DNA Center

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Objective

The key objective of the DNA series is to cover specific technologies making up the Digital Network Architecture solution aka Software Defined Access (SDA).

This session will go into how to setup the Appliance, setup DNA Center and deploy a small fabric

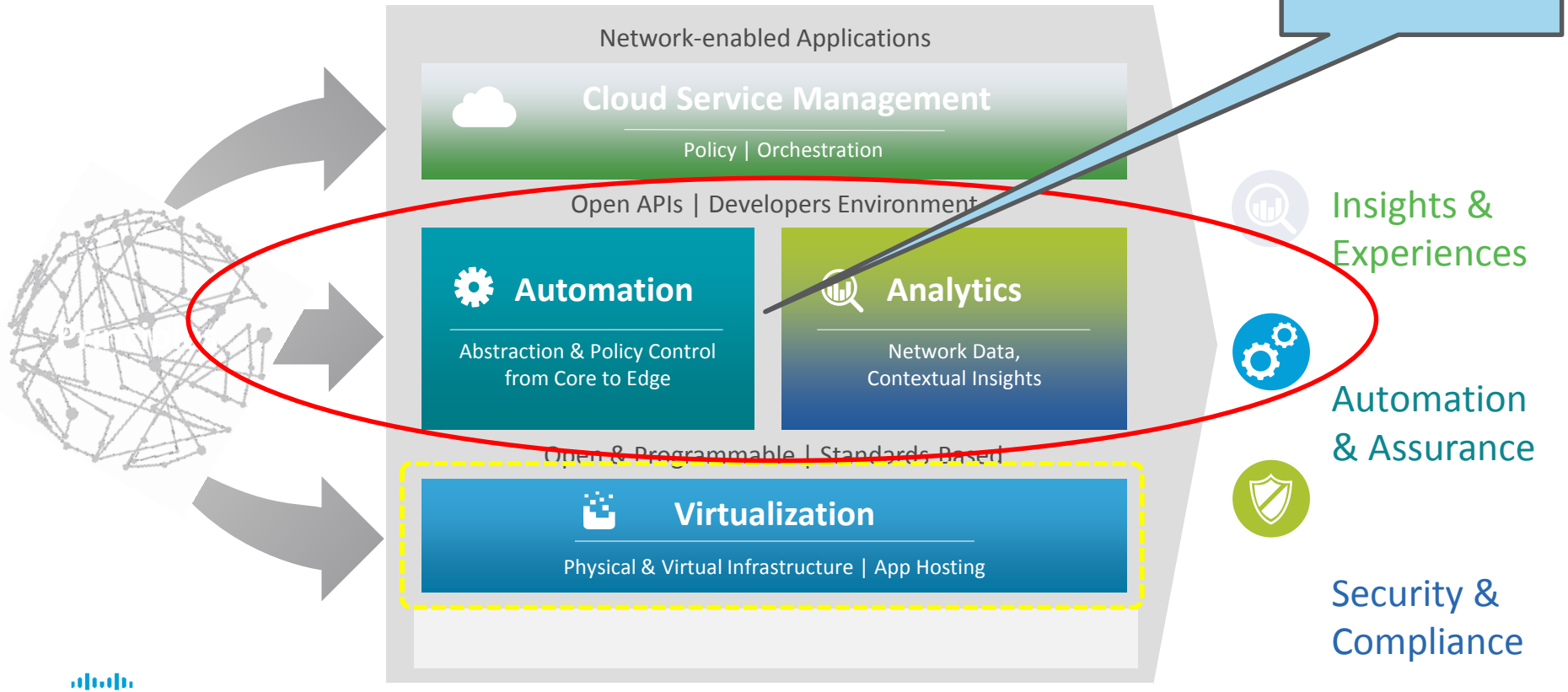
Agenda

- DNA Center Applicance Installation
- Basic setup of DNA Center
- Deploying a fabric

DNA Center Appliance

Cisco Digital Network Architecture

Overview



DNA Solution

Cisco Enterprise Portfolio

Center
e Workflows

PROVISION POLICY ASSURANCE

DNA Center

Identity Services Engine — APIC-EM — Network Data Platform

Routers Switches Wireless Controllers Wireless APs

DNA Center Appliance (DNA-HW-APL)

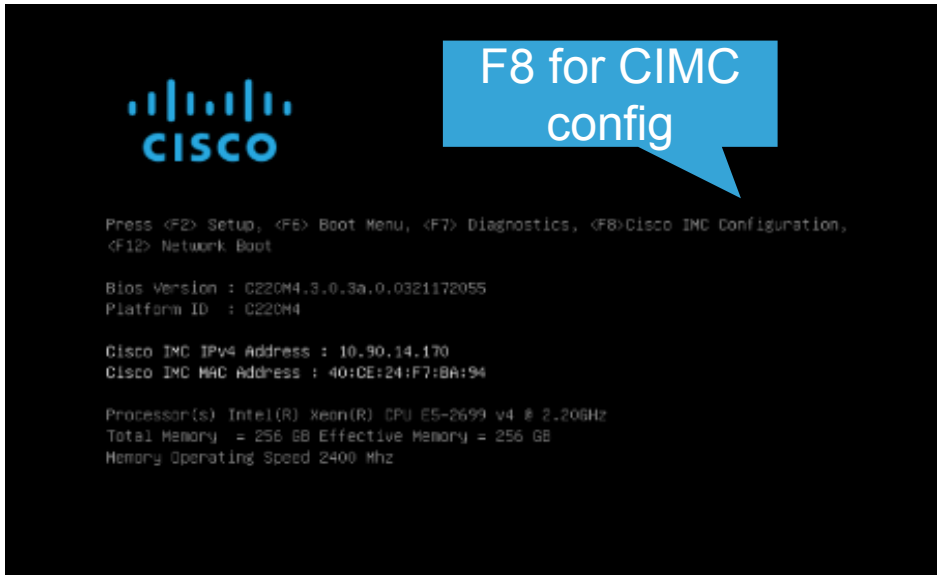
Drive Bays	Disk Type	Function
1-2	2x 480G	Master
3-4	2x 1.9TB	Automation
5-8	4x 1.9TB	Assurance

CIMC Management port

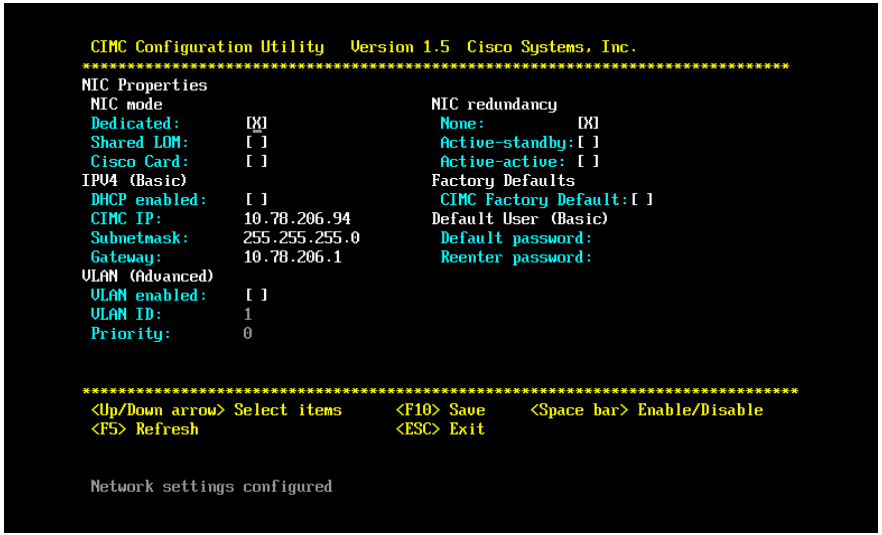
DNA Center interfaces

DNA Center only supported on the DNA Appliance.
Currently no VM support

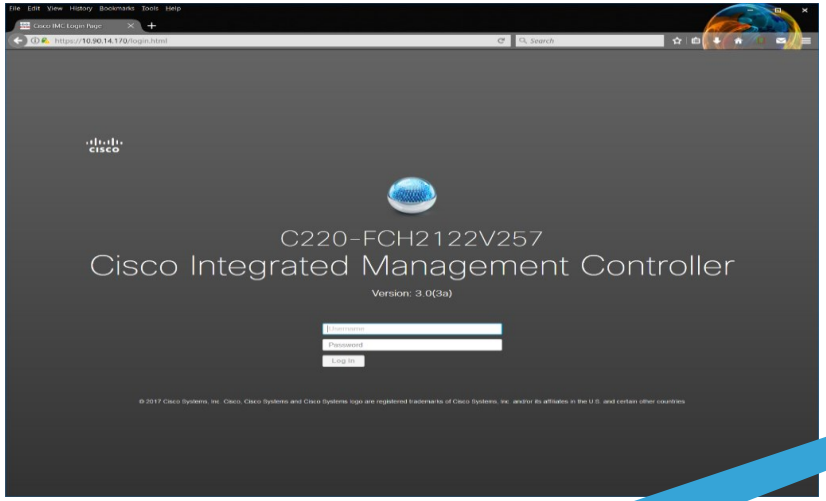
Cisco Integrated Management Controller Setup

