



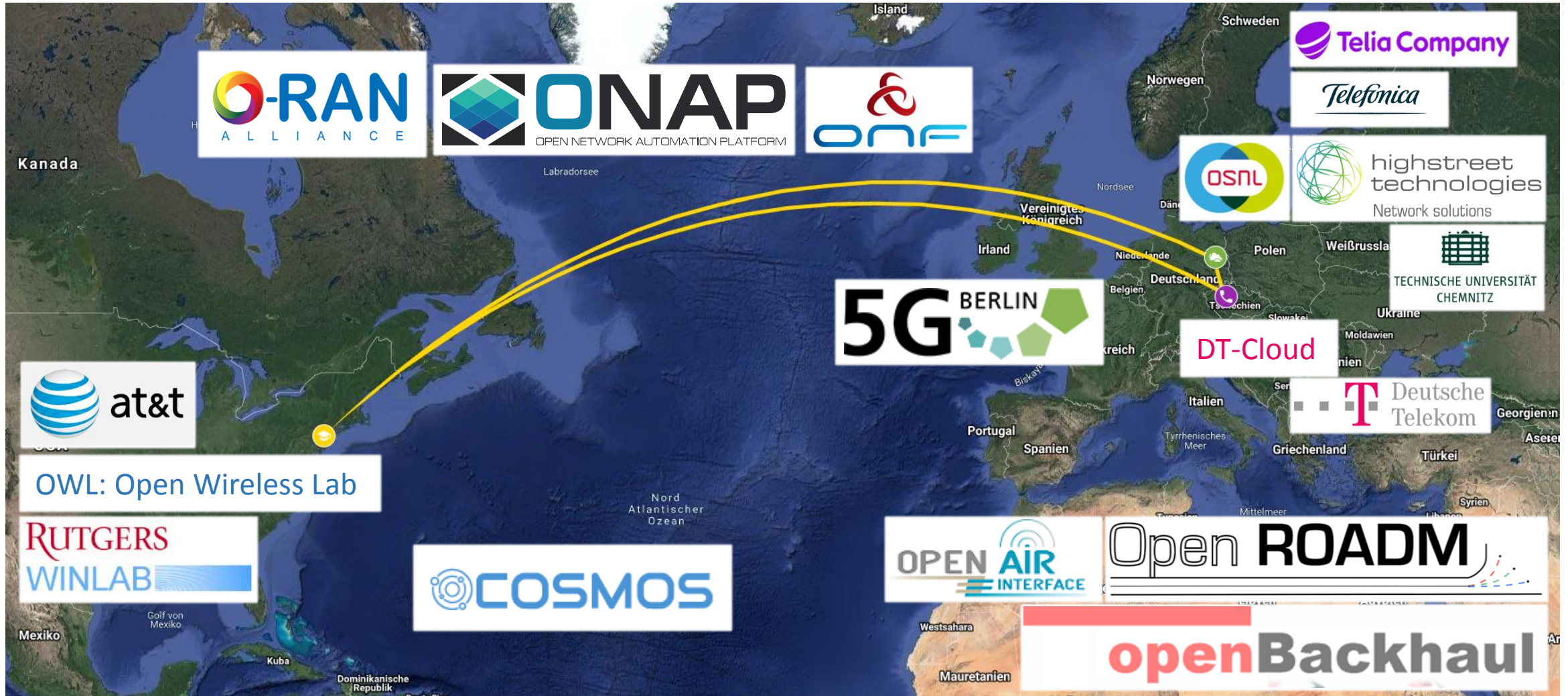
O-RAN-SC PoC #01

by Martin Skorupski and Alex Stancu

2019-06

updated: 2019-06-30: RU, DU to O-RU, O-DU, Page 13, 14 added

Open RAN ecosystem projects

