# Scalability, Security, Stability and Performance (S3P)

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# Agenda

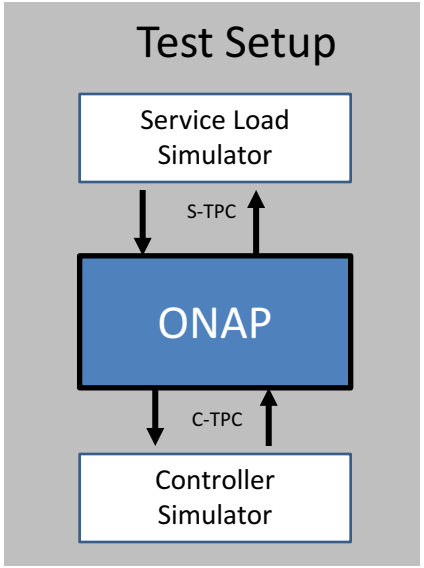
- Overview / Dimensions
- Scalability, Security, Stability and Performance (S3P)
- Mercury Plan (In progress)

# S3P

- Metrics
- Guideline / Best Practice
  - Architecture
  - Deployment
- Infrastructure: testing setup, simulator, etc.
- Tools:
- Report
- Communication

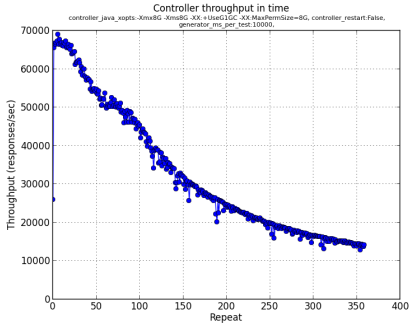
# Scalability

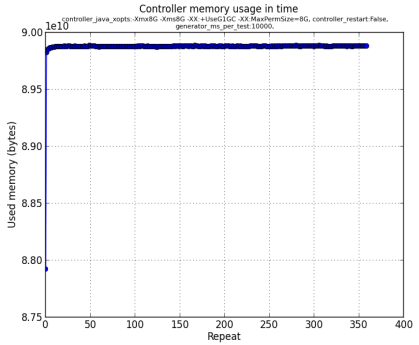
- **“Metrics & Tools” needed for measuring system scalability**
  - Number of transaction events:
    - **Metric:** Number of Service Transactions Per Second (S-TPC)
    - **Metric:** Number of Configuration Transactions Per Second (C-TPS)
    - **Tool:** Service Load Simulator: load generator for “service requests”
    - **Tool:** Controller Simulator
  - Size of infrastructure:
    - **Metric:** Number of Managed Resource Controllers
    - **Metric:** Number of Managed Objects (NEs & NFVs and their changes)
    - **Tool:** Controller Simulator: modeling SDN/NFV Controllers
  - Number of users:
    - **Metric:** Number of account activities per unit of time (CRUD operations on users, accounts, policies, and settings)
    - **Tool:** Load generator for “accounts activities”
- **Expected outcome:**
  - Define metrics and guidelines for proper sizing and deployment of the system
  - Provide input for architecture improvement (clustering, replication, etc)
    - Cluster: Scale in / out without disruption; Scale in / out individual micro service
    - Offline installation: ONAP Installation without internet access.



# Stability

- Longevity Tests
  - Bring an instance up
  - Repeatedly run requests against it for a long time
  - Check for bugs, performance degradation, memory leaks, etc.
- Resilience Tests
  - Verify graceful crash recovery
  - Abort a microservice and test its restart
  - May need different strategies for each microservice depending on persistence requirements




- ONAP is sensitive to MSB, but all micro-services can be tested this way to validate their stability
- ONAP can run throughput and memory trends against time for critical components

# Security

- Integrate security scan tools, such as OpenSCAP, in CI / CD on each docker image.
- Vulnerabilities
  - Well-defined process for reacting to vulnerability discovery or reports
  - Plan or promise to fixed report vulnerabilities in a certain amount of time
  - Security response team to reacting and responding to security vulnerabilities
  - Special mailing list for security related issues:
- Deployment / Architecture decision
  - Explicit design/discussion on the security zones that the various microservices should be located in
    - Define zone by micro services security sensitive level
    - Define Access Control Policy between Zones
  - Whether authentication should be required between microservices

# Performance

- Identify the right metrics to measure
  - How long does it take to perform a particular operation? (*e.g. duration of operation at 50%, 95% and 99% distribution*)
    - Speed of service provisioning
    - Capability of concurrent provisioning of multiple services
  - How many particular operations can be processed in a second?
  - How many concurrent operations can be run in parallel without degradation?
  - What is the impact of having many networks and links? How the performance degrades? (*e.g. will ONAP be slower when there are thousands of network elements and how slower will it be*)
  - Number of VNFs instantiated per second?
- Select or create the performance testing tool to test and measure these metrics
  - E.g. CPerf for ODL
- Measure results over time/releases
  - Improve the system
  - Marketing purposes

# BACKUP

# S3P in Mercury Release (in progress, haven't communicate with PTLs yet)

| | | |
|---|---|---|
| Security | Integrate security scan tools, such as OpenSCAP, in CI / CD on each docker image. | Stretch goal |
| | Special mailing list for security related issues: | Yes |
| Scalability | Define metrics and guidelines for proper sizing and deployment of the system | Yes |
| | Number of transaction events | Stretch goal |
| Stability | Longevity Tests:<br>Open-O can run throughput and memory trends against time GS-O, NFV-O, SDN-O | Yes |
| | Longevity Tests:<br>Open-O can run throughput and memory trends against time MSB | Yes |
| | Resilience Tests: Abort a microservice and test its restart<br>Verify graceful crash recovery | MSB (Yes) |
| Performance | Select or create the performance testing tool to test and measure these metrics | Stretch goal |