cluster_prod |  |
| Variables | <pre>autofs_indirect_maps: - mounts: - fstype: nfs,rw name: archiver url: 172.16.4.14:/tn-nas02/archiver name: autofs.tn-nas01 path: /nfs epicsarchiverap_cluster: aa_cluster_prod</pre> | |
| Type | STATIC | |
| hosts | archiver-01.tn.esss.lu.se archiver-02.tn.esss.lu.se | |
| Created by | benjaminbertrand | |
| Created at | 2018-11-27 14:25 | |
| Updated at | 2019-06-04 14:15 | |

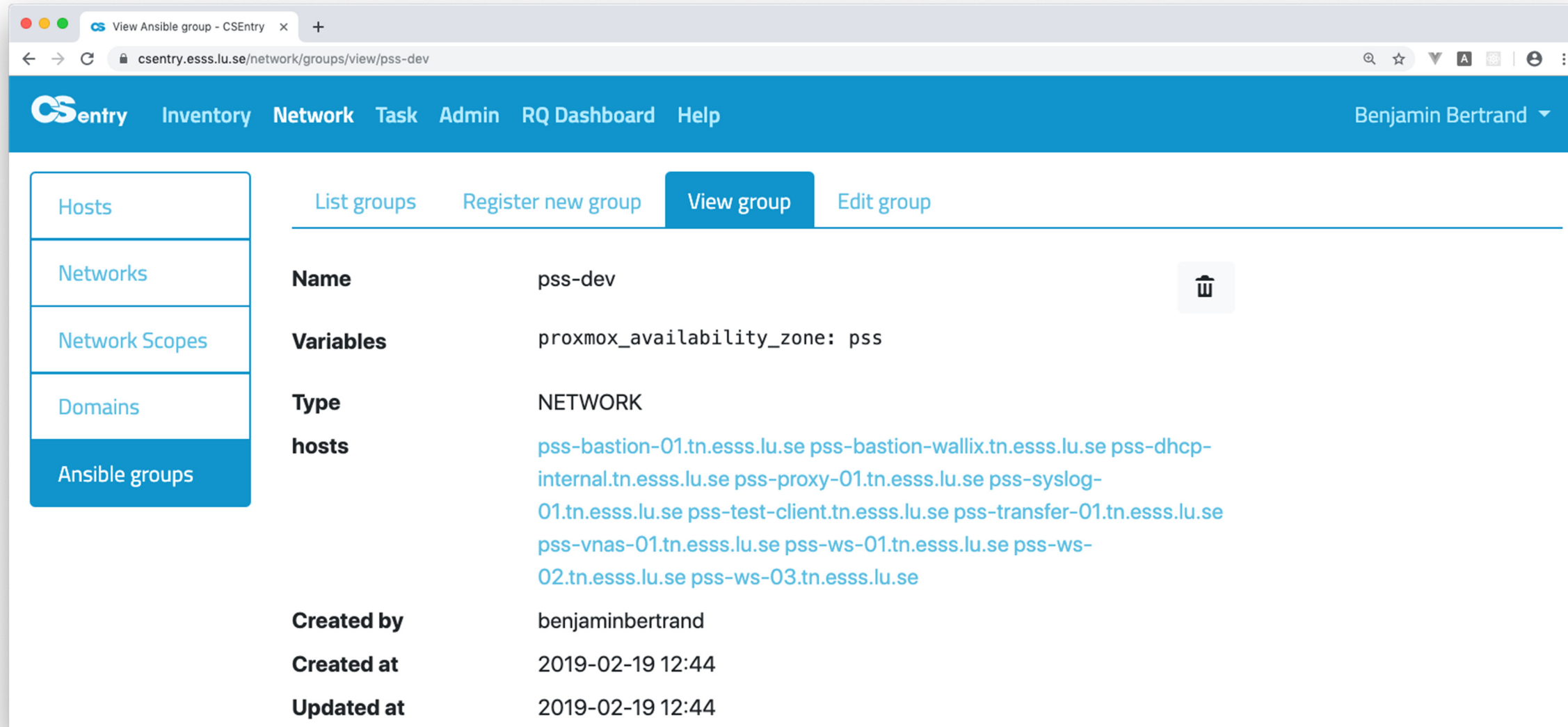
CSEntry

Groups of Groups




The screenshot shows a web browser window with the URL `csentry.ess.lu.se/network/groups/view/utgard`. The page has a blue header with the CSEntry logo and navigation links: Inventory, Network, Task, Admin, RQ Dashboard, and Help. The user 'Benjamin Bertrand' is logged in. A sidebar on the left contains navigation options: Hosts, Networks, Network Scopes, Domains, and Ansible groups (which is highlighted). The main content area has tabs for 'List groups', 'Register new group', 'View group' (selected), and 'Edit group'. Below the tabs, the details for the 'utgard' group are displayed in a table-like format:

| | | |
|-------------------|---|--|
| Name | utgard | |
| Variables | proxmox_availability_zone: utgard | |
| Type | STATIC | |
| Children | utgard-dmsc-mgmt utgard-vip utgard-dev cslab-utgrd-generallab utgrd-epics-gw-front utgard-staging utgard-instr utgrd-epics-gw | |
| hosts | | |
| Created by | benjaminbertrand | |
| Created at | 2019-09-10 08:37 | |
| Updated at | 2019-10-02 09:43 | |



