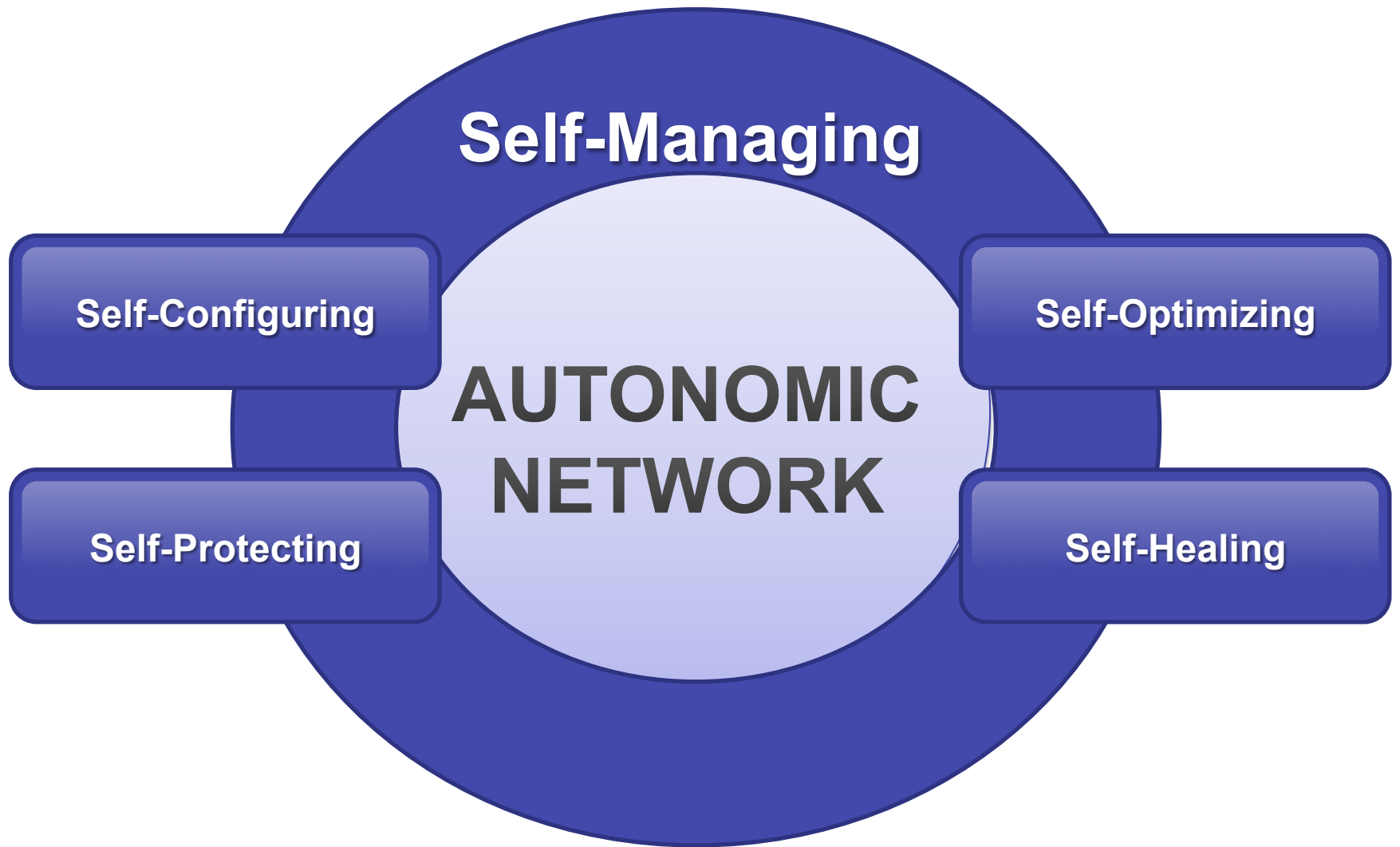# Autonomic Networking – Definitions and Design Goals
draft-irtf-nmrg-autonomic-network-definitions-00