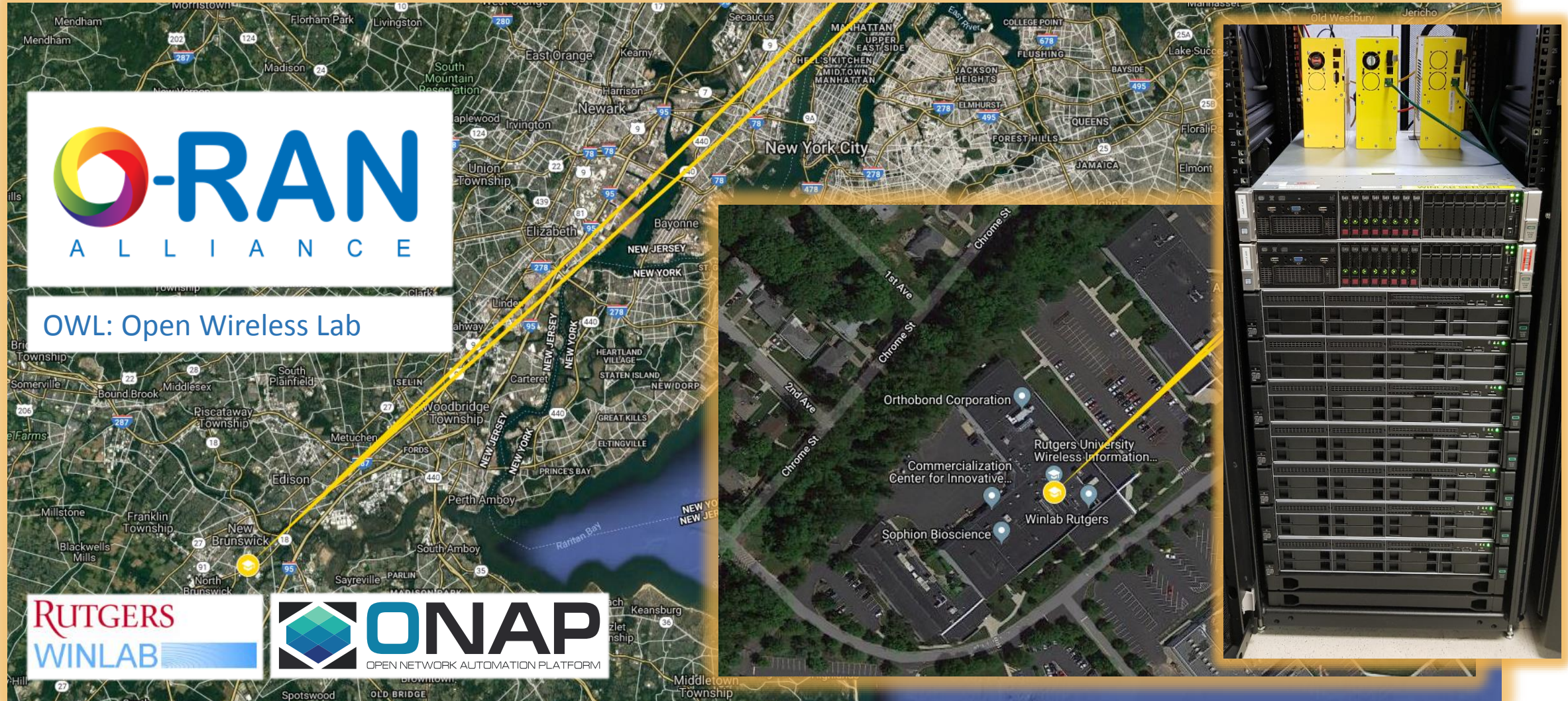


Handover to Shankar and Ivan



- Shankar: ONAP OOF-PCI preview
- Ivan: What are the objectives and projects of Winlab, Orbit-Lab, COSMOS?

