

Network Configuration Automation



SCINET & SURFNET



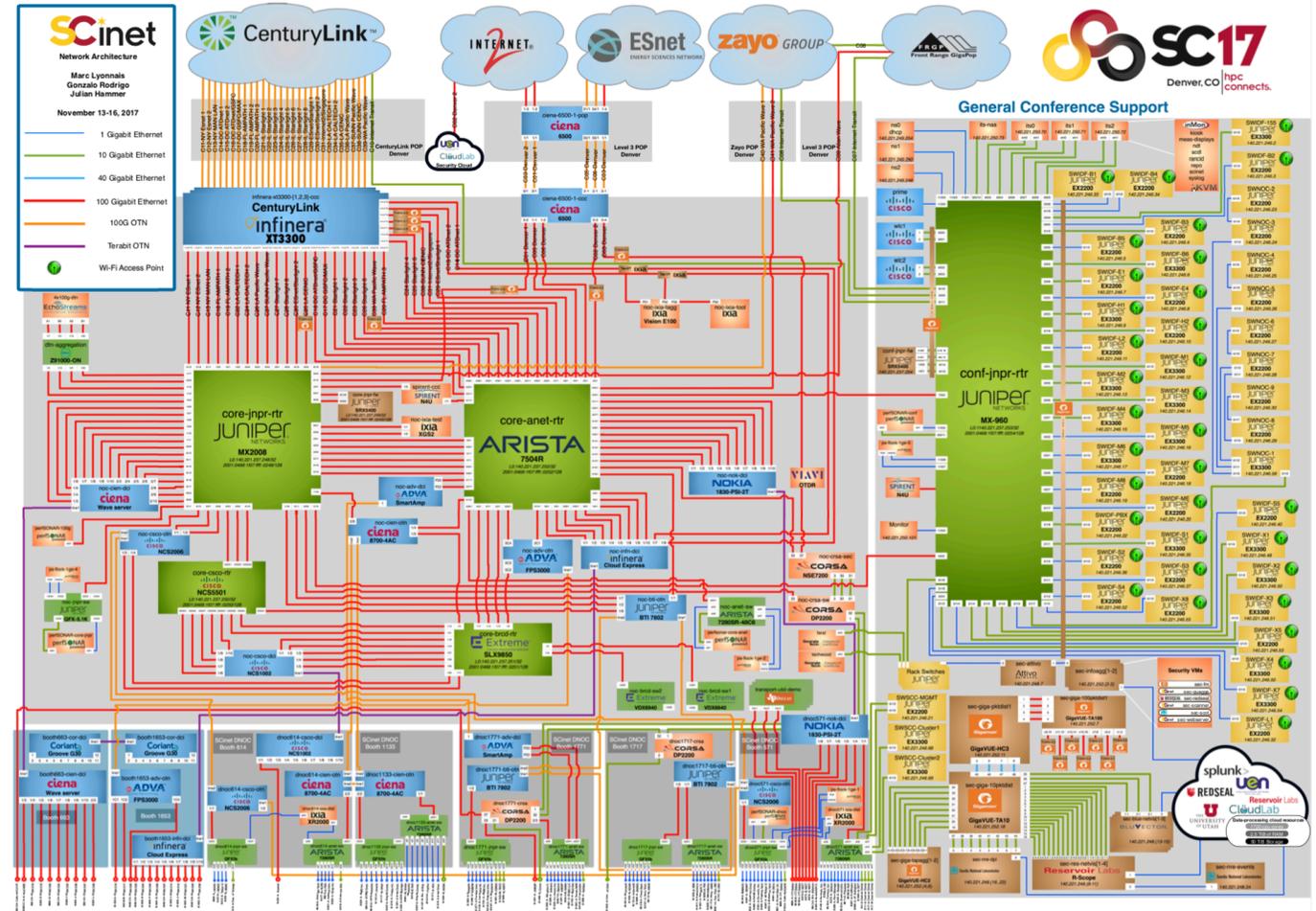
Peter Boers – peter.boers@surfnet.nl



The configuration challenge (SCINET)



- Multi-vendor network
- Time (constraints)
- Changeability
- Iterations
- Interoperability
- Scope/size
- Cutting edge hardware/software



How can Automation help @SCINET?



- Staging
 - Default configurations
 - NTP, DNS, Hostnames, Users, peering
- Setup
 - Provisioning*
- Show
 - Automated change rollout

* This years challenge!

How do/did we provision?

- Pre show
 - Connections are requested on booths through the CRS
 - Database gets populated with connections per booth
 - [Connection example](#)
- Setup/Show:
 - Then Layer 2 information needs to be filled out.
 - [Layer 2 info example](#)
 - Templating
 - Copy/Paste

Issues with this method

- Big iterations once or twice a day
- Consistency
- Headaches
- No overview
- Dependant on just a few people
- SSH copy/paste buffers 😊

Holy grail of configuration changes?



