

DE-CIX predictions: 5 tech trends for 2024

Technology is evolving at an ever-faster pace. From generative AI to Quantum computing and beyond, the world has seen striking advances in the past year, with revolutionary technology and new use-cases demanding the adaptation of company strategies and the building of new infrastructure for the coming years. Dr. Thomas King, CTO at DE-CIX, has identified 5 trends that will shape the connected business world, the further evolution of technology, and the interconnection business in 2024.

1. AI interconnect services for optimized low-latency AI delivery

With several powerful generative artificial intelligence (AI) models becoming available for general use in 2023, AI is finding a place in many companies and providing a competitive advantage for those that can leverage it effectively. However, many companies lack the internal computing resources to enable the development and operation of their own AI models. Here, AI from the cloud and AI as a Service (AlaaS) providers offer convenient alternatives. For these, optimized connectivity to clouds and specifically to the AlaaS providers is an essential component for ensuring low latency and high bandwidth, and thus better performance of chatbots, analytics, and other tools.

In 2024, the increasing utilization of AI-supported services will mean that companies have no option other than to optimize data pathways and connect directly and securely with external AI models or service offerings. AI interconnect services, either direct connectivity to AI clouds or directly connecting to AI networks (“peering”) will need to become a central pillar in AI strategies.

2. AIOps for Network Operations

Network optimization can support better performance of AI, but AI can also support better performance of networks. Although it’s still early days for AIOps (AI for IT operations), it is beginning to show potential. While all areas of IT operations are covered by AIOps, one area which is now emerging as an important component is AIOps for network operations. Network engineers are being faced with increasingly complex network landscapes, combining a distributed workforce, a multitude of devices, and cloud infrastructure, etc. AIOps simplifies the management of network operations through automation, predictive analytics, and root cause analysis on the basis of big data and machine learning. AIOps can speed up troubleshooting and resolving issues for customers, and at the same time reduce costs, as precious NOC employees can work on more critical tasks that AI can’t solve today.

In late 2023, one [survey](#) found that while only 4% of respondents have already integrated some kind of AIOps organization-wide, a further 15% have implemented AIOps as a proof of concept, and 29%

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have identified use cases for its future implementation. The market is [forecast](#) to triple in size over the next four years, reaching nearly US\$ 65 billion in 2028.

3. The advent of the SD-WAN Exchange

The market for SD-WAN has grown rapidly and substantially in recent years, as today many [large enterprises](#) are already making the most of its advantages. It is replacing the much more expensive and less flexible MPLS. SD-WAN intelligently uses existing Internet connectivity to integrate seamlessly with multi-cloud scenarios. It optimizes data pathways by routing locally instead of routing all traffic back through the company infrastructure. SD-WAN achieves this by being a software-based overlay that separates the control plane from the underlying network infrastructure, the Internet connectivity. As is technology agnostic, it can function with agility over multiple network technologies, such as last-mile Internet connectivity via broadband or 4G LTE/5G.

Internet Exchanges have the potential to evolve into SD-WAN Exchanges, meaning that they will provide different SD-WAN endpoints. Enterprises can then use their SD-WAN technology of choice to connect to SD-WAN Exchanges to either consume interconnection services like cloud connectivity or the Microsoft Azure Peering Service (MAPS), or to route between different SD-WAN technologies. We are expecting to see the first SD-WAN Exchange solutions in 2024.

4. Private communications in the post-Quantum era

With the increasing availability of [quantum computing](#) over the last few years, significant challenges have emerged in securing confidential communications. To ensure private communication channels in the post-quantum era, quantum encryption technology is being developed and is now becoming available in an experimental form. Quantum key distribution (QKD) is required in order to communicate quantum key material to a communication partner. One challenge with QKD lies in how far the key material needs to travel. The reason is that decoding a quantum signal is vastly more difficult than decoding signals with traditional network technology. As a result, only completely unobstructed fiber can be used for the networks to function effectively, and quantum repeaters will be needed every 80 kilometers.

Following initial testbeds, in 2024 we will see productive quantum networks being built in Europe to test QKD over longer distances, a challenge yet to be solved conclusively. New approaches to the interconnection of participants in quantum networks will also emerge, which will ensure the optimization of data pathways to minimize distances.

5. Network as a service goes global

Network as a service (NaaS) enables enterprises to outsource the building and management of their Wide Area Network (WAN) to a service provider. The approach unifies the concepts of pay as you go, API-based operation, self-service portals, automated ad-hoc provisioning, and a broad set of interconnection services, all in one bundle. Having emerged around a decade ago, NaaS has



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developed especially strongly in the enterprise sector, with the main focus until now being placed on local and regional WAN connectivity.

Today, NaaS is coming of age. Alongside traditional carriers, the first NaaS providers have now built their global networks to support multi-national organizations in connecting their many branch locations, manufacturing plants, and distributed workforces, and enabling them local access to the Internet, clouds, and partner networks. In 2024, we will see Network as a service offerings becoming global phenomenon.

The bottom line

These are exciting times. Technology is being developed to deliver better performance, enable competitive advantages, and tackle long-standing challenges. The expansion and evolution of digital technology is bringing the world closer together and allowing more people better access to content, applications, and services. Organizations the world over need to ensure that their infrastructure and processes keep pace their digital evolution, their geographical growth, and the changing demands of their customers.

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About DE-CIX

DE-CIX is the world's leading operator of Internet Exchanges (IXs). DE-CIX offers its interconnection services in around 50 metro-markets in Europe, Africa, North America, the Middle East, and Asia. Accessible from data centers in over 600 cities world-wide, DE-CIX interconnects thousands of network operators (carriers), Internet service providers (ISPs), content providers and enterprise networks from more than 100 countries, and offers peering, cloud, and interconnection services. DE-CIX in Frankfurt, Germany, is one of the largest Internet Exchanges in the world, with a data volume of almost 34 Exabytes per year (as of 2022) and close to 1100 connected networks. More than 200 colleagues from over 30 different nations form the foundation of the DE-CIX success story in Germany and around the world. Since the beginning of the commercial Internet, DE-CIX has had a decisive influence – in a range of leading global bodies, such as the Internet Engineering Task Force (IETF) – on co-defining guiding principles for the Internet of the present and the future. As the operator of critical IT infrastructure, DE-CIX bears a great responsibility for the seamless, fast, and secure data exchange between people, enterprises, and organizations at its locations around the globe.

Further information at www.de-cix.net

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