

An Autonomic Control Plane

draft-behringer-anima-autonomic-control-plane-03.txt

93rd IETF, 20 July 2015

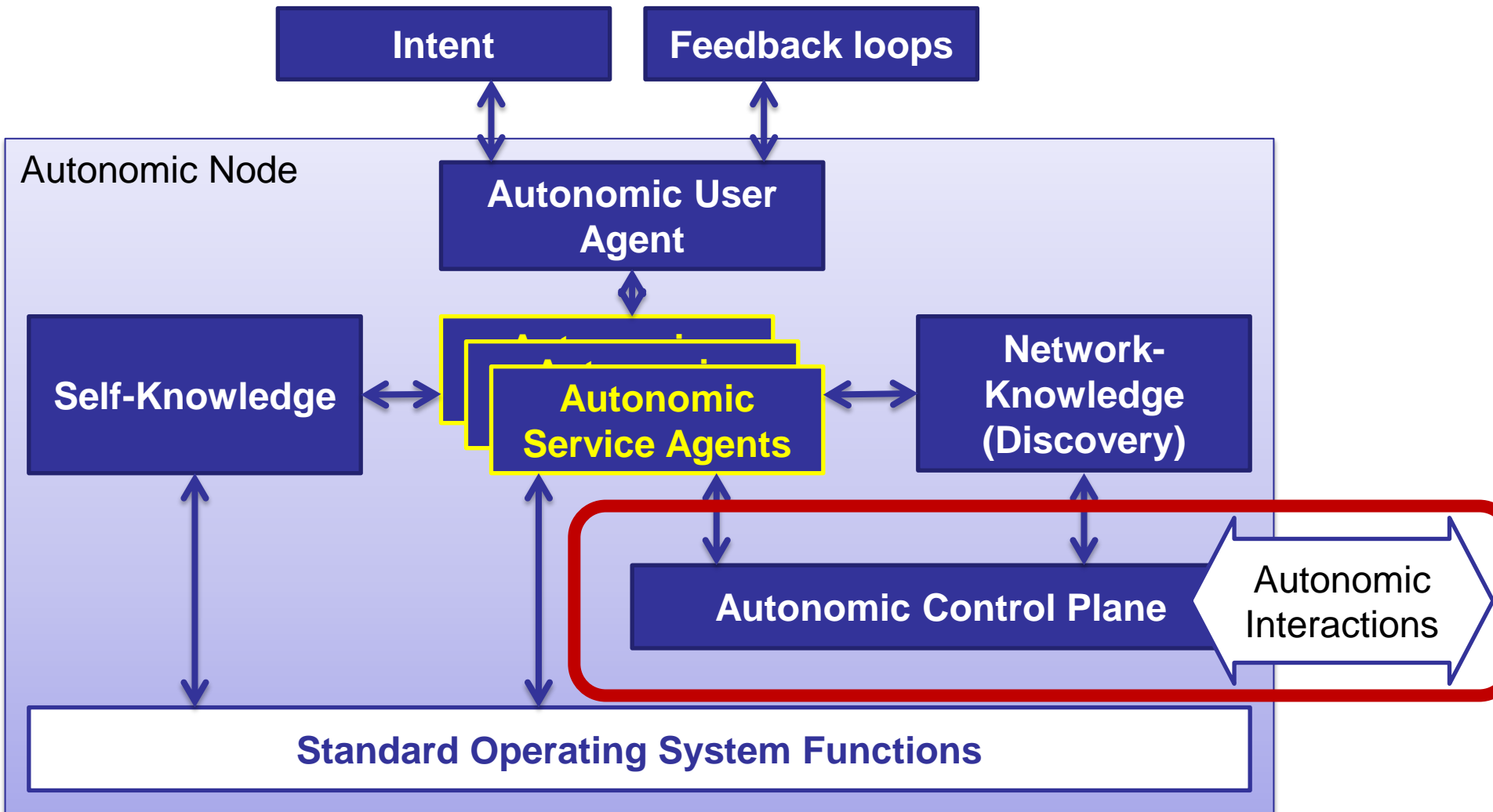
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Reference Model of an Autonomic Node