The screenshot shows a web browser window with the URL `csentry.esss.lu.se/network/groups/view/pss-dev`. The page title is "View Ansible group - CSEntry". The navigation menu includes "Inventory", "Network", "Task", "Admin", "RQ Dashboard", and "Help". The user "Benjamin Bertrand" is logged in. The left sidebar shows a menu with "Hosts", "Networks", "Network Scopes", "Domains", and "Ansible groups" (highlighted). The main content area has tabs for "List groups", "Register new group", "View group" (active), and "Edit group". The "View group" page displays the following information:

| | | |
|-------------------|--|---|
| Name | pss-dev |  |
| Variables | proxmox_availability_zone: pss | |
| Type | NETWORK | |
| hosts | pss-bastion-01.tn.esss.lu.se pss-bastion-wallix.tn.esss.lu.se pss-dhcp-internal.tn.esss.lu.se pss-proxy-01.tn.esss.lu.se pss-syslog-01.tn.esss.lu.se pss-test-client.tn.esss.lu.se pss-transfer-01.tn.esss.lu.se pss-vnas-01.tn.esss.lu.se pss-ws-01.tn.esss.lu.se pss-ws-02.tn.esss.lu.se pss-ws-03.tn.esss.lu.se | |
| Created by | benjaminbertrand | |
| Created at | 2019-02-19 12:44 | |
| Updated at | 2019-02-19 12:44 | |

Dynamic type: NETWORK / NETWORK_SCOPE / DEVICE_TYPE

The name of the group shall match the name of the <type>

cscopy-inventory script

README.rst

cscopy-inventory

CSEntry Dynamic Inventory script for [Ansible](#).

Quick start

This Python package installs an entry-point that can be run directly. The variables CSEnTRY_URL and CSEnTRY_TOKEN shall be set in the environment or can be passed via the --cscopy-url and --cscopy-token command line options.

```
$ export CSEnTRY_URL="https://cscopy.esss.lu.se"  
$ export CSEnTRY_TOKEN="xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx"  
$ cscopy-inventory --list --pretty  
  
$ cscopy-inventory --help
```

Installation

```
$ pip install cscopy-inventory -i https://artifactory.esss.lu.se/artifactory/api/pypi/pypi-virtual/simple
```

