

ANIMA WG

(Autonomic Networking Integrated
Model and Approach)
Rechartering Consideration

By co-authors

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History of ANIMA WG

- Primary presentations in 2013
- Dedicated Autonomic Sessions in IETF 88, 89 & 90
 - RFC7575, Autonomic Networking: Definitions and Design Goals
 - RFC7576, General Gap Analysis for Autonomic Networking
- UCAN ([Use Cases for Autonomic Networking](#)) BoF (non-WG forming) in IETF 90 (July, 2014)
- The ANIMA (Autonomic Networking Integrated Model and Approach) WG formed in November 2014 & have first WG meeting in IETF 91
 - Formal WG charter is the 24th version of proposed charter text

Current Charter of ANIMA WG

- One of the major concern when forming the WG is “NOT boil the ocean”
 - Additional documents concerning other autonomic infrastructure components, policy intent, use cases or autonomic service agents are strongly encouraged, as individual submissions, or as submissions to the IRTF Network Management Research Group. Additional work items may only be added with approval from the responsible Area Director or by re-chartering.
- Enable to the **progressive** introduction of autonomic functions into operational networks, as well as **reusable** autonomic network infrastructure
- The initial scope of this WG's effort is much more modest: the specification of a minimum set of specific reusable infrastructure components to support autonomic interactions between devices
- The WG focuses on **professionally-managed** networks

Autonomic Network in ANIMA WG

- is defined as:
 - Autonomic networking refers to the self-managing characteristics (configuration, protection, healing, and optimization) of **distributed network elements, adapting to unpredictable changes** while hiding intrinsic complexity from operators and users
 - Autonomic Networking, which often involves **closed-loop control**, is applicable to the complete network (functions) lifecycle (e.g. installation, commissioning, operating, etc)
 - An autonomic function that works in a distributed way across various network elements is a candidate for protocol design (mode suggested, but not mandatory)
- Co-existence with traditional modes
 - Autonomic functions should allow central guidance and reporting
 - Co-existence with non-autonomic methods of management

Autonomic Network Infrastructure Components

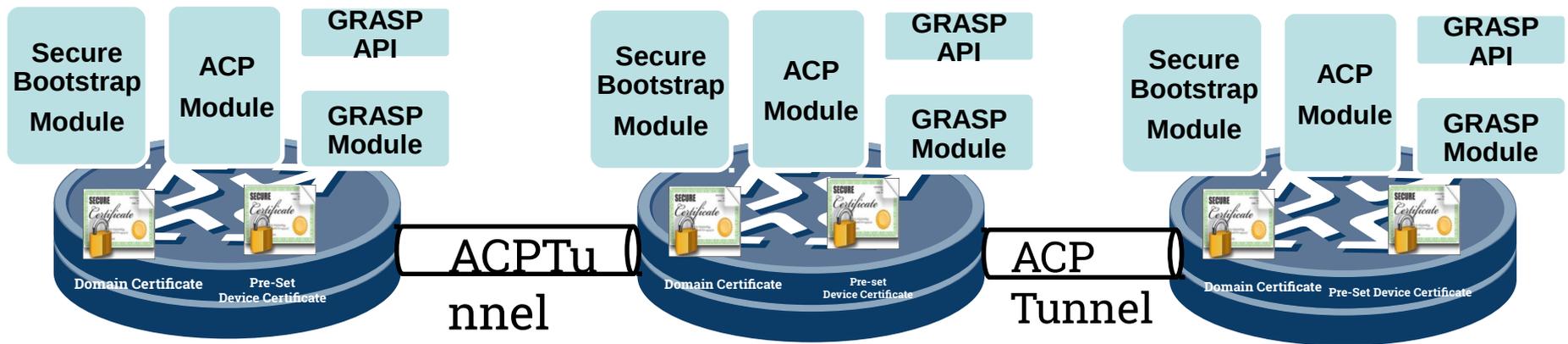
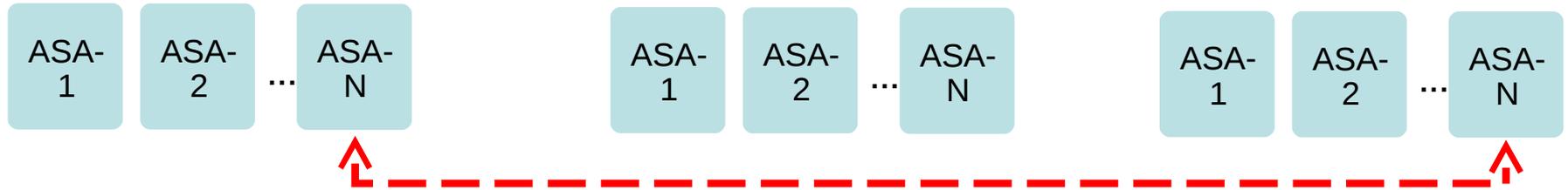
AN components should be capable of providing the following services to those distributed functions:

- A common way to identify nodes
- A common security model
- A discovery mechanism
- A negotiation mechanism to enable closed-loop interaction
- A secure and logically separated communications channel
- A consistent autonomic management model

Anima ANI (Autonomic Network Infrastructure)

ASA (*Autonomic Service Agent*) :

- Could be considered as “Apps” within network devices.
- ASAs interact with each other to fulfill specific management tasks such as parameter configuration, service delivery etc



ANI, including 3 “re-useable components” :

- **Bootstrapping Key Infrastructure** : access authentication of new devices; assigning Autonomic Domain certs to new devices
- **ACP (Autonomic Control Plane)** : hop-by-hop encrypt IP tunnels between nodes in an Autonomic Domain, to form a stable VPN dedicated for management channel.
- **GRASP (GeneRIC Autonomic Signaling Protocol)** : 1) signaling protocol for interaction between ASAs to fulfill specific management tasks; running in ACP to gain security protection.
2) signaling protocol during Bootstrap discovery and ANI formation.

WG Milestone Status

- WG Documents (in procedure for publication)
 - [draft-ietf-anima-gdn-protocol_15](#)
Passed IESG Evaluation, July, 2017
 - [draft-ietf-anima-voucher_04](#)
Passed WGLC, June, 2017
In shepherd write-up, waiting for IPR disclosure confirmation from coauthors & WGLC confirmation from NETCONF & 6TISCH; plan to send to IESG by IETF99 week
 - [draft-ietf-anima-prefix-management_04](#)
Passed WGLC, July 2017
In shepherd write-up
 - [draft-ietf-anima-stable-connectivity_03](#)
In WGLC, end by July 28 2017

WG Milestone Status (2)

- WG Documents still with WG
 - [draft-ietf-bootstrapping-keyinfra_07](#)
Planning to have WGLC in Aug 2017
Shepherd has done thorough review
 - [draft-ietf-anima-autonomic-control-plane_07](#)
Planning to have WGLC in Aug/Sep 2017
 - [draft-ietf-anima-reference-model_04](#)
Planning to have WGLC in Sep/Oct 2017

Process Today

- Relax!
 - No Discussion yet with AD about recharter (WG chairs & AD later today)
 - Just Review/brainstorm list of possible work items.
 - Co-chairs: will put onto wiki after '99 so we can better structure them.
- Criteria for vetting / prioritizing work items:
 - Active contributors to the work
 - Does it solve customer problems ?
 - Will the resulting document be necessary and sufficient for interoperable implementations ?
 - Does it leverage charter round 1 work ?
 - Can it proliferate charter 1 round into more deployments ?
 - Is it necessary / helpful to improve deployment of charter round 1 work ?
 - Its not duplicating work from other WG, better done in other WG, not contribute to global warming (boiling the ocean).

Potential Work Categories 1

Leveraging the Current ANI

- ASA guidance (draft-carpenter-anima-asa-guidelines)
- GRASP API (draft-liu-anima-grasp-api)
- ANI deployment (multiple, draft-rfmesh-anima-iot-management)
- Information Distribution over GRASP (draft-liu-anima-grasp-distribution)
- Open source reference implementation for ANI

Potential Work Categories 2

Beyond Current ANI

- Intent (multiple, draft-du-anima-an-intent)
- ANI extension
 - ✓ Topology discovery (draft-nmdt-anima-management-bootstrap, draft-behringer-anima-autonomic-addressing)
 - ✓ AN domain management
 - ✓ AN over virtual devices
 - ✓ AN reporting
 - ✓ Controller integration & Data models

Potential Work Categories 3

ASA relevent

- ASA Coordination/conflict resolution (draft-ciavaglia-anima-coordination, draft-ciavaglia-anima-knowledge)
- Generic ASA specification
- Specific ASAs (based on specific scenarios, Criteria?)
- Network Slicing in AN Reference model & ASA (draft-galis-anima-autonomic-slice-networking)
- ASA for Load balance based on device negotiation
- Auto Software (Update) Management
- Towards PubSub and Storage integration
- Lifetime management of ASA (draft-peloso-anima-autonomic-function)

Other Individual Drafts

- draft-richardson-anima-6join-discovery
- draft-richardson-anima-state-for-joinrouter
- draft-strassner-anima-control-loops
- draft-richardson-anima-idevid-cert
- draft-faq-anima-cpe-yang-profile
- draft-mtoy-anima-self-faultmang-framework

Next

- After discuss with AD & permission from AD to re-charter
 - Start discuss on list about work items (from our list or new)
 - Propose your preferred work items, describe how they match criteria.
 - Co-Chairs: Work out proposed enhanced charter
- Next IETF thereafter
 - Recharter discussion in meeting

Calling proposals & contributors

Thanks!