DE-CIX Global
Annual Report

20
23

Content

2023

Message from the CEO

Ivo Ivanov,
CEO and Chair of the Board

Dear customers, partners, employees and friends of DE-CIX, interconnection, and digital infrastructure around the globe,
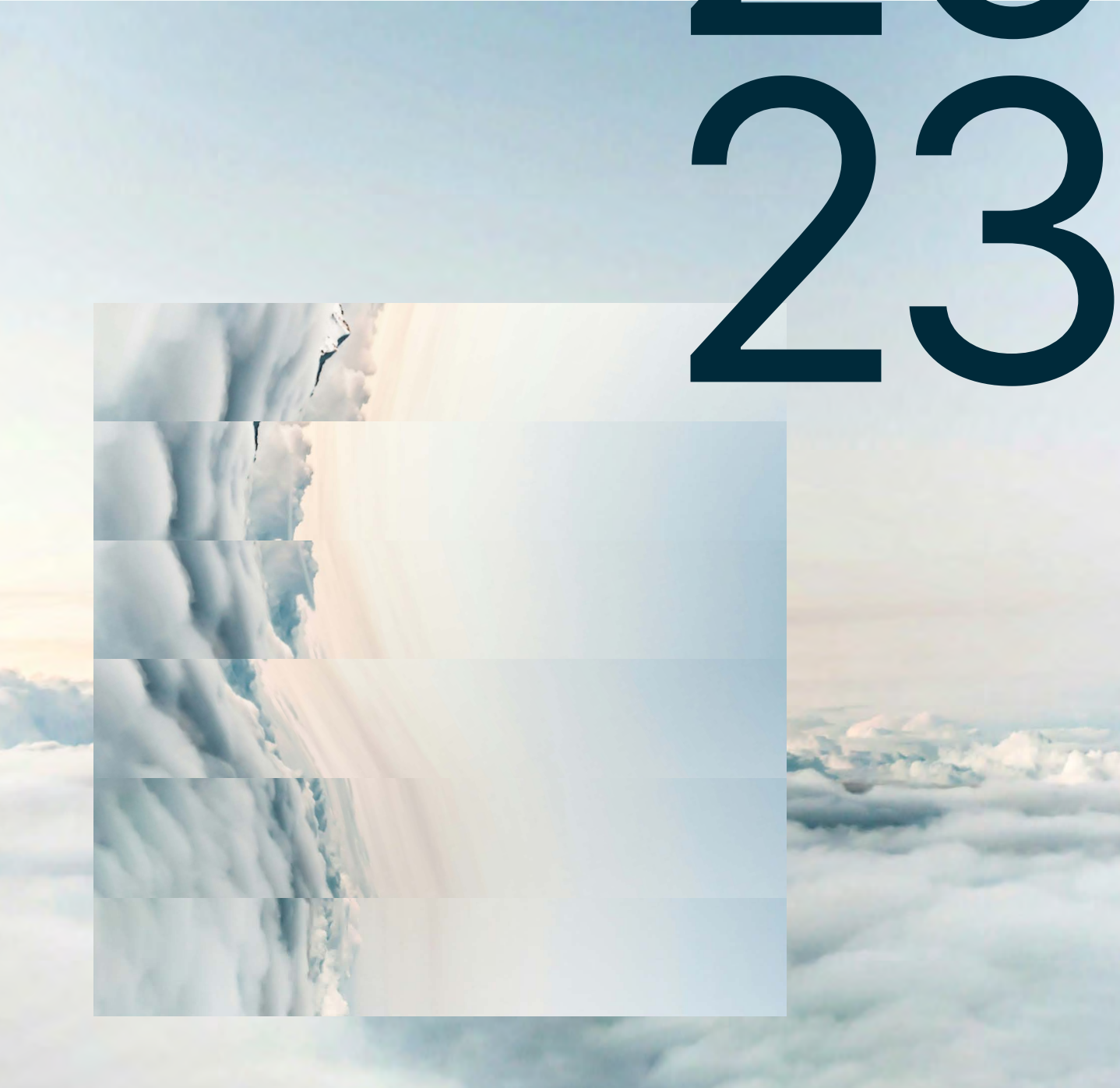
It is with great pleasure that I introduce to you the DE-CIX Global Annual Report for 2023.

2023 was, in many ways, a watershed year. Breakthroughs in the areas of generative AI and Quantum Computing, among others, have resulted in a rapidly changing technology landscape with enormous potential for societal and economic benefits. These benefits will be reaped by companies and organizations that take a strategic approach to their digital infrastructure, their data, and their data journey. Because data is key to unlocking future innovation.

This means that the digital infrastructure industry will take center-stage in supporting future economic development and growth. It is more essential than ever before that the data center and network operators of the world, the hardware manufacturers, and the interconnection experts work together to pave the way for this future growth. This report will show in no small way how this is already happening.

At DE-CIX, we have been working tirelessly to make our contribution to ongoing infrastructure development. And our growth in 2023 again demonstrates not only the strength of the company's commitment and passion, but also the strength of our model of distributed data center and carrier neutral Internet and Cloud Exchanges. Our neutrality allows us to bring together the world's networks, data centers, cloud players, other infrastructure operators and service providers,

as well as enterprises, educational institutions, and public organizations.

2023 in Review

Today, 28 years in the business, DE-CIX continued to enjoy strong double-digit growth in all areas in 2023. In terms of finances, DE-CIX continued on track, with global revenues of all company parts growing by 7.9 million / 14.4% to reach 63.34 million Euro. In line with strategic goals, revenues from international activities grew by 26.5 percent in comparison to 2022 and represented 25 percent of total revenues in 2023.

In terms of our infrastructure, growth was visible across a number of important metrics. Connected networks across the entire DE-CIX ecosystem grew to over 3600, while connected customer capacity rose to 140.98 terabits, an increase of 14%.

Traffic continued to grow strongly, with DE-CIX Frankfurt crossing the 16 terabits per second (Tbit/s) mark, and with four further IXs now in the 1 Tbit/s club – Dallas, New York, Madrid, and Mumbai. Peak peering traffic across the global platform reached a high of 22.36 Tbit/s, up 19% on 2022 levels.