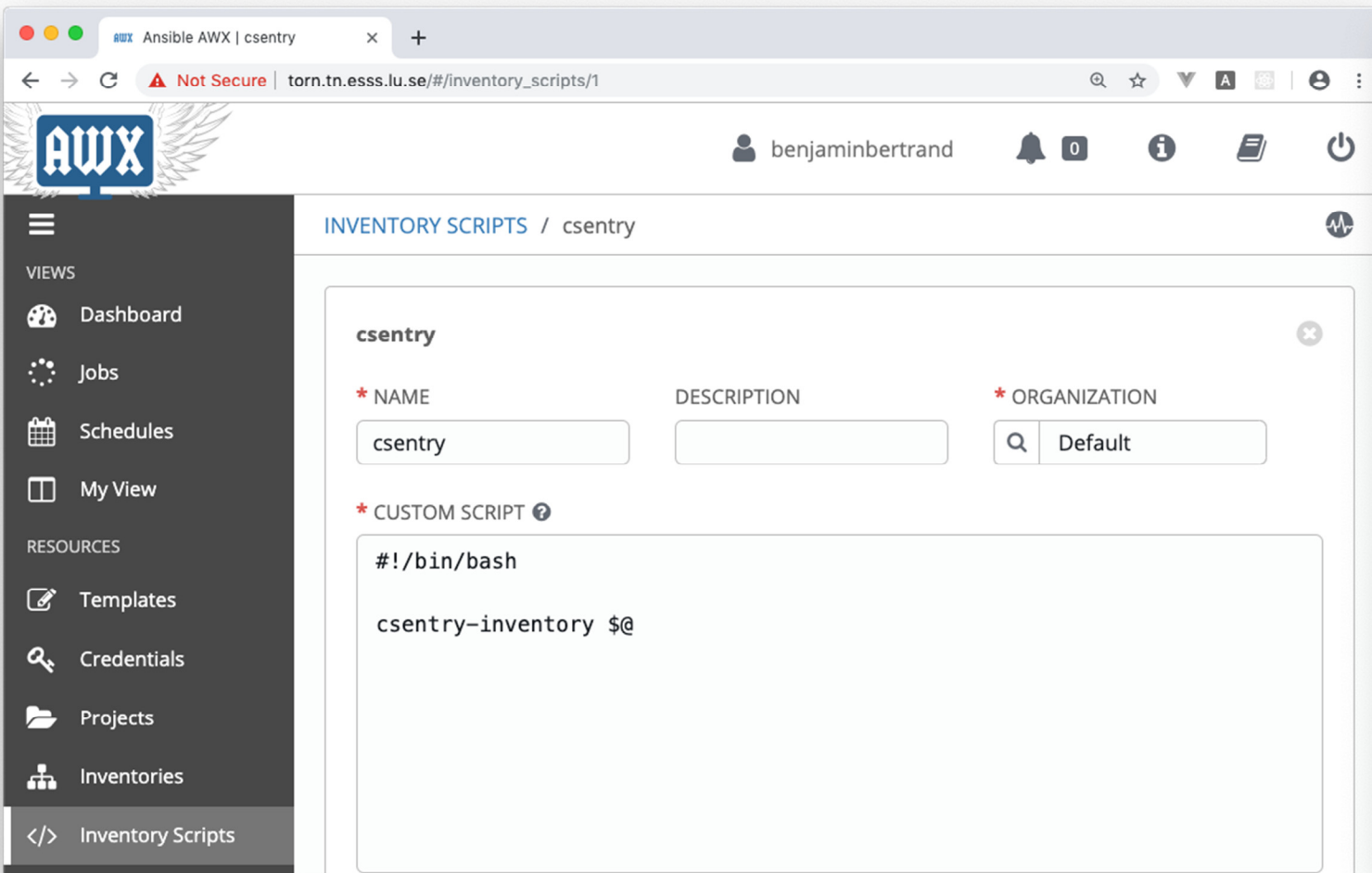
License

MIT

cscopy-inventory extra variables

```
"archiver-utgard.cslab.esss.lu.se": {
  "ansible_host": "172.30.238.75",
  "cscopy_device_type": "VirtualMachine",
  "cscopy_host_id": 1220,
  "cscopy_interfaces": [
    {
      "cnames": [],
      "gateway": "172.30.238.126",
      "ip": "172.30.238.75",
      "is_main": true,
      "mac": "02:42:42:79:b7:db",
      "name": "archiver-utgard",
      "netmask": "255.255.255.192",
      "network": {
        "domain": "cslab.esss.lu.se",
        "name": "Utgrd-EPICS-GW",
        "vlan_id": 3967
      }
    }
  ],
  "cscopy_is_ioc": false,
  "cscopy_items": [],
  "cscopy_model": null,
  "cscopy_user": "benjaminbertrand",
  "epicsarchiverap_epics_ca_addr_list": "172.30.238.13",
  "epicsarchiverap_java_max_heapsize": "4G"
```

cscopy-inventory in AWX



AWX Ansible AWX | cscopy

Not Secure | torn.tn.ess.lu.se/#/inventory_scripts/1

benjaminbertrand

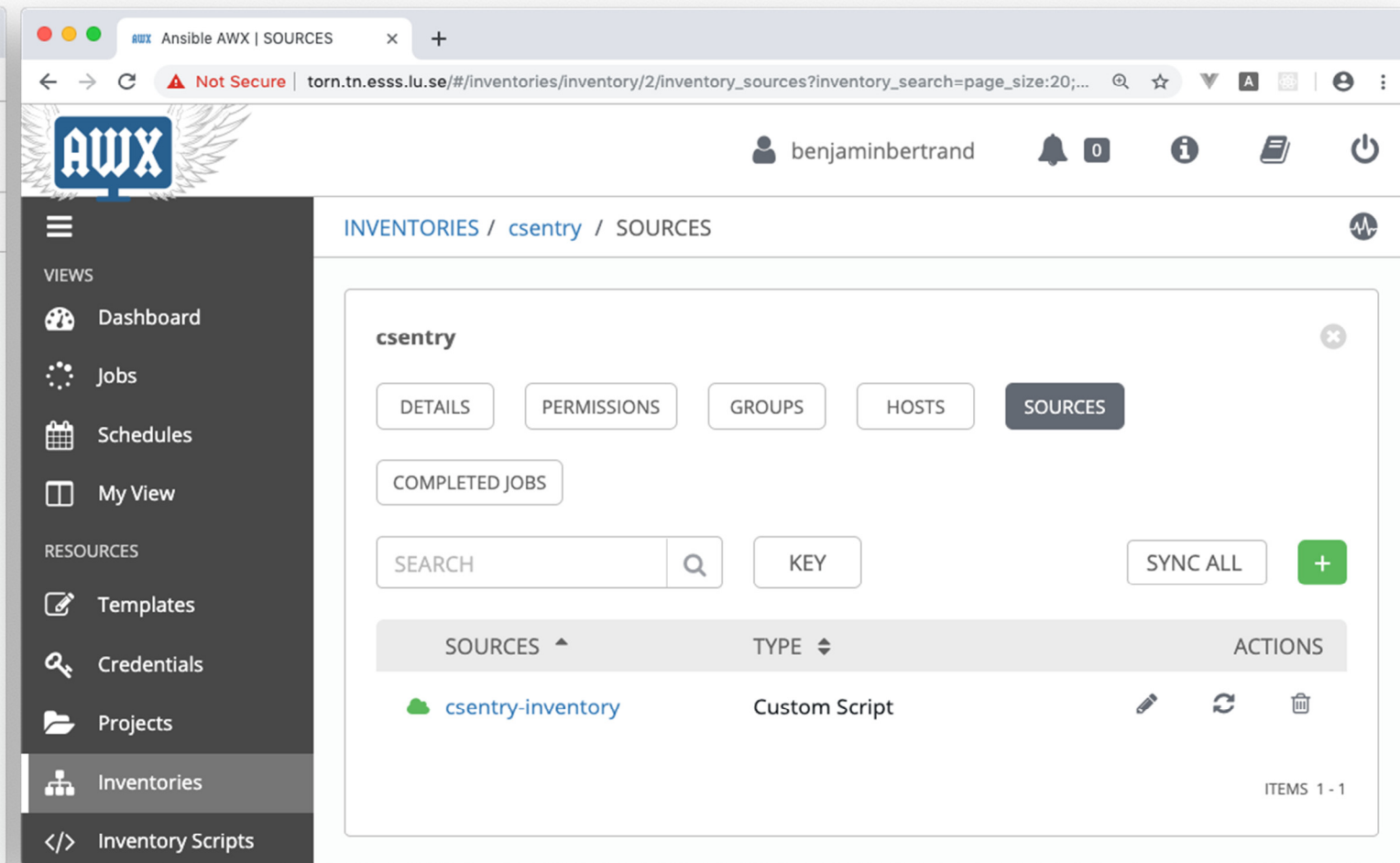
INVENTORY SCRIPTS / cscopy

cscopy

| * NAME | DESCRIPTION | * ORGANIZATION |
|-------------------------------------|----------------------|--------------------------------------|
| <input type="text" value="cscopy"/> | <input type="text"/> | <input type="text" value="Default"/> |

