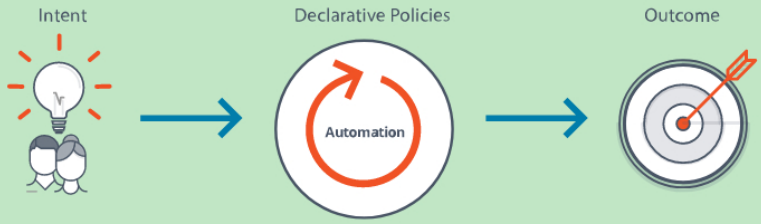
What Is Intent-Based Networking?

What is the Definition of Intent-Based Networking?

Intent-based networking is the evolution of modern, intelligent networking. It simplifies operations, improves agility and fortifies security with advanced automation. An intent-based networking system lets administrators and line of business owners decide the desired outcomes of network orchestration, then automates provisioning, configuration of servers, and full lifecycle management of the application services. The high-level plans and policies of a business (often specified in a declarative model) are automatically implemented and enforced, often with the help of machine learning, and artificial intelligence.



While the concepts and ideas behind intent-based networking have been discussed for years, recent advancements in machine learning, APIs, and orchestration platforms are making intention-based networking a reality. Research firm, Gartner predicts it will be mainstream by 2020.

Intent-based networking eliminates the manual network configurations and inputs that many companies still use. An intent-based networking system allows an administrator to send a request that the network will automatically respond to. This avoids laborious manual coding of action sequences to cope with specific scenarios. Instead, the admin states the desired outcome (e.g. service level), and the intelligence of the system then decides how best to meet it. Intent-based networking also allows an IT generalist or even business owner to define outcome by specifying their intents, without having to relying on an IT specialist to manually provide inputs every single time.

According to Andrew Lerner of Gartner, the key characteristics of an intent-based network include:

- Translation and validation — The ability to translate commands from network engineers into actions performed. When a manager wants a policy enforced, the intent-based network system verifies that the policy can be executed.
- Automated implementation — Software automatically enforces policies that the network manager has defined.

- Awareness of state — Data is gathered to constantly monitor network operations.
- Assurance and dynamic optimization/remediation — Machine learning ensures implementation of policies and corrective action is automated.

Declarative Versus Imperative Model

A declarative model of code expresses the logic of a computation without describing its control flow. An imperative model of code uses statements that change a program's state. Intent-based networking is based on a declarative policy model that focuses on the desired business outcomes by specifying intent. It frees coders from repetitive and error prone manual inputs, which represent the imperative model.

Intent-Based Networking and SDN

Intent-based networking and software-defined networking have common goals. Software-defined networking moves the focus of network infrastructure from hardware to software, from configurations to policies. It allows for more network programmability, improved automation, and reduced costs. An intent-based networking system takes networking strategy to a higher level by combining automation with intelligence.

At first, software-defined networking was an innovative concept that quickly became mainstream. Intent-based networking is on the same path if not more accelerated as machine learning and artificial intelligence advance, intent-based networking systems will become more predictive and useful.

Software-defined networking (SDN) and intent-based networking (IBN) can build on each other. The implementation of an intent-based networking system may include a SDN controller to carry out the desired policies.

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