A total of 59 exabytes of data traffic was transferred over the global platforms in 2023, year on year growth of 23%. Finally, 2023 marks DE-CIX's circumnavigation of the planet: Our global backbone now traverses the globe, interconnecting the vast majority of our locations across the Pacific and the Atlantic oceans.

140+

Terabits Connected Customer Capacity

150 Tbit

100 Tbit
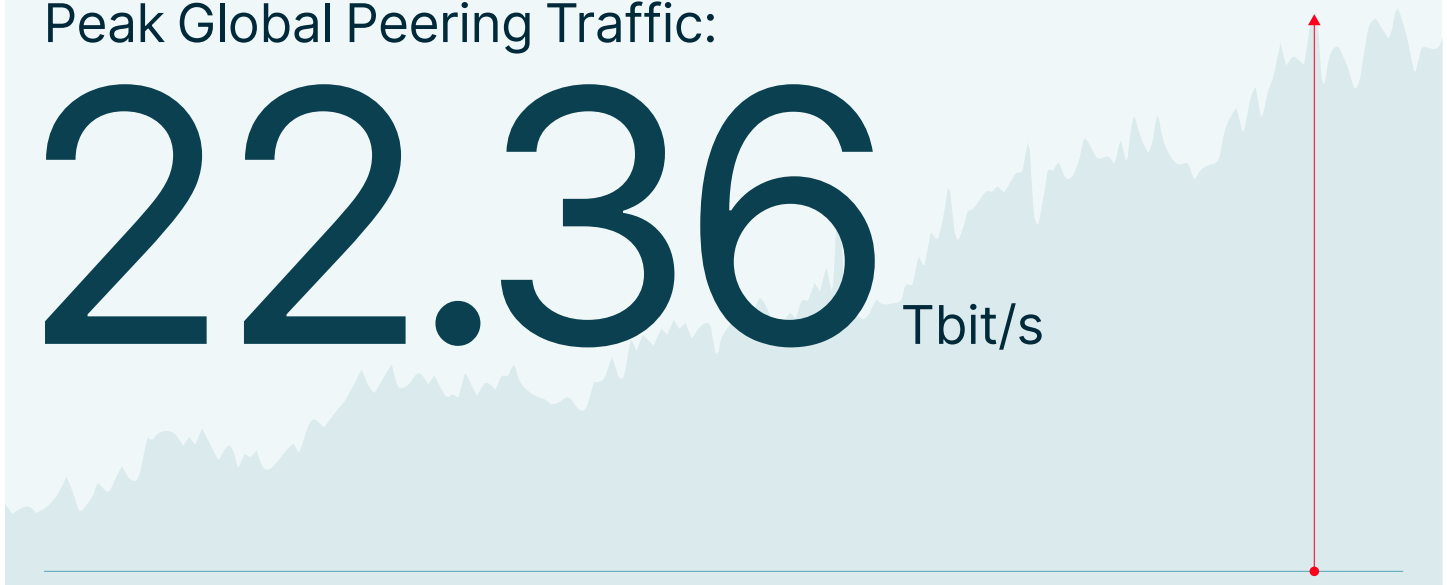
50 Tbit

0 Tbit
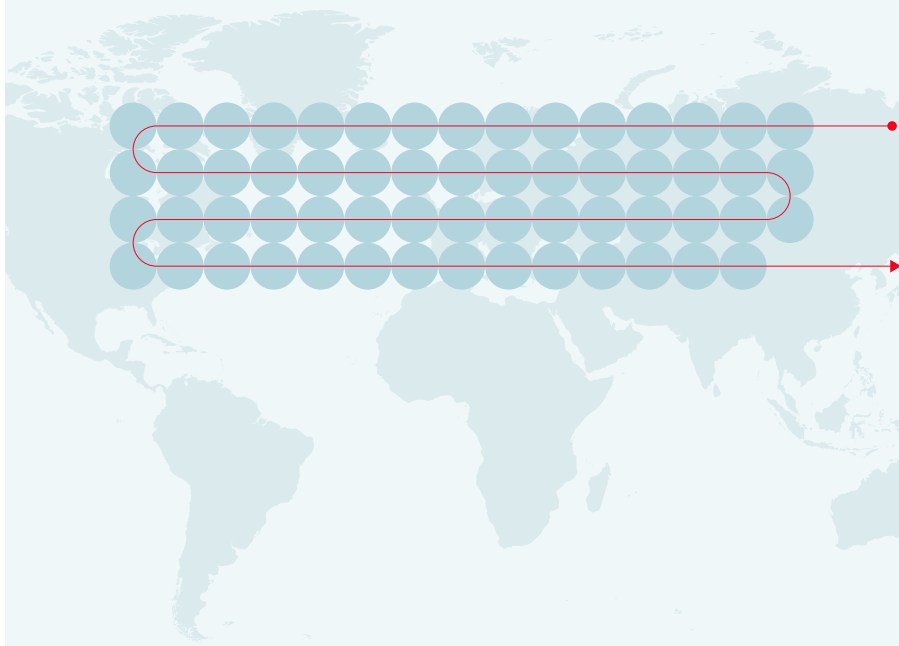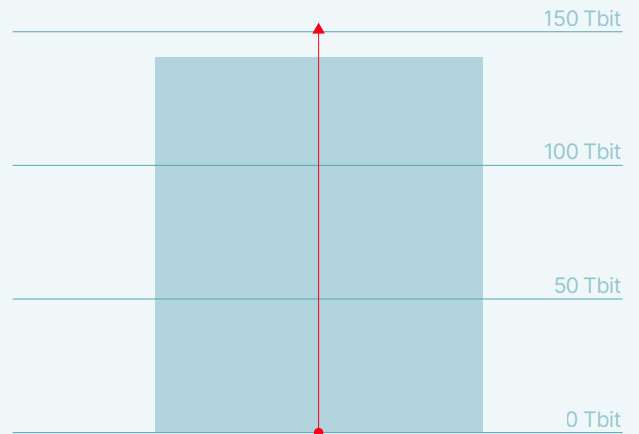
59

Exabytes of Data exchanged across global platform

Peak Global Peering Traffic:

22.36

Tbit/s

Another metric also saw strong signs of expansion in 2023: our geographical presence. The technical, marketing, public relations, and sales teams were kept busy with new launches across multiple continents.