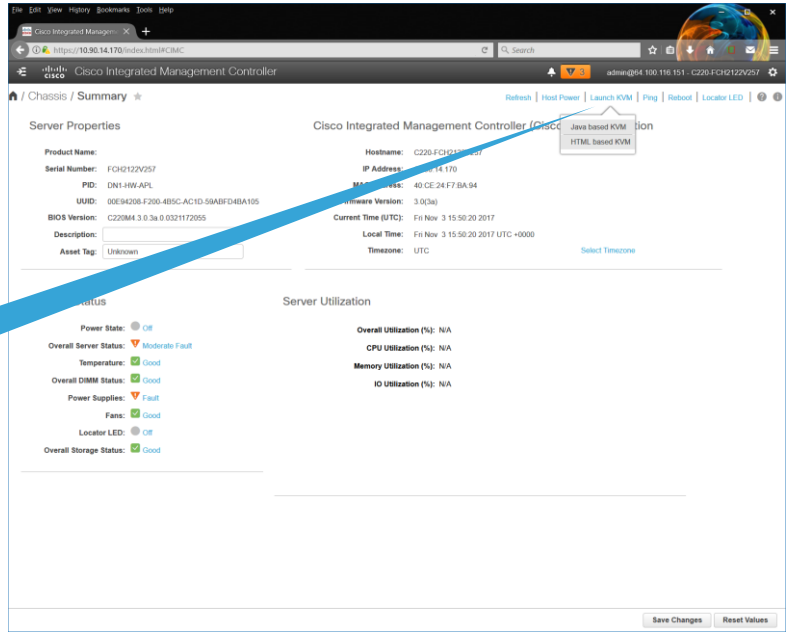


CIMC needs an IP address either via DHCP or using a Keyboard/monitor



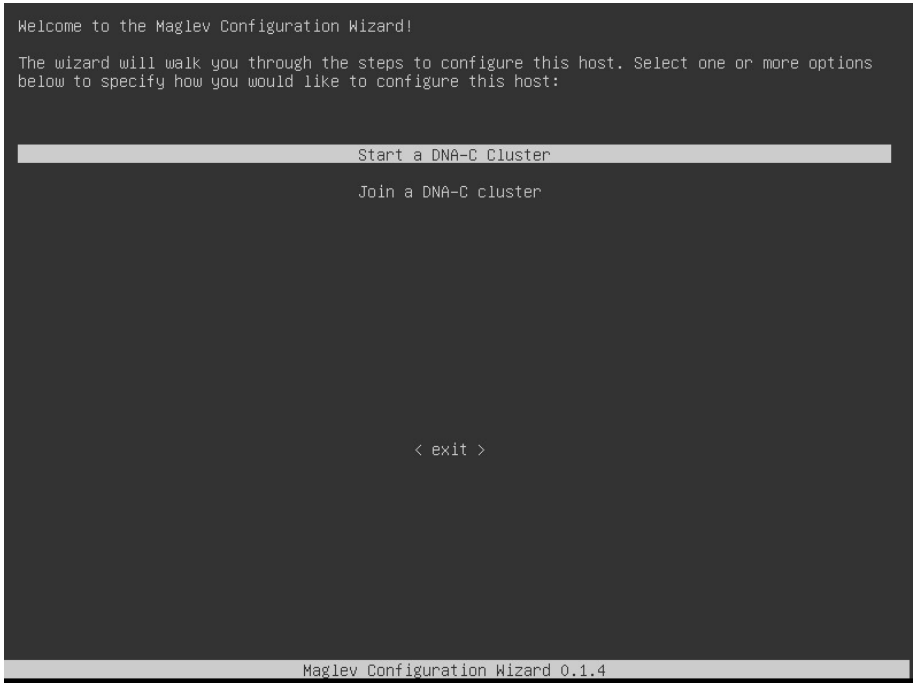
Accessing CIMC KVM

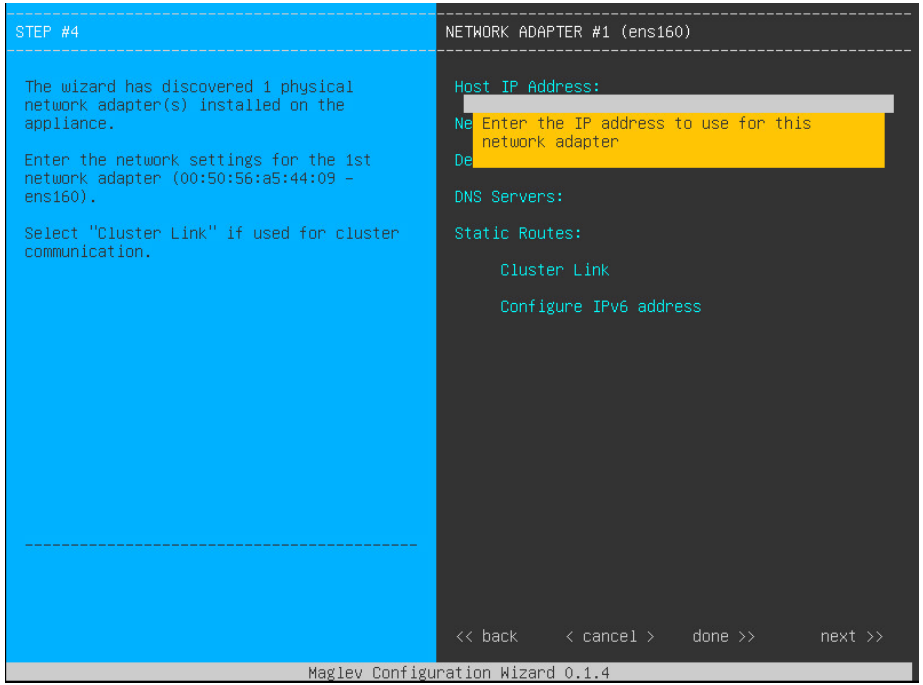




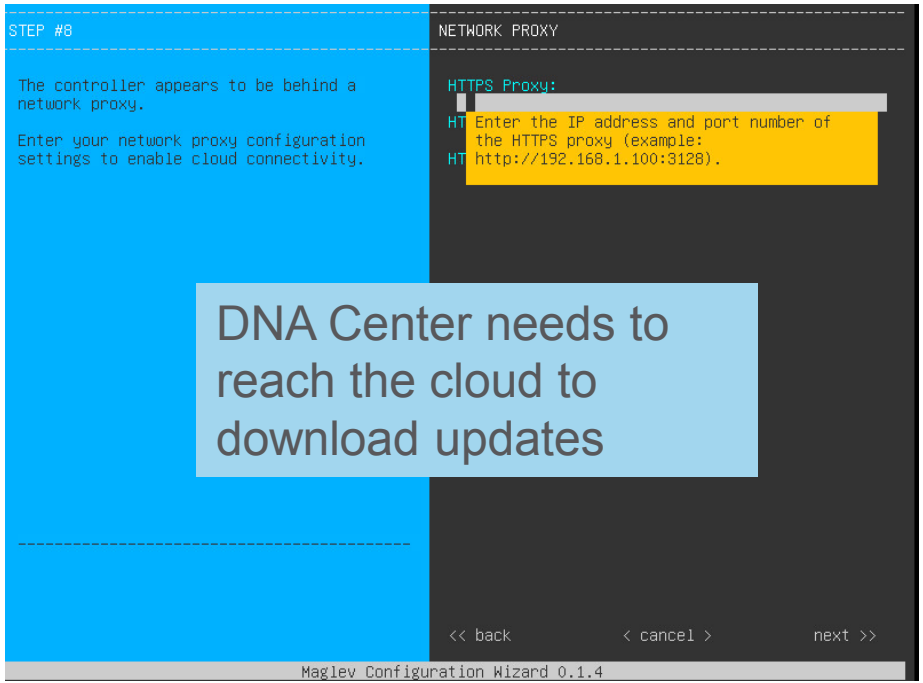
KVM can be launched from CIMC

DNA Center Initial setup

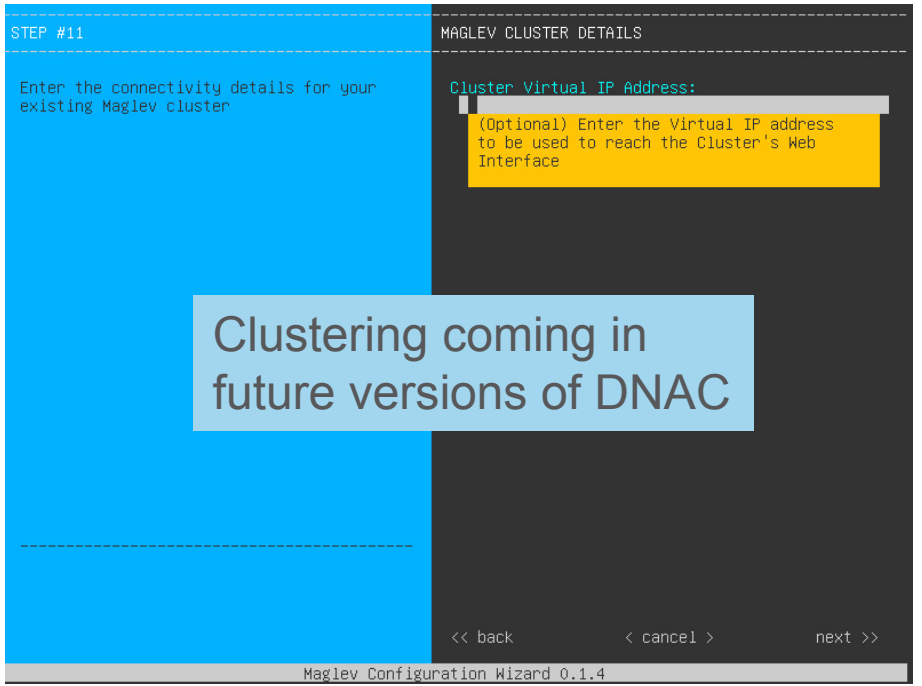




DNA Center Initial setup

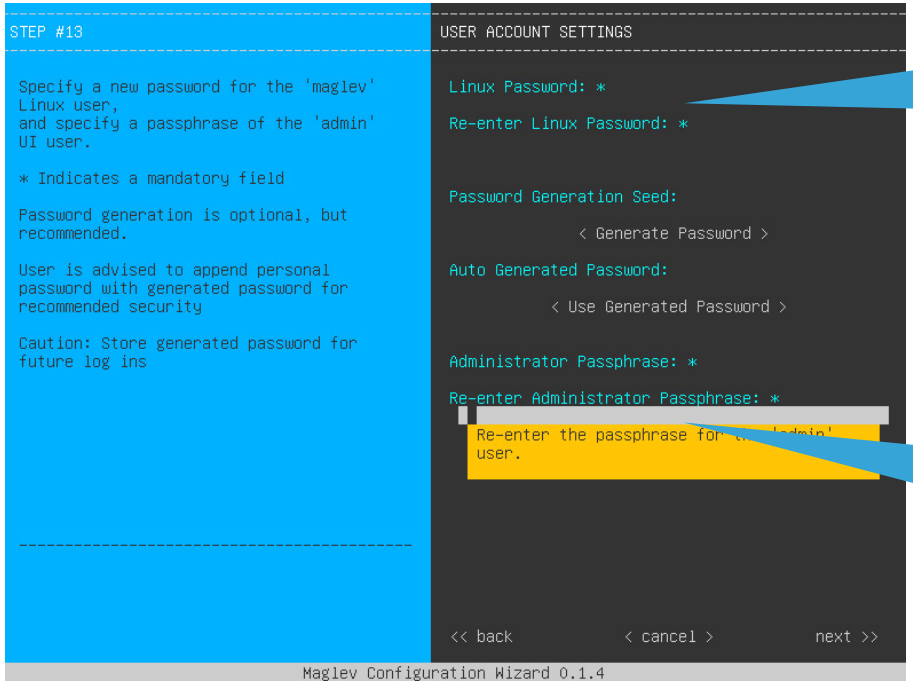


DNA Center needs to reach the cloud to download updates



Clustering coming in future versions of DNAC

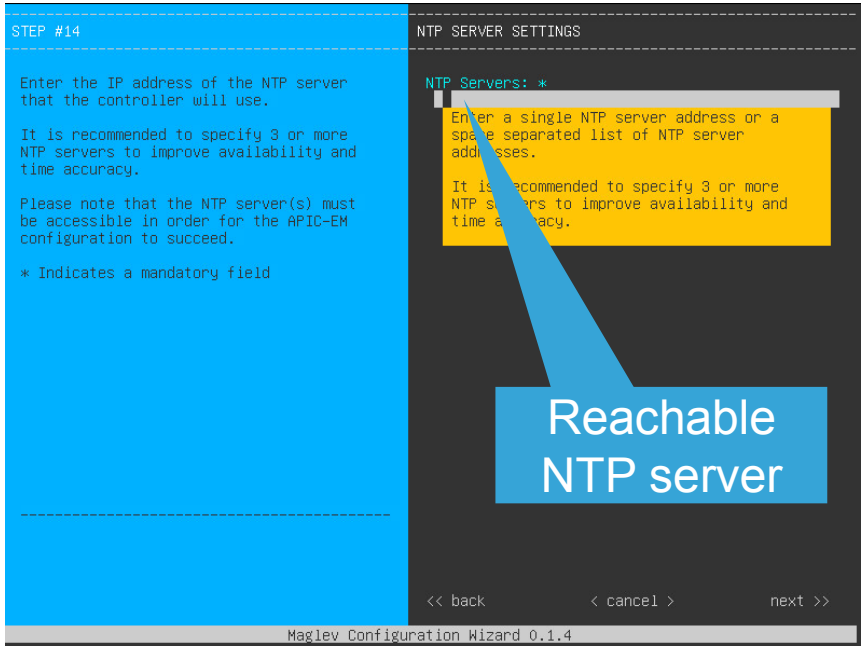
DNA Center username setup

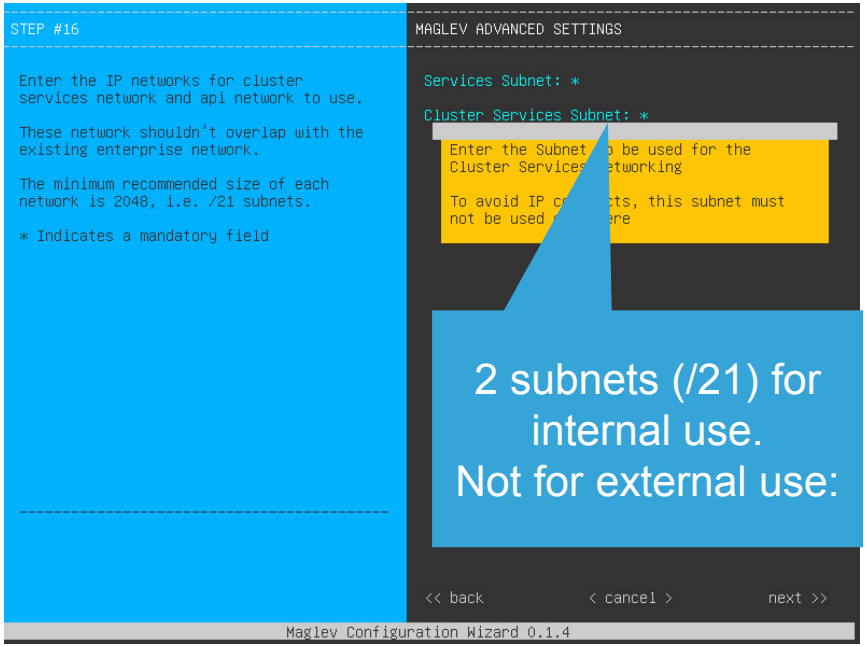


Local console access and ssh access using port 2222
Username maglev

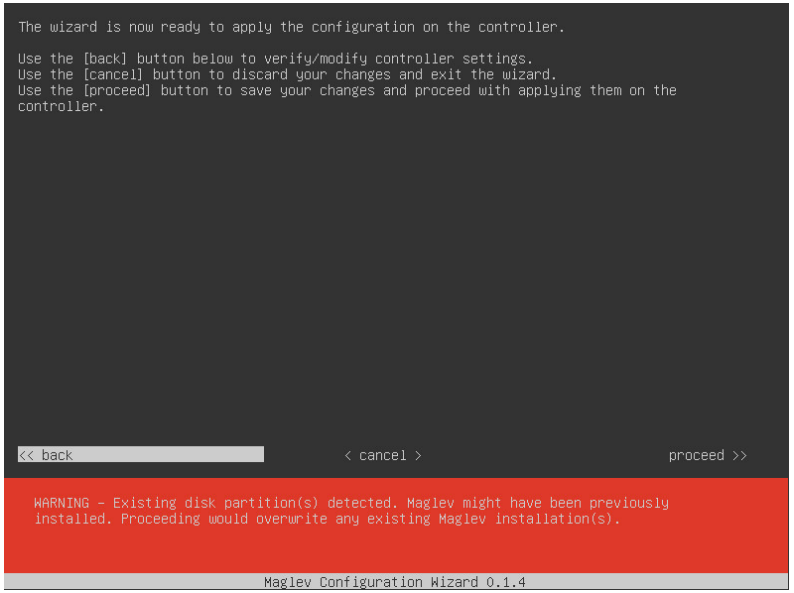
User for access to GUI , username admin

DNA Center additional networking settings





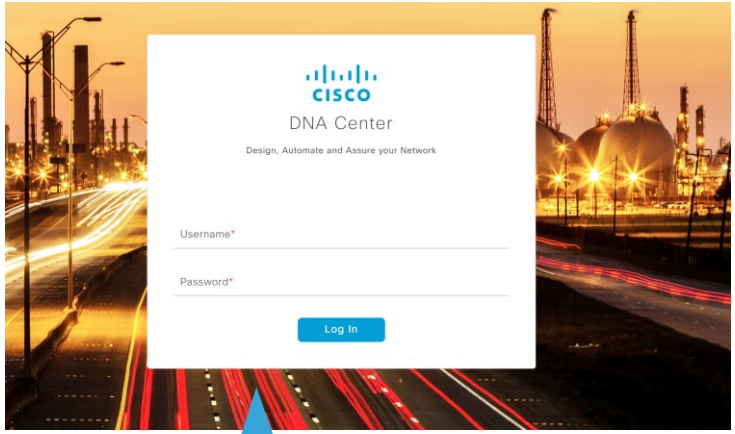
DNA Center Installation script



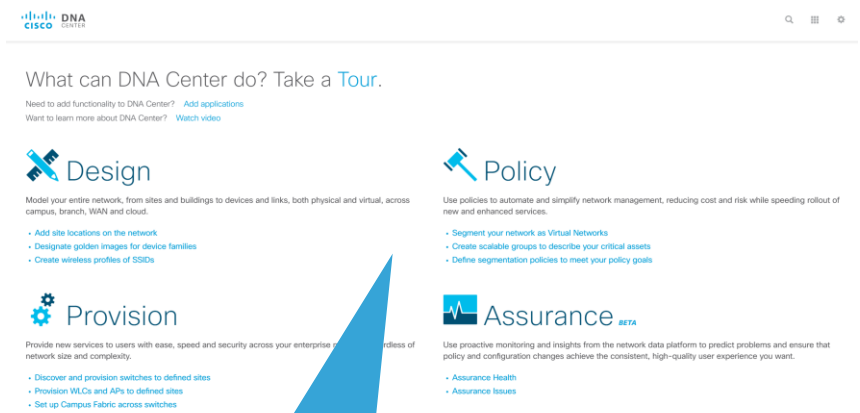

```
2017-12-08 07:40:50,844 |  post_reboot : Collecting all addons APIs
2017-12-08 07:40:50,968 |  post_reboot : set_fact
2017-12-08 07:40:51,012 |  post_reboot : set_fact
2017-12-08 07:40:51,053 |  post_reboot : Adding addons routes to API gateway
2017-12-08 07:40:55,663 |  post_reboot : Configure request-termination plugin on api gateway for int
ernal route
2017-12-08 07:40:55,951 |  post_reboot : Creating Default Tenant on API gateway
2017-12-08 07:40:56,229 |  post_reboot : Get passphrase from secret
2017-12-08 07:40:56,563 |  post_reboot : set_fact
2017-12-08 07:40:56,605 |  post_reboot : Creating Default Tenant secret on API gateway
2017-12-08 07:40:56,928 |  post_reboot : Waiting for Identity Management service to be running
2017-12-08 07:43:12,432 |  post_reboot : Creating Default Tenant on Identity Management
2017-12-08 07:43:14,936 |  post_reboot : Adding default rbac resource
2017-12-08 07:43:19,846 |  post_reboot : Adding rbac resource for user
2017-12-08 07:43:20,116 |  post_reboot : Adding default rbac permissions for super admin
2017-12-08 07:43:26,540 |  post_reboot : Adding default rbac permissions for network-admin and obser
ver
2017-12-08 07:43:32,029 |  post_reboot : Adding rbac url mappings
2017-12-08 07:43:37,929 |  post_reboot : Adding  rbac permission for superadmin, network-admin and o
bserver to update login password
2017-12-08 07:43:38,319 |  post_reboot : Adding rbac url mappings for user password update permissio
n
2017-12-08 07:43:38,627 |  post_reboot : Enabling JWT security on api gateway
2017-12-08 07:43:42,288 |  post_reboot : include
2017-12-08 07:43:42,668 |  post_reboot : Creating Maglev Catalog service
2017-12-08 07:43:45,732 |  post_reboot : Waiting for Maglev Catalog service to be running
2017-12-08 07:43:56,571 |  post_reboot : Get passphrase from secret
2017-12-08 07:43:56,899 |  post_reboot : set_fact
2017-12-08 07:43:56,944 |  post_reboot : Configuring maglev CLI
2017-12-08 07:44:00,656 |  post_reboot : Syncing local service catalog with parent service catalog
2017-12-08 07:44:00,695 |  post_reboot : Pulling latest version of maglev system Package from parent
 service catalog
2017-12-08 07:44:00,730 |  post_reboot : Looking for default Libraries to deploy
2017-12-08 07:44:00,991 |  post_reboot : Looking for default Packages to deploy
2017-12-08 07:44:01,181 |  post_reboot : Pushing default Libraries
2017-12-08 07:44:22,068 |  post_reboot : Pushing default Packages
```