89th IETF, 6 March 2014
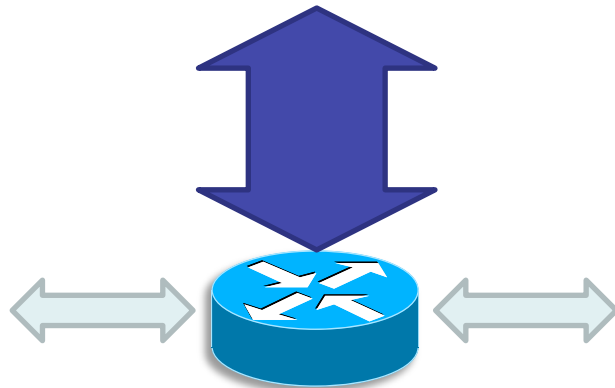
Michael Behringer

Steinthor Bjarnason

Brian Carpenter

Laurent Ciavaglia

Alex Clemm

Sheng Jiang

Max Pritikin

Self-Managing

Self-Configuring

Self-Optimizing

AUTONOMIC NETWORK

Self-Protecting

Self-Healing

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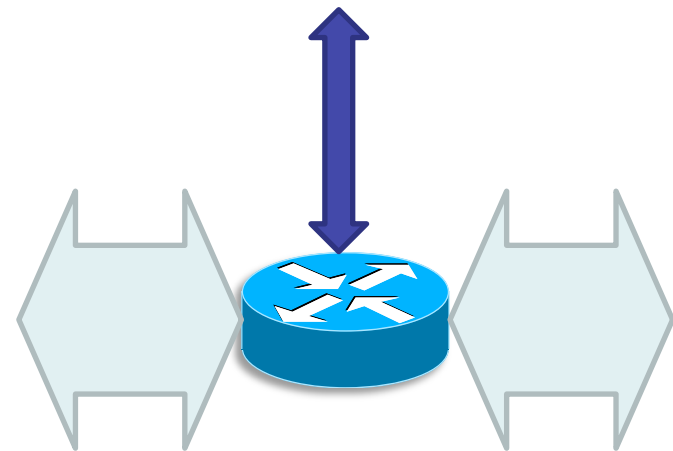http://www.research.ibm.com/autonomic/

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

Minutes from the last meeting

"In particular it has been proposed to work on three RG documents:

- **One on definitions and concepts (including guidelines to reporting case studies)**
- **One on the Design goals and principles**
- **One on functions.**

This draft

The starting point for these documents is draft-behringer-autonomic-network-framework-01.txt"

Source: http://www.ietf.org/mail-archive/web/nmrg/current/msg01497.html

Change Log

	draft-behringer-autonomic-network-framework-01	draft-irtf-nmrg-autonomic-network-definitions-00
Title	"A Framework for Autonomic Networking"	"Autonomic Networking - Definitions and Design Goals"
Outline title	"Fundamental Concepts"	"Design Goals"
Section titles	Changed "Domain identity" (not a design goal) to	"By default secure" (which is a design goal)
	Changed "intent" (a concept, not a goal) to	"Simplification of the Northbound interface"
Content		Added "Self-Management"
		Added "non design goals" (next slide)
	Took out "discovery" (a concept, not a goal)	-
	(All other sections remained)	

Non Design Goals

- **Eliminate human operators**
- **Eliminate emergency fixes**
- **Eliminate management control and central policy**
- **Eliminate existing configuration tools**
- **Eliminate existing network management systems**

New Definition

- **Autonomic Service Agent: An agent implemented on an autonomic node which implements an autonomic function, either in part (in the case of a distributed function) or whole.**

(all other definitions unchanged)

New Outline

SLIDES FROM PREVIOUS DRAFT (FOR REFERENCE)