The Autonomic Control Plane

- **Definition:** The conjunction of protocols and interactions between autonomic service agents on nodes and registrars.
 - Includes: Discovery, negotiation, messaging, etc.
 - **Four options (from RFC7575):**
 - Out of band: On a separate DCN
 - In a configured overlay network (VPN)
 - Inband: Like today's control plane protocols
 - In a self-managing overlay network (VPN)
- } Main focus

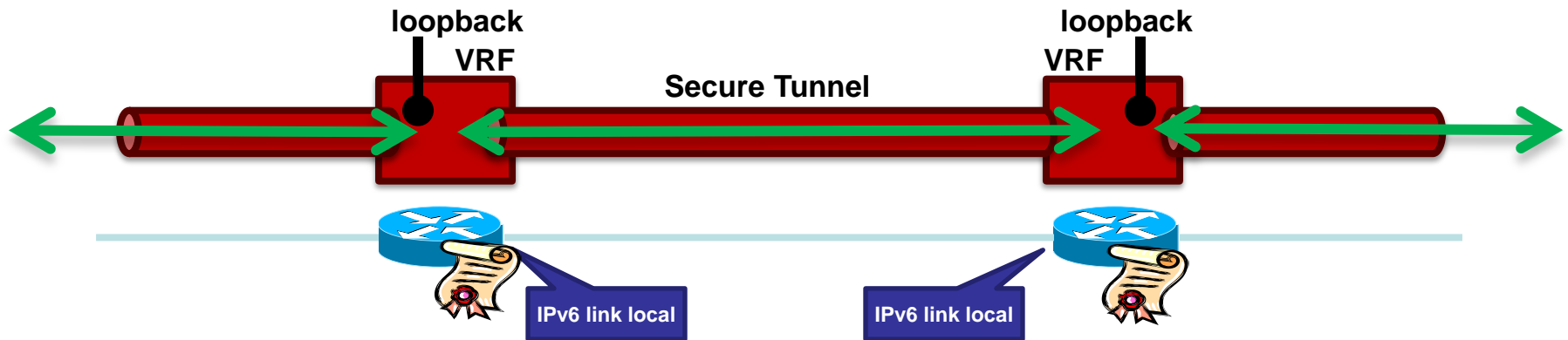
Changes from -02 to -03

- **More focus on supporting autonomic functions**
- **Two key use case categories:**
 - Autonomic functions
 - Traditional protocols, for co-existence
- **Two options:**
 - A virtually separated ACP
 - A data plane based ACP
- **Requirements**

Requirements (new section)

- **The ACP SHOULD provide robust connectivity**
- **The ACP MUST have a separate address space from the data plane**
- **The ACP MUST use autonomically managed address space.**
- **The ACP MUST be generic**
- **The ACP MUST provide security**

Autonomic Control Plane – Self-Managing Overlay Network



- Routing inside the ACP to distribute loopbacks
- Automatic
- Routing protocol must be scalable and light-weight

Properties of the Autonomic Control Plane (self-managing overlay)

- **Self-Creating**
- **Self-Managing**
- **Self-Healing**
- **Self-Optimising**
- **Self-Protecting**