- In Europe, new DE-CIX-owned IXs were launched in Helsinki (Finland), Oslo and Kristiansand (Norway), plus Copenhagen and Esbjerg (Denmark), as part of our expansion to the Nordics.

- Mexico was added to the North American DE-CIX ecosystem, with new fully-owned IXs launched in Mexico City and Queretaro, while another IX was added to the DE-CIX India ecosystem, with the establishment of DE-CIX Hyderabad.

- Three DE-CIX as a Service (DaaS) IXs were also taken live for partners – two in Africa (ACIX powered by DE-CIX in Kinshasa, DRC, and AF-CIX powered by DE-CIX in Lagos, Nigeria) and one in the Middle East (Aqaba IX powered by DE-CIX in Jordan). In addition, announcements were made for a further DE-CIX-owned expansion in Jakarta, Indonesia, and a DE-CIX-as-a-Service (DaaS) IX in Karachi, Pakistan.

Three further locations established in 2023 require a separate introduction: DE-CIX Tokyo and DE-CIX Osaka, the first DE-CIX presences in Japan, and Seattle, the sixth DE-CIX location in the USA and the first on the West Coast, are the first in a new concept we have added to the DE-CIX locational portfolio: dedicated Cloud Exchanges. The establishment of these has been driven by customer demands for global solutions with DE-CIX. While hubs like Seattle and Tokyo have extremely strong and resilient peering communities centered around a world-class Internet Exchange, our Cloud Exchanges in these markets enrich the options for complementary cloud connectivity, providing access to data center and carrier neutral, distributed, enterprise-grade cloud interconnection solutions. In these hubs, our dedicated DE-CIX Cloud Exchanges offer enterprises and organizations access to the world of low-latency, high-performance, highly secure, and resilient cloud connectivity.

With integration of these sites into the rest of the DE-CIX ecosystem, the DE-CIX network now encircles the globe. In addition, our investment in becoming an interconnection platform for Network as a Service (NaaS) providers continued, with further development of API and portal capabilities. With new locations, additional sites at existing locations, and technical upgrades to our infrastructure, 2023 was also a year of many technical highlights.

Strategic Outlook

In the last twelve years, we have added 50 markets globally – starting with Dubai as our first international venture in 2012, and spreading out around the world, year by year. By the end of 2023, we had expanded our reach to 54 markets, including DE-CIX owned and operated Internet Exchanges and Cloud Exchanges, partner-owned IXs operated under the DE-CIX-as-a-Service (DaaS) model, and strategic partnerships with other IX operators. In this way, we have created a great foundation for our growth. From here on out, we are

committed to developing these locations, just as a skyscraper is built, story by story, on top of a strong and robust foundation.

2024 is a pivotal point in the history of DE-CIX. Twelve years after our first international expansion, and with intensive expansion activities over the last five to six years, we have now built up a crucial geographical presence around the globe to achieve our strategic goals. Now, the time has come to leverage this enormous undertaking to grow the gravity of the ecosystems in the existing markets. While it is true that heavy geographical expansion will not be an operational focus over the next two to four years, there is no question that, as previously, important geographical opportunities will continue to be developed and taken to enter further strategically important markets.

Therefore, the strategic focus for the next three years will be placed on nurturing growth in the existing markets, filling the skyscraper's stories with connected networks, partners, customers from different market segments, innovative interconnection services designed to support the needs of these diverse customers, 24/7/365 customer support, and customer success management in all its facets. We shall place emphasis on extending our customer base in existing markets and refining our offering for enterprises and organizations. We will develop new products for the current and future needs of our customers, and become more agile in our dealings with partners, as well as leveraging re-selling opportunities. 2024 will also be an essential year for building the next level of global partnerships with globally-operating data center and connectivity partners.

DE-CIX: easy interconnection, anywhere.

In effect, we will develop DE-CIX into a digital marketplace for infrastructure requirements, ensuring the simplicity of doing business with us. Making interconnection easy, anywhere!

Over the last few years, we have been working resolutely on all aspects of offering easy interconnection, anywhere. With our ongoing expansion, we have not only circled the planet with our Internet and Cloud Exchange locations and global network, we are also reaching for the stars, supporting satellite network operators (especially LEO satellite operators) to deliver excellent Internet connectivity to far-flung corners of the planet, off the beaten track of terrestrial infrastructure. With our technical, product, and research teams, we continue to simplify processes for customers and offer innovative services to meet their needs for agility, automation, and speed of service. With our software team, we are making significant investments in proprietary software to support innovation in the interconnection service landscape.

Our mission as a company is to excel in developing and operating cutting-edge interconnection services and platforms, while creating customer value through innovation, automation, and quality, in a cost-efficient manner. This means that we prioritize customer success and offer both self-service tools and comprehensive customer service support. This can be seen in the impact of our peering management, an area where we are globally unique. It can also be seen in our excellent global 24/7/365 customer service,

our collaboration and outreach with and for our valued partners, and in the bespoke service offerings we design and implement to meet the individual needs of specific enterprises and large-scale customers. We enable organizations of all types and sizes to provide secure, scalable, and controllable experiences for their customers and staff by leveraging the strength and reliability of a global interconnection ecosystem. Our long-term goal is to be a self-sustaining, scalable, secure, steadfast, and reliable long-term business partner for our customers.

A bright future: Why peering is central to socio-economic development

At DE-CIX, we love peering! Peering is in our DNA and will remain central to our activities. Peering is central to efficient and resilient data flows across wholesale networks and digital infrastructure operators of all kinds. But we see now that peering is also becoming increasingly important for customers like enterprises and organizations. They are beginning to leverage the benefits of peering in addition to interconnection services like direct and dedicated connectivity to clouds, applications, and service offerings such as supercomputing and artificial intelligence.

Just as, a decade ago, companies like Netflix, Apple, Amazon, and Google started building out their own global networks and taking control of their digital infrastructure, we are now seeing a similar trend with other industries like banks, the automotive sector, and the healthcare sector. This is because these enterprises have understood the importance

of security, compliance, customer experience and satisfaction, and the ability to create digital assets, including digital products and services. They have understood the importance of creating the highest level of controllability possible on their data journey. And they have understood that this controllability is only possible if they get directly involved in digital infrastructure services. And the way to do this is to peer.