Let's get focused



O-RAN ALLIANCE

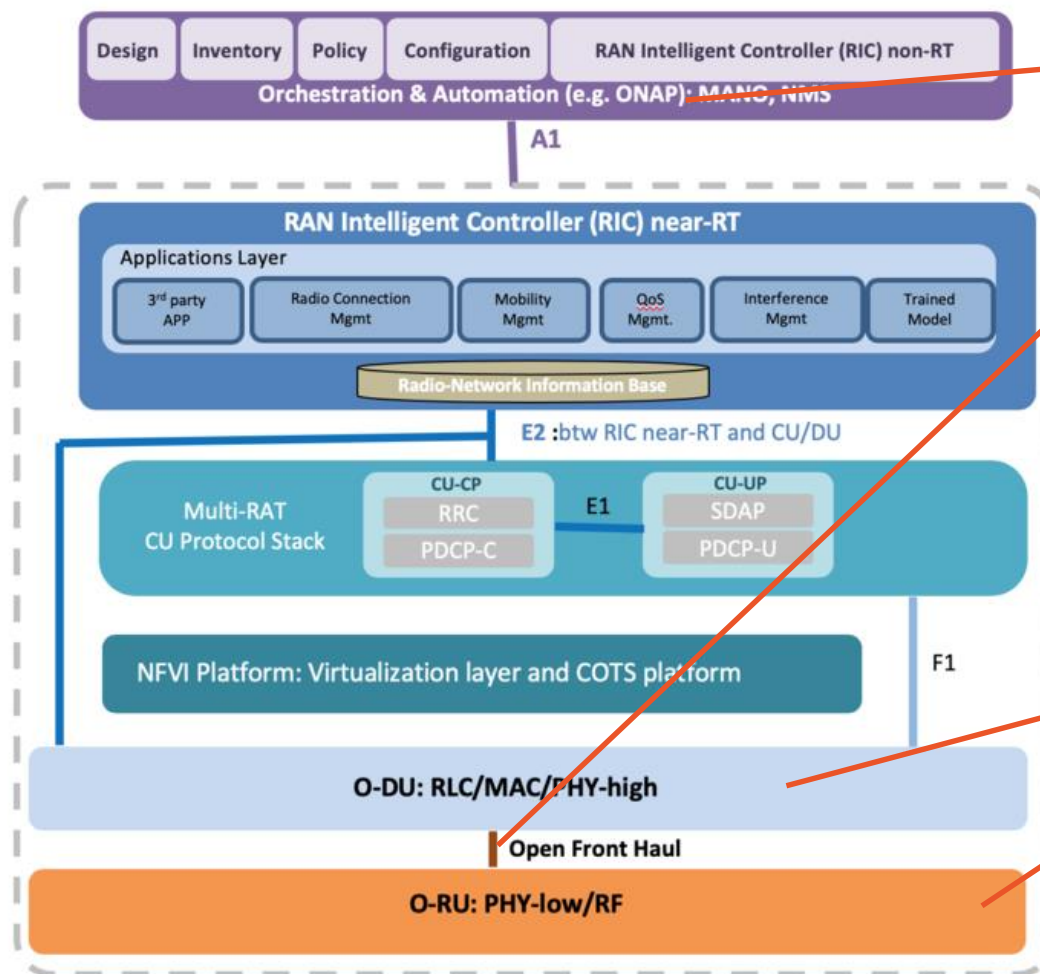
OWL: Open Wireless Lab

RUTGERS WINLAB

ONAP
OPEN NETWORK AUTOMATION PLATFORM

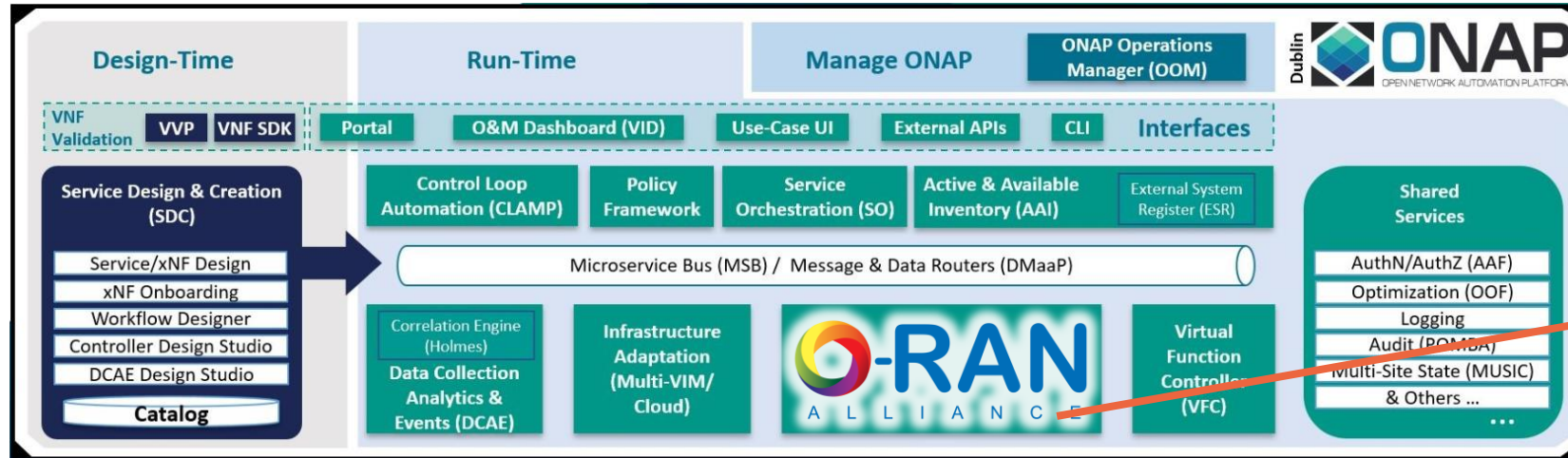
Orthobond Corporation
Commercialization Center for Innovative...
Rutgers University Wireless Information...
Winlab Rutgers
Sophion Bioscience