**The Autonomic Control Plane
is autonomic itself!**

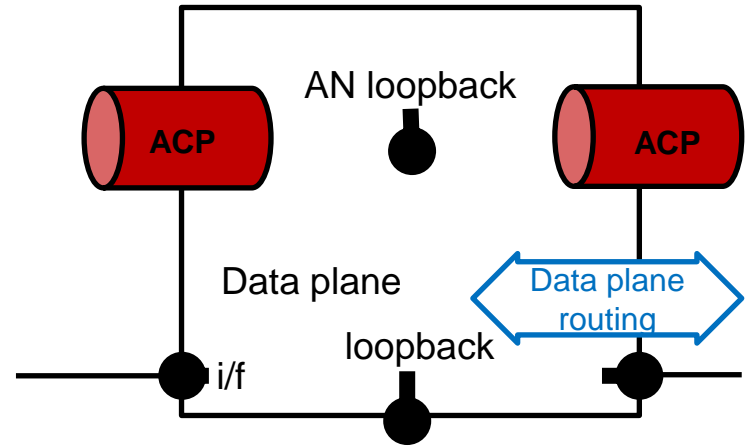
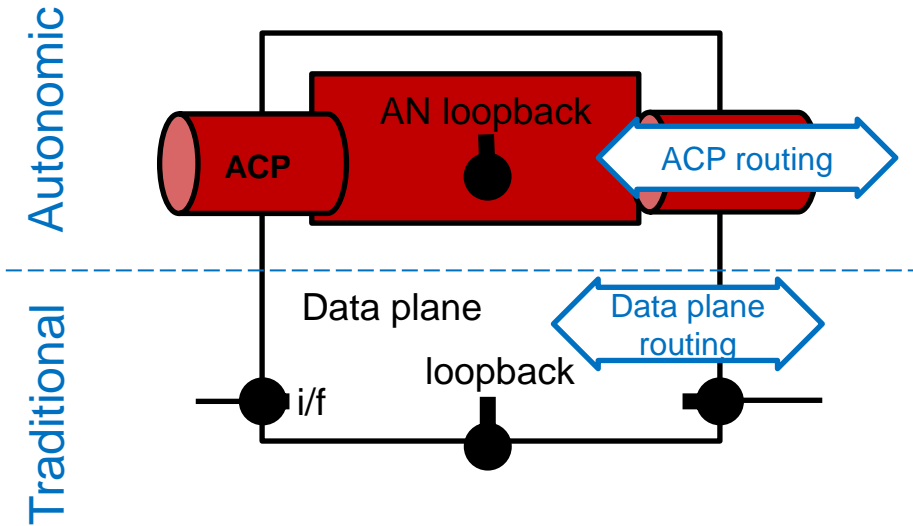
Use Cases: (see also draft-eckert-anima-stable-connectivity)

- **Bootstrapping an un-configured network**
- **Virtual Out Of Band Channel**
 - **ACP not dependent on configuration, addressing, routing**



Virtually separate ACP

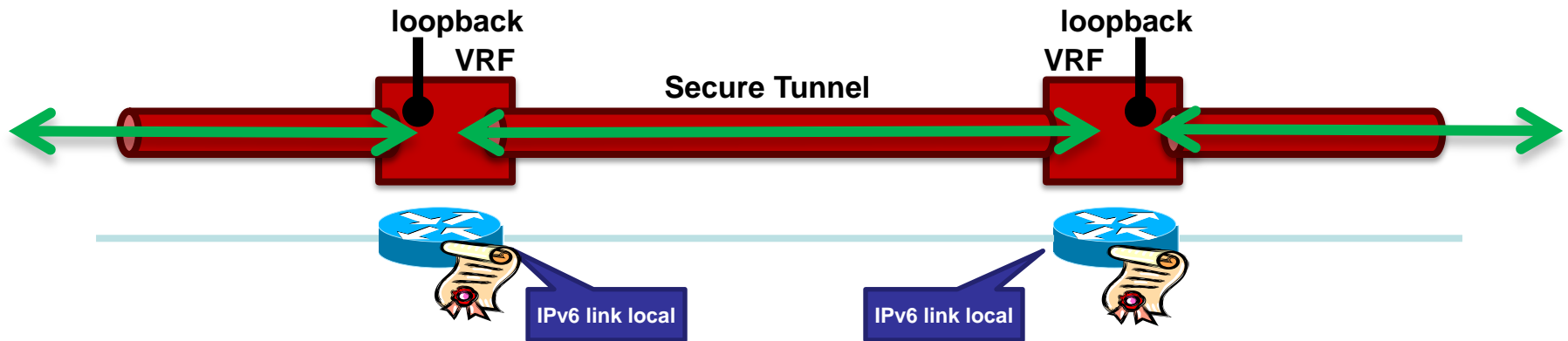
Data plane based ACP



- Addressing, routing: Independent
- AN loopback managed autonomically
- ACP tunnel use IPv6 link local
- AN communication between AN loopbacks only

- Single addressing, routing
- AN loopback managed autonomically
- Tunnel use IPv6 link local
- AN communication between AN loopbacks only

Hop by Hop?



- **Some function must be hop by hop**
 - Bootstrap of a network, for example
- **Robustness higher with hop by hop**
 - No dependency on configured or autonomic addressing
- **But, functions must also work unicast between any two nodes.**

Discussion

- **Is the scope of the document right?**
 - Two options: virtually separated and data plane ACP
- **Is the structure of the document right?**
- **What are open issues / concerns?**

- **Is this ready for WG adoption?**