Be patient,install can take few hours

GUI access



HTTPs access to DNA Center



DNA Center home page

App Management

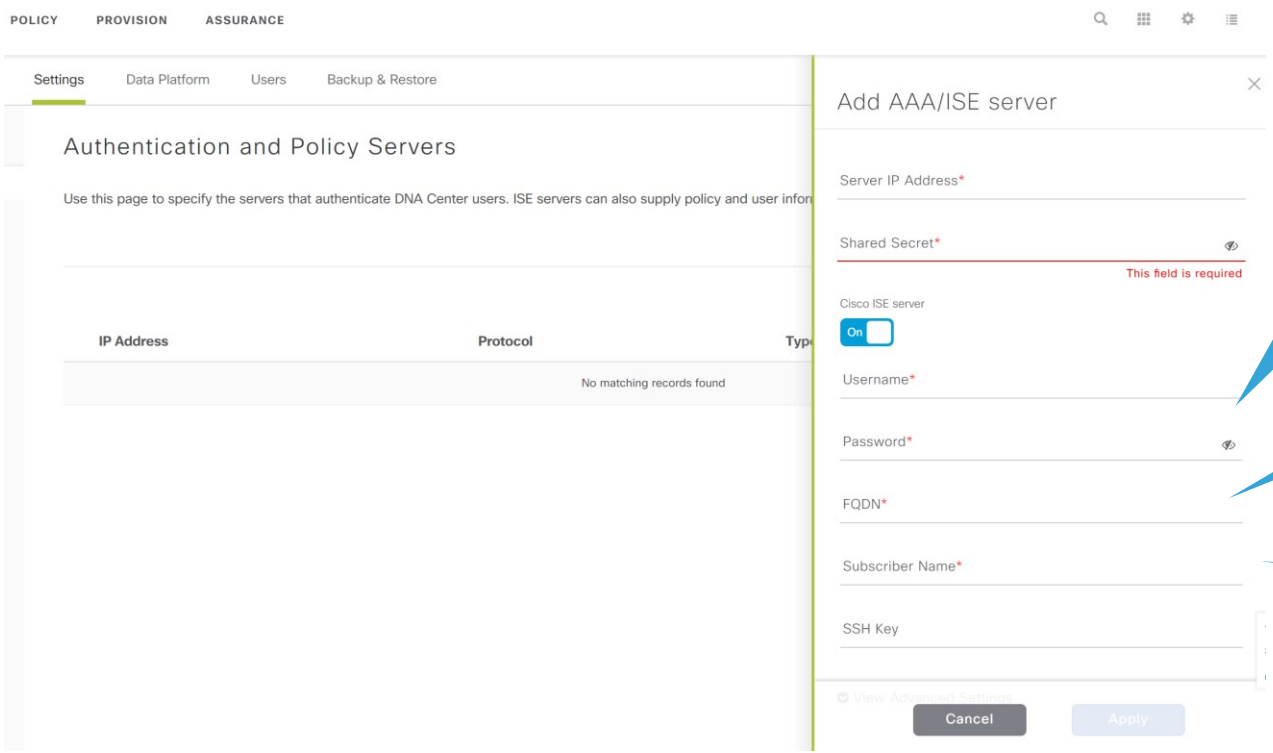
System settings, app management

Assurance - Base	Running	1.0.5.471	
Command Runner	Running	2.1.0.64153 | Uninstall	
Network Controller Platform	Running	2.1.0.64153 | Uninstall	
Automation - Sensor [EFT]	Not Installed		2.1.0.64153 | Install
NCP - Services	Running	2.1.0.64153	
Infrastructure	Running	1.0.4.588	
Automation - Device Onboarding	Running	2.1.0.64153 | Uninstall	
Network Data Platform - Base Analytics	Running	1.0.6.332	
Automation - SD Access	Not Installed		2.1.0.64153 | Install
Automation - Image Management	Running	2.1.0.64153	
Assurance - Path Trace	Running	2.1.0.64153	

Apps can be downloaded and installed from cloud

DNA Center,
Basic setup, ISE integration

Adding ISE

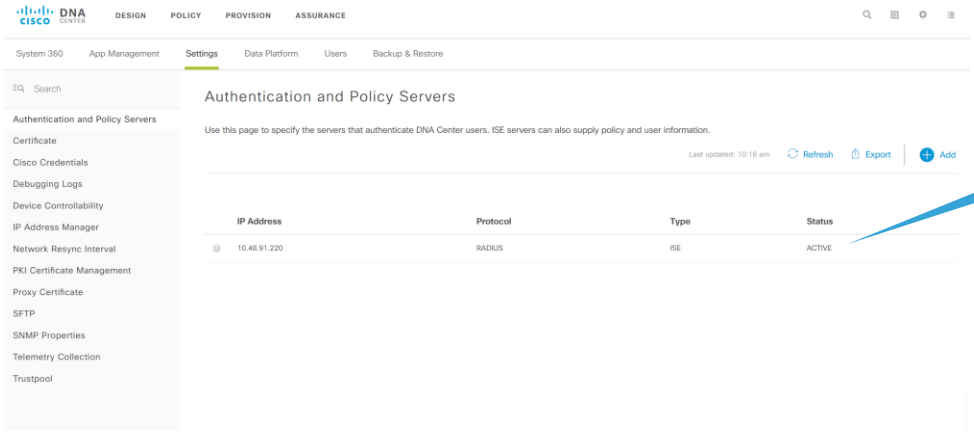


Username on ISE, for admin (UI) and console access (ssh)

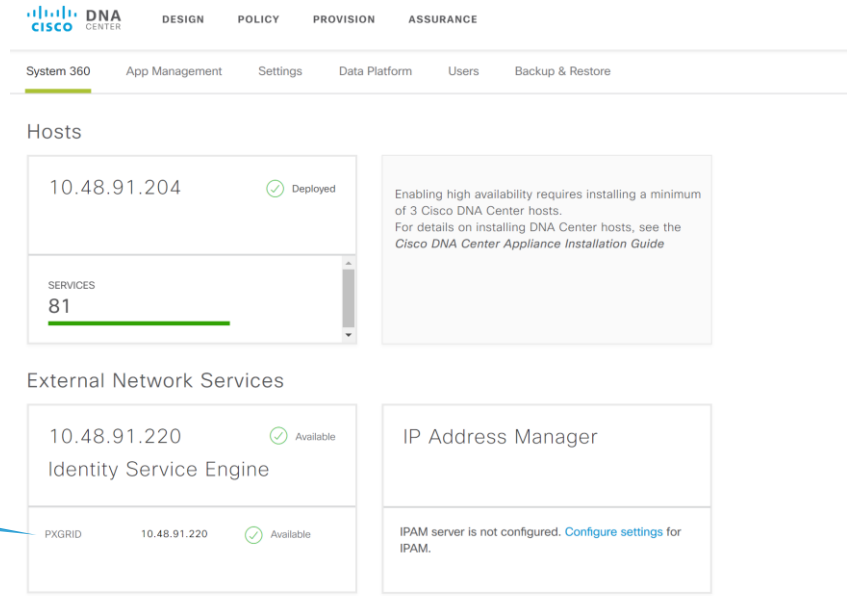
FQDN of ISE Certificates(Gi0)

A username to be created on pxgrid

ISE Succesfully added

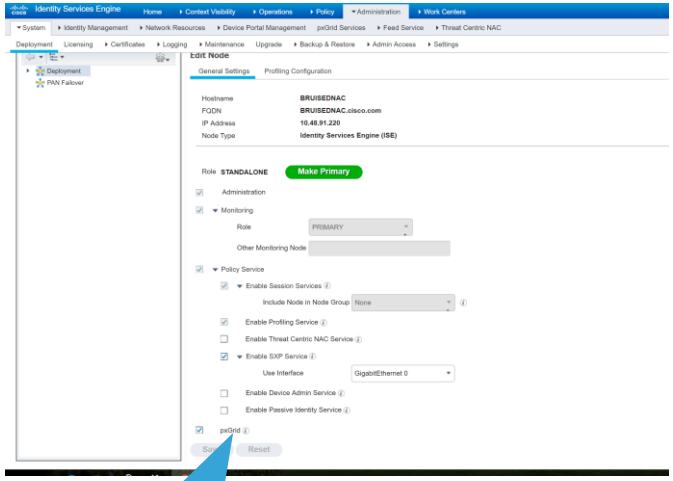


ISE Added and active



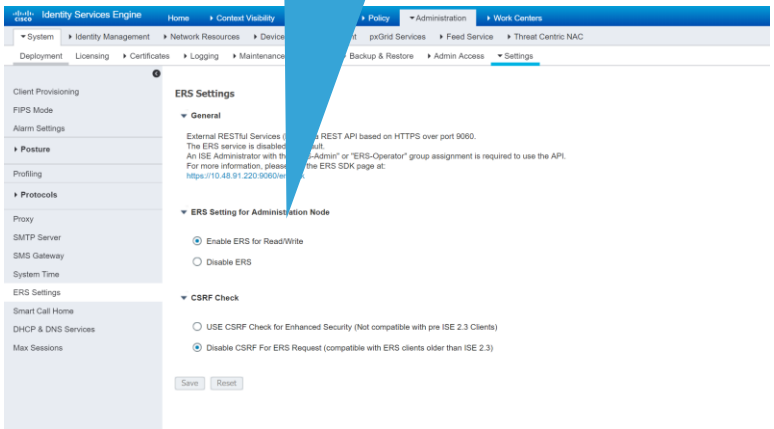
ISE reachable and pxgrid connection up

ISE Basic setup (ISE 2.3)

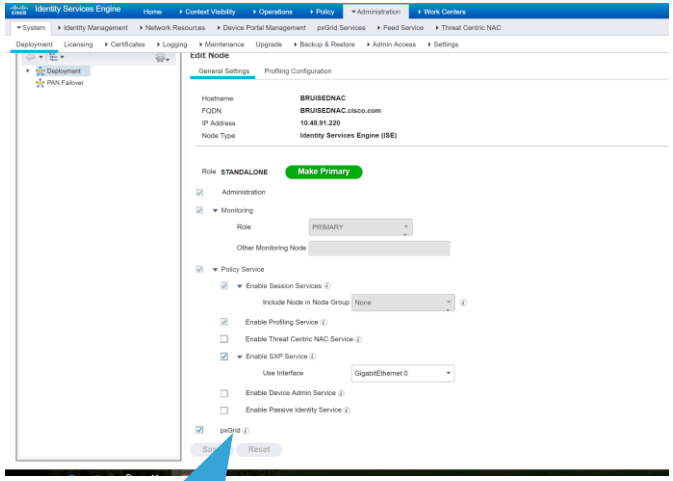


Enable PxGrid

Enable ERS

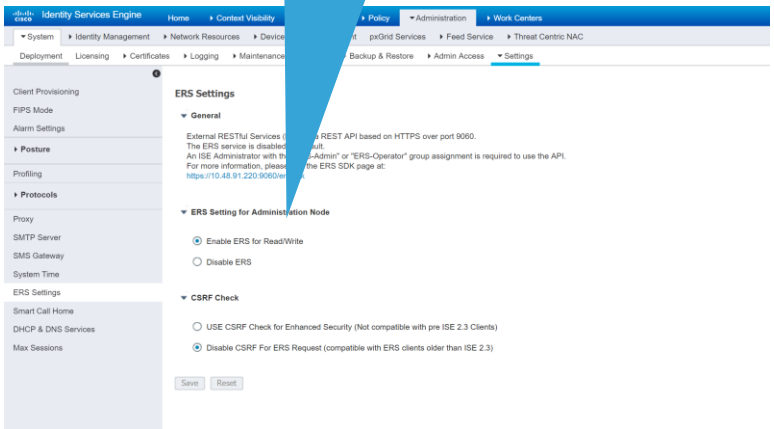


ISE Basic setup (ISE 2.3)