O-RAN Architecture

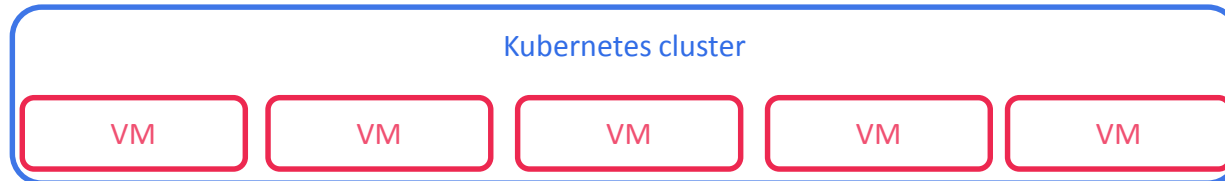
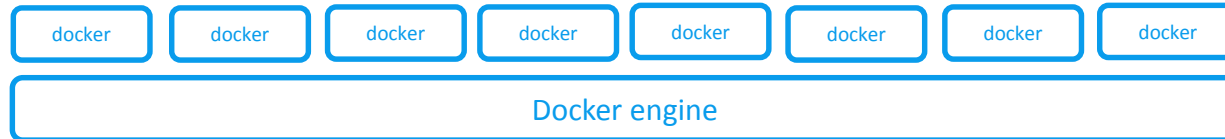


- Our interpretation of non-RT-RIC is ONAP CCSDK/SDNC based.
- O-RAN has released the first WG4 Open Fronthaul m-plane interface specification between RU and DU
- Of course there are currently no products available “talking” Open Fronthaul. In order to proof the interface specification it is necessary to simulate the O-RU and the O-DU.
- For the O-RU a NetOpeer2 based NetConf server is used, to simulate the O-DU an ODL cluster based on ONAP CCSDK/SDNC is used.

Non-RT RIC as ONAP component



O-RAN
Non-real-time
Radio Access Network (RAN)
Intelligent Controller



Standard hardware



[Instructions and documentation of the deployment.](#)