- Idempotency
- Two fase commit
- Rollback possibilities
- Small iterations often
- Anyone can do it
- Reduce human error
- Increase speed of rollouts
- ***Fully automated configuration pushes***

△ Super Computing Configuration Generator

Live Config

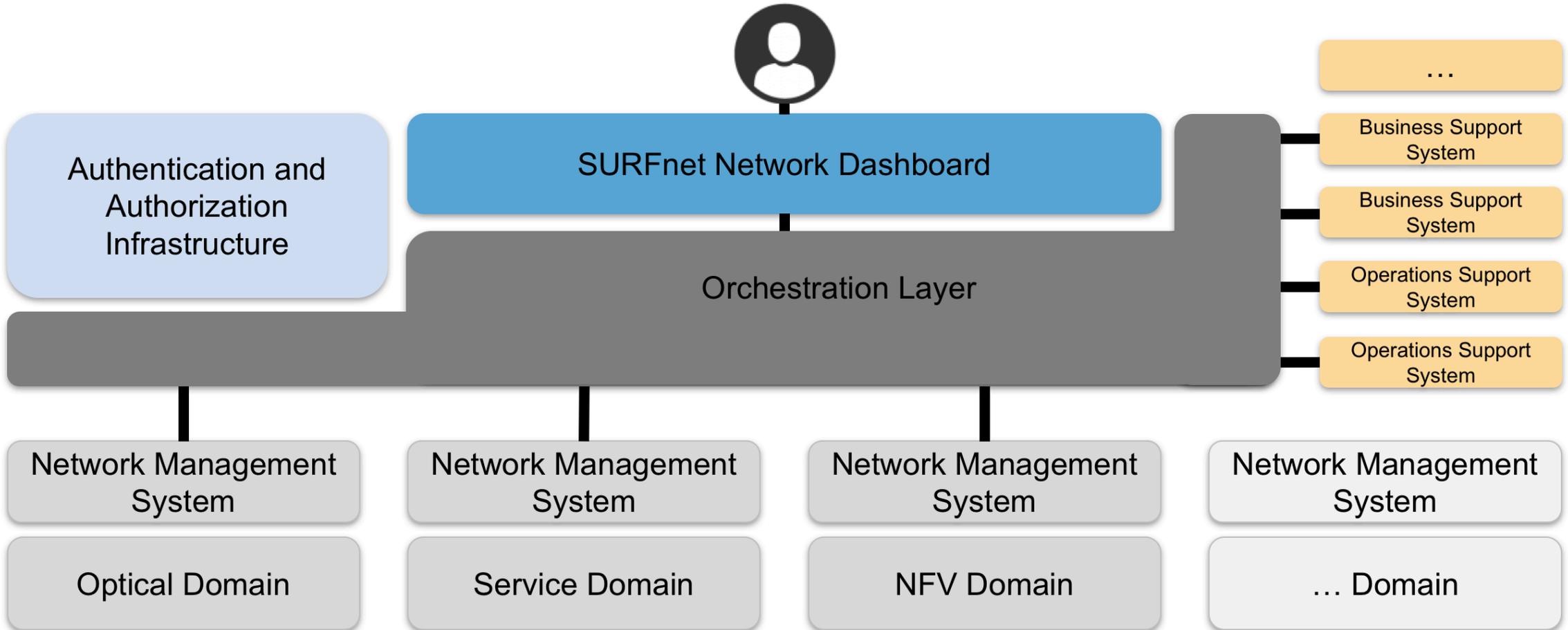
Generate

Configs

Rollback ALL

Rollback menu

- SURFnet is the Dutch NREN
- Provides connectivity to up to 1.5 million users each day
- Similar challenges to SCINET faces:
 - Base configurations
 - Provisioning services
- Differences:
 - Legacy
 - Larger scale
 - Service chaining



- Workflows
- Defining sources of truth
- Creating a single view on the truth
- Correct modelling of services and products
 - Products
 - Product blocks
 - Resources

- Data integrity
 - Clean up the data model
 - Keep it clean from that point onwards
- Keep it Simple
- Don't be afraid to go live 😊
- Take time to invest in the data model
- **Automation affects all processes within a business**

Demonstration SURFnet



NETWORK **AUTOMATION** WORKFLOWS anonymous Help | Logout **BETA**

Processes Validations Subscriptions

Assignee: ALL Status: ALL Search for processes... **NEW PROCESS +**

REFRESH AUTOMATICALLY EVERY 3 SECONDS?

ASSIGNEE	STEP	STATUS	CUSTOMER	PRODUCT	WORKFLOW	STARTED	LAST MODIFIED	
SYSTEM	Check lichtpad subscription exists in IMS (ims_service_id)	failed	Avans Hogeschool	Lichtpad (SSP ↔ MSP)	lichtpad_opzeggen	11/10/2017, 8:14:00 AM	11/10/2017, 8:18:42 AM	...
SYSTEM	Send confirmation mail to customer	failed	Avans Hogeschool	Lichtpad (MSP ↔ MSP)	statisch_lichtpad_aanvragen	11/9/2017, 9:49:33 AM	11/9/2017, 9:50:49 AM	...
CHANGES	Approve Request	suspended	Avans Hogeschool	Lichtpad (MSP ↔ MSP)	statisch_lichtpad_aanvragen	11/9/2017, 1:38:40 AM	11/9/2017, 1:38:51 AM	...
SYSTEM	Close JIRA ticket	failed	Hotelschool Den Haag	Lichtpad (MSP ↔ MSP)	lichtpad_opzeggen	11/8/2017, 10:09:44 AM	11/8/2017, 10:10:23 AM	...
SYSTEM	Done	completed	Vrije Universiteit	Lichtpad (MSP ↔ MSP)	statisch_lichtpad_aanvragen	11/8/2017, 9:44:21 AM	11/8/2017, 9:45:35 AM	...

Peter Boers

peter.boers@surfnet.nl

Booth 857

www.surf.nl/surfnet