* CUSTOM SCRIPT ?

```
#!/bin/bash  
  
cscopy-inventory $@
```



AWX Ansible AWX | SOURCES

Not Secure | torn.tn.ess.lu.se/#/inventories/inventory/2/inventory_sources?inventory_search=page_size:20;...

benjaminbertrand

INVENTORIES / cscopy / SOURCES

cscopy

DETAILS PERMISSIONS GROUPS HOSTS **SOURCES**

COMPLETED JOBS

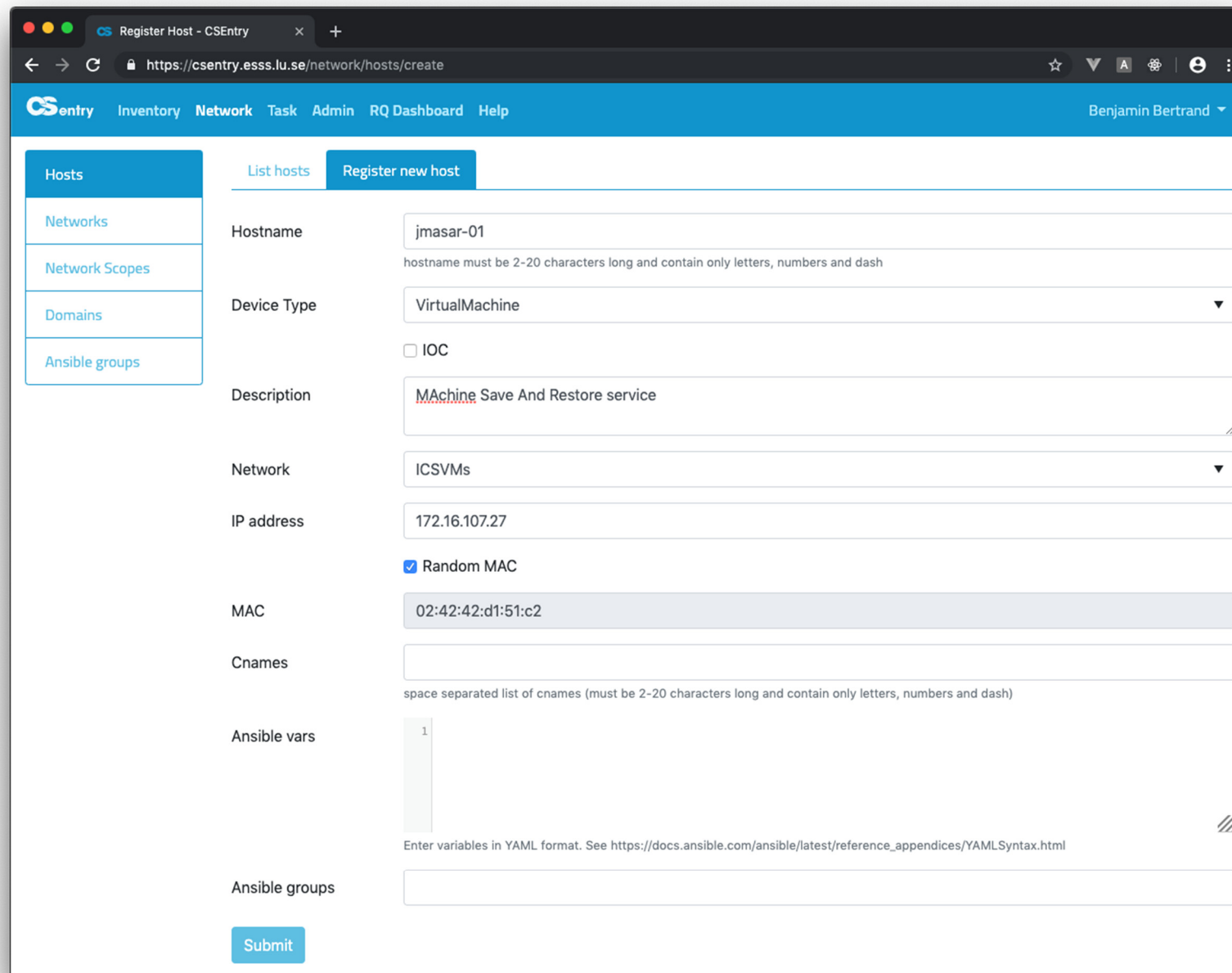
SEARCH KEY SYNC ALL +

| SOURCES | TYPE | ACTIONS |
|------------------|---------------|---------|
| cscopy-inventory | Custom Script | |

ITEMS 1 - 1

Register new host

CSEntry



The screenshot shows a web browser window with the URL `https://csentry.ess.lu.se/network/hosts/create`. The page title is "Register Host - CSEntry". The navigation menu includes "Inventory", "Network", "Task", "Admin", "RQ Dashboard", and "Help". The user "Benjamin Bertrand" is logged in. The left sidebar shows a menu with "Hosts" (selected), "Networks", "Network Scopes", "Domains", and "Ansible groups". The main content area has two tabs: "List hosts" and "Register new host". The form fields are as follows:

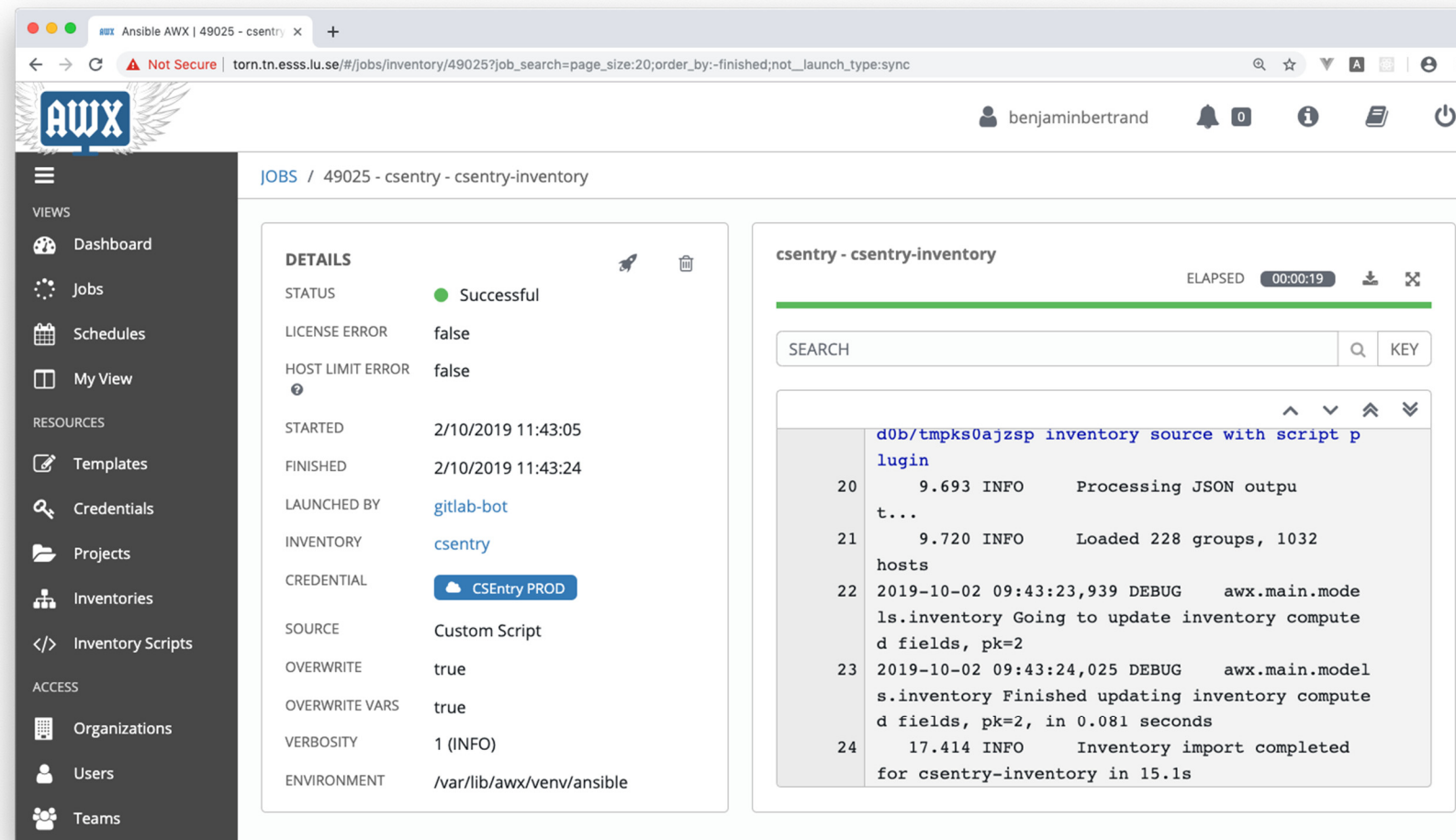
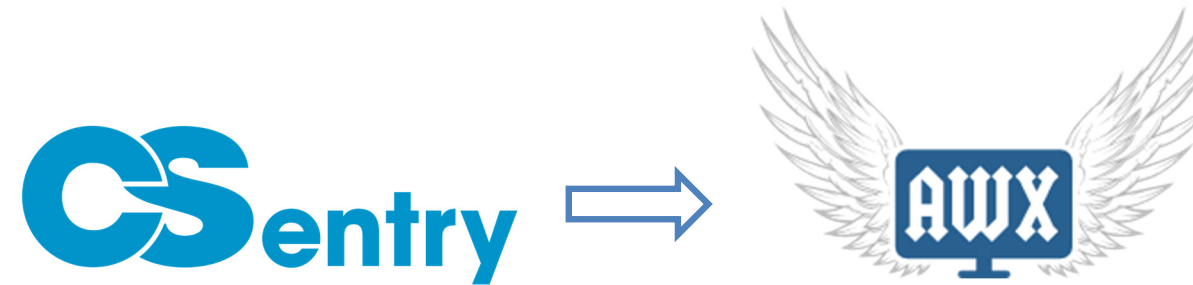
- Hostname:** `jmasar-01`. A note below states: "hostname must be 2-20 characters long and contain only letters, numbers and dash".
- Device Type:** `VirtualMachine` (dropdown menu).
- IOC:**
- Description:** `MACHINE Save And Restore service`
- Network:** `ICSVMs` (dropdown menu).
- IP address:** `172.16.107.27`
- Random MAC:**
- MAC:** `02:42:42:d1:51:c2`
- Cnames:** (empty field). A note below states: "space separated list of cnames (must be 2-20 characters long and contain only letters, numbers and dash)".
- Ansible vars:** `1`. A note below states: "Enter variables in YAML format. See https://docs.ansible.com/ansible/latest/reference_appendices/YAMLSyntax.html".
- Ansible groups:** (empty field).

A "Submit" button is located at the bottom left of the form.