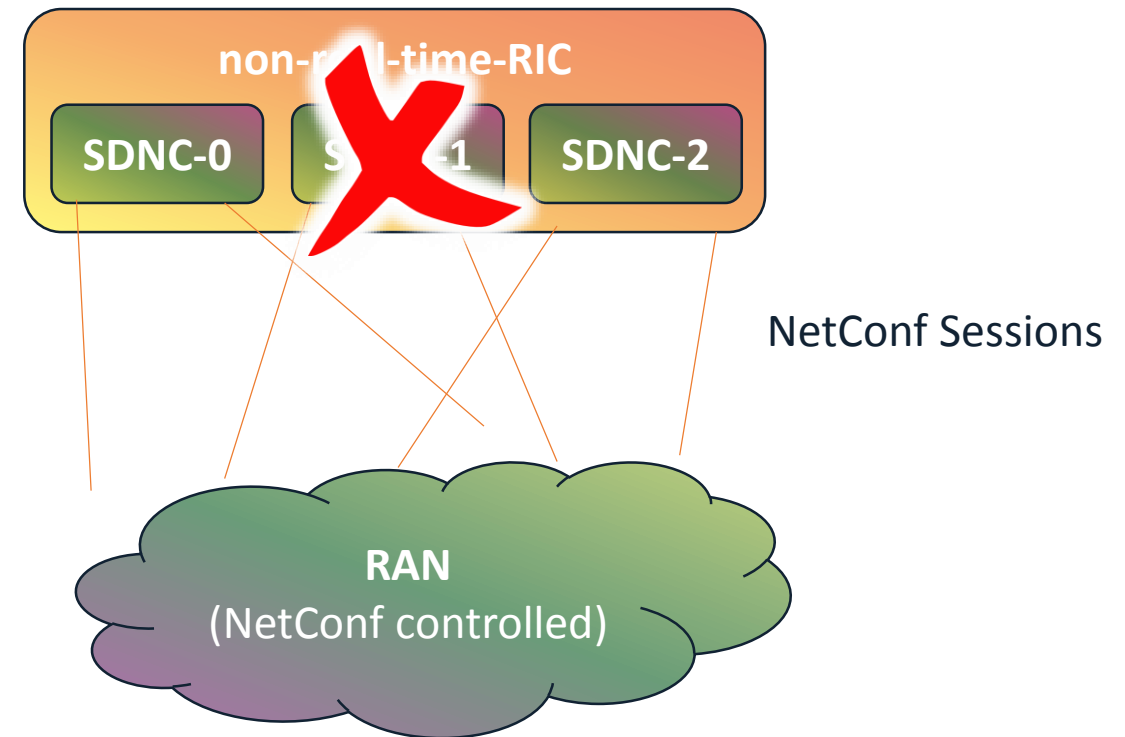
Handover to Alex



- All about NetConf Server, TLS, O-RAN Fronthaul YANG

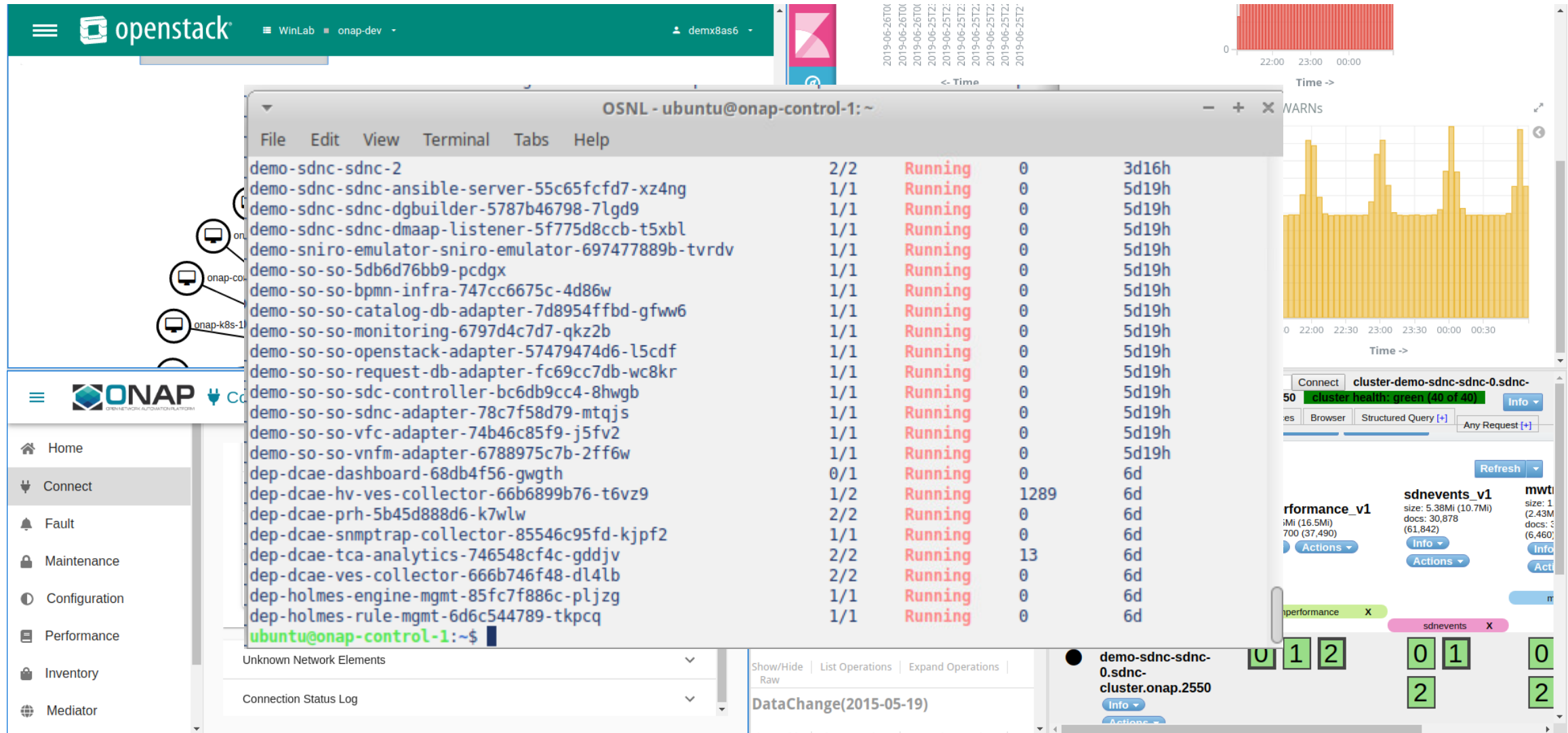
Failover of NetConf Sessions

- ODL 3 node cluster (non-RT-RIC) host several NetConf sessions
- Check for the ODL node with the most NetConf sessions
- Kill that node
