A Framework for Autonomic Networking

draft-behringer-autonomic-network-framework-01.txt

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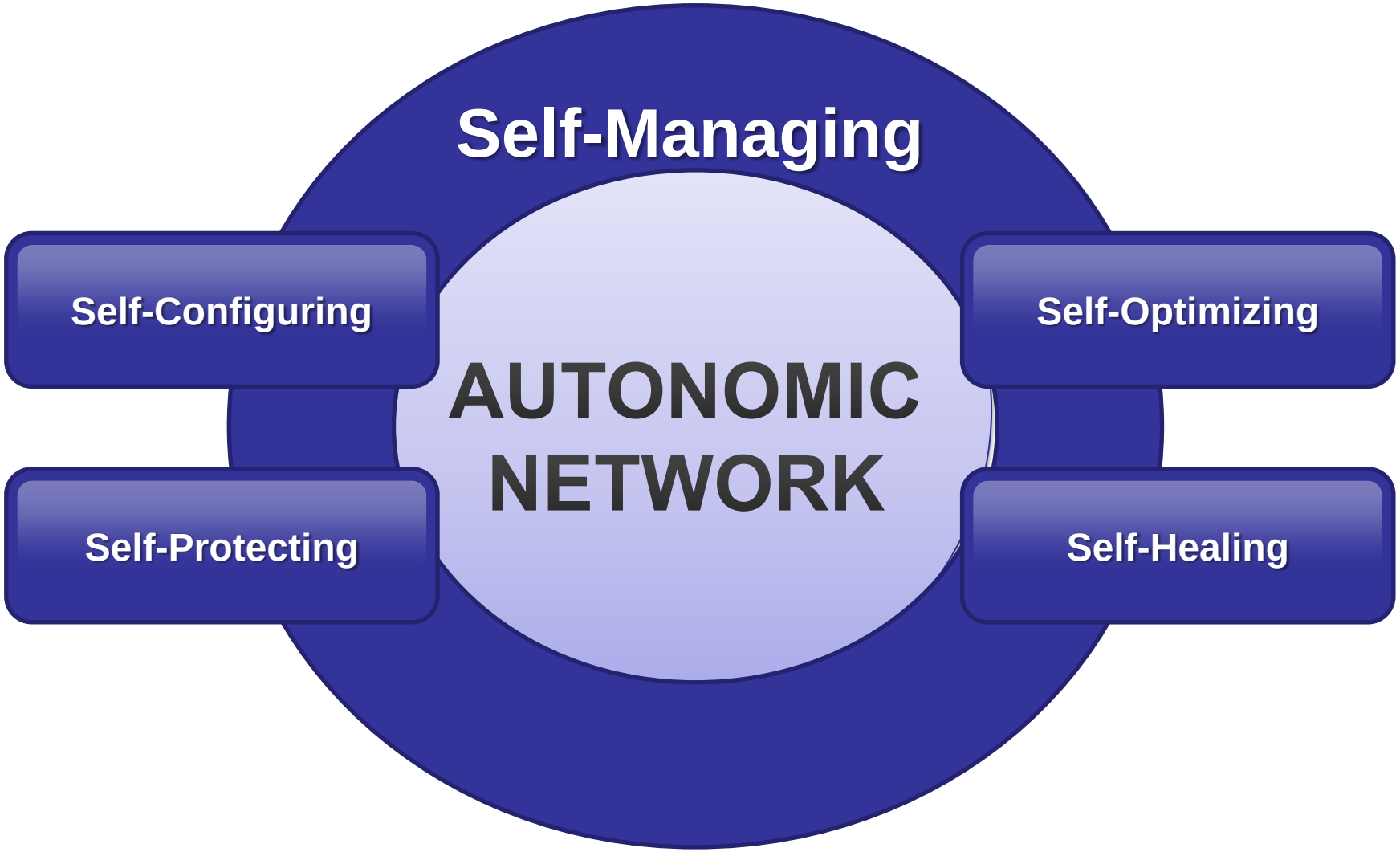
Michael Behringer

Max Pritikin

Steinthor Bjarnason

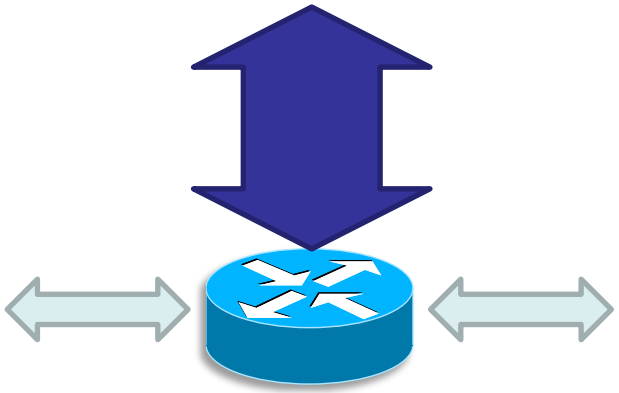
Alex Clemm



History: IBM's "Autonomic Computing" (2001)
http://www.research.ibm.com/autonomic/

Traditional

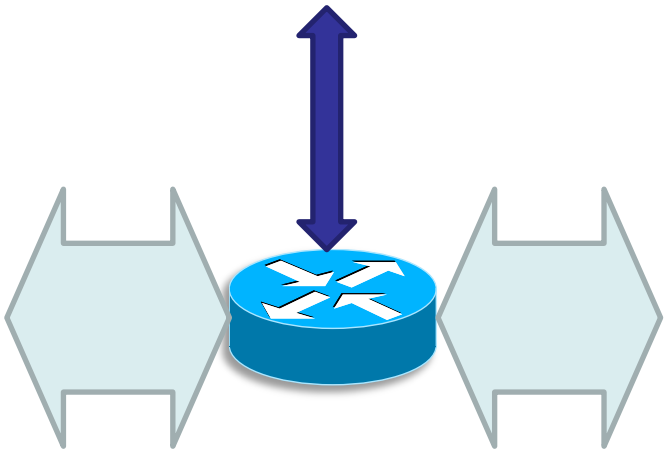
- Configuration
- Monitoring
- Reporting



