NFV at SURF

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In this talk

- What is SURFs usecase for NFV?
- Our experiences building a NFV infrastructure
- What does our NFV infrastructure look like

SURF

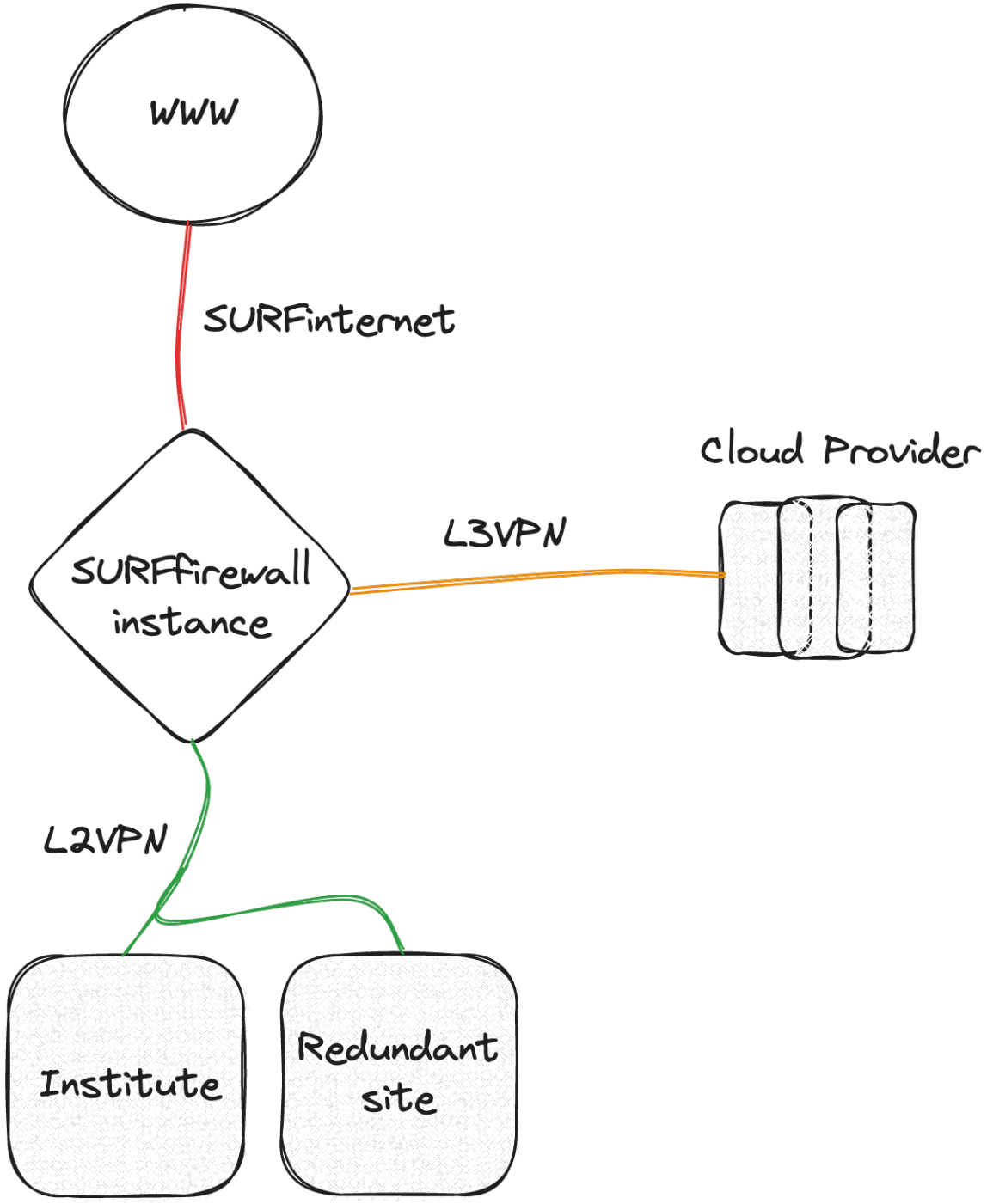
SURFfirewall

Built upon several building blocks in SURF Network Orchestrator:

- SURFinternet
- L2VPN
- L3VPN
- FW

Usable in any configuration

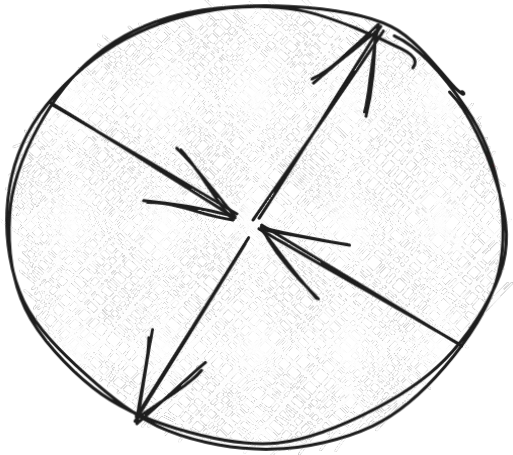
Physical firewalls in central location

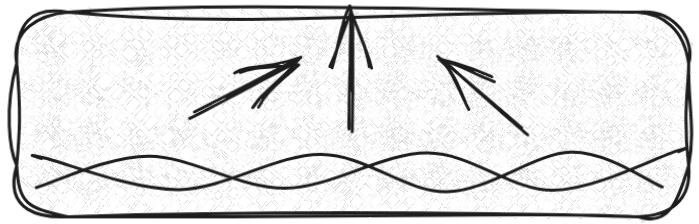


What about other services?

Usecases:

- Routers
- VPN concentrators
- Wireless controllers
- Switches
- EduVPN
- .. etc





”Give me a fully licensed 1Gbit UTM capable firewall with such-and-such ruleset in Amsterdam between 9:00AM and 4:00PM on September 22nd"

Goals for NFV

- Provide additional networkservices for connected institutes
- On-demand
- Pay as you grow
- High throughput – low latency

”Give me a fully licensed 1Gbit UTM capable firewall with such-and-such ruleset in Amsterdam between 9:00AM and 4:00PM on September 22nd"

PoCs

- Juniper Contrail

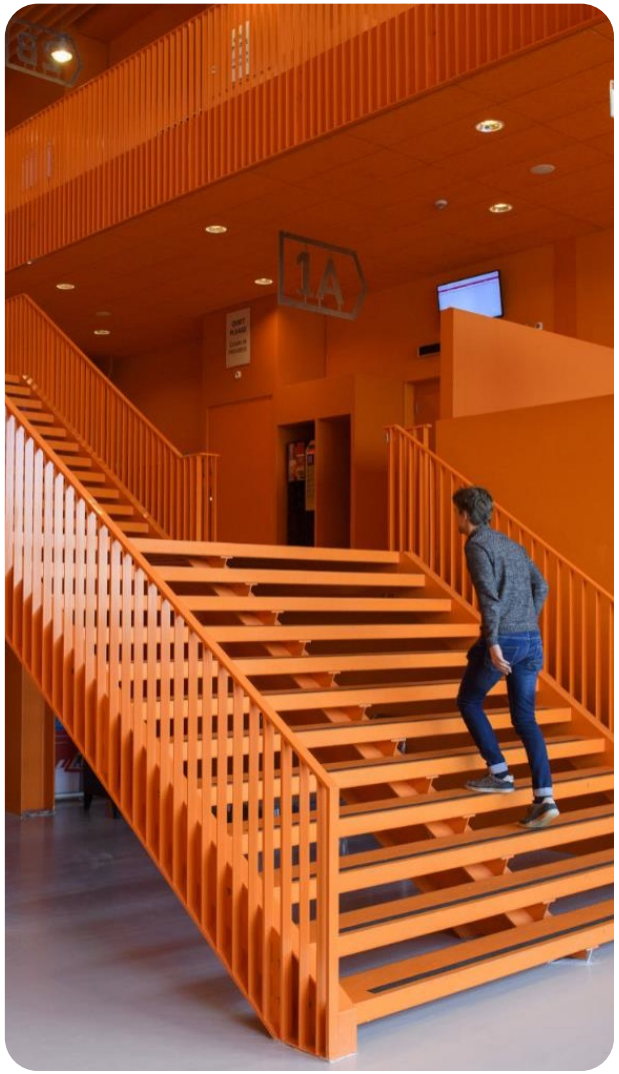
Not the right fit

Better for datacenters

- Vanilla Openstack with VPP dataplane

Openstack is complex (!)

No QinQ success story



What do we need for NFV at SURF?