Peering is secure. With peering, it is possible to enforce compliance. Peering offers enhanced performance and low latency, leading to enhanced customer experience. Peering allows an enterprise or organization to get control of their data flows and ensure their transparency. Therefore, peering and other interconnection services will be central to future socio-economic development.

How innovation relies on interconnection

Socio-economic developments like...

... the smart city. To make smart cities a reality, they will require the hyper-localization of digital infrastructure, bringing together transmission technologies, connected devices, and AI – what we refer to as the digital triangle of edge interconnection – to support the way people live, work, and move within a city.

... advances in healthcare. Big data and the real-time management of thousands of data sources of patients engaged in global studies are leading to very positive results on innovative therapies, medicines, and treatment programs. Such projects require

global integration of connectivity solutions to manage and analyze incoming patient data on a massive scale.

… like ubiquitous connectivity, on land, in the sky, and in space. The first major deal has recently been struck between an LEO satellite connectivity provider and a global airline operator. This will enable free high-speed Internet to the airline's passengers – across all seat classes – of 50 Mbit/s per seat. Achieving this requires a global presence of digital infrastructure, not just in space, but also on the ground: interconnection corridors fueling low-latency data traffic flows.

… like harnessing AI for economic growth. AI is a game-changer for all manner of innovations in the technical, pharmaceutical, and financial spheres, to name just a few. AI will continue to develop and gain increasing relevance for all areas of human existence.

The DE-CIX AI Exchange

With much on-premise IT not dimensioned for the infrastructure requirements of AI chips and servers, companies are now often sourcing AI from the cloud or from specialist AI as a Service providers. This requires excellent low latency connectivity from multiple data sources to the AI model, and on to the recipients, be they company staff, customers, or different AI agents. Returning to the concept of the digital triangle, AI can be used to optimize the management of networks, which can, in turn, be used to optimize the management of AI data flows.

Therefore, at DE-CIX we are working on building the DE-CIX AI Exchange, analogous to the DE-CIX Cloud Exchange. Along with clouds, DE-CIX will pave the way to offering interconnection solutions to the AI as a Service players in order to meet enterprise interconnection needs for AI solutions.

The whole realm of innovation demands digital infrastructure networked in a fine mesh to allow data to flow where it is needed. Data sources need to be interconnected intelligently and in low latency with infrastructures especially designed for the demands of AI and big data analysis. These infrastructures must also be interconnected with the relevant recipients to allow the seamless interweaving of human and artificial intelligence in order to create societal and economic benefits for people and businesses. No infrastructure provider can hope to achieve all of this in isolation – our digital future demands collaboration across sectors, across technology providers, across borders, and around the globe. Interconnection is the glue that binds these together. At DE-CIX, we are working with our excellent team and our valued partners to make this future a reality.

Best wishes,

Ivo Ivanov,
CEO and Chair of the Board

EXPANDING HORIZONS

North America
Chicago, Dallas, Mexico City,
New York, Queretaro, Phoenix,
Richmond, Seattle

EMEA
Amsterdam, Aqaba, Athens,
Baghdad, Barcelona, Berlin,
Bucharest, Copenhagen, Dubai,
Dusseldorf, Esbjerg, Frankfurt,
Hamburg, Helsinki, Istanbul,
Kinshasa, Kristiansand, Lagos,
Leipzig, Lisbon, Madrid, Marseille,
Munich, Oslo, Palermo, Prague,
Ruhr region, Sofia, Tripoli, Warsaw

50+

INTERNET AND CLOUD EXCHANGES

140+

**TERABITS CONNECTED
CUSTOMER CAPACITY**

600+

DATA CENTERS

ACCESIBLE FROM

3600+

CONNECTED NETWORKS GLOBALLY

Asia Pacific

Brunei, Chennai, Delhi,
Hyderabad, Jakarta, Johor Bahru,
Kuala Lumpur, Karachi, Kolkata,
Manila, Mumbai, Osaka, Penang,
Singapore, Tokyo

Organization and Corporate Governance

The DE-CIX Group AG management team. From left to right: Sebastian Seifert (CFO and Board Member), Dr. Thomas King (CTO and Board Member), Klaus Landefeld (Member of the Supervisory Board), Ivo Ivanov (CEO and Chair of the Board), Felix Höger (Chair of the Supervisory Board), Harald A. Summa (Member of the Supervisory Board), Christian Reuter (CSO and Board Member), Rudolf van Megen (Member of the Supervisory Board).

Company Structure

DE-CIX Group AG is headed by CEO and Chair of the Board Ivo Ivanov. All global DE-CIX activities, financial investments, and company parts are consolidated under the DE-CIX Group AG umbrella. eco – Association of the Internet Industry is the sole shareholder of the DE-CIX Group AG.

Executive Leadership and Supervisory Board

DE-CIX Group AG is led by Ivo Ivanov, as Chair of the DE-CIX Group AG Board and CEO, together with board members Sebastian Seifert (Chief Financial Officer), Dr. Thomas King (Chief Technology Officer), and Christian Reuter (Chief Sales Officer). The DE-CIX Supervisory Board is chaired by Felix Höger, with Klaus Landefeld, Rudolf van Megen, and Harald A. Summa as additional members.

DE-CIX Subsidiaries

DE-CIX Group AG has five wholly owned subsidiaries. DE-CIX Management GmbH, DE-CIX International GmbH, and DE-CIX Asia Pte. Ltd., are all led by Ivo Ivanov and Sebastian Seifert as Executive Directors. DE-CIX Global Solutions GmbH is led by Ivo Ivanov and Christian Reuter as Executive Directors. In addition, DE-CIX Interconnection México, S. de R.L. de C.V., shares its ownership between DE-CIX Group AG (90%) and DE-CIX International GmbH (10%). It is led by Ivo Ivanov and Sebastian Seifert. The scope of operations of the five DE-CIX Group AG subsidiaries, and their respective subsidiaries and joint ventures, is structured as follows:

- DE-CIX Management GmbH operates the DE-CIX Internet Exchanges (IXs) in Frankfurt, Hamburg, Munich, Dusseldorf, and Leipzig. The UAE-IX in Dubai and Ruhr-CIX in Germany are operated under the DE-CIX as a Service (DaaS) model in cooperation with local data center and carrier partners in their respective regions.