- Routing

Autonomic

- Policy and Service Orchestration
- Aggregated Reporting



- Routing
- Discovery
- Autonomic interactions

Autonomic Networking means:
→Minimize operator interventions
→Minimize NMS dependencies

Definitions (1)

- **Autonomic: Self-managing (self-configuring, self-protecting, self- healing and self-optimizing); however, allowing high-level guidance by a central entity, through intent.**
- **Intent: An abstract, high level policy used to operate the network autonomically. Its scope is an autonomic domain, such as an enterprise network. It does not contain configuration or information for a specific node. It may contain information pertaining to nodes with a specific role.**
- **Autonomic Domain: A collection of autonomic nodes that instantiate the same intent.**

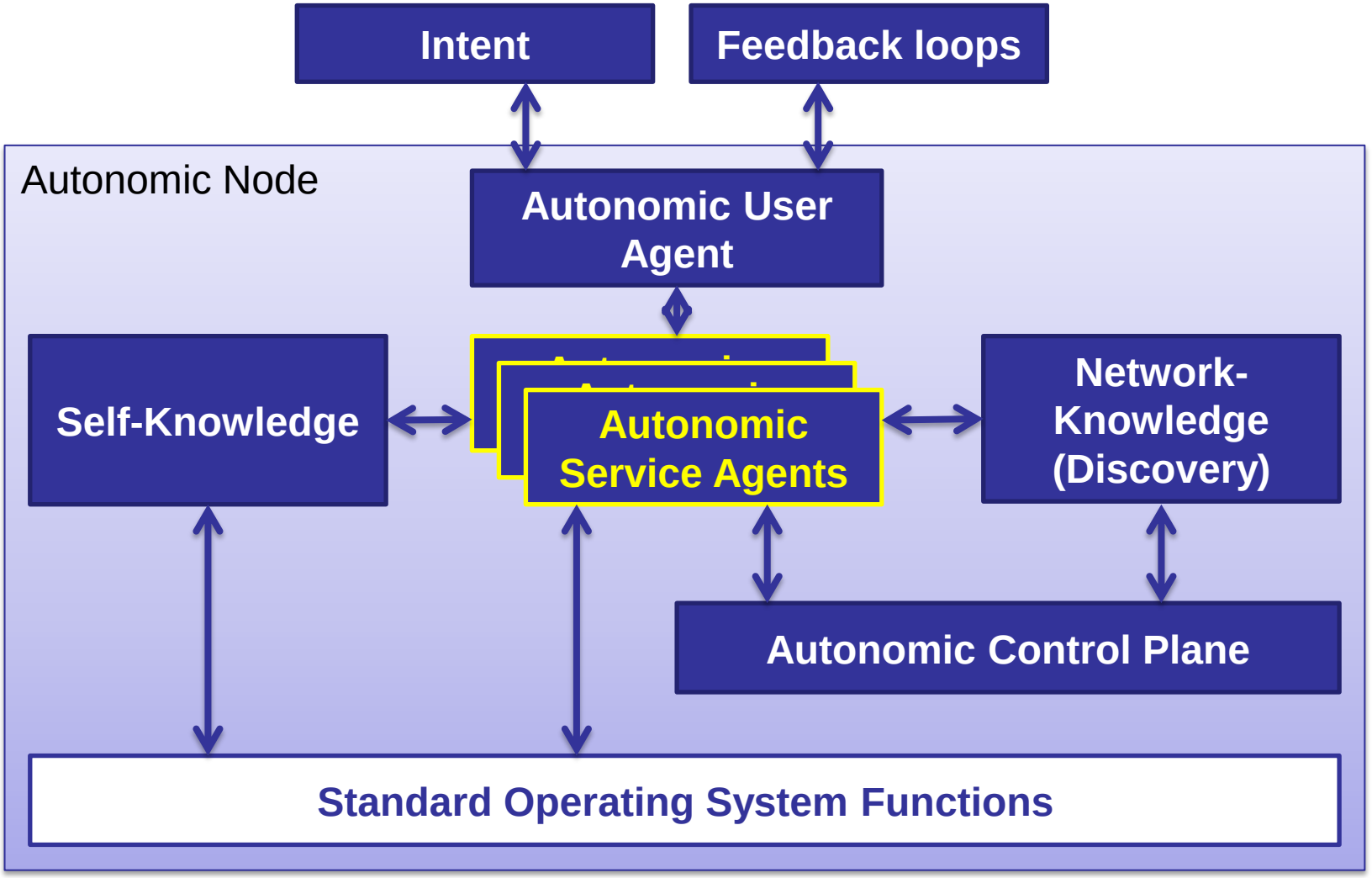
Definitions (2)

- **Autonomic Function: A function which requires no configuration, and can derive all required information either through self-knowledge, discovery or through intent.**
- **(Fully) Autonomic Node: A node which employs (exclusively) autonomic functions. It may operate on any layer of the networking stack. Examples are routers, switches, personal computers, call managers, etc.**
- **(Fully) Autonomic Network: A network containing (exclusively fully) autonomic nodes.**

Autonomic Networking – Fundamental Concepts

- Domain Identity – The network is secure by default
- Discovery
- Intent
- Abstraction
- Autonomic Reporting
- Decentralisation and Distribution
- Modularity
- Independence of Function and Layer
- Full Life Cycle Support: Beyond Deployment

Reference Model of an Autonomic Node



Need for Standardisation