- Virtualization engine
- Shared storage solution
- High speed dataplane
- Workflow engine

https://github.com/ansible/awx

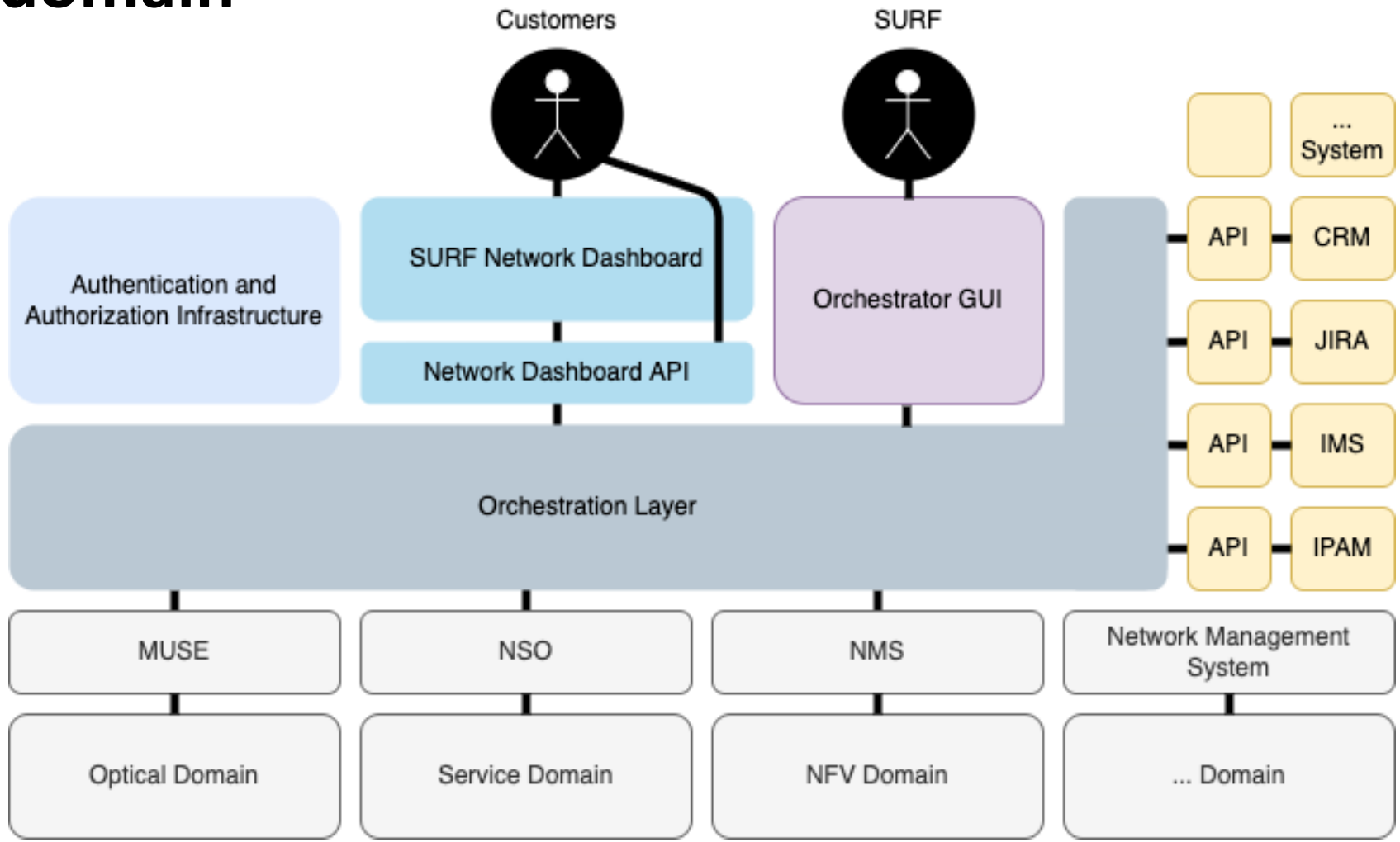
https://ceph.io

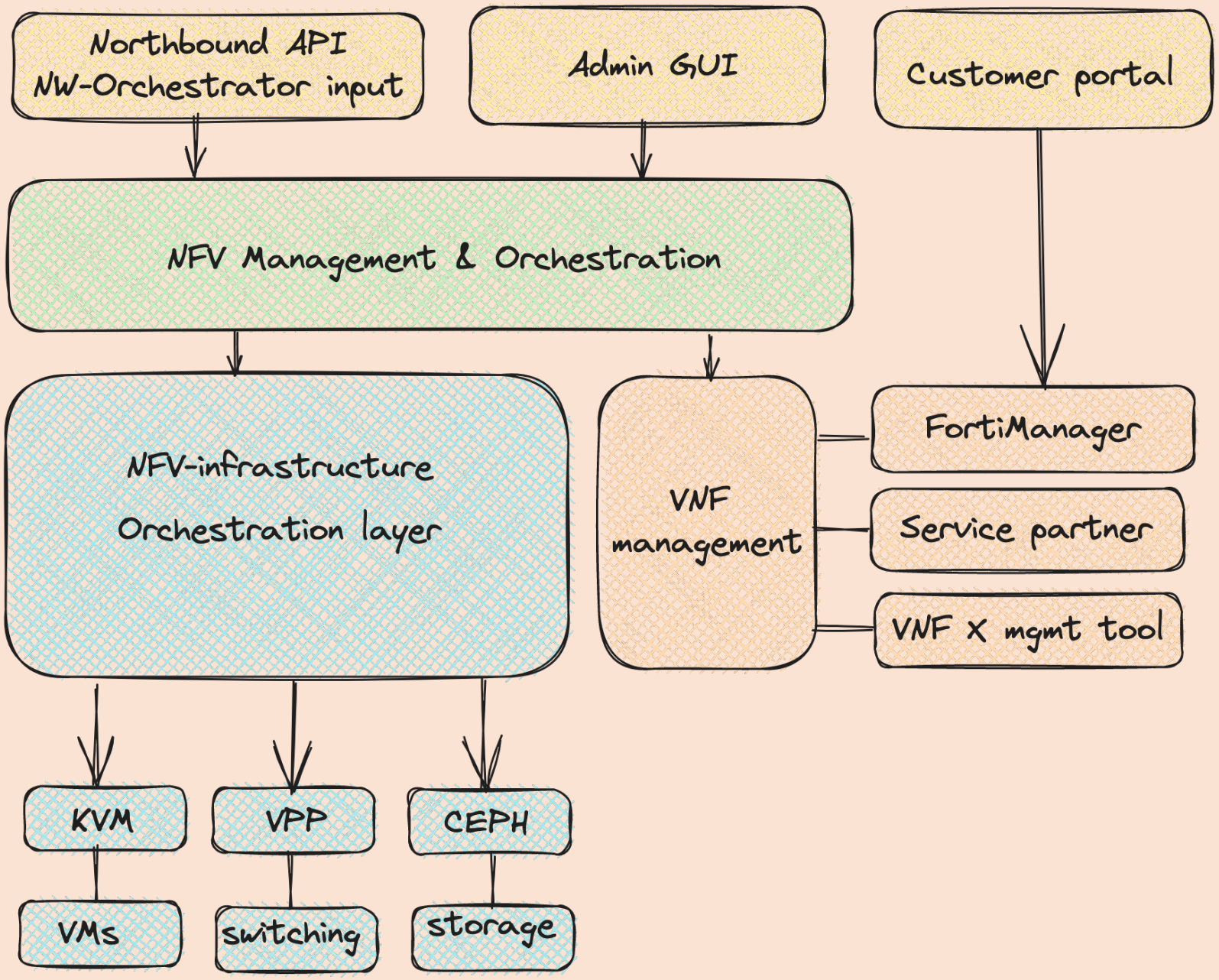
https://fd.io

SURF

NFV technology domain

- Handles compute stuff
- In-house developed
- Based on ETSI NFV-MANO & NFVi




Northbound API
NW-Orchestrator input
Admin GUI
Customer portal
NFV Management & Orchestration
NFV-infrastructure
Orchestration layer
VNF
management
FortiManager
Service partner
VNF x mgmt tool
KVM
VPP
CEPH
VMs
switching
storage

SURF

Payload from orchestrator

- Service version
- Availability_zone
- State
- Identifier


```
{
  "execution_environment": "production",
  "institute_name": "OWGNOORD",
  "institute_uuid": "1273b4a6-0d11-e511-80d0-005056956c1a",
  "interface_map": [
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      "interface_remote_description": "OWGN VLAN 2003",
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      "interface_secondary_ipv4": [],
      "interface_secondary_ipv6": []
    },
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      "interface_vlan": 15,
      "interface_remote_description": "Internet",
      "interface_role": "WAN",
      "interface_ipv4": "145.145.0.251/29",
      "interface_ipv6": "2001:610:f00:11::251/64",
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      "interface_mtu6": 1500
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      "neighbor_address": "145.145.0.250"
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      "bfd_enable": true,
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    {
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      "bfd_enable": true,
      "neighbor_address": "2001:610:f00:11::249"
    }
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  "bfd_desired_min_tx": 900,
  "bfd_desired_min_rx": 900,
  "bfd_detect_multi": 3,
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  "deploy_type": "VFW",
  "state": "present",
  "validate_flow": false,
  "orchestrator_callback_url": "https://orchestrator.automation.surf.net/api/processes/
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}
```

