AutoGOLE/SENSE
Working Group

GNA-G Community VCs – 7-8 December 2020
Gerben van Malenstein (chair)
“The global advancement of science by realizing a multiresource infrastructure through international collaboration.”
MEICAN – 2017
Vision on Automation & Orchestration: multidomain interoperability, R&E + Commercial + Scientific Facility

Commercial domain

SURF

Another R&E domain

Standardisation needed!

Scientific Facility

2019
AutoGOLE/SENSE =

Intercontinental Network Provisioning (AutoGOLE, SENSE)
- Dynamic networking with Network Service Interface (NSI)
- Layer 2 (dedicated capacity) / VLAN setup
- Multipoint network service capabilities
- MEICAN graphical frontend

Data Transfer Nodes (SENSE)
- Layer 2 addressing
- Layer 3 addressing
- Configuration of user on the nodes
The Persistent Multiresource Infrastructure

Persistent Multiresource Infrastructure 2020 update 4

NEW!
Please have a look at our screen capture showing a live NSI-based connection and configuration of Data Transfer Nodes through SENSE:

https://www.youtube.com/watch?v=GvKLQVQ2dPs
GNA-G AutoGOLE/SENSE WG deliverables

Implementing SENSE

- End-to-End Testing Complete - Q4 2020
- SENSE Services Integrated with AutoGOLE Infrastructure - Q4 2020

Dynamic ANA

- Design and Implementation Options Defined - Q4 2020
- Implementation Option Selection and Schedule - Q2 2021

Persistent Multi-Resource Infrastructure

- Design of monitoring system complete - Q1 2021
- Deployment monitoring system complete - Q2 2021
- Development of automated regular testing system - Q2 2021
- Deployment of automated regular testing system - Q3 2021
- Domain Science Application Workflow Agent Integration and Testing - Q3 2020 and ongoing
So far ...

- we successfully setup an intercontinental network that talks NSI: the AutoGOLE

- we conducted various experiments on dynamic circuits with LHC sites

- we introduced beyond-the-network resources on a global scale

- we have proven the true multidomain interoperability between our networks, exchanges and user resources/data transfer nodes: combining the network with compute and storage
Vision

- The Persistent Multiresource Infrastructure is just at the beginning of its era

- it will be extended and serve many scientific disciplines

- via reliable operations and further expansion of the system
  - continuous monitoring and security
  - amount of sites and data transfer nodes
  - amount of scientific and network users
  - availability of system yellow pages
  - expanding to new/other resource types
Architectural draft for a multiONE instance by AutoGOLE

Control plane not drawn
Outlook, Ideas & Next Steps

- The Persistent Multiresource Infrastructure needs improvements to guarantee reliable operations: monitoring

- Scaling the Persistent Multiresource Infrastructure to scientific disciplines: multiONE, from individual researcher, research groups to global VOs such as LHC, SKA, <new ideas here>, commercial cloud service connections, ... e.g. via GNA-G Data Intensive Science (DIS) WG, GRP, FABRIC, ...

- Providing Common interface to scientific programs e.g. RUCIO/FTS, BigData Express, K8s...

- Adopting new/other resource types: 400G, 1T, supporting provisioning of VRF and even scientific instruments and open software for switches and routers
More information

- SC’20 AutoGOLE/SENSE Movie
  https://www.youtube.com/watch?v=GvKLQVQ2dPs

- AutoGOLE/SENSE Working Group Homepage
  https://www.gna-g.net/join-working-group/autogole-sense/

- AutoGOLE/SENSE Working Group Mailing List
  autogole@lists.gna-g.net

- Join our bi-weekly calls
  Tuesday 15:00 – 16:00 CE(S)T
Thank you!

Gerben van Malenstein

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