- DE-CIX International GmbH is responsible for the majority of DE-CIX's international activities, either directly (Barcelona, Madrid, Marseille, Palermo, Lisbon, Kristiansand, Oslo, Esbjerg, Copenhagen, and Helsinki), through subsidiaries in the USA (DE-CIX North America Inc. – operating New York, Dallas, Chicago, Richmond, Phoenix and the Cloud Exchange in Seattle) and in Turkiye (DE-CIX Istanbul Network Connections LLC, operating the IX in Istanbul), or on behalf of local partners as DaaS locations. The latter are located in Greece (SEECIX in Athens), Nigeria (AF-CIX in Lagos), the Democratic Republic of the Congo (ACIX in Kinshasa), Iraq (IRAQ-IXP in Baghdad), Jordan (AqabaIX in Aqaba), and Pakistan (PIE Karachi). The Angola-based angonix has placed its trust in the consultancy services of DE-CIX International. DE-CIX International is also a partner in the joint venture DE-CIX Interwire Internet Services Private Limited, operating the five DE-CIX locations in India: Mumbai, Chennai, Delhi, Kolkata, and Hyderabad.
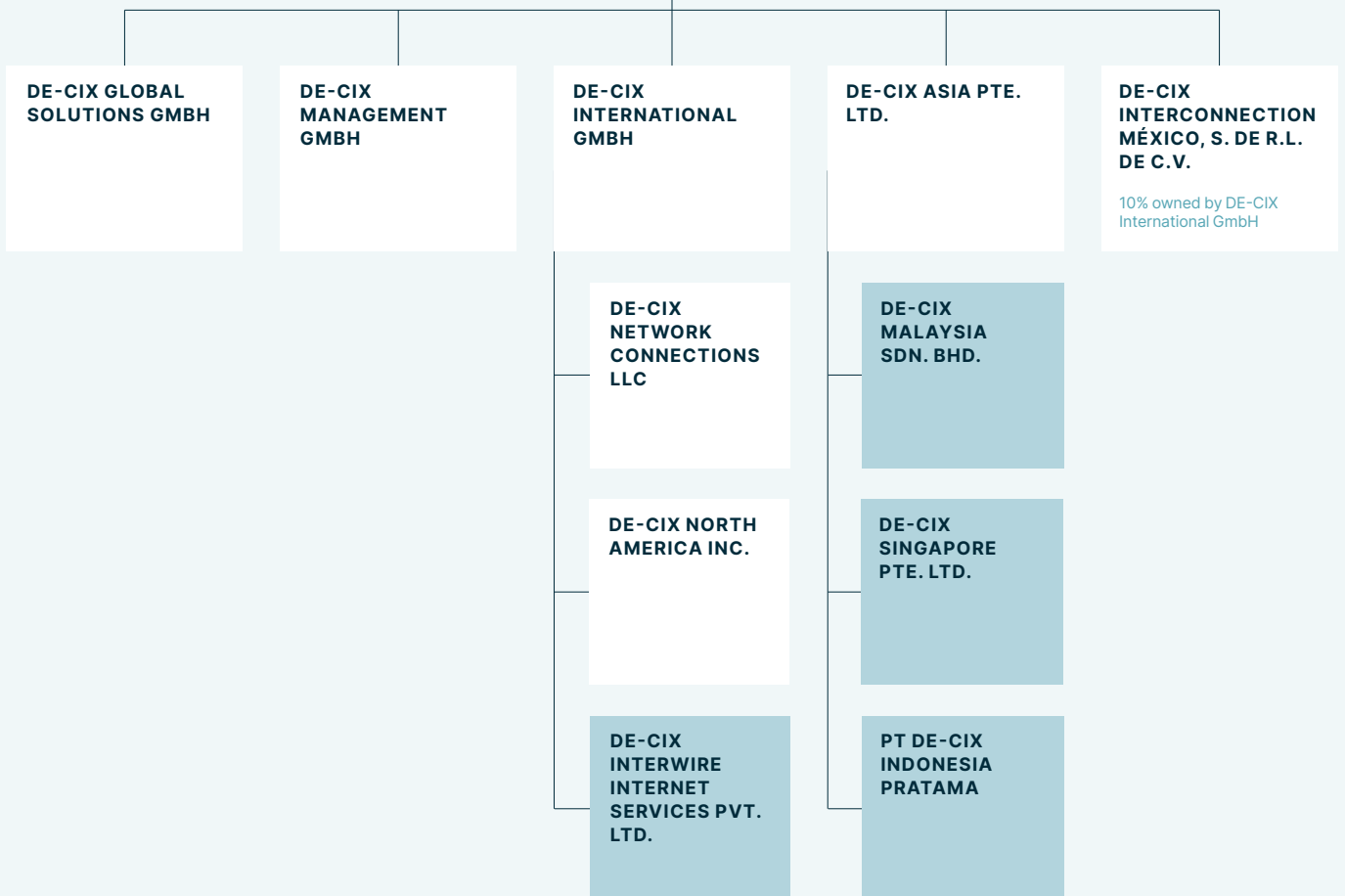
- DE-CIX Asia PTE. LTD. was founded in 2020 to provide an umbrella for the East and Southeast Asian operations. In Southeast Asia, the joint venture companies DE-CIX Malaysia Sdn. Bhd. and DE-CIX Singapore PTE. LTD., established as mergers with the Malaysian operator Starwing Technologies Sdn. Bhd., operate the DE-CIX Internet Exchanges in Kuala Lumpur, Johor Bahru, Singapore, and Penang (PIX powered by DE-CIX) respectively. In 2023, the joint venture company PT DECIX Indonesia Pratama was established together with PT IDMarco Digital Solusi, a subsidiary of the Salim Group, to operate an IX in Jakarta, connected to the wider DE-CIX ecosystem in Southeast Asia. A further IX located in Brunei is operated as a DaaS location on behalf of a local telecommunications company. In Southeast Asia, DE-CIX's distributed platform now spans seven metro markets: Jakarta, Singapore, Kuala Lumpur, Johor Bahru, Penang, Brunei, and Manila (IXP partnership with GETAFIX). Additionally, in Japan, DE-CIX took two Cloud Exchanges into operation in Osaka and Tokyo in 2023.