- Check for when the all NetConf sessions are established again (~2min) -> time will be used by the next speaker ;)



- Kill the node of the ODL cluster with the most NetConf Sessions.

Screenshots

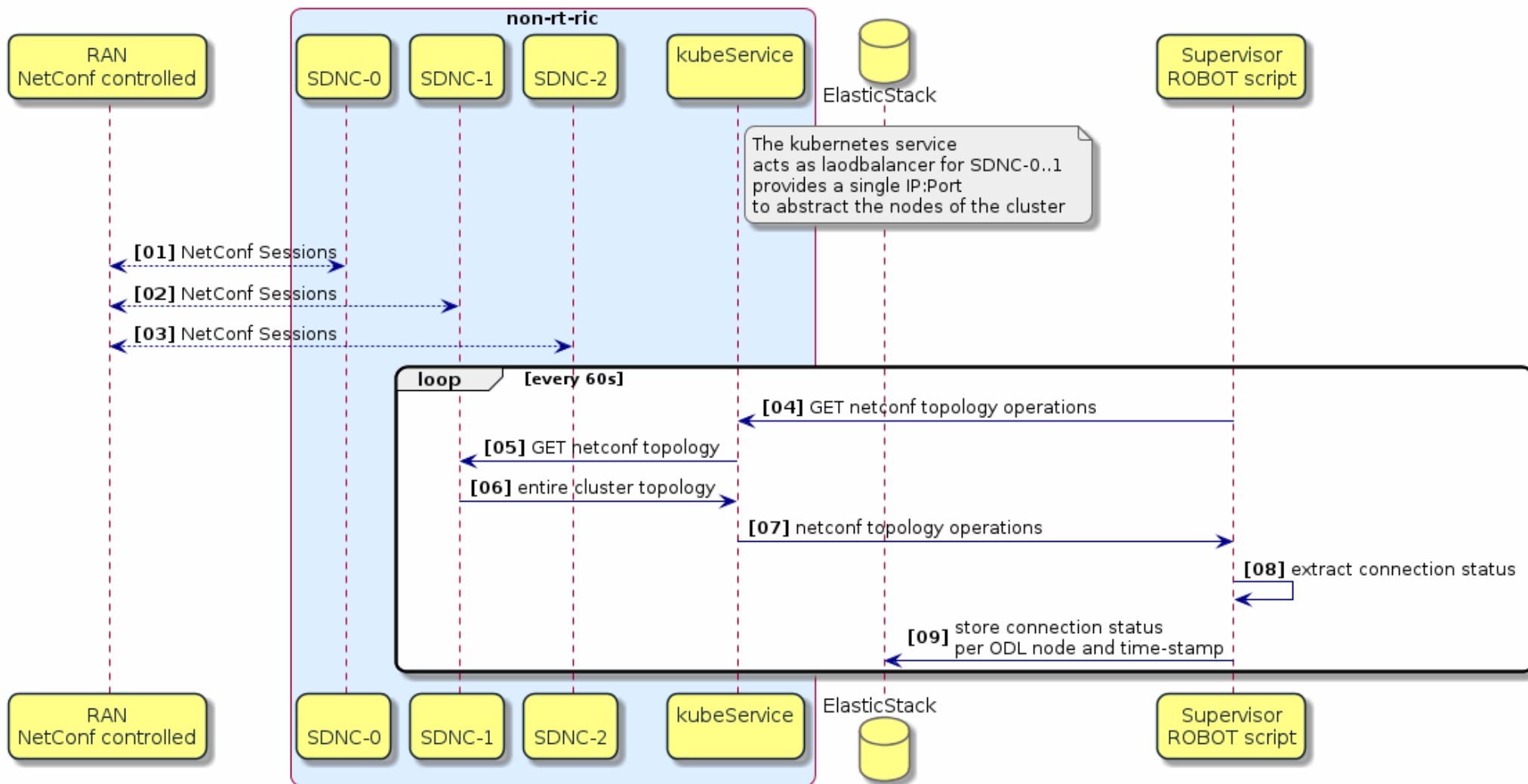


The screenshot displays the ONAP WinLab interface. A terminal window in the foreground shows a list of services and their status:

Service Name	CPUs	Mem	Status	CPUs	Mem	Age
demo-sdnc-sdnc-2	2/2	Running	0	3d16h		
demo-sdnc-sdnc-ansible-server-55c65fcfd7-xz4ng	1/1	Running	0	5d19h		
demo-sdnc-sdnc-dgbuilder-5787b46798-7l9d9	1/1	Running	0	5d19h		
demo-sdnc-sdnc-dmaap-listener-5f775d8ccb-t5xbl	1/1	Running	0	5d19h		
demo-sniro-emulator-sniro-emulator-697477889b-tvrdrv	1/1	Running	0	5d19h		
demo-so-so-5db6d76bb9-pcdgx	1/1	Running	0	5d19h		
demo-so-so-bpmn-infra-747cc6675c-4d86w	1/1	Running	0	5d19h		
demo-so-so-catalog-db-adapter-7d8954ffbd-gfw6	1/1	Running	0	5d19h		
demo-so-so-monitoring-6797d4c7d7-qkz2b	1/1	Running	0	5d19h		
demo-so-so-openstack-adapter-57479474d6-l5cdf	1/1	Running	0	5d19h		
demo-so-so-request-db-adapter-fc69cc7db-wc8kr	1/1	Running	0	5d19h		
demo-so-so-sdc-controller-bc6db9cc4-8hwgb	1/1	Running	0	5d19h		
demo-so-so-sdnc-adapter-78c7f58d79-mtqjs	1/1	Running	0	5d19h		
demo-so-so-vfc-adapter-74b46c85f9-j5fv2	1/1	Running	0	5d19h		
demo-so-so-vnfm-adapter-6788975c7b-2ff6w	1/1	Running	0	5d19h		
dep-dcae-dashboard-68db4f56-gwgth	0/1	Running	0	6d		
dep-dcae-hv-ves-collector-66b6899b76-t6vz9	1/2	Running	1289	6d		
dep-dcae-prh-5b45d888d6-k7wlw	2/2	Running	0	6d		
dep-dcae-snmpttrap-collector-85546c95fd-kjpf2	1/1	Running	0	6d		
dep-dcae-tca-analytics-746548cf4c-gddjv	2/2	Running	13	6d		
dep-dcae-ves-collector-666b746f48-dl4lb	2/2	Running	0	6d		
dep-holmes-engine-mgmt-85fc7f886c-pljzq	1/1	Running	0	6d		
dep-holmes-rule-mgmt-6d6c544789-tkpcq	1/1	Running	0	6d		

The dashboard on the right shows a 'cluster-demo-sdnc-sdnc-0.sdnc-' with a health status of 'green (40 of 40)'. It includes performance charts for 'performance_v1' and 'sdnevents_v1', and a summary table for 'demo-sdnc-sdnc-0.sdnc-cluster.onap.2550' with counts for various components.

Supervision NetConf Sessions



Result

**Result during the demo:
Most of the sessions remained on the just killed node.**

Explanation by Jeff (many thanks!!!): ODL recovery was so fast that most of the session could be reestablish on the just killed node.

See time range in the upper right corner for detailed analyses of the ElasticStack logs on Kubernetes Pod: "demo-onap-log"