Trigger:

- inventory sync
- core services update

Inventory sync



The screenshot shows the AWX web interface. The browser address bar indicates the URL: `torrn.tn.ess.lu.se/#/jobs/inventory/49025?job_search=page_size:20;order_by:-finished;not_launch_type:sync`. The user is logged in as `benjaminbertrand`. The page title is `JOB / 49025 - c Sentry - c Sentry-inventory`.

DETAILS

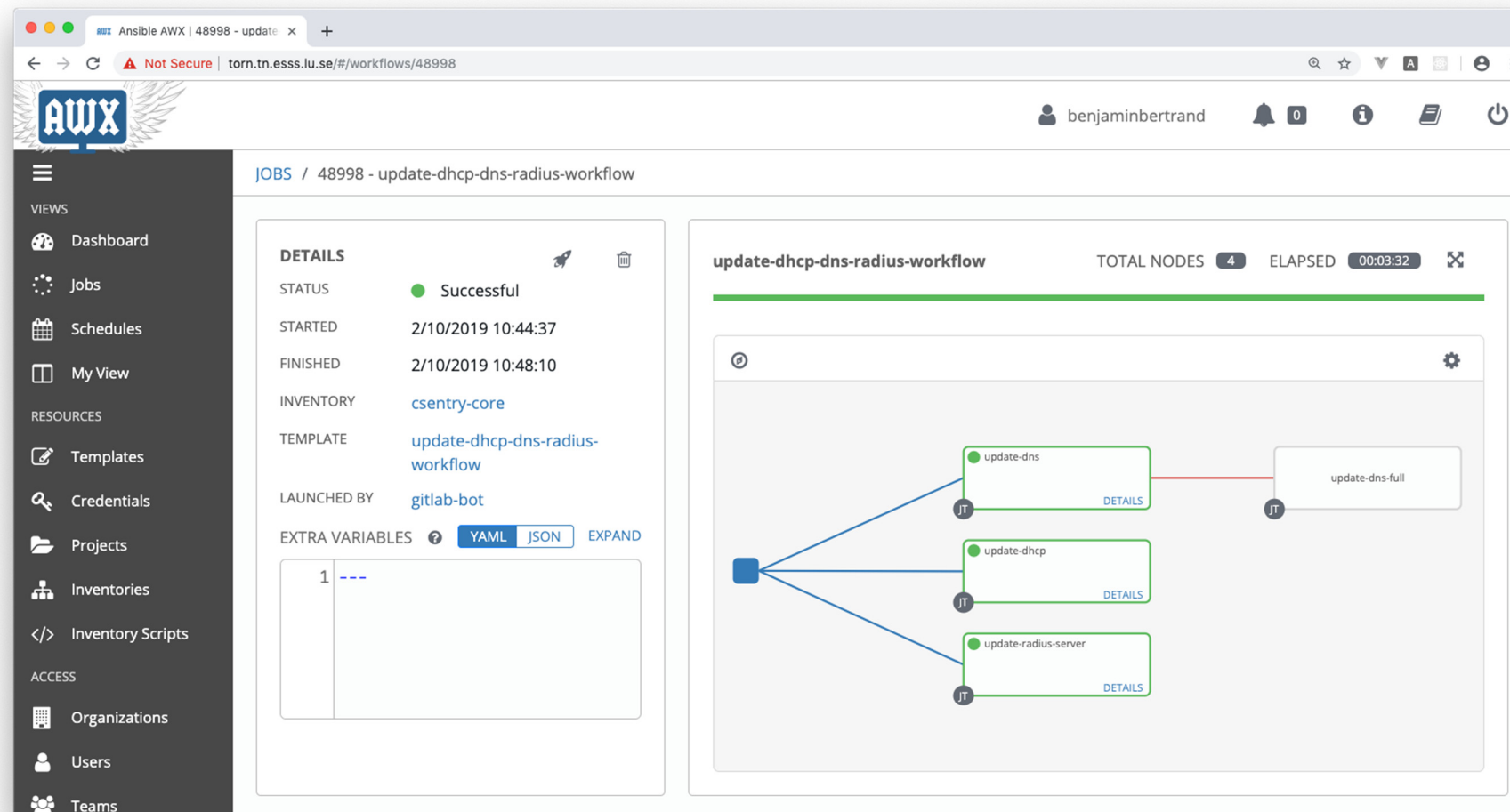
| | |
|------------------|---------------------------|
| STATUS | Successful |
| LICENSE ERROR | false |
| HOST LIMIT ERROR | false |
| STARTED | 2/10/2019 11:43:05 |
| FINISHED | 2/10/2019 11:43:24 |
| LAUNCHED BY | gitlab-bot |
| INVENTORY | c Sentry |
| CREDENTIAL | C Sentry PROD |
| SOURCE | Custom Script |
| OVERWRITE | true |
| OVERWRITE VARS | true |
| VERBOSITY | 1 (INFO) |
| ENVIRONMENT | /var/lib/awx/venv/ansible |

c Sentry - c Sentry-inventory ELAPSED 00:00:19

SEARCH KEY

```
d0b/tmpks0ajzsp inventory source with script p
login
20 9.693 INFO Processing JSON output
t...
21 9.720 INFO Loaded 228 groups, 1032
hosts
22 2019-10-02 09:43:23,939 DEBUG awx.main.mode
ls.inventory Going to update inventory compute
d fields, pk=2
23 2019-10-02 09:43:24,025 DEBUG awx.main.model
s.inventory Finished updating inventory compute
d fields, pk=2, in 0.081 seconds
24 17.414 INFO Inventory import completed
for c Sentry-inventory in 15.1s
```

DNS DHCP Radius update



The screenshot shows the AWX web interface for a job titled "48998 - update-dhcp-dns-radius-workflow". The job status is "Successful".