- DE-CIX Interconnection México, S. de R.L. de C.V. operates the DE-CIX IXs in Mexico City and Queretaro.

- DE-CIX Global Solutions GmbH was established in 2023 to facilitate the provision of services from a single source for globally active companies. It does not engage in its own business activities. DE-CIX Global Solutions GmbH can enter into contracts with multinational companies for the sourcing of services from multiple DE-CIX companies and joint ventures around the world. The client company can therefore leverage the global connectivity between the DE-CIX locations for not only peering, the connection to Microsoft's M365, and cloud connectivity, but also for consuming services provided by DE-CIX's partners within the ecosystem.

COMPANY STRUCTURE

SOLE SHAREHOLDER

eco
ASSOCIATION OF THE INTERNET INDUSTRY

DE-CIX
GROUP AG

☐	**WHOLLY-OWNED**
▦	**JOINT VENTURE**

DE-CIX GLOBAL SOLUTIONS GMBH

DE-CIX MANAGEMENT GMBH

DE-CIX INTERNATIONAL GMBH

DE-CIX ASIA PTE. LTD.

DE-CIX INTERCONNECTION MÉXICO, S. DE R.L. DE C.V.

10% owned by DE-CIX International GmbH

DE-CIX NETWORK CONNECTIONS LLC

DE-CIX MALAYSIA SDN. BHD.

DE-CIX NORTH AMERICA INC.

DE-CIX SINGAPORE PTE. LTD.

DE-CIX INTERWIRE INTERNET SERVICES PVT. LTD.

PT DE-CIX INDONESIA PRATAMA

In partnership with our customers – the DE-CIX Customer Advisory Boards

The Customer Advisory Boards mirror the customer and partner base, as their members act as representatives of DE-CIX's diverse ecosystem of network and data center operators, as well as cloud and content providers. While the Customer Advisory Boards do not have decision-making power, their members communicate with the DE-CIX management team and help guide the overall direction of DE-CIX. As of today, there are three Customer Advisory Boards supporting DE-CIX in different markets: Germany, North America, and Turkiye. The Customer Advisory Board of DE-CIX Management GmbH has five members representing the global customer reach of the company. One of the Board Members is appointed directly by eco – Association of the Internet Industry. The other four members are elected directly by DE-CIX customers.

Germany: DE-CIX Management GmbH Customer Advisory Board

Falk von Bornstaedt,
Senior Strategy Consultant,
BENOCS GmbH

Malte von dem Hagen,
Director Global Infrastructure /
Co-Head of Procurement,
Anexia

Zaid Kahn,
Vice President, Cloud AI and
Advanced Systems Engineering,
Microsoft

Bernhard Krönung,
Managing Director and Founder,
regio [.NET]

Klaus Landefeld,
Board Member,
eco – Association of the Internet
Industry

USA: DE-CIX North America Customer Advisory Board

Scott Brown,
President, Pixel Factory Data Center, Inc.

Phil Koblence,
COO, New York Internet – NYI

Steven Schecter,
Senior Director, Network Architecture,
Akamai Technologies

Carl Williams,
IPv6 Hall of Fame
Adjunct Professor, Temple University

Turkiye: DE-CIX Istanbul Network Connections LLC Customer Advisory Board

Cem Çelebiler,
Managing Director, Turknet

Çağlar Dabanoğlu,
Senior Manager, Network Architecture,
Akamai Technologies

Serkan Sevim,
Founder & CEO of Medianova

DE-CIX as
an employer

Lucia Falkenberg,
Chief People Officer

Enabling passionate people to expand the horizons of the Internet

DE-CIX is the world's leading operator of Internet Exchanges (IXs). As such, our success story runs in parallel to the Internet's ever-growing usage in our day. Today, around 250 employees across the world are working at DE-CIX to expand the horizons of the Internet. To achieve this goal, we combine the economic security of a world leader with the agility, mentality, and spirit of a start-up. Our aim is to continue to grow in a healthy and sustainable way. Our employees have access to state-of-the-art technology and are encouraged in their academic and professional development, no matter what level they enter the company. Fast approval processes for acquiring technology, short decision-making routes, individual opportunities for professional advancement, economic robustness even in times of crisis, exciting and meaningful projects, mutual respect and cooperation within and between teams, and the drive to be the best in the world – these are the qualities that define the work in DE-CIX teams worldwide. And even after operating for almost 30 years, the innovative spirit which allowed DE-CIX to grow strongly across the globe persists.

"At DE-CIX, we are committed to fostering excellent teamwork and continuously seek out new talents who are eager to contribute to our diverse DE-CIX teams."

Nathalie Langley,
HR Representative

"We asked our employees for their opinion: 85 percent identified fully with the DE-CIX strategy in 2023. We are proud of the levels of satisfaction, the healthy feedback culture, and the strong identification with DE-CIX and its contributions for a secure and high-performance Internet."

Selin Gueldner,
HR Representative

Working towards the Internet of tomorrow

As an employee of DE-CIX, you are expanding the horizons of the Internet of tomorrow, creating new possibilities for digitalization and prosperity. Almost every industry, from manufacturing to banking, from automotive to medicine, benefits from the fast and reliable connections and digital services provided by Internet Exchanges. DE-CIX's 50+ Internet and Cloud Exchanges worldwide have a real and positive impact on global Internet quality and access by fostering the growth of the ecosystems that develop around them. The resulting enhancement of local digital infrastructure means that Internet performance and connectivity resilience increase while the cost of connectivity drops significantly.

At DE-CIX, you are part of a wider community that defines guiding principles of the present and future Internet in various leading global bodies. We are working towards a common goal: a free and open Internet that allows the seamless flow of data at a global scale. For almost 30 years, our interconnection services have contributed to the creation of new digital ecosystems worldwide and have prepared people, businesses, and organizations for the coming decades of digital evolution. We want to reduce the digital divide by fostering healthy digital ecosystems to provide access to online education and healthcare, and a myriad of other digital services, as well as offering more and more people the opportunity to participate in the digital economy. By working at DE-CIX, you support our continuous outreach to establish IXs in new markets – for the good of the Internet, and for the benefit of people everywhere.