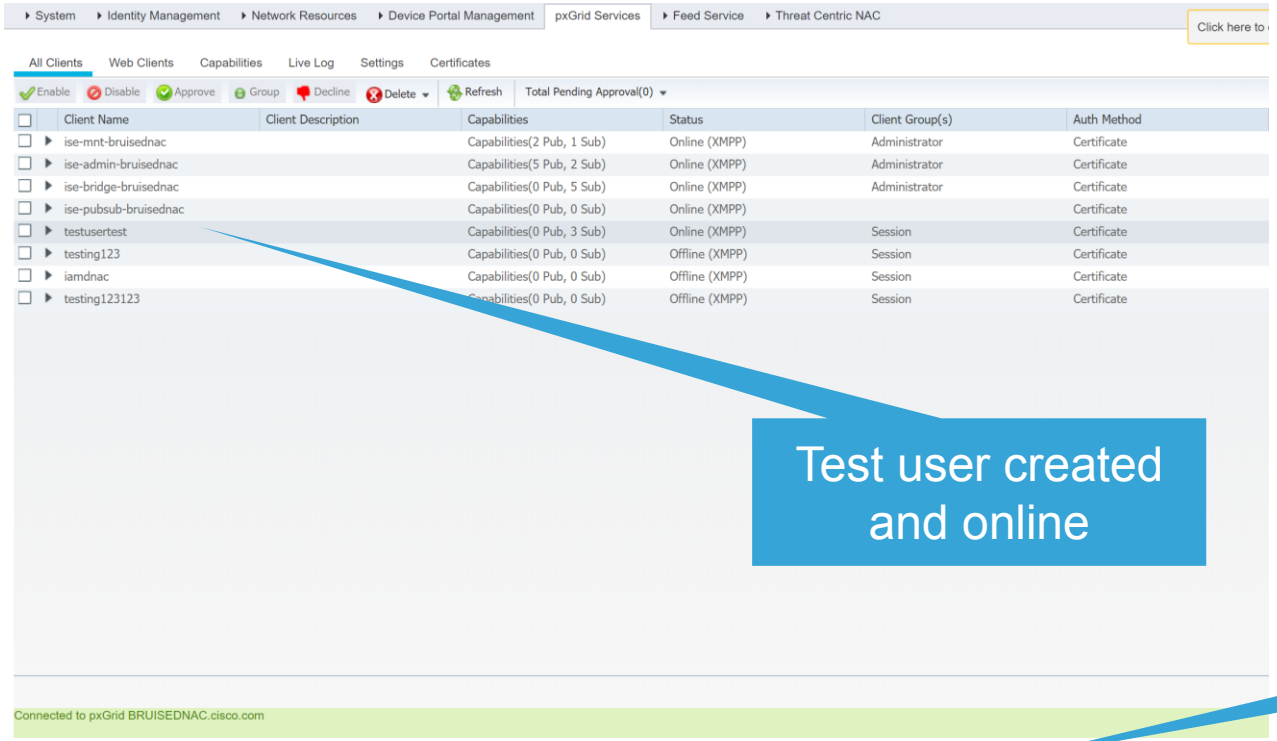


Enable PxGrd

Enable ERS



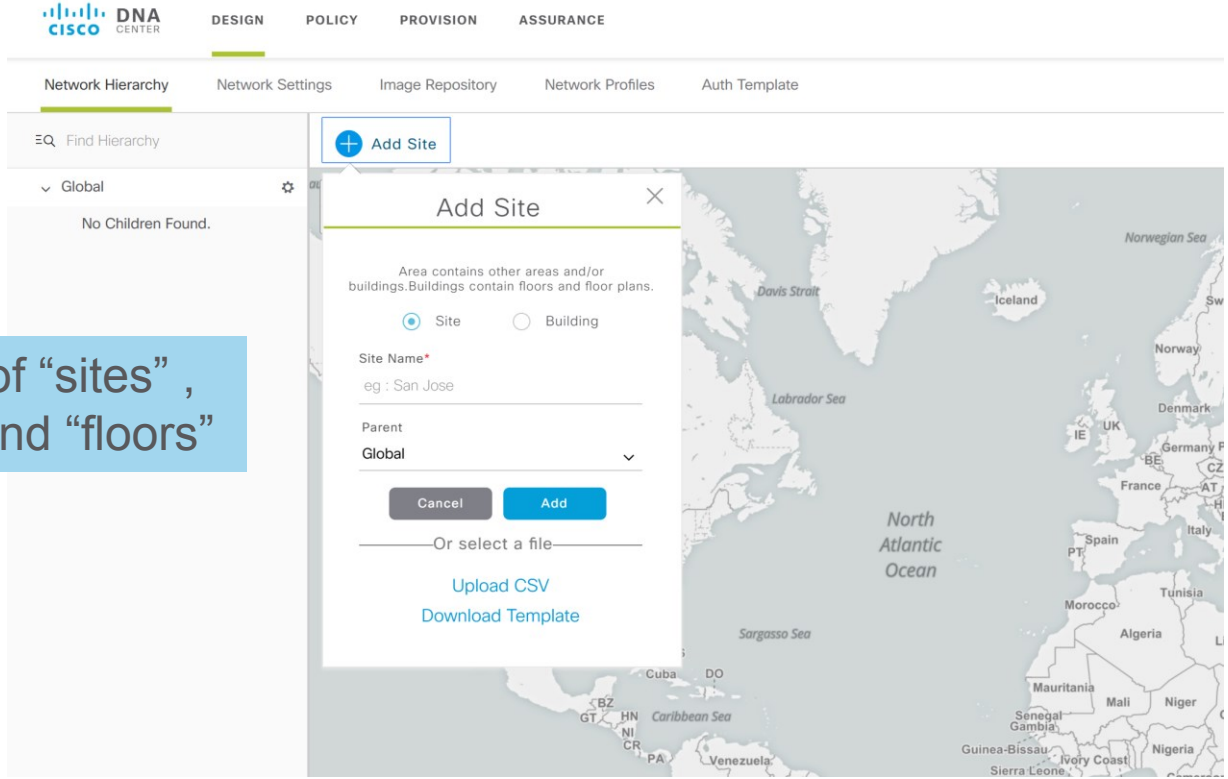
Integration success



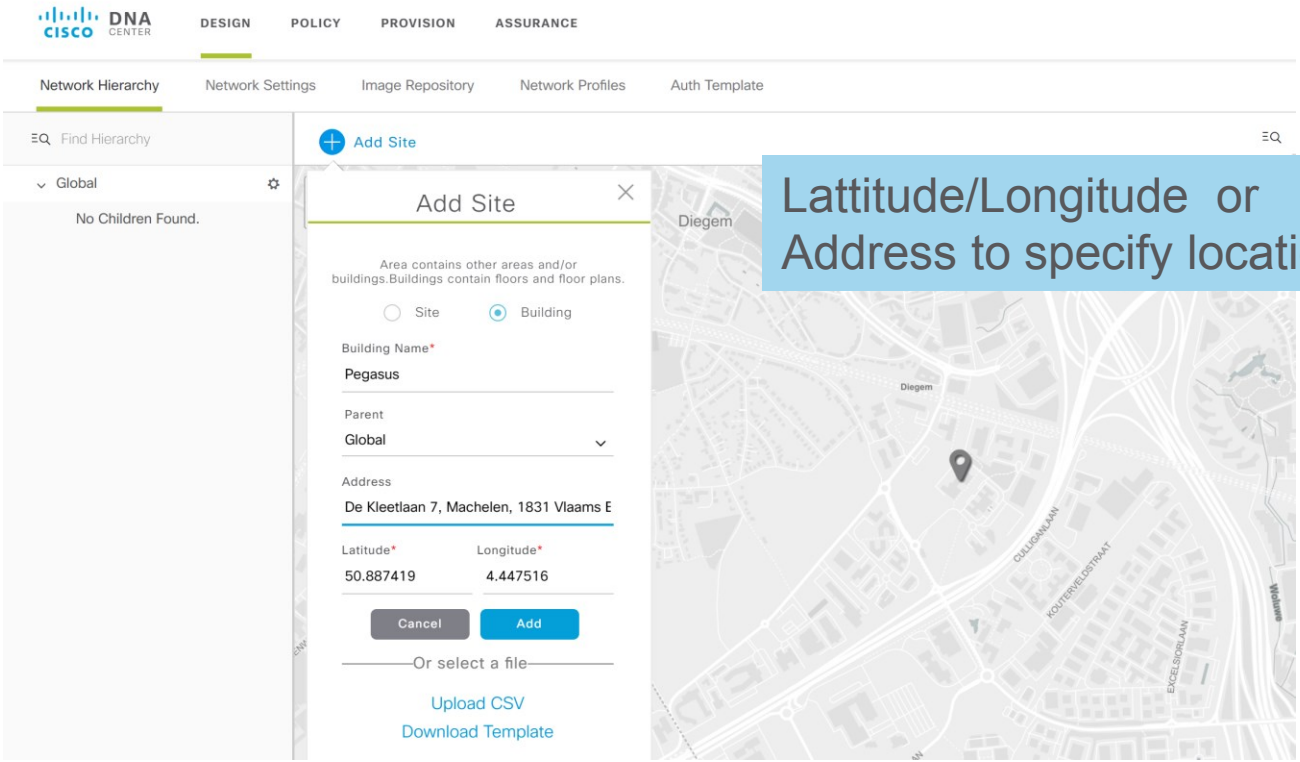
DNA Center, Basic setup

Adding sites

A hierarchy of “sites” , “Buildings” and “floors”

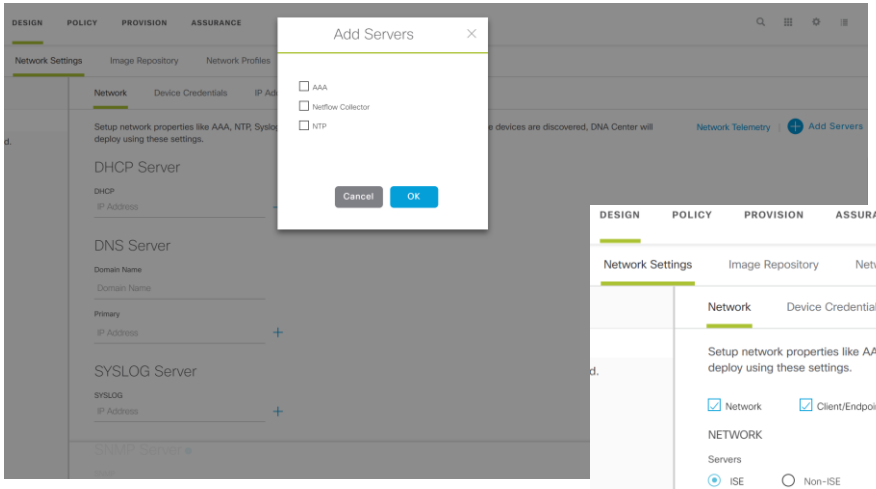


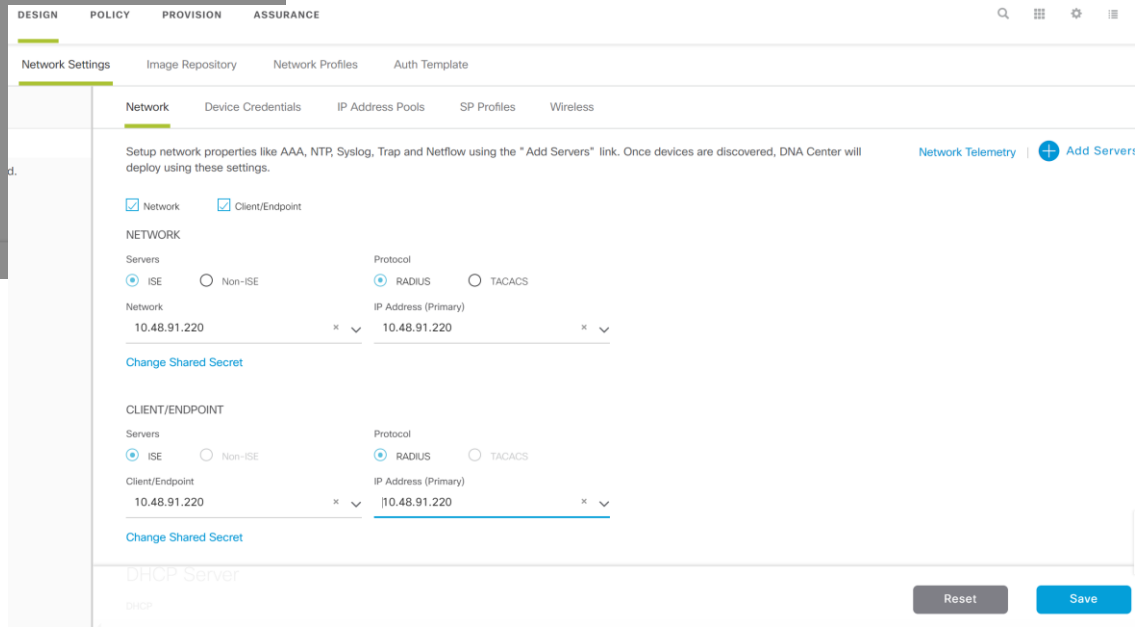
Adding buildings



Defining network Servers

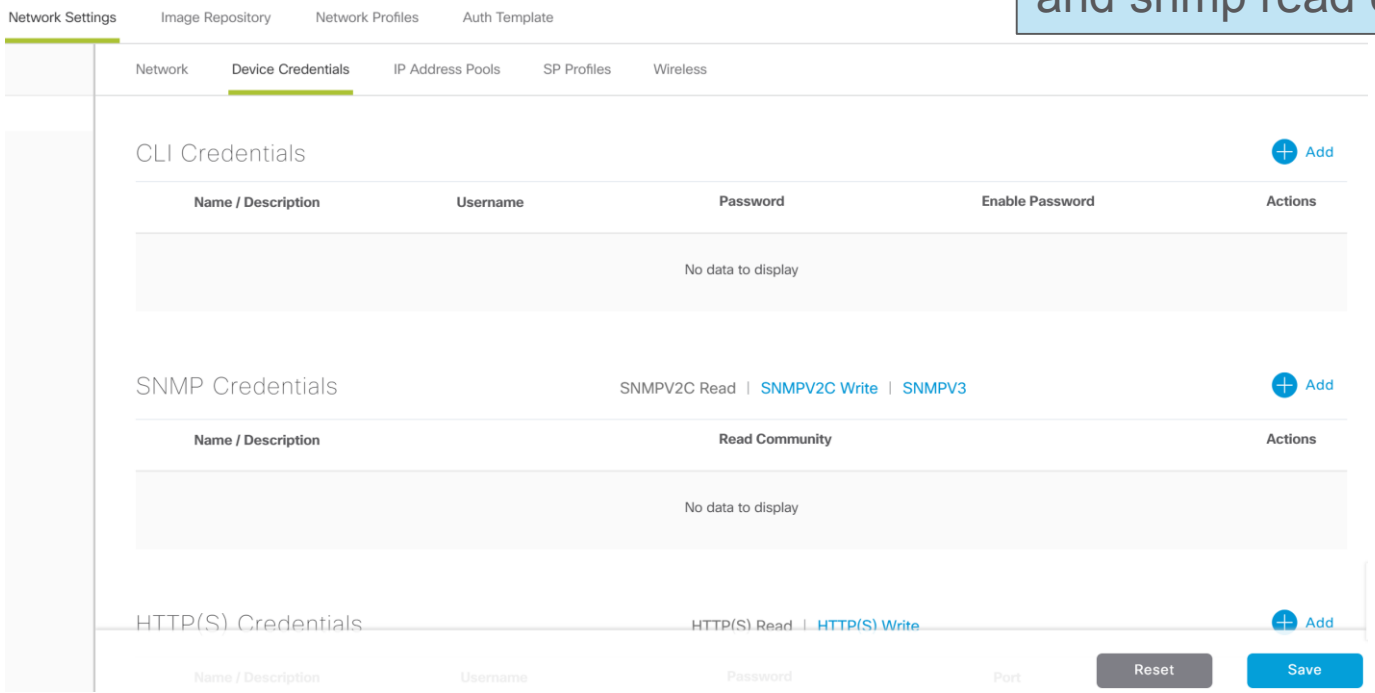
Under Network Settings/Network all servers for the Fabric devices are defined.