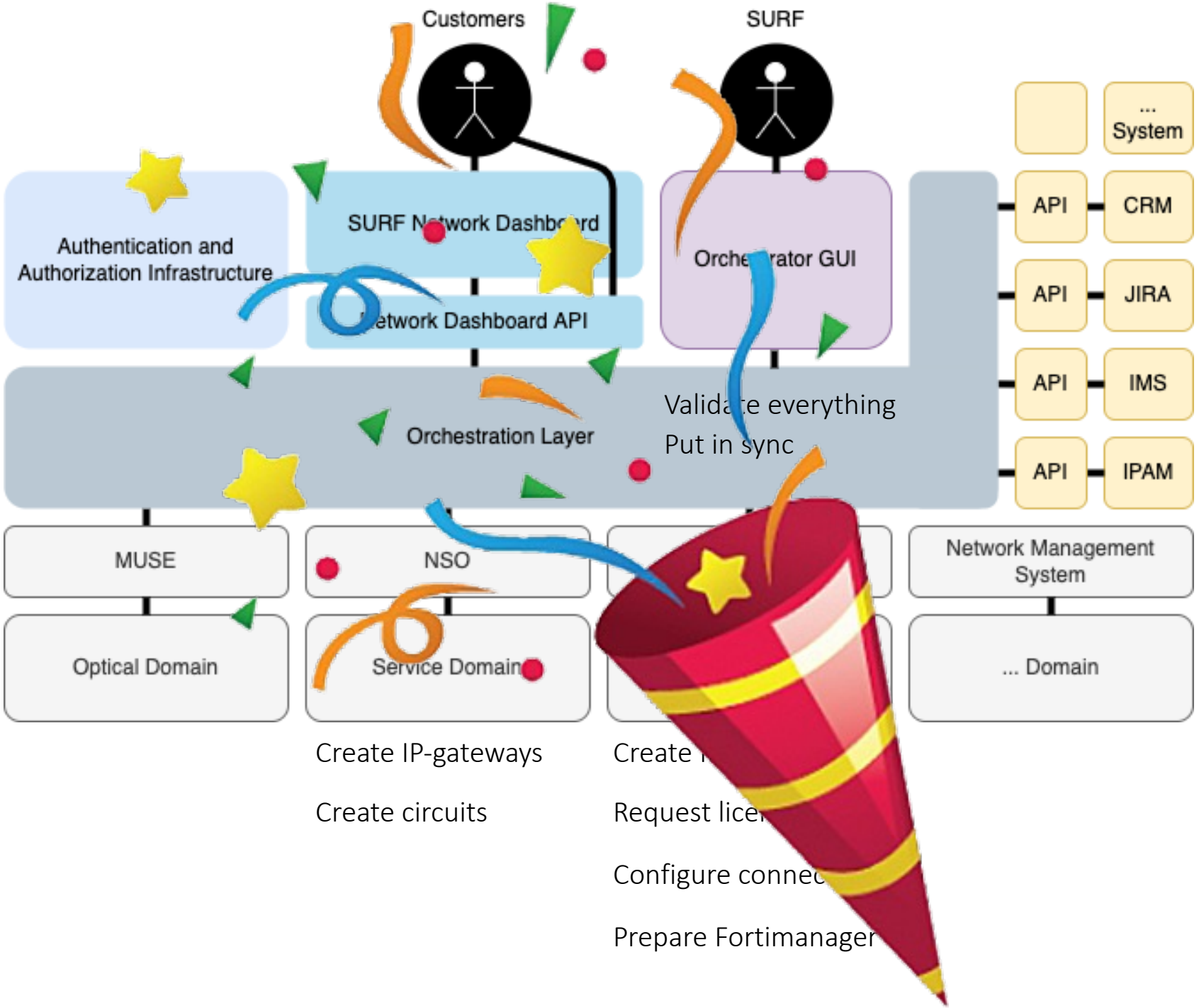
Customers
SURF
Authentication and Authorization Infrastructure
SURF Network Dashboard
Network Dashboard API
Orchestrator GUI
Orchestration Layer
Validate everything
Put in sync
MUSE
NSO
Network Management System
Optical Domain
Service Domain
... Domain
... System
API
CRM
API
JIRA
API
IMS
API
IPAM
Customer information
Update project ticket
Create circuits for impact/monitoring
Reserve p2p prefixes
Create IP-gateways
Create circuits
Request lice
Configure connec
Prepare Fortimanager

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