Supporting the drivers of the Internet

At DE-CIX, we value professional growth and enable our outstanding team to take on the challenges of a dynamic market. As a result, we offer various career paths. Some of our staff started as student assistants at DE-CIX and rose to leadership roles. We also have a remarkable research and development department, and we encourage our staff to pursue academic degrees with their research. We maintain close ties with several German universities and research institutes, such as the TU Darmstadt and the Goethe University in Frankfurt.

Of course, one key ingredient of growing as a company is to create good working conditions for our staff. Therefore, various benefits accompany your work at DE-CIX: We cover the costs of fitness club memberships, offer employee discounts, support the acquisition of bikes, improve foreign language skills, and promote the health and well-being of our staff. For example, we promote charitable activities of the DKMS.

When it comes to health and well-being, sports play a big role in taking care of yourself. That's why we not only participate in business runs in multiple cities, but were also proud to see employees strengthen these ideas and self-organize their participation in a charitable holiday sporting event in Cologne in 2023.

Part of our work-culture is to actively ensure that our staff can expand their own personal horizons. This also includes regular cross-functional trainings that improve knowledge exchange, work-related skills, and collaboration. An endeavor that we want

"When we started as working students, we quickly noticed that DE-CIX places great emphasis on our professional development. Today, a few years later and as full-time employees, we and our responsibilities have grown alongside the company. Therefore, we are now committed to helping all other new colleagues to have the same positive start at DE-CIX as we have enjoyed, and that all colleagues experience DE-CIX as a place where everyone is valued and supported."

Carla Rodtheut and Jutta Klausmann,
HR Representatives

"For 2024, our goal is clear: We want to continue to inspire our employees to contribute to the future of the Internet and to shape the digital future."

Lucia Falkenberg,
Chief People Officer

Top Company 2024
kununu

charta der vielfalt
UNTERZEICHNET

to expand in 2024 and the years to come. In a nutshell, we offer a flexible, intense, and innovative work environment, with competitive salaries, cool perks, and a vibrant community of talented minds.

A diverse workforce

With our headquarters in the center of the Frankfurt East End, DE-CIX connects Frankfurt to the world, and the world to the Internet. Our global teams are composed of various nationalities, and we value intercultural communication as part of the DE-CIX spirit. Colleagues from 35 different countries collaborate, share ideas, and learn about each other's cultures and languages. Many of them moved to Germany just to work at DE-CIX.

Moreover, with 72 highly skilled female staff members (around 30% of the workforce) in roles from creative and technical to team leaders and division heads, DE-CIX is proud to be a frontrunner in encouraging women to work in tech. We assist career paths with a family-friendly work environment supported by PME familienservice, and also encourage flexibility within teams whenever possible.

With nearly three decades in the business and rapid, company-wide growth in the past few years, the staff today ranges from Internet pioneers who witnessed the very first moments of the modern Internet, to undergraduates who are striving to become the next generation of networking experts. We at DE-CIX are honored to contribute to the future of the Internet and to shape the digital future.

250

EMPLOYEES WORLDWIDE

Technical Update:
The heartbeat
of DE-CIX

Dr. Thomas King,
Chief Technology Officer

The technology that keeps data flowing

In the coming years, we will see increasing demand from both wholesale network operators and the enterprise sector for bespoke global interconnection solutions and specialized interconnection services to not only harness the potential but also overcome the challenges of the speed of technological evolution. No small part here will be played by the cloud and by as-a-service offerings, including the provision of access to a range of applications, AI models, supercomputing services, and even quantum computing. These services offer the advantage of reducing the need for individual investment in infrastructure and specialists. However, without excellent and globally conceived connectivity, such services will not be able to fulfill expectations.

In addition, we will see an increasing demand for interoperable technologies. Where interoperability has not been central to the design of technologies, additional bridging technologies will emerge to enable integrative network landscapes – in just the same way as cloud routers have resolved the challenges of a lack of interoperability between cloud infrastructures.

Such innovations will alleviate the pain point of vendor lock-in and heighten the classic advantages of interconnection: enabling provider neutrality, increasing resilience, and promoting data sovereignty. Added to this, security through direct interconnection and flexibility through automation and self-service management will also work hand-in-hand with low-latency and high-bandwidth connectivity to shape the continuing evolution of interconnection.

Artificial intelligence will play multiple roles in this transformation. Connecting data sources efficiently and securely to AI infrastructure will enable companies to achieve competitive advantages in rapidly evolving markets. Equally, with network engineers faced with increasingly complex network landscapes, combining a distributed workforce, a multitude of devices, and cloud infrastructure, etc., AIOps (AI for IT operations) will provide essential support. AIOps will help to simplify the management of network operations through automation, predictive analytics, and root cause analysis on the basis of big data and machine learning, thus speeding up troubleshooting and resolving issues, while also reducing costs.

2023 in Review

Continual growth in traffic, connected capacity, and networks resulted in another exciting year in 2023 for the technical teams at all DE-CIX locations around the world. Traffic grew in all locations, with significant new peak traffic records being set in Frankfurt (16.62 Tbit/s), New York (1.61 Tbit/s), Madrid (1.54 Tbit/s), Mumbai (1.48 Tbit/s), Dallas (897.38 Gbit/s), and Dubai (598.27 Gbit/s). These peaks – with four Internet Exchanges (IXs) already in the terabit club and DE-CIX Dallas finishing the year on the verge of reaching the milestone – contributed to global peak traffic for the GlobePEER service of 22.36 Tbit/s (19% growth year on year) and total traffic exchanged over the global platforms of 59 exabytes (up 23% on 2022). These figures attest to the constant need for expansion of the DE-CIX fabric, with the establishment of new locations, increases in capacities between locations, upgrades of

technological components, and the roll-out of new products, services, and features.

Continued geographical expansion

2023 saw the establishment and commissioning of six new DE-CIX-owned IXs, with two each in Norway (DE-CIX Oslo and DE-CIX Kristiansand) and Denmark (DE-CIX Copenhagen and DE-CIX Esbjerg), and one in Helsinki (Finland) and Hyderabad (India). Two further IXs were established under the DE-CIX as a Service (DaaS) model in Africa (ACIX powered by DE-CIX in Kinshasa, DRC and AFCIX powered by DE-CIX in Lagos, Nigeria) and one in Jordan (Aqaba IX powered by DE-CIX). In Jordan, networks were also migrated from the existing Aqaba exchange to the new DE-CIX-operated platform. In addition, work was undertaken on the technical setup for another three DaaS IXs which were inaugurated in early 2024, these being Penang IX powered by DE-CIX in Malaysia, IRAQ-IXP powered by DE-CIX in Baghdad, and PIE powered by DE-CIX in Karachi, Pakistan.

