vnfpool problem statement

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about

- we’re trying to develop a problem statement that
  - identifies a problem that fits within appropriate IETF scope
  - isolates what is unique about this problem – that it doesn’t substantially overlap other work
  - is scoped correctly – it doesn’t try to boil the ocean on one hand, or is too narrow to be useful on the other
  - is something that can be solved by the group of people interested in working on it
- This is a discussion, not a presentation – feel free to raise questions and issues at any time
  - but we do need to stay focused on the task of developing a strong problem statement

quick background

- *Network Functions Virtualization (NFV)* originally came out of the European Telecommunications Standards Institute
- Describes an architecture for decomposing monolithic network devices into individual *Virtualized Network Functions (VNFs).*
- Network services (firewalls, tunnel endpoints, SLA enforcement) are implemented on top of virtualization technologies (e.g. hypervisors) and chained together (see http://portal.etsi.org/NFV/NFV_White_Paper.pdf)
- New, related work in the IETF on Service Function Chaining (sfc: http://datatracker.ietf.org/wg/sfc/charter/)

The core problem

- Sometimes services go down
- On a monolithic platform
  - Often the entire device will be up or down
  - When individual services crash the management backplane detects the outage
  - All services on the device may fail over to a new instance

New aspects of the core problem

With virtualized network functions (VNF)

- Individual network functions may fail
- there is currently no mechanism to provide detection and redundancy for individual members of a VNF chain

New problems

- VNF introduces new problems in reliable service provision that are not addressed in existing mechanisms
- How does a VNF manager detect and respond to a an element failure?
- How do neighbors respond to a failure?
- How is service state transferred?

one-sentence summary

vnfpool will address the problem of reliability and resiliency of individual VNFs

Problems vnfpool would address

- vnf transition advertisement/signaling
- identification and evaluation of state sharing mechanisms
- identification of transport requirements and evaluation of existing mechanisms against those requirements (gap analysis)
- security evaluation and threat analysis