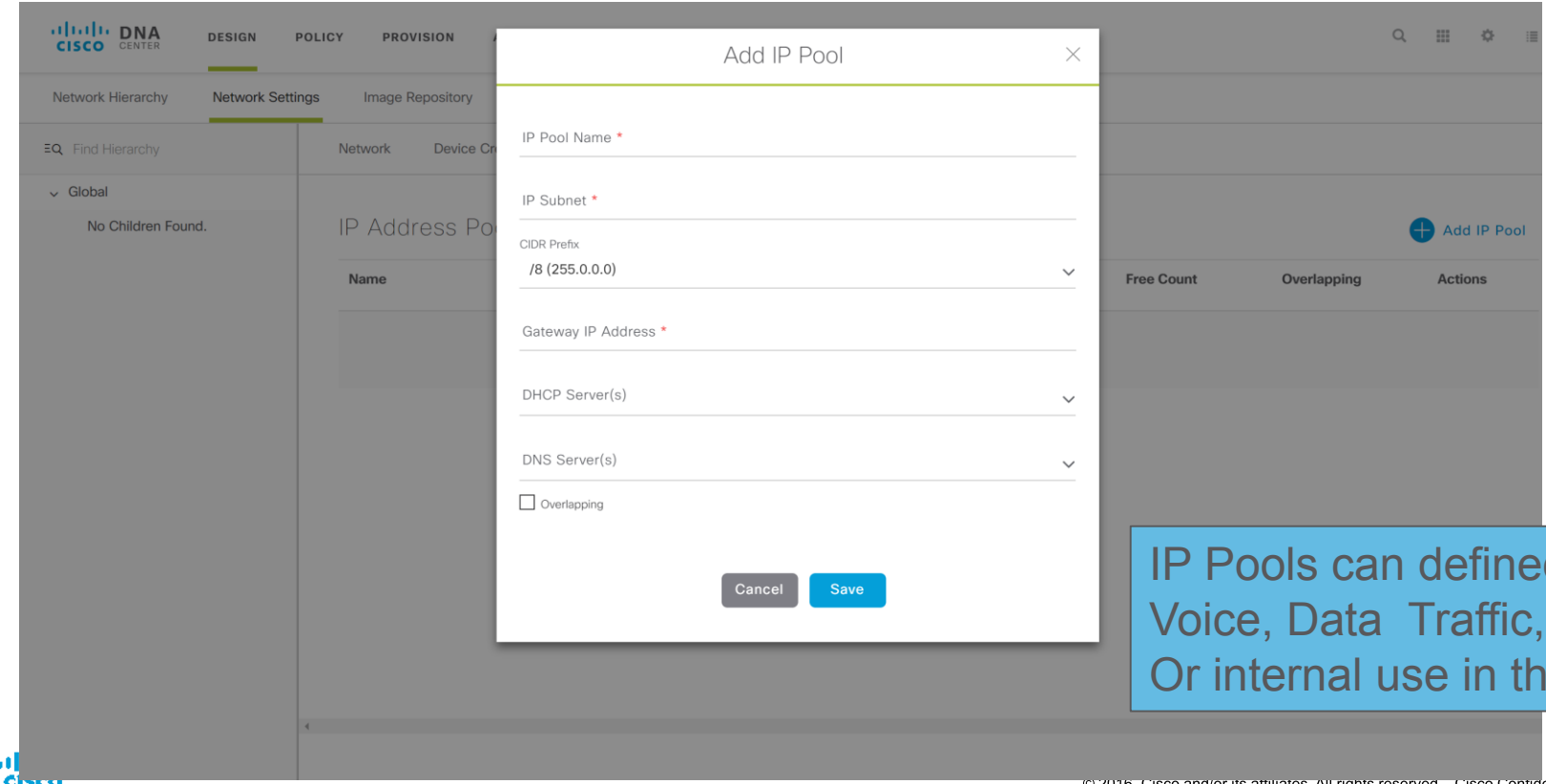


Device credentials

Needs at least CLI credentials and snmp read community

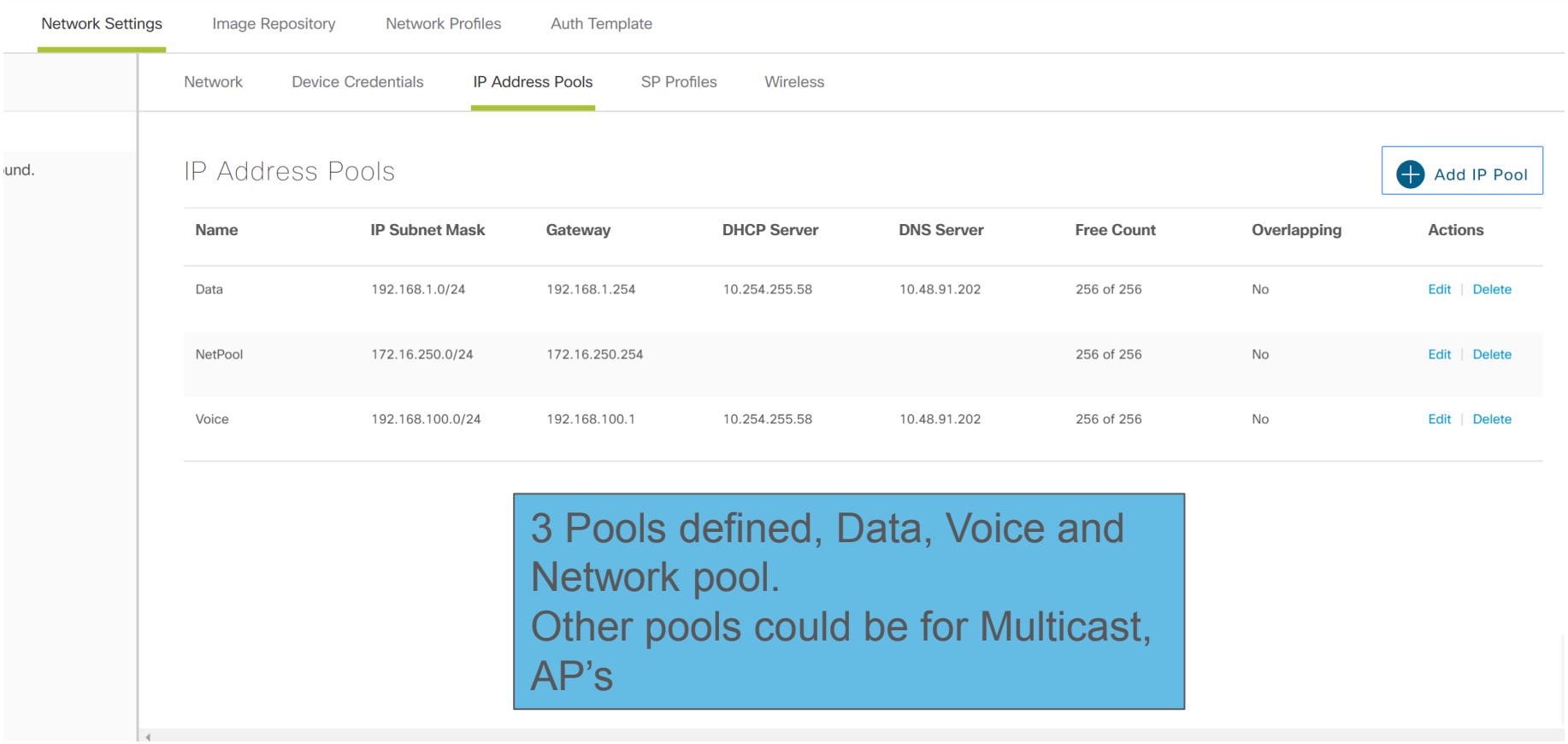


IP Pools



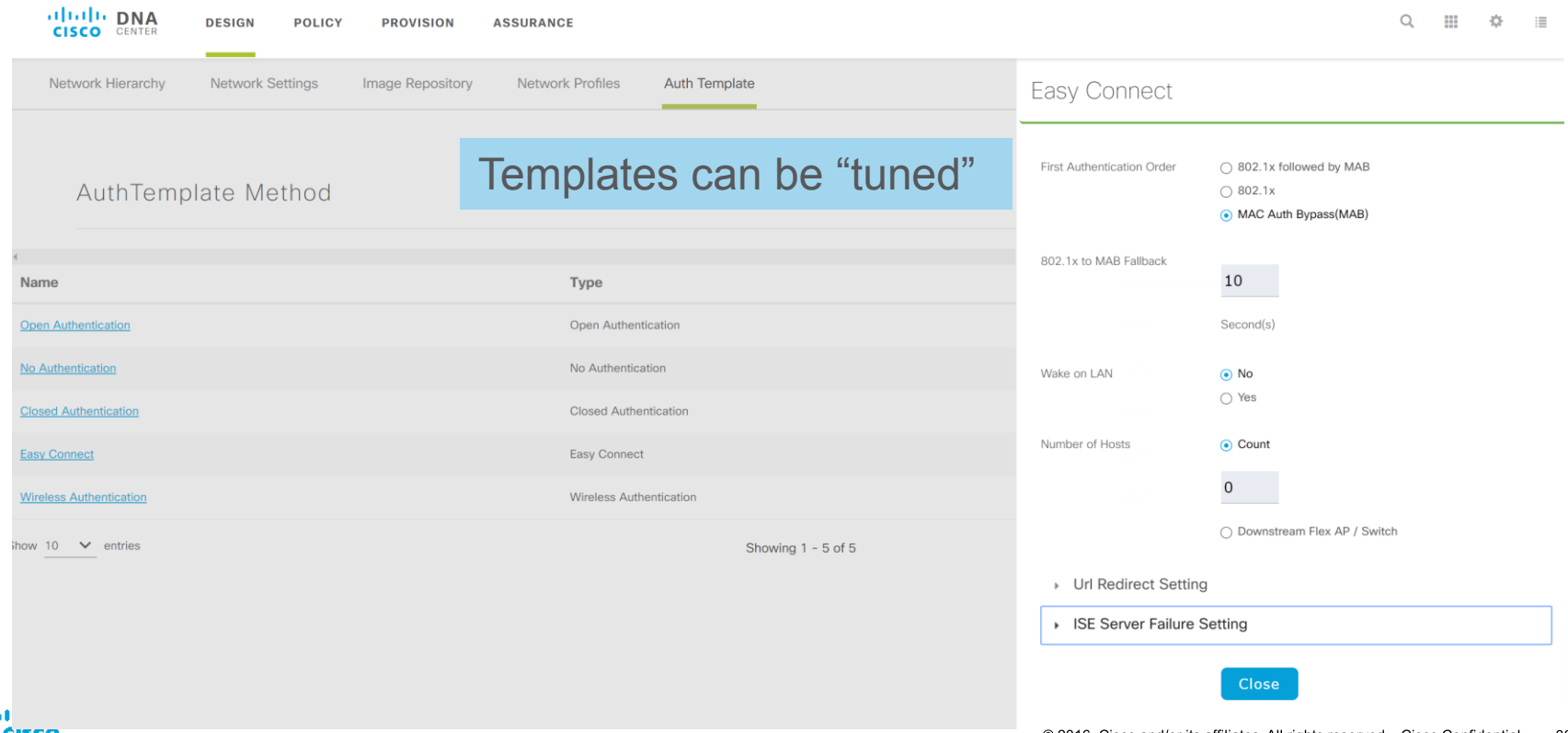
IP Pools can defined for Voice, Data Traffic, AP's. Or internal use in the fabric