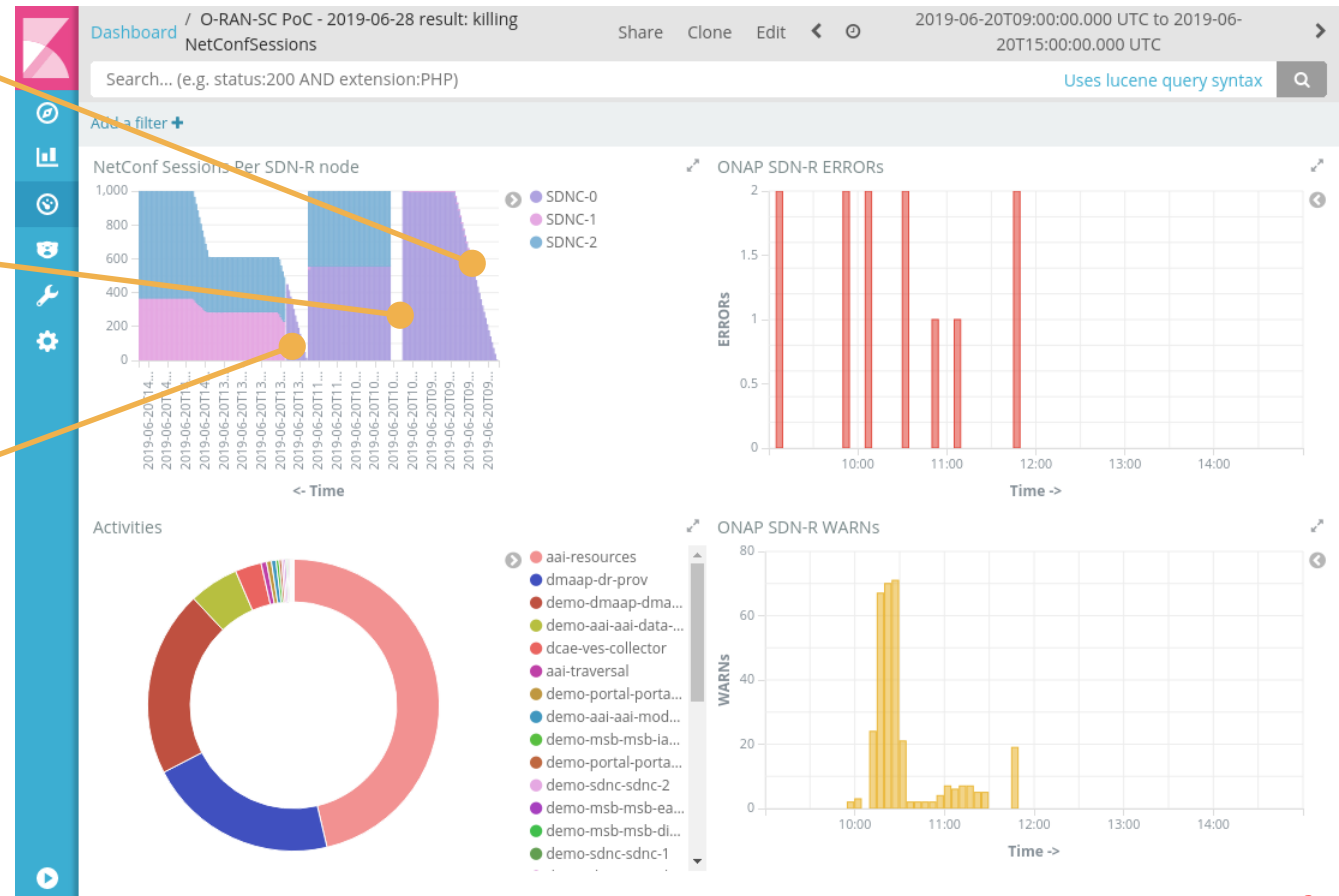
**Experiments before demo:
All NetConf sessions moved to another ODL node.**

The entire recovery took of all 1000 NetConf sessions about 120s

Page added after demo.

Adding NetConf Session logs

- Adding 1000 NetConf sessions the first time
- Kill the node with most NetConf sessions the first time
- Adding 1000 NetConf sessions the second time and killing the node with the most NetConf sessions during this procedure



Page added after demo.

Community



Andrade, Carlos	Grayson, Mark (cisco.com)	LI, JULIA (att.com)	Seskar, Ivan (winlab.rutgers.edu)
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Fischer, Matthias (highstreet-technologies.com)	Kwan, Dick (labs.att.com)	Scaggs, Kevin (att.com)	VARMA, VIKAS (att.com)
GOPALAKRISHNAN, VIJAY (research.att.com)	Lantz, Rebecca (ericsson.com)	Seetharaman, Swaminathan (wipro.com)	
	Lattoch, Andreas (telefonica.com)		

Page added after demo.

2019-06-28 14:00 UTC (1:55)

Meeting Recording:

<https://zoom.us/recording/share/hC7AlxmRRnklq-QGETssx0Vuqm7a8AbssCwu8q4ZI5-wlumekTziMw>

Page added after demo.

Thank you very much!



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