Intro to The Workflow Orchestrator

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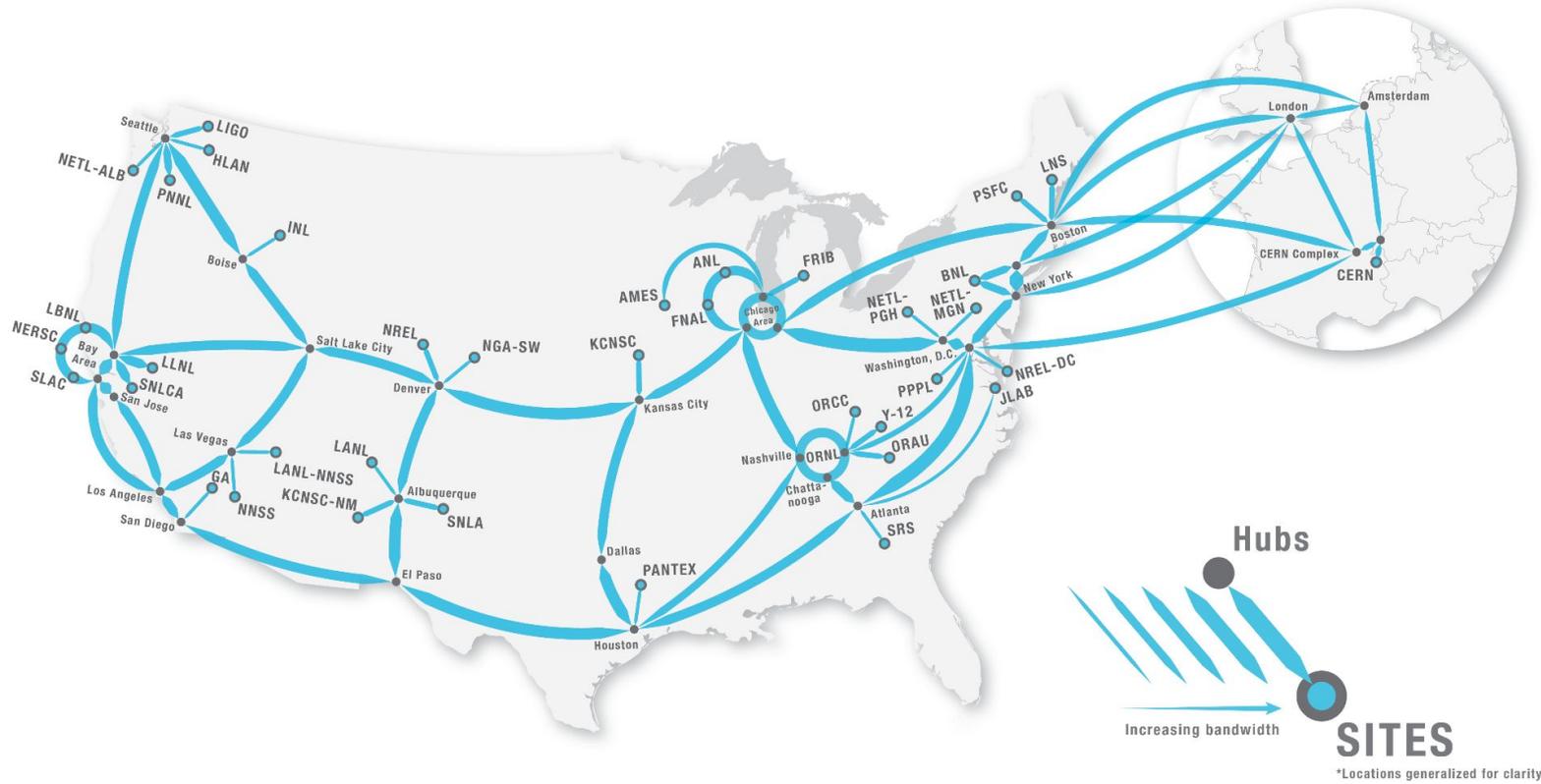
What is Intent Based Networking?

- A high level definition of a Network Service

- Describes a service, but not *how* to implement it.

- Abstracts service offerings from implementation details

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What is Orchestration?

- Coordination of multiple computer and network systems

- Translates network *intent* into network *configuration*

- Workflow-based method for provisioning services

- Method for ensuring consistency in service delivery

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What is Orchestration *NOT* ?

- A replacement for network engineers

- A way to have one network engineer do the job of multiple engineers

- A single tool to run all of ESnet

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Benefits of Orchestration

- Forces you to **design** and **plan** services, not config

- Creates consistent configurations for complex services

- Reduces the chance for human error

- Makes the network more reliable

- Allows engineers to focus on more design than deployment (less busy-work)

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What are workflows?

