

Intent-Based Networking Surges Forward

By: Tim Young

As 2017 draws to a close, it looks like there are clear signs that the network is becoming smarter and more self-sustaining.

Year in and year out we've written about the growth of technologies such as SDN and self-healing networks, all increasingly pointing the way toward a network that can handle the details of resource allocation and other minutiae based on the goals and needs of CSPs and the subscribers they serve.



Those technologies have taken a big step forward this year with the growing prominence of intent-based networking (IBN).

As Gartner's Andrew Lerner [explained in a blog post](#), "intent-based networking is not a product, or a market. Instead, it is a piece of networking software that helps to plan, design and implement/operate networks that can improve network availability and agility." Put another way, Lerner describes it as "lifecycle management software for networking infrastructure."



IBN systems, according to Lerner, have four basic characteristics:

1. **Translation and Validation**– The ability to take a policy or broad network preference and convert that desire into a concrete network configuration. The system then must validate the resulting design to ensure that it is correct and can be implemented.
2. **Automated Implementation** – The ability to implement the resulting network configuration automatically, through network automation, network orchestration, etc.
3. **Awareness of Network State** – Real-time visibility into the status of the entire network, regardless of protocol or transport type, and
4. **Assurance and Dynamic Optimization/Remediation**– Ongoing awareness of and adherence to the original intent, and the capability to adjust network settings to ensure that the original intent is being fulfilled.

IBN isn't wholly new. Steve Harris points out on [Orange Business Services' blog](#) that it builds on goal-based policies that have been around for two decades, though back then there wasn't a platform capable of executing those ideas. And to those who might ask if IBN is just SDN under a different name, Harris says, "It is more like the next iteration of SDN. Where SDN comprises a series of network objects such as switches, routers and firewalls, all deployed in an agile and automated way, IBN takes the capabilities of SDN and adds extra smarts."

And those “extra smarts” are the sort of thing that are all over other fields of technology. Machine-learning and other early iterations of AI have crept into technology we interact with on a daily basis, but the network has remained stuck in an earlier era in many ways.

“Networking missed out on the evolution to high-level programming,” David Cheriton, founder of and chief scientist for Apstra, said in an interview with the [MIT Technology Review](#). “We’re still programming networks like we did in the ‘60s.”

Cheriton’s company, Apstra, is one of several startups who are pushing IBN to the forefront lately, along with Veriflow, Intentionet, Forward Networks, and others. The buzz for IBN ratcheted up earlier this year when Cisco and Juniper jumped on board with the technology, with other large network equipment vendors dipping their toes in the intent-based waters as well.

And to Cheriton’s point, there has certainly been a delay in not only IBN, but a wide array of other strategic planning elements on the network side. After all, the network folks are given the unenviable task of keeping one of the most complex technical achievements in the history of mankind up and running. It’s not easy to rebuild a jetliner that you can never land.

In fact, I wrote that line about the jetliner before I noticed a supporting quote in [Cisco’s June announcement of its IBN work](#) by the CIO of Royal Caribbean Cruises, so I guess the massive-transportation analogy is apt in a number of ways. “From a technology standpoint, our cruise ships are like small cities,” said Royal Caribbean CIO Michael Giresi. “Cisco’s intent-based networking is transformational in how our IT can securely and remotely provision cruise ships around the world.”

Cisco has placed IBN front-and-center in its overall strategy, betting big on the attractiveness of a smarter way to run a network. And it’s likely a good bet, as Patrick Moorhead of Moor Insights & Strategy pointed out [in an editorial in Forbes](#) over the summer. Legacy networks are a big inhibitor to progress, as they’re unwieldy and slow-to-change.



Cisco promises that its new IBN efforts will bring intent, context and intuition, all of which will put Cisco in a position to leverage its untold wealth of data and network insight to work in a way that will allow networks to keep up with demand. And the fact that giants like Cisco and Juniper are being proactive suggests a very different—but equally important—kind of intent: the willingness of equipment vendors and, ultimately, CSPs to get on board with rolling out networks that are as smart as they could be.

So far, CSPs have been pretty quiet about their willingness to embrace IBN. Verizon mentioned intent-based networking in a reference architecture last year [\[PDF\]](#), but hasn’t made any large announcements since. Verizon, Century Link, and others have gotten on board with Cisco’s SD-WAN and software analytics offerings, though, so an embrace of IBN now that the bigger players have gotten on board would be unsurprising.

IBN—along with automation frameworks, SDN, machine learning, and a wide variety of other technologies—can and should be seen as yet another way post in the move toward autonomous networks. It’s a long journey, but as [Juniper CTO Kireeti Kompella told ComputerWeekly](#), “It took 10 years for self-driving cars to advance from vision to prototype. I don’t expect an autonomous, self-driving network to take this long.”

In the coming year, we expect to hear a lot more about intent-based networking from hardware and software vendors, as well as the carriers they serve.