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.**
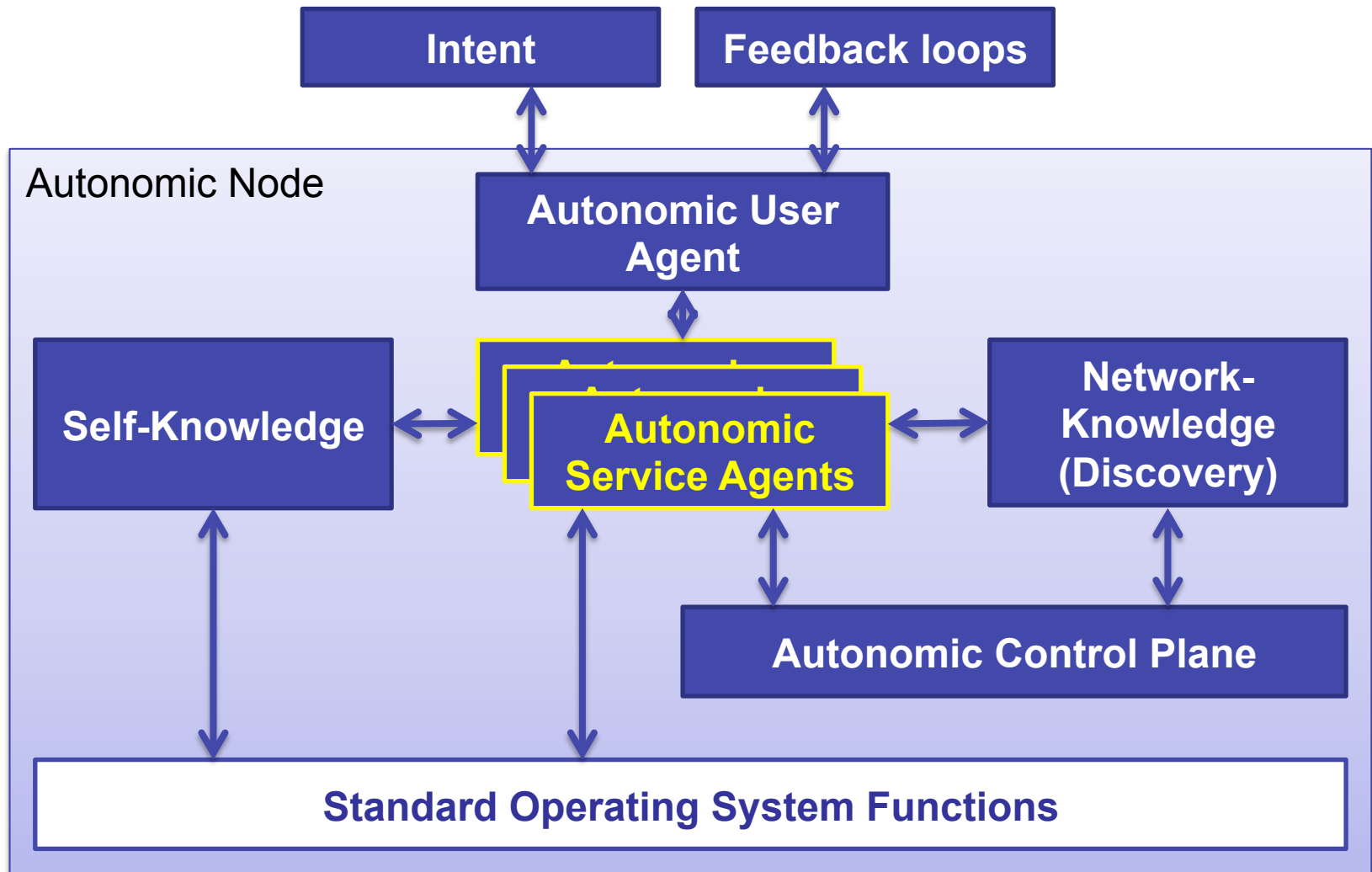
Definitions (2)

- **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