Finite resources exist in other systems
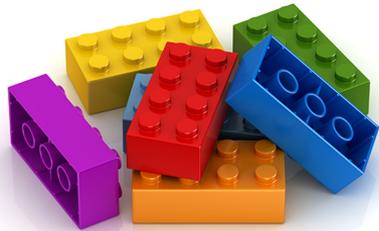
The workflow contains the "Steps" needed to complete the work
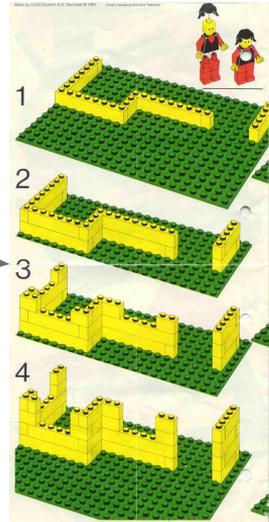
Orchestrator stores the final product until we break it all apart again

ESnet6 Provisioning Stack
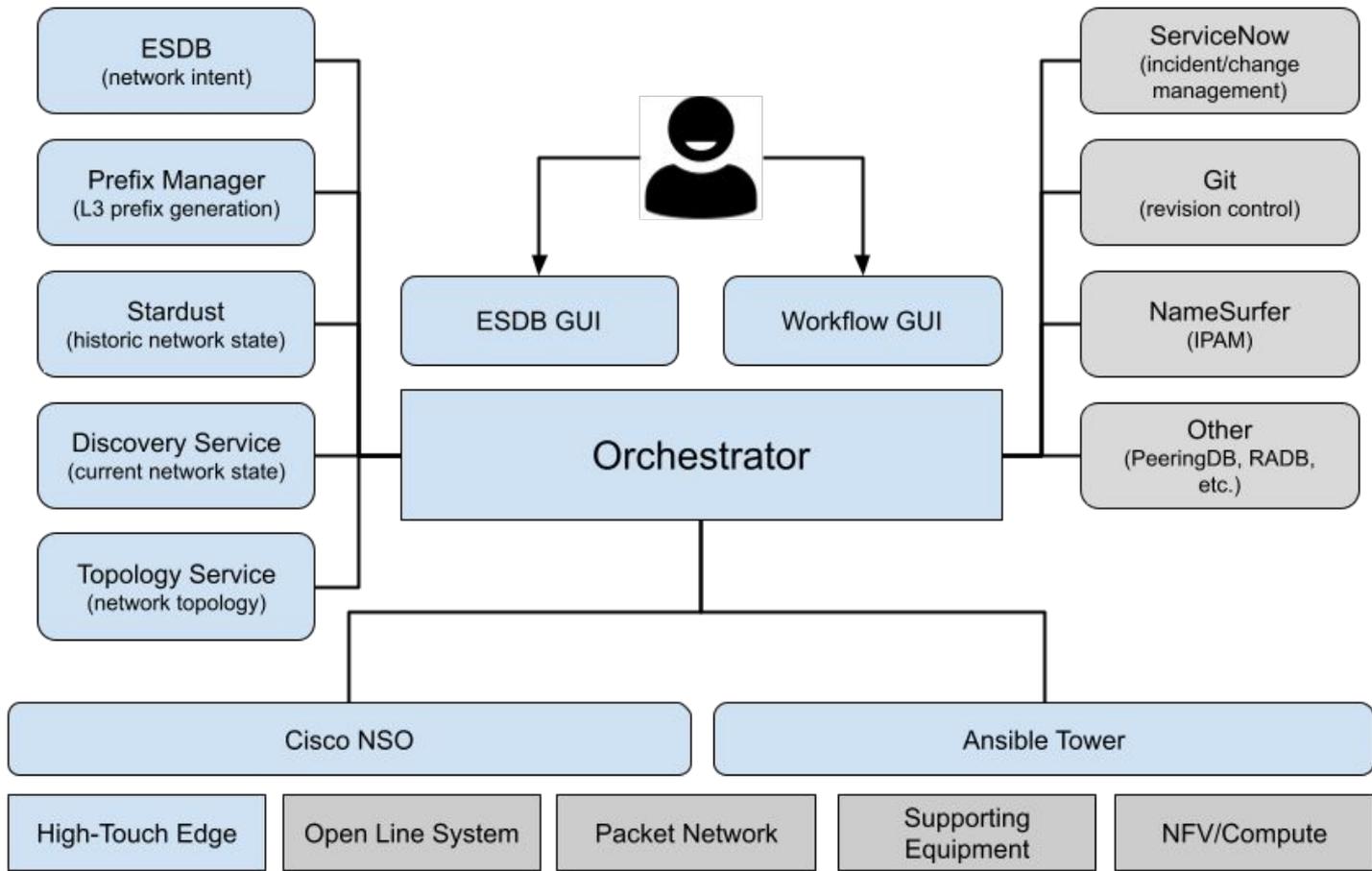
ESnet6 Provisioning Workflow
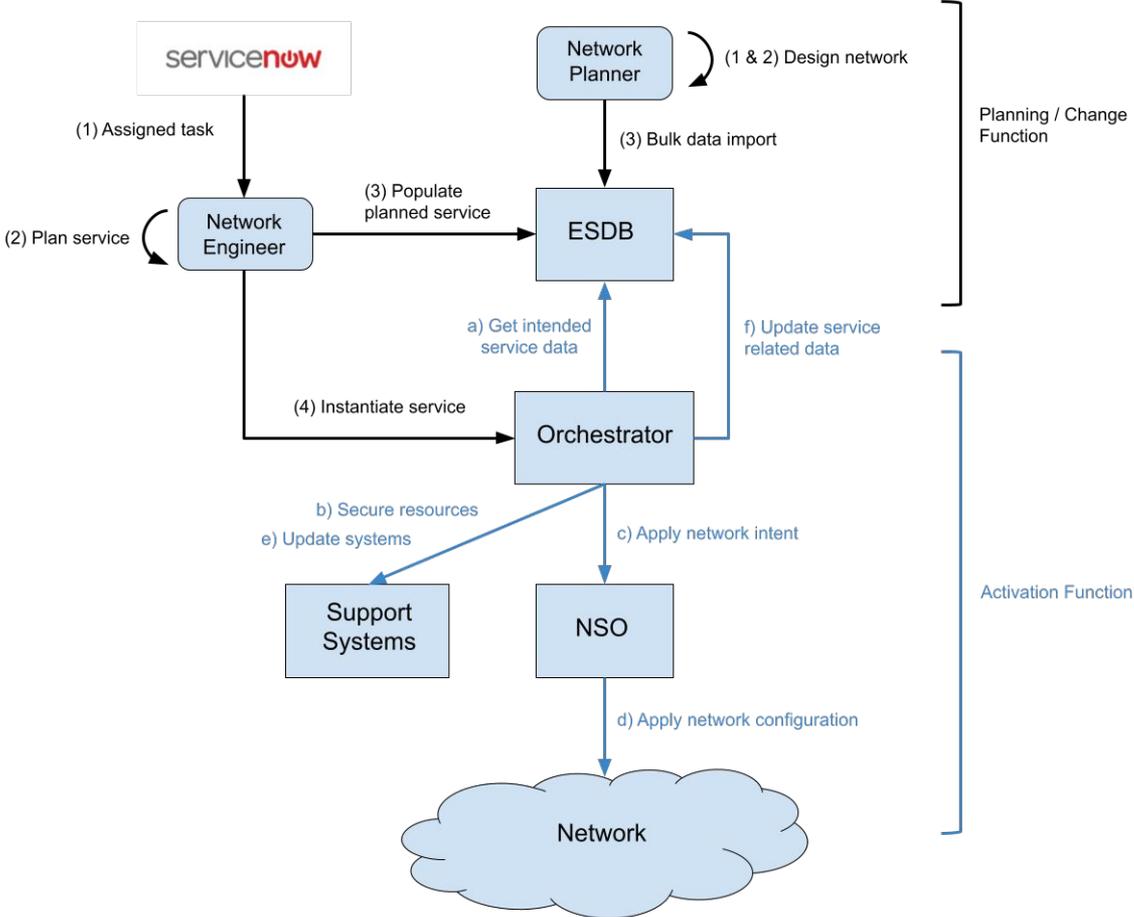
Demonstration