DETAILS

- STATUS: Successful
- STARTED: 2/10/2019 10:44:37
- FINISHED: 2/10/2019 10:48:10
- INVENTORY: csentry-core
- TEMPLATE: update-dhcp-dns-radius-workflow
- LAUNCHED BY: gitlab-bot

EXTRA VARIABLES

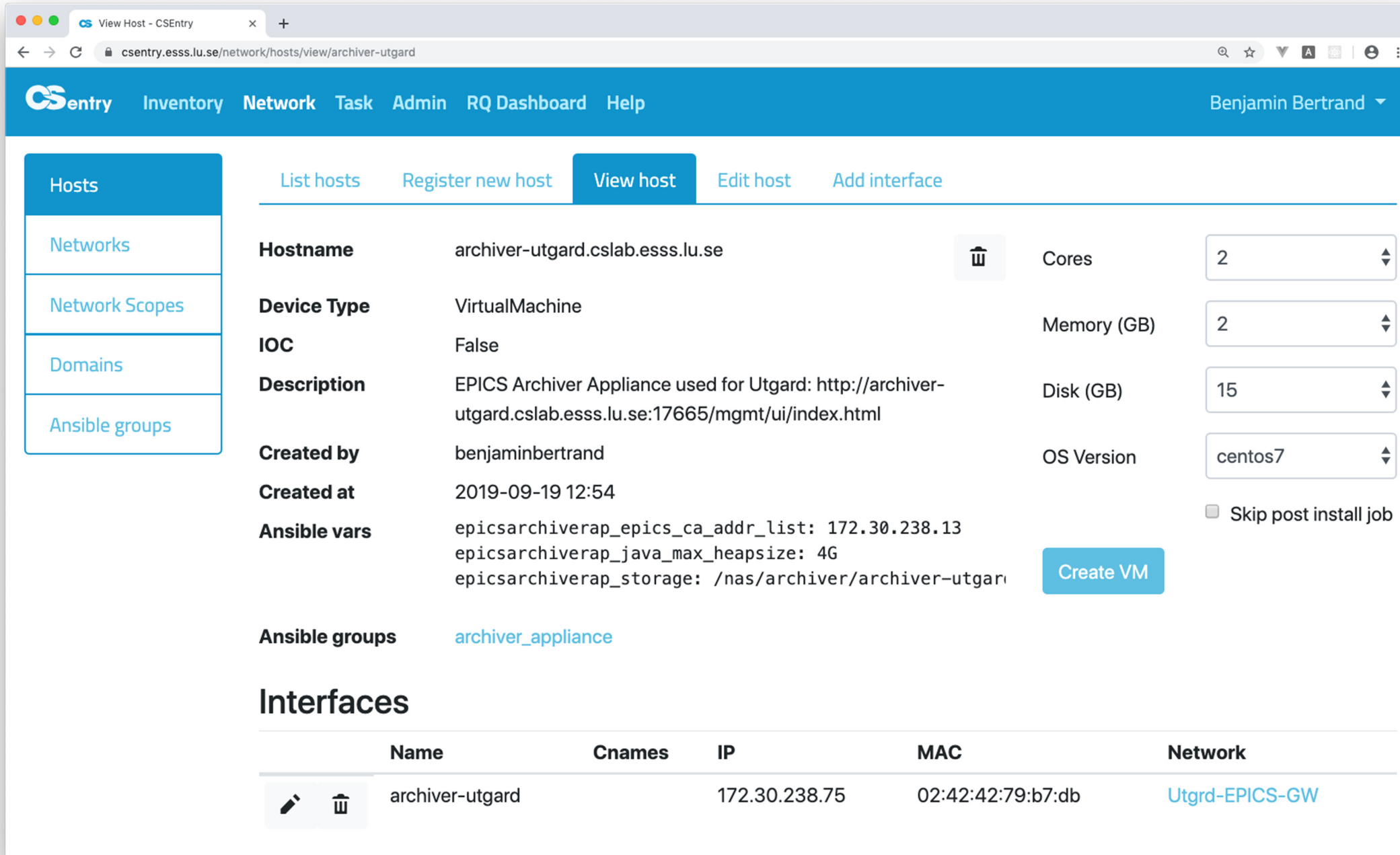
| | |
|---|-----|
| 1 | --- |
|---|-----|

update-dhcp-dns-radius-workflow TOTAL NODES 4 ELAPSED 00:03:32

The workflow graph shows four nodes: "update-dns", "update-dhcp", "update-radius-server", and "update-dns-full". The first three nodes are parallel tasks that feed into the final "update-dns-full" node.

VM Creation

CSEntry



The screenshot shows the CSEntry web interface. The browser address bar displays `csentry.esss.lu.se/network/hosts/view/archiver-utgard`. The navigation menu includes **CSEntry**, [Inventory](#), [Network](#), [Task](#), [Admin](#), [RQ Dashboard](#), and [Help](#). The user **Benjamin Bertrand** is logged in.

The main content area has tabs for [List hosts](#), [Register new host](#), **View host**, [Edit host](#), and [Add interface](#).