IP Pools

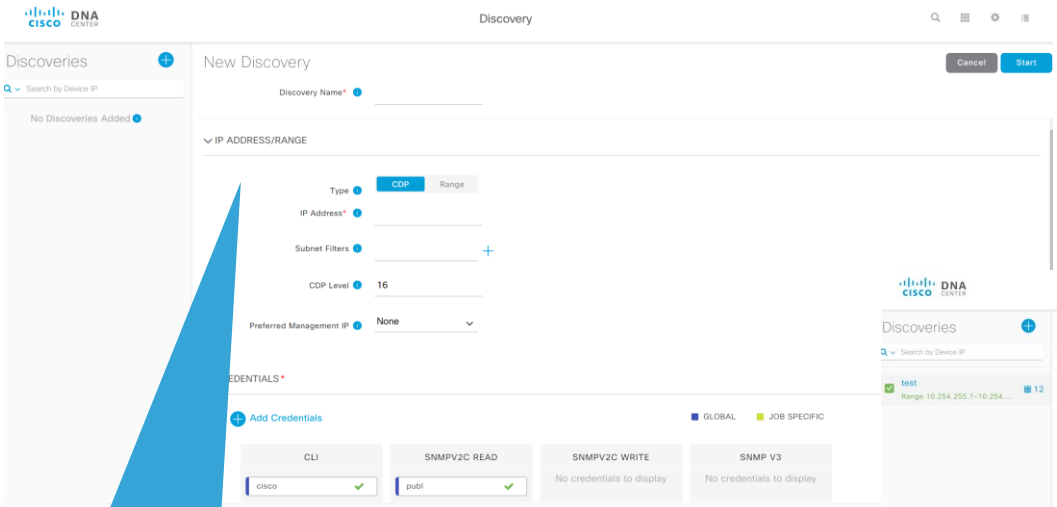


3 Pools defined, Data, Voice and Network pool.
Other pools could be for Multicast, AP's

Authentication Templates

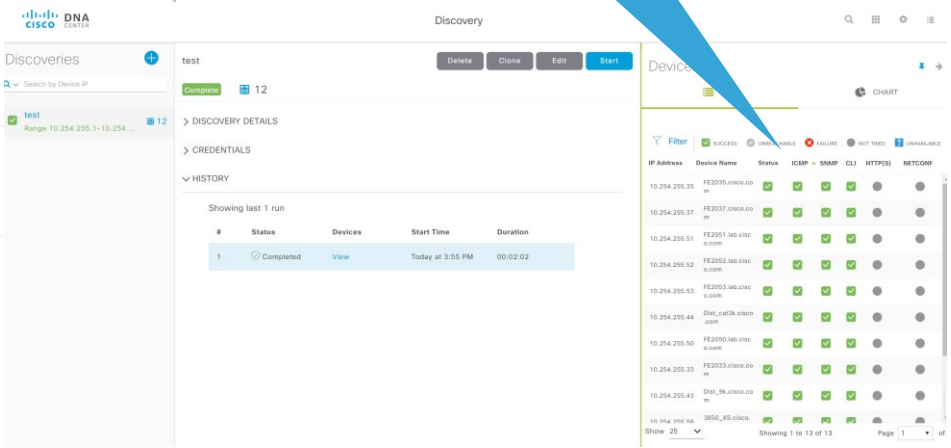


Discovery

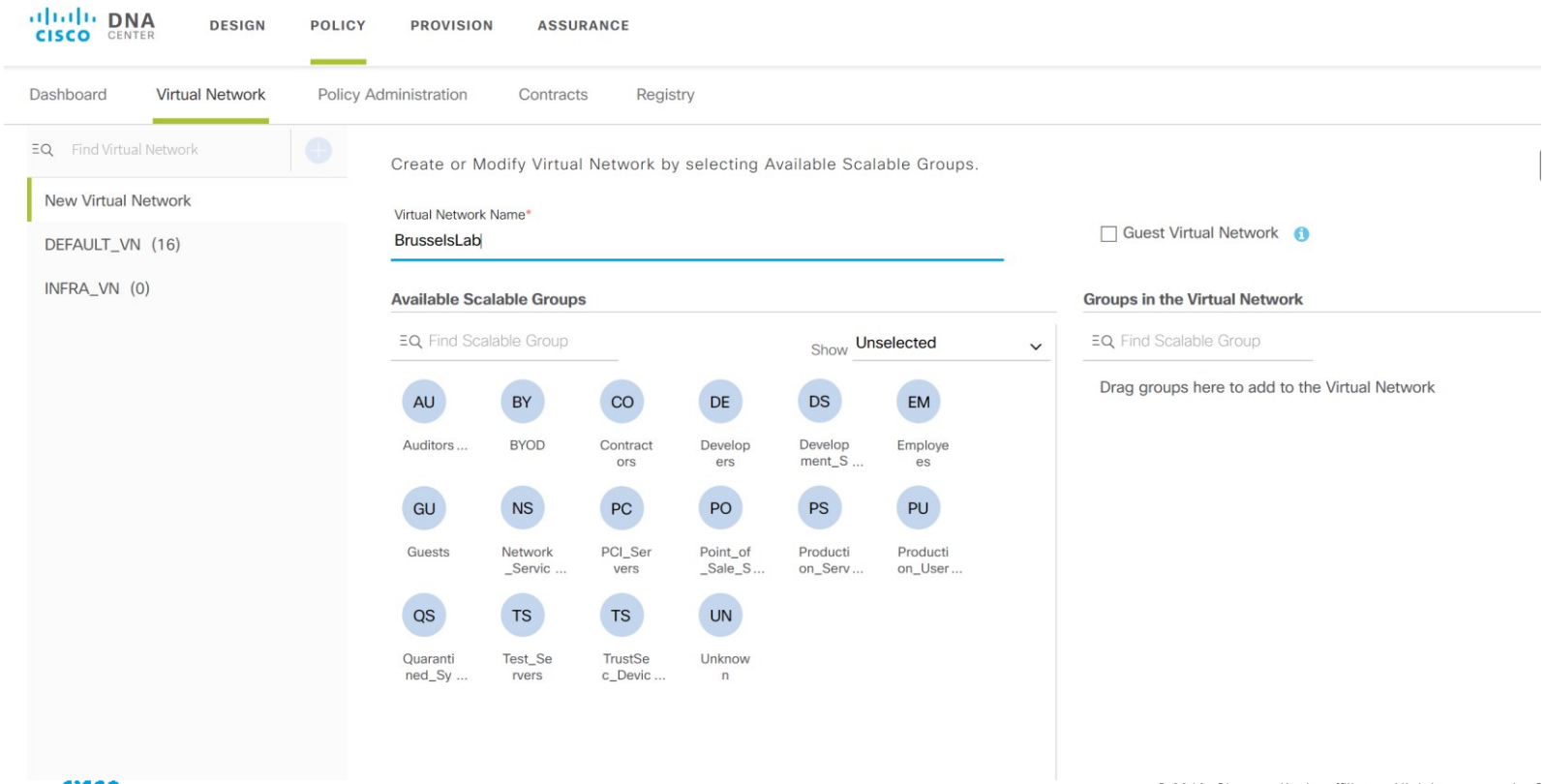


Discovery based on IP range or using CDP

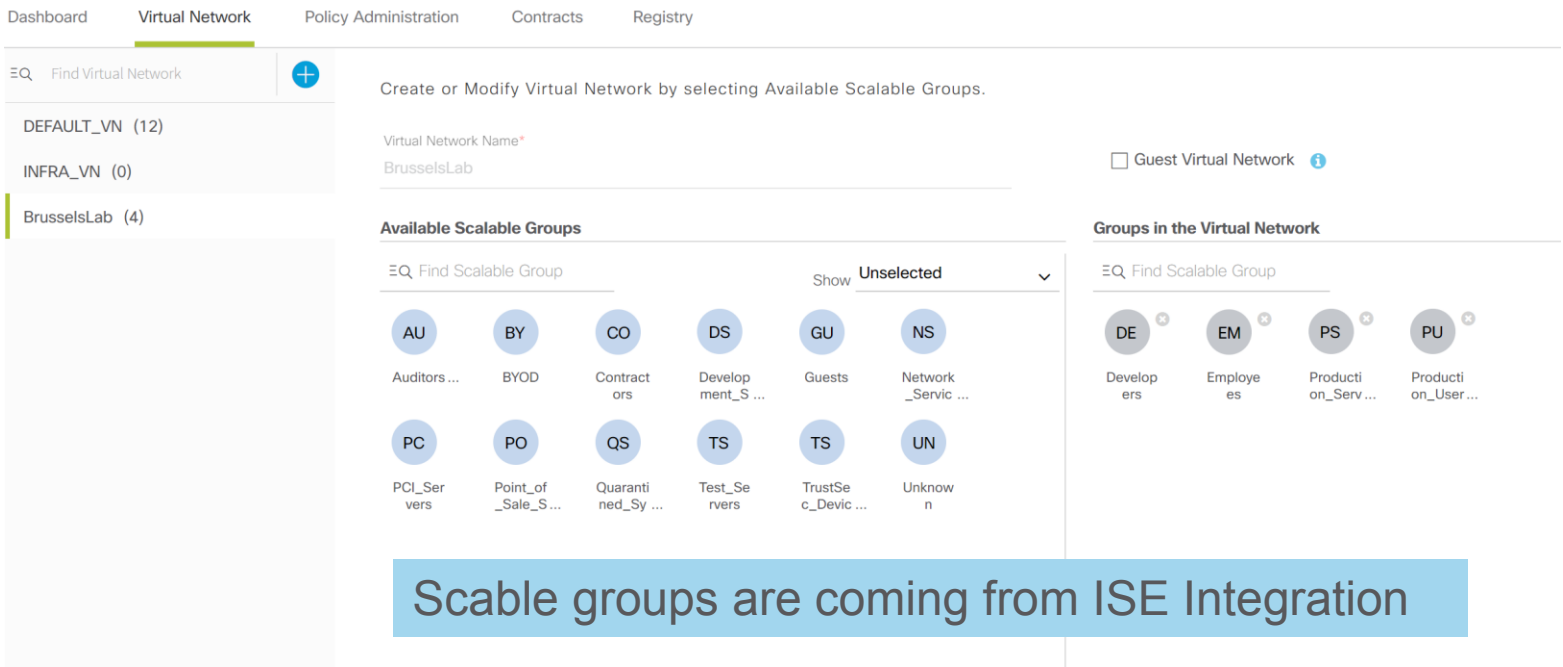
Devices discovered and reachable



Defining a Virtual Network

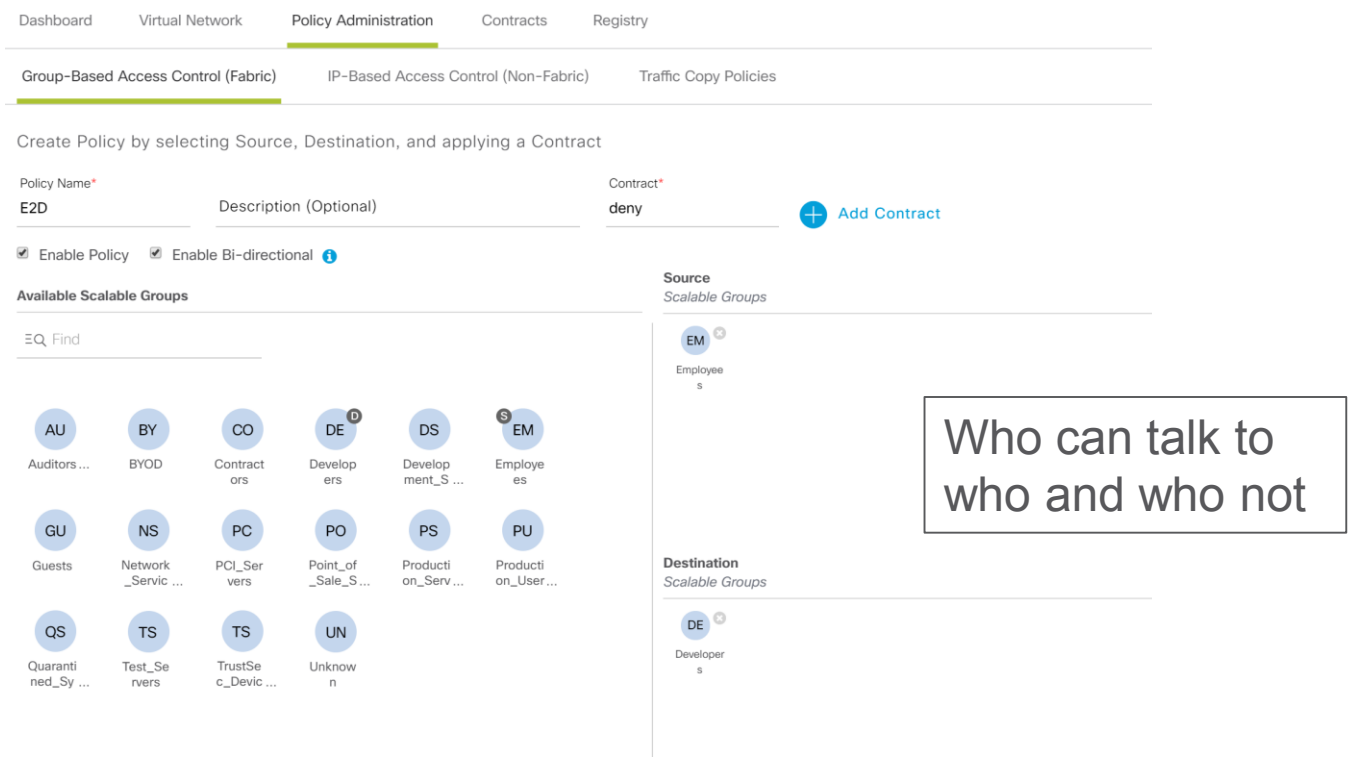


Assigning Groups to the VN

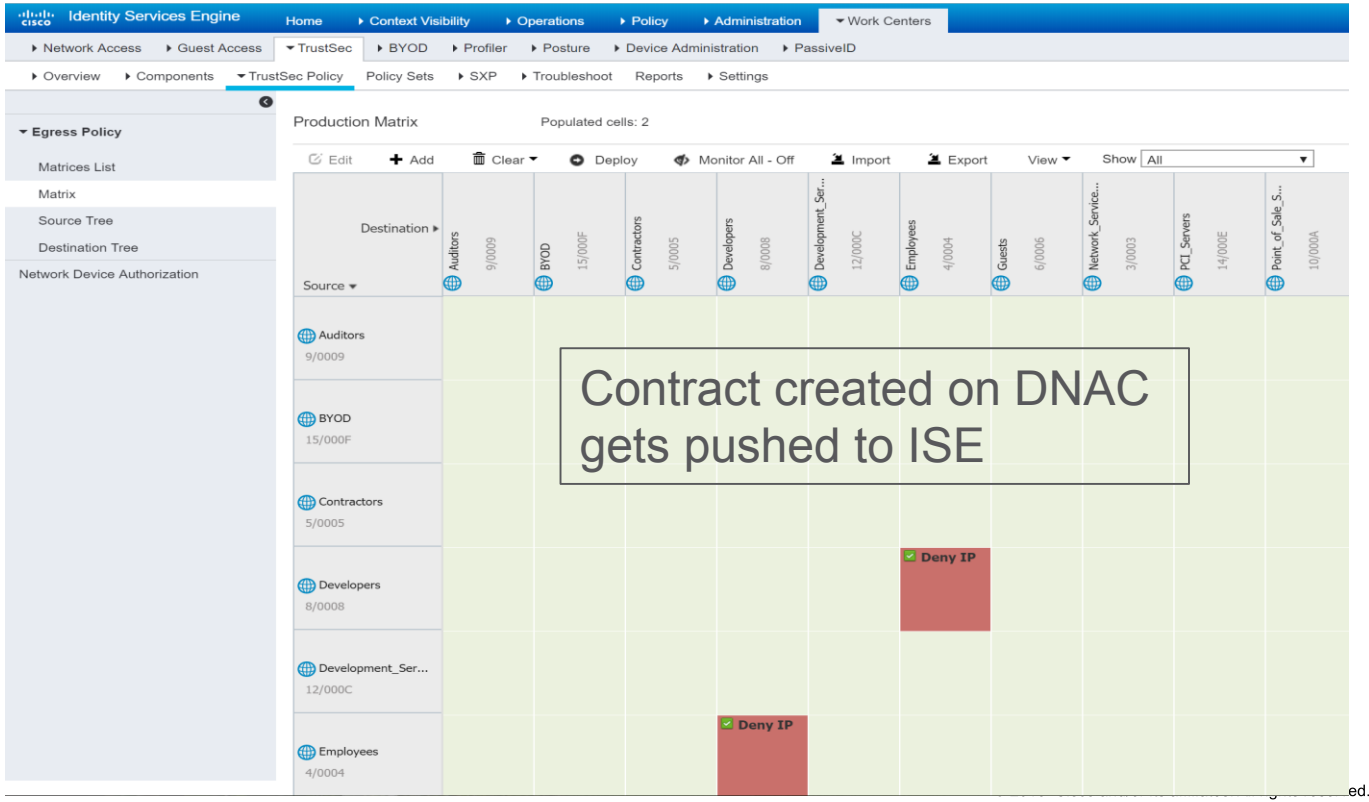


Scable groups are coming from ISE Integration

Defininig Contracts



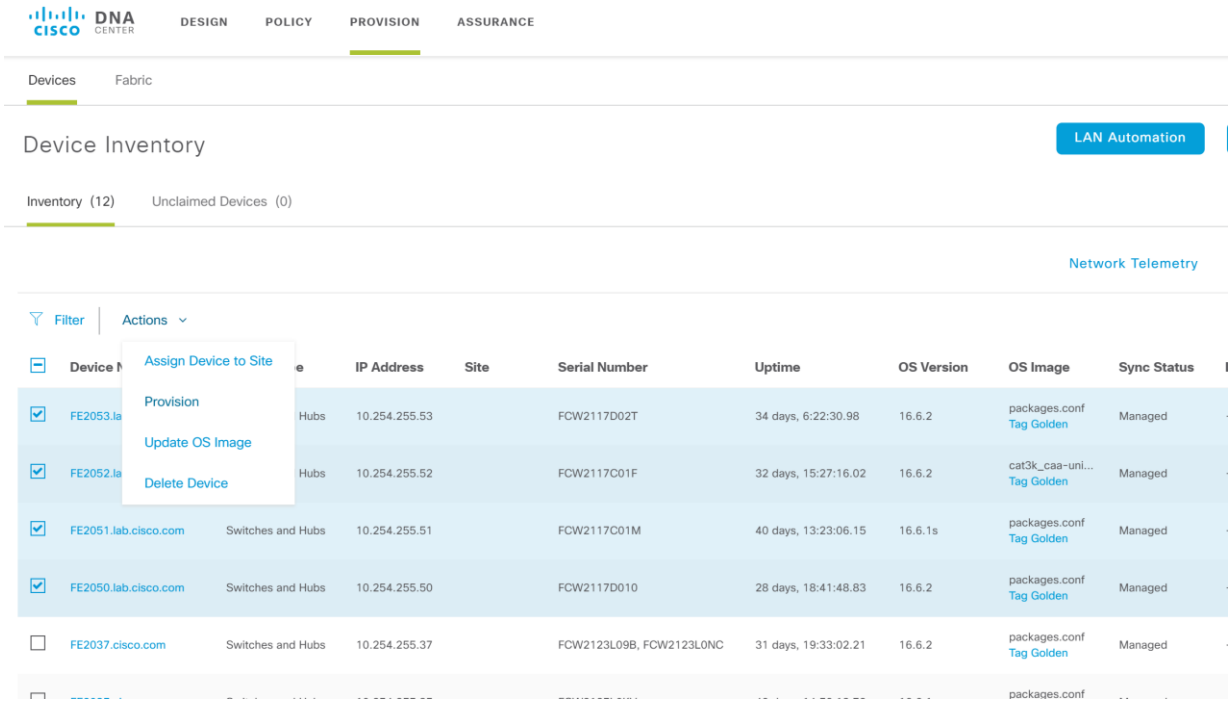
Contract pushed to ISE



Building a Fabric

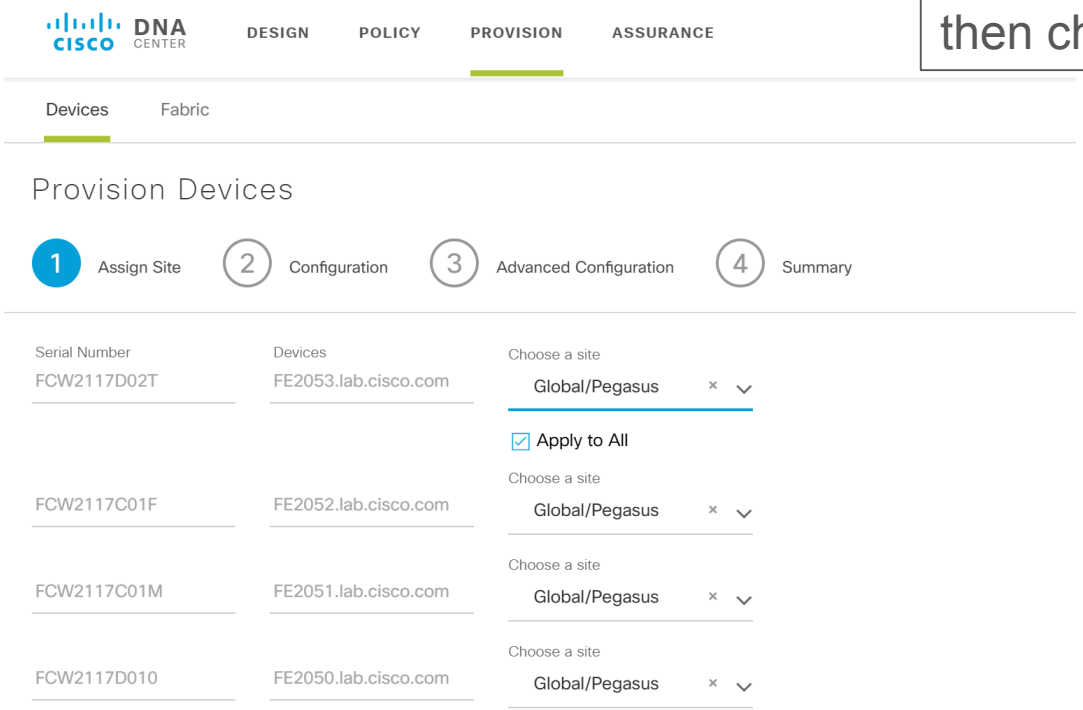
Provisioning

Devices need to be assigned to a site and provisioned before they can be in a fabric