- ECMP Group (Backbone Link)

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ECMP Group Steps

```python
129   @create_workflow("Create ECMP Group", initial_input_form=initial_input_form)
130 ∨ def create_backbone_link() -> StepList:
131
132 ∨     return (
133             begin
134             >> construct_blink_model
135             >> determine_bandwidth
136             >> determine_circuit_latency
137             >> store_process_subscription(Target.CREATE)
138             >> generate_dns_names(flavor="bb")
139             >> set_status(SubscriptionLifecycle.PROVISIONING)
140             >> provision_ipv4_block
141             >> provision_ipv6_block
142             >> set_name_on_ip_blocks
143             >> provision_ip("a", "ipv4")
144             >> provision_ip("a", "ipv6")
145             >> provision_ip("z", "ipv4")
146             >> provision_ip("z", "ipv6")
147             >> assemble_nso_payload
148             >> nso_dry_run_cli_patch
149             >> confirm_dry_run_results
150             >> patch_esdb_interface("a")
151             >> patch_esdb_interface("z")
152 ∨           >> patch_esdb_circuit(
153 ∨               new_esdb_state=NSO_ADMIN_STATE_TO_ESDB_STATE[NSOBackboneLinkAdminState.MAINTENANCE][
154                     "new_esdb_circuit_state"
155                 ]
156             )
157             >> patch_nso
158             >> set_status(SubscriptionLifecycle.ACTIVE)
159         )
160
```

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Service Containers

ESDB Orch NSO PMS Name Surfer

Each service container is connected to the OOB management interface of the network elements.

cr6 devices are Nokia vSIMs running 20.10R5
mpr1 devices are experimental vQFXs running 18.4
customer/(nsp/host) devices ar running
SR-Linux:latest

Z00001

Questions?

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