Host Details:

- Hostname:** archiver-utgard.cslab.esss.lu.se
- Device Type:** VirtualMachine
- IOC:** False
- Description:** EPICS Archiver Appliance used for Utgard: <http://archiver-utgard.cslab.esss.lu.se:17665/mgmt/ui/index.html>
- Created by:** benjaminbertrand
- Created at:** 2019-09-19 12:54
- Ansible vars:**
epicsarchiverap_epics_ca_addr_list: 172.30.238.13
epicsarchiverap_java_max_heapsize: 4G
epicsarchiverap_storage: /nas/archiver/archiver-utgard
- Ansible groups:** archiver_appliance

Configuration Parameters:

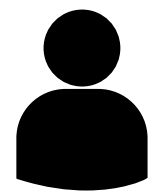
- Cores:** 2
- Memory (GB):** 2
- Disk (GB):** 15
- OS Version:** centos7
- Skip post install job

Interfaces Table:

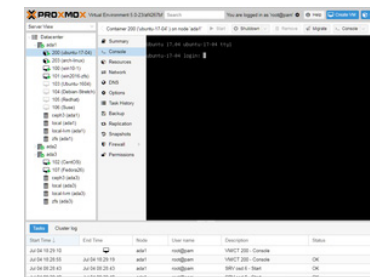
| | Name | Cnames | IP | MAC | Network |
|---|-----------------|--------|---------------|-------------------|----------------|
|   | archiver-utgard | | 172.30.238.75 | 02:42:42:79:b7:db | Utgrd-EPICS-GW |

Create VM

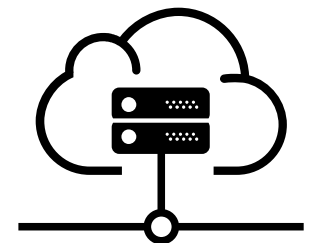
VM Creation Workflow



User



Proxmox
(virtualisation platform)

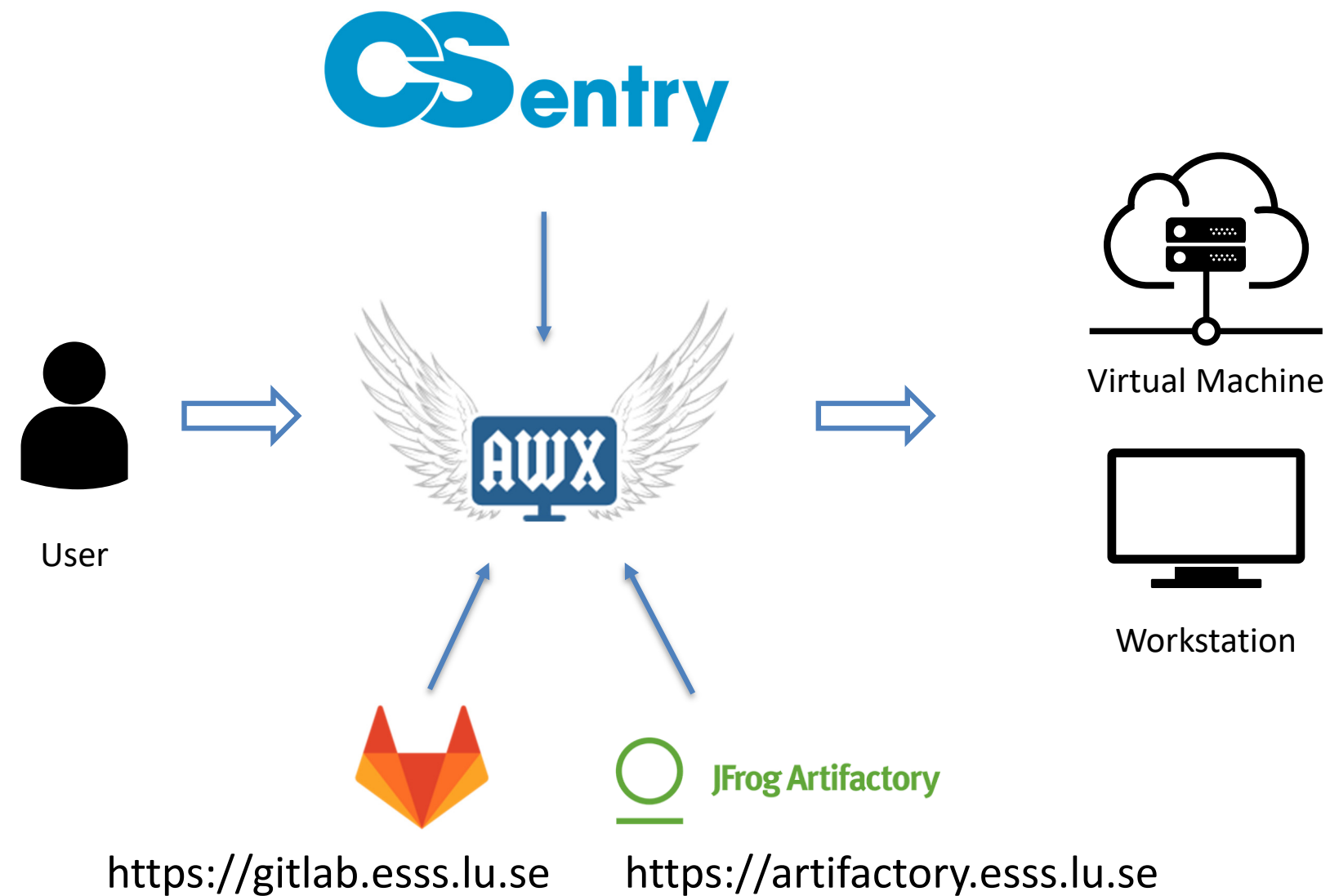


Virtual Machine

Proxmox Clusters



Application Deployment Workflow



- Infrastructure as Code
- Deployment shall be:
 - Repeatable
 - Reproducible
 - Reliable
- CSEntry gives us an easy to use and flexible solution

Thank you!

Thank you for your attention

– Contact: benjamin.bertrand@esss.se