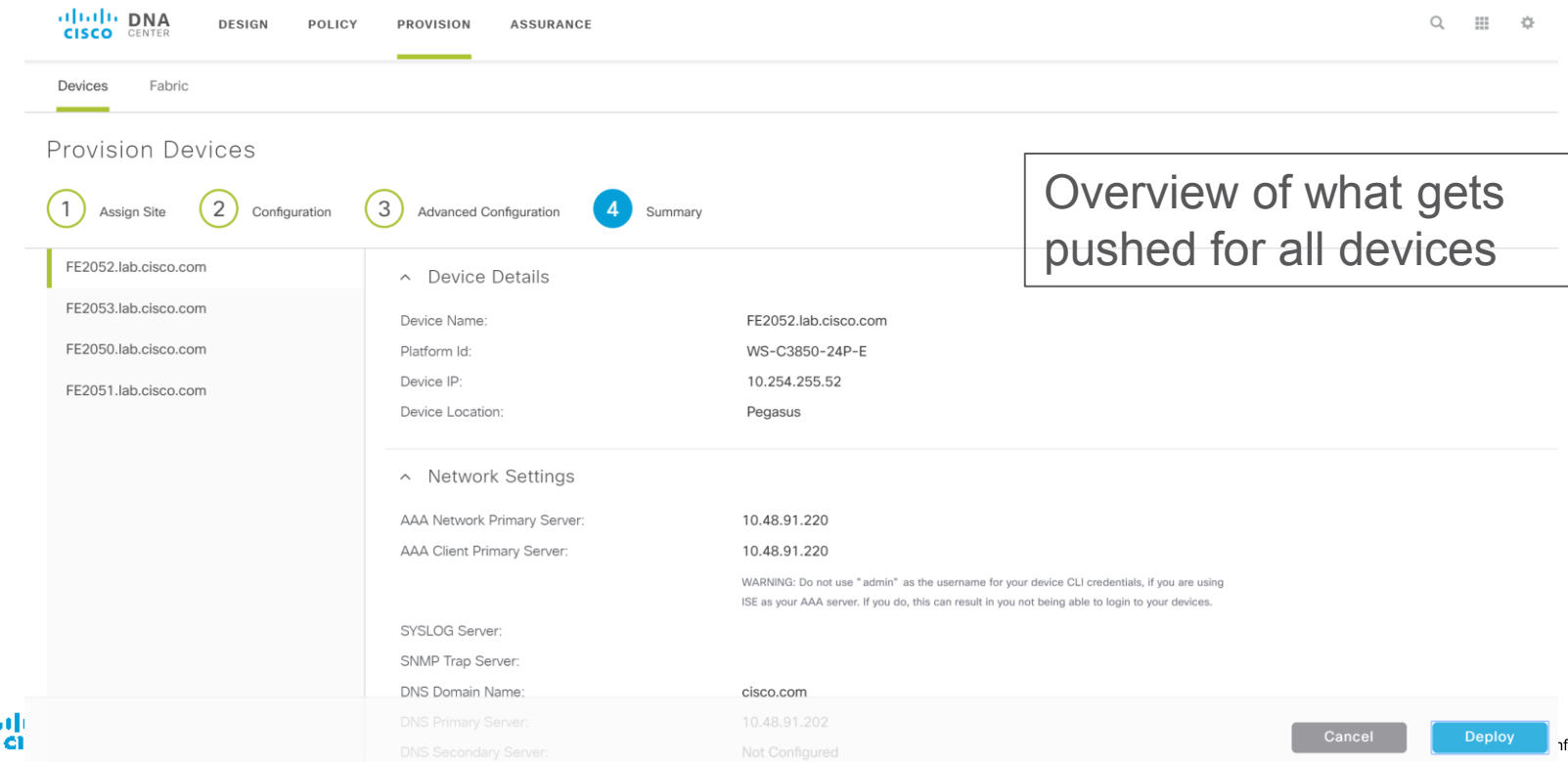


Assigning it to a Site

First check “ apply to all” then choose the site

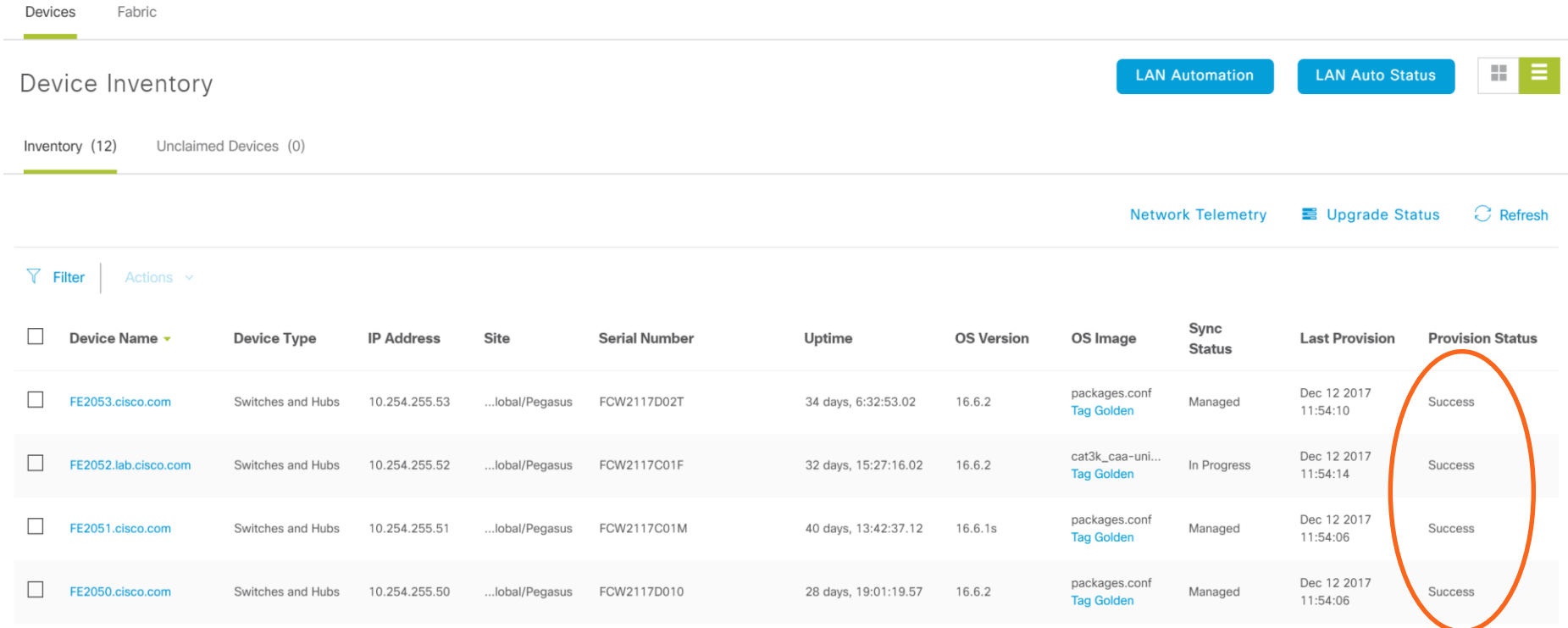


Deploy Provisioning

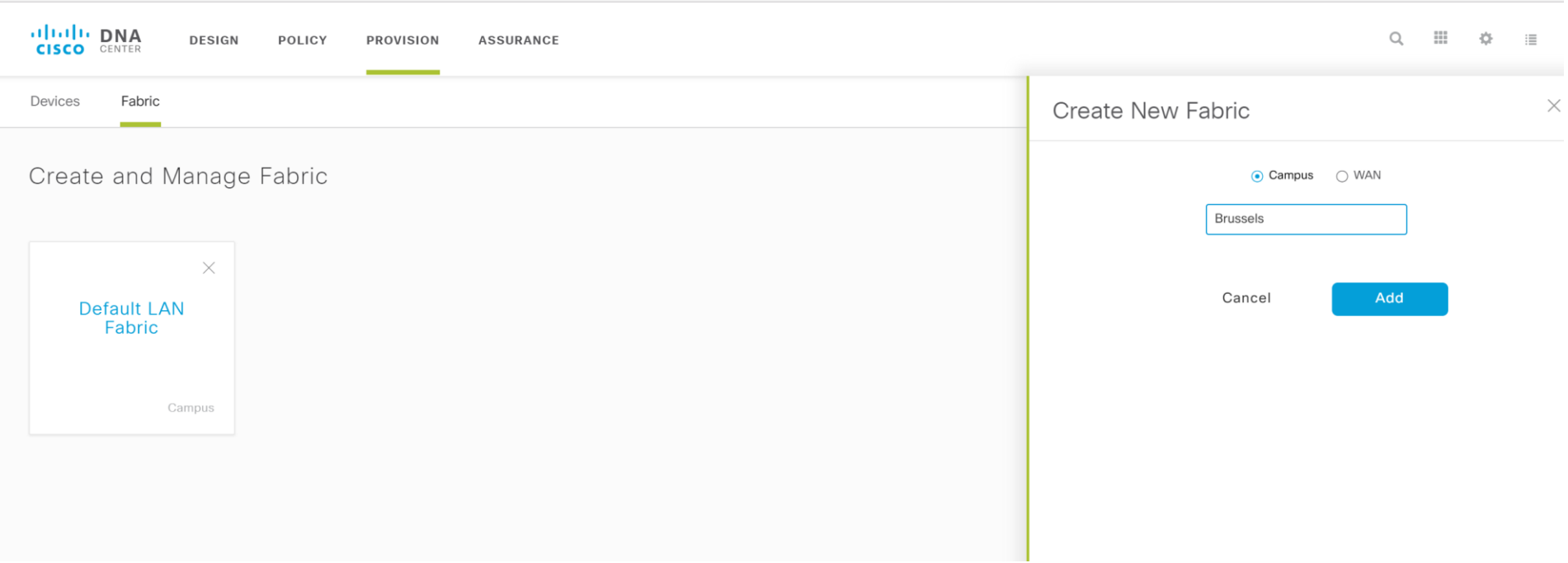


Overview of what gets pushed for all devices

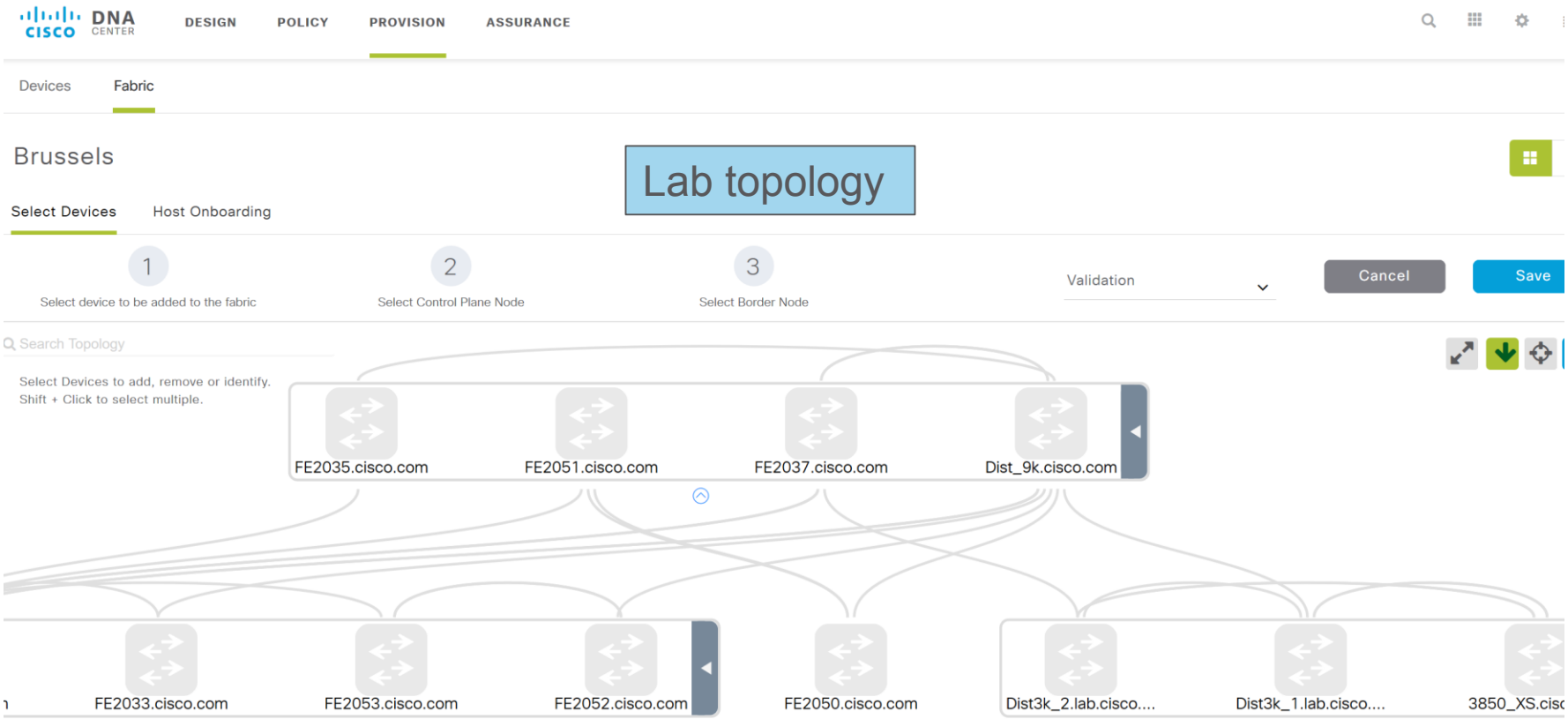
Deployed succesfully



Adding a new Fabric

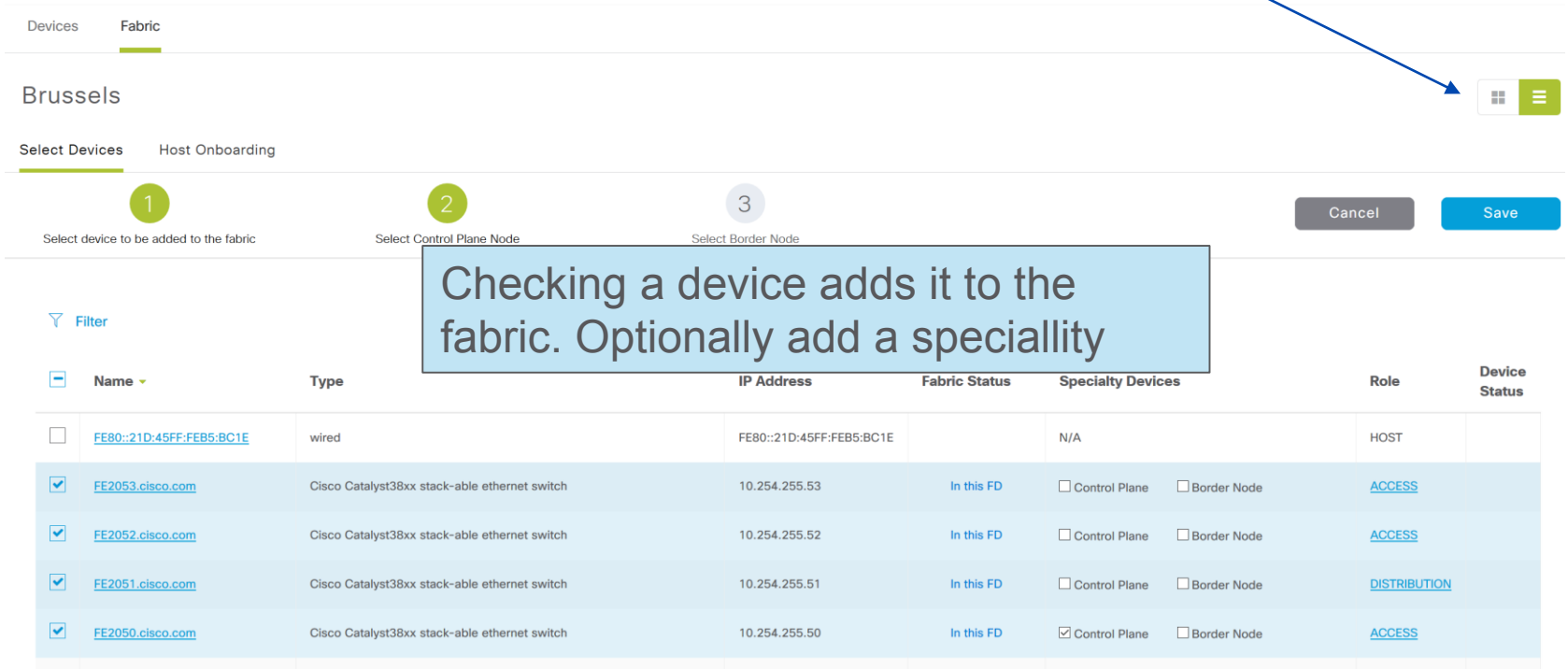


The Fabric view (pictogram)



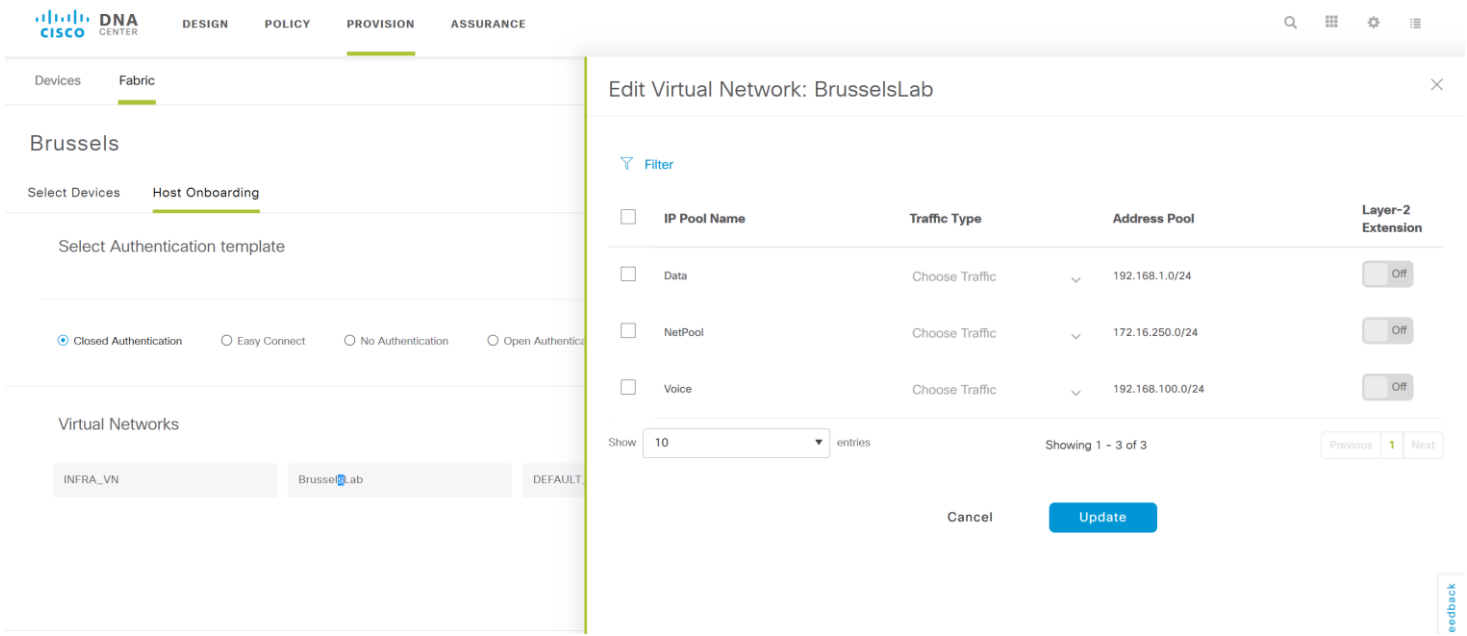
Fabric, List view

Devices can be listed too

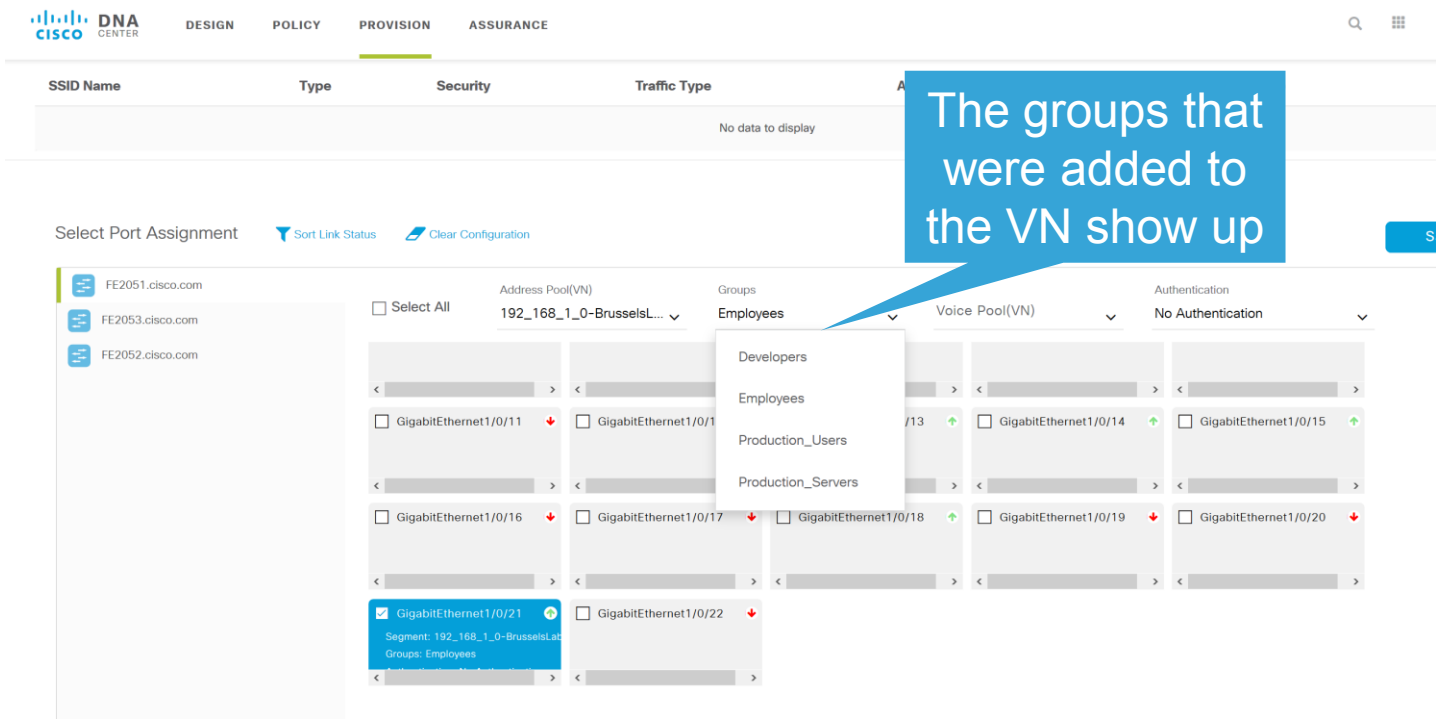


Checking a device adds it to the fabric. Optionally add a speciallity

Linking Pool to Virtual Network



Host Onboarding



Quick check Device Side setup

```
interface GigabitEthernet1/0/21
 switchport access vlan 1021
 switchport mode access
 device-tracking attach-policy IPDT_MAX_10
 load-interval 30
 cts manual
  policy static sgt 8
  no propagate sgt
 spanning-tree portfast
end
```

```
interface Vlan1021
 description Configured from apic-em
 mac-address 0000.0c9f.f45c
 vrf forwarding BrusselsLab
 ip address 192.168.1.254 255.255.255.0
 ip helper-address 10.254.255.58
 no ip redirects
 ip local-proxy-arp
 ip route-cache same-interface
 no lisp mobility liveness test
 lisp mobility 192_168_1_0-BrusselsLab
end
```

AAA config pushed to device

```
FE2051#sh run | sec aaa
aaa new-model
aaa group server radius dnac-group
 server name dnac-radius_10.48.91.220
 ip radius source-interface Loopback0
