Intent Based Networking (IBN)

Last Updated : 28 May, 2020

Intent-based networking (IBN) is a systematic approach to bind infrastructure management and business intent. It is a network management approach in which artificial intelligence (AI) and machine learning (ML) play a major role by automating all the organizational tasks which can be applied across the network i.e., it helps in accomplishing a specific purpose or intent.

In the IBN approach, the network can translate the intents into network policies. Further with the aid of automation, it can deploy suitable configurations to the network. The input to IBN is provided either with the help of API (Application Program Interface) or through the Graphical User Interface (GUI).

Example of an IBN Network –
Cisco Digital Network Architecture (Cisco DNA).

Working of Intent-based networking (IBN) :
IBN is an extension of software-defined networking (SDN). It consists of a network controller that acts as a central control point for the network by managing the distributed devices present across the network. The central controller also plays a major role in network abstraction along with the integration.

There are 3 functional blocks of IBN namely –

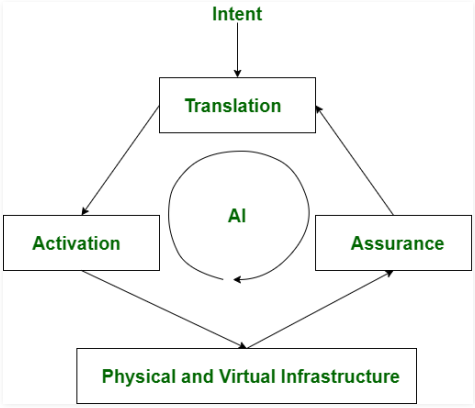

Figure – Intent Based Networking (IBN)

1. **Translation –**
The translation block can capture and translate business intents into policies across the system

2. **Assurance –**
   The activation block is responsible for the end-to-end verification of the wide network. It predicts the changes which have taken place concerning the original intent and then provides recommendations to fix it. This recommendation process is solely carried out by the AI and ML which is incorporated in this network. Here the security and performance factors of the network are studied constantly and necessary re-configurations are made if required.
3. **Activation –**
   After specifying the intent and the development of policies, the activation block makes use of network-wide automation to verify the configuration of the devices before their deployment.

Advantages of intent-based networking (IBN) :

- **Reduction in manual tasks to be performed –**
  IBN translates commands into actions automatically with the help of ML and AI. Manual configuration need not be performed by the network administrators. The task to achieve the desired configuration and repair work is done automatically by IBN.
- **Security –**
  IBN constantly monitors threats, even in encrypted traffic. Security violations are immediately acknowledged and restricted. Moreover, with the help of AI, it can provide a more secure environment for the applications in real-time.
- **Enhances network analytics capabilities –**
  IBN is constantly collecting data about itself for analysis that provides important information about network performance and security threats.
- **Operational cost –**
  The operational cost of the IBN system is low.
- **Speed –**
  The response time to achieve the intents is fast as IBN systems provide agility for the applications. The time that could have been spent on scheduling, testing, and manual configuration is saved.

Disadvantages of Intent-Based Networking (IBN) :

- **Complex Design –**
  IBN system has a complex design as it is a combination of several operating systems, environments, and network components.
- **Verification and Validation –**
  Rigorous Verification and Validation is required in the IBN system to function well.
- **Success Rate –**
  IBN System's success rate is dependent on API's as the network access lies with API.

Applications of Intent-Based Networking (IBN) :

1. **Performance testing –**
   IBN systems can help in performance testing of an application
2. **Security –**
   It can provide high security to the application by the support of AI and ML algorithms.
3. **Assistance in web traffic filtering –**
   IBN systems also provide a firewall to the web application which can help in Internet traffic and also enhance security measures.

Previous Next

RECOMMENDED ARTICLES

Page : 1 2 3

01 Troubleshooting Questions on OS and Networking asked in Cloud based Interview
15, Feb 21

02 Let's experiment with Networking
02, Aug 09

03 Basics of Computer Networking
08, Aug 17

04 Advantages and Disadvantages of Computer Networking
19, Dec 18

05 Software defined Networking
02, Jul 19

06 Top 5 Highest Paying Jobs in Networking
03, Mar 20

07 Top 5 Career Domains in Networking
02, Mar 20

08 OSI Model Full Form in Computer Networking
01, May 20

Article Contributed By :

manandeep1610
@manandeep1610

Vote for difficulty

Easy | Normal | Medium | Hard | Expert

Article Tags : Computer Networks

Practice Tags : Computer Networks

Improve Article | Report Issue

Writing code in comment? Please use ide.geeksforgeeks.org, generate link and share the link here.

Load Comments

GeeksforGeeks
5th Floor, A-118,
Sector-136, Noida, Uttar Pradesh - 201305

feedback@geeksforgeeks.org

Contact Us
Copyright Policy

CS Subjects
Video Tutorials

Web Development

HTML
CSS
JavaScript
Bootstrap

Contribute

Write an Article
Write Interview Experience
Internships
Videos