In addition, the DE-CIX technical team worked together with SwissIX to upgrade the technology of the Swiss Internet Exchange. For this purpose, a total of 220 networks connected to SwissIX were migrated to the award-winning DE-CIX Apollon platform. The migration took place during ongoing operations in overnight maintenance windows to keep the impact on customers as low as possible.

The integration of new data centers as enabled sites into existing IXs is another ongoing project for the team. In 2023, this included establishing a point of presence at NTT Noida and expanding the DE-CIX Delhi presence to five data centers. A further enabled site at DE-CIX Istanbul in the ComNet data center adds a seventh data center to the IX's presence. At DE-CIX Barcelona, a third enabled site at EdgeConneX was also implemented during the year.

The evolving DE-CIX platform – Cloud Exchanges and global backbone

Although cloud connectivity has been a part of the DE-CIX portfolio since 2016, until now this has always been integrated into an Internet Exchange platform. In 2023, the concept of a dedicated DE-CIX Cloud Exchange was added to our location portfolio. These exchanges offer cloud connectivity equal to all other existing DE-CIX exchanges, without the addition of peering services. The DE-CIX Cloud Exchanges offer interconnection solutions that enable seamless, on-demand, and direct access to cloud service providers. Our services facilitate secure, reliable, and high-performance connectivity – therefore, instead of relying on Internet-based connections, enterprises can benefit from enhanced network performance, lower latency, improved data transfer speeds, and increased security. In 2023, the first dedicated Cloud Exchanges were built and taken live in Osaka and Tokyo, establishing the first DE-CIX presence in Japan, as well as in Seattle, extending the DE-CIX North America footprint to six metro markets.

During 2023, the DE-CIX backbone was extended around the circumference of the planet, connecting Europe, North America, and Asia. This enables much greater flexibility in the use of our remote services, such as GlobePEER Remote and DirectCLOUD Remote. It also allows simpler integration of globally distributed locations in order to interconnect distributed company facilities in a Closed User Group, or source products like the Microsoft Azure Peering Service (MAPS) globally. DE-CIX is the only operator in the IX sector to offer such a globally distributed and interconnected platform.

DE-CIX is now a fully-fledged Network as a Service provider

Another on-going project is the increasing automation of our platform and services via the API (Application Programming Interface) and the self-service portal. Automated access port provisioning for our customers was implemented in the API and self-service portal in 2023, with the service live by the end of the year. In addition, our investment in becoming an interconnection platform for Network as a Service (NaaS) providers continued, with further development of API and portal capabilities. For this, the specifications for IX-API V2.50 were released, and the design and user experience of the portal were modernized.

Performing open-heart surgery on the Internet

In 2023, during 38 nightshifts over a period of several months, the DE-CIX technical team successfully completed the migration of 1006 customer access ports at DE-CIX Frankfurt. This involved transitioning from old Nokia XRS40 devices to the latest Nokia SR14s FP5-based routers. The migration was necessary to meet the high demand for 100GE and 400GE access ports, while also supporting future growth in Frankfurt. One of the key benefits of these new devices is their improved energy efficiency, consuming only half the power of their predecessors.

Also, as one of the first IX operators to introduce the cutting-edge 100G LR technology, DE-CIX implemented the roll-out of the next-generation optical transceivers in Frankfurt in mid-2023. While the existing 100G LR-4 uses four lasers, each carrying a signal of 25 Gbit/s, the new 100G LR technology needs only a single laser and uses pulse amplitude modulation (PAM4) to transmit data at 100 Gbit/s. The reduction in transceiver design complexity of the increasingly deployed 100G LR technology will result in power savings as well as better transceiver pricing.

Outlook – 2024 and beyond

Looking into the future of the DE-CIX platform, in 2024 and beyond we will be leveraging our existing technology for the creation of new services and environments, while also continuing to develop our technical capabilities further. Six new locations are planned to go

live in 2024: Internet Exchanges in Jakarta (Indonesia), Mexico City, and Queretaro (Mexico), plus DaaS IXs in Iraq and Pakistan, and a further Cloud Exchange in Amsterdam (the Netherlands). In addition, around ten new Premium Enabled Sites will be implemented. Network upgrades and extensions will be executed in the North American locations Dallas, Chicago, Phoenix, and New York, introducing 400GE and 100G LR-1 capabilities.

In terms of new products, additional features and functionalities will be rolled out for the Peering LAN in 2024. As the next step in the automation of our platform, the technical team will also establish the automated provisioning of access and services, including not only the digital self-service portal but also orders coming from a manual sales process. The self-service portal is also to be enriched with further features in 2024, including offering statistics in the portal's partner view for our DaaS partners. Further enterprise-relevant products and solutions can be found in Chapter 6.

Below, some of the teams responsible for the projects described above and for the year-round seamless operations of DE-CIX infrastructure are introduced in more detail.

THE HEARTBEAT OF DE-CIX

Bernhard Hahn,
Head of Global Infrastructure and Operations

Infrastructure and Operations

The Global Infrastructure and Operations team is responsible for the building, expansion, and operation of the DE-CIX platforms around the world, as well as for the service environments for applications, such as the self-service portal and the API. The team is divided into the sub-teams **Platform Development**, **Capacity**, **Application Platform**, **Network Operations**, and **Systems Operations**, two of which – Platform Development and Network Operations – are introduced separately below.

The team is comprised of skilled and experienced network engineers, systems engineers, and site reliability engineers, globally distributed but with the majority centered around the DE-CIX headquarters in Frankfurt, Germany. Alongside technical knowledge and skills, project management skills are an essential component of the work carried out by the team, and two teams – Network Operations and System Operations – work on-call around the clock.

While the team has members on location in Germany, Spain, and the US to take care of local requirements, trusted remote hands are engaged for the infrastructure in other regions, with the exception of some projects involving the initial building or major expansion of IXs. As such, all technical projects involve coordination and technical project management, logistics, and steering the building and commissioning of individual sites. The operation of our platforms is handled remotