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by Dr. Thomas King – CTO DE-CIX

On demand interconnection: Network automation makes cloud connectivity easy and safe

Network automation offers the answer to simplifying the art of connecting within and between networks. With the advent of virtual working and the need for hybrid and multi-cloud strategies to store data and run enterprise-grade applications, company IT infrastructures have rapidly become increasingly distributed and complex. The automation of interconnection ensures easy, flexible, and cost-efficient access to enterprise resources, at the same time reducing the likelihood of security incidents and misconfigurations. Dr. Thomas King, CTO at DE-CIX, on the evolution of network automation at Cloud Exchanges and dedicated direct connections to the cloud.

Services and products on-demand: In our digitalized world, consumers are increasingly turning to on-demand usage instead of purchasing a product or taking out a long-term lease. In recent years, the sharing economy has taken our cities by storm, with car sharing, bike-sharing, and e-scooters spicing up mobility options, as an example. Such offerings allow for flexible application of equipment in a way that fits our fast-paced business and private lives, without the ongoing costs of ownership. Digital infrastructure can now also be accessed in as-a-service models, enabling companies to rent machines for temporary requirements as needed – even down to the second. This type of business model is now also being adopted in the network infrastructure domain in the form of network automation.

What is network automation?

Network automation began life as a mechanism to simplify the addition of new hardware or deployment of software updates within an individual network. But just as transport services have evolved from individual service silos – e.g. car hire vs. train travel – to a connected mobility platform incorporating diverse offerings, network automation is also evolving. It is now on the road to enabling easy interconnection – at the press of a button – in an all-encompassing multi-service platform where many networks can interact, share data, and provide or access services.

The impact of state-of-the-art network automation can best be exemplified in the context of a multi-cloud strategy. Multi-cloud makes it possible to use the best services from diverse cloud players, and

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bring them together to fit your own specific needs in an optimal way. Beyond this, with cloud resources becoming increasingly business-critical, no enterprise can any longer afford to place all their eggs in one basket when it comes to the cloud, and enterprises want the flexibility to choose vendors as and when it suits them. A multi-cloud strategy has even become a compliance obligation for some sectors, such as financial services and banking, in order to mitigate the risk of cloud concentration. With multiple departments requiring different cloud services to carry out a range of tasks of varying levels of criticality, it is no longer conceivable for the network engineer to be handling the connections to the many clouds manually, whilst still ensuring seamless connectivity and constantly high levels of security.

Computers and computer networks function naturally with long indigestible strings of numbers – something which human concentration and memory is less able to deal with. A single case of fat-fingered human error can result in a crippling misconfiguration which can take an organization's IT offline until the fault has been found. Even the biggest players in the market are not immune to such risks, as the recent Facebook outage – which took the social media giant offline globally for more than six hours as a result of a misconfiguration – attests to. Better, then, to avail of automated interconnection services to ensure that clouds and resources remain reliably accessible, and that no data is lost in the meantime.

Flexible access to clouds

Again, like the mobility platform's ability to provide on-demand services – helping you find a shared bike or car when you need it and for the length of time you need it – interconnection services are also heeding the call of on-demand. Flexibility is increasingly in demand so that the (up-to-the-minute) needs of companies in terms of connections to specific clouds and variable bandwidths can be met dynamically.

Static long-term contracts will soon be a thing of the past, as will holding unused bandwidth. The future will be on-demand, as the following example shows: A major application provider is planning an update to its application (e.g. operating system, office application, or game) in the near future, and this will be rolled out globally – resulting in a new short-lived requirement for extra interconnection bandwidth. A platform can be used to increase the bandwidth easily and quickly for three days. Once the update is complete and everything has gone smoothly, the provider goes back to the usual bandwidth, which is sufficient for day-to-day business. The result of this is that the organization does not need to pay for excess bandwidth that is not needed, reducing the costs of interconnection.

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But the need for extra bandwidth is not always foreseeable. Let us take a webshop as an example: the latest marketing campaign has become so successful that your marketeers are over the moon. Unfortunately, the unexpectedly high demand on the webshop exceeds your infrastructure's capabilities, potentially making the webshop inaccessible. In the world of network automation, you can easily and immediately increase the bandwidth between the cloud-based webshop and the ERP system (which is probably running in a separate specialist ERP cloud as part of your multi-cloud strategy), so that you have no difficulty in handling the increased volume of requests to your shop.

Interconnection as a Service

Today, modern networks have long since abandoned configuration changes that require logging into the individual router. Rather, Application Programming Interfaces (APIs) enable organizations to embed external services into their own portals. APIs are often based on open-source software and allow interoperability across platforms. The interconnection industry is no different: APIs can be implemented at an Internet Exchange or at a cloud service provider, thus providing easy interconnection at the click of a button. The DE-CIX API – based on the IX-API which DE-CIX developed in collaboration with other interconnection industry giants – allows services to be provisioned and consumed across different networks in just minutes, flexibly and on demand. As well as being able to create new cloud connections, increase or decrease the bandwidth of connections, and cancel connections at the press of a button, network automation via the DE-CIX API also enables the establishment of dedicated direct connections to the cloud. Connecting directly to cloud resources means that no data needs to flow over the public Internet, with the added benefit that the data travels along the shortest path, improving performance and latency. This is ideal for business-critical applications like managing transaction data, IoT and AI use cases, as well as for latency-sensitive applications drawn from the cloud, such as virtual desktop functionalities and video conferencing applications.

The thing about APIs is that computers are talking to computers to adjust the network to the demands of the customer. Sometimes, however, humans want to be hands-on, and automate the network themselves. As a result, self-service portals are becoming popular: they enable a person to adjust the network to their specific requirements, ad hoc and flexibly. Therefore, the latest advances in network automation actually bring the human being back into the picture.



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Making interconnection easy – within an enterprise network, across network boundaries in secure closed user groups, or to the cloud – through network automation is the essential next step in the digitalization of industries and the economy. Network automation saves time and money, protects resources against human fallibility, and enables flexible connections in accordance with up-to-the minute needs.