aaa authentication login default group dnac-group local
aaa authentication enable default enable
aaa authentication dot1x default group dnac-group
aaa authorization exec default group dnac-group local
aaa authorization network default group dnac-group
aaa authorization network dnac-cts-list group dnac-group
aaa accounting dot1x default start-stop group dnac-group
aaa server radius dynamic-author
 client 10.48.91.220 server-key cisco123
```

SGT policies download

```
FE2051#sh cts policy sgt  8
CTS SGT Policy
===============
RBACL Monitor All : FALSE
RBACL IP Version Supported: IPv4
SGT: 8-01:Developers
SGT Policy Flag: 0x41400001
RBACL Source List:
  Source SGT: 4-01:Employees-0, Destination SGT: 8-01:Developers-0
  rbacl_type = 80
  rbacl_index = 1
  name   = Deny IP-00
  ...
```

RBACL showing the contract earlier defined

And ofcourse the LISP configuration

```
FE2051#sh running-config | sec router lisp
router lisp
 locator-table default
 locator-set rloc_775fbc22-8abb-4313-8fe8-0b2d78e179c8
  IPv4-interface Loopback0 priority 10 weight 10
  exit-locator-set
 !
 locator default-set rloc_775fbc22-8abb-4313-8fe8-0b2d78e179c8
 service ipv4
  encapsulation vxlan
  map-cache-limit 25000
  database-mapping limit dynamic 5000
  itr map-resolver 10.254.255.50
  etr map-server 10.254.255.50 key uci
  etr map-server 10.254.255.50 proxy-reply
  etr
  sgt
  proxy-itr 10.254.255.51
  exit-service-ipv4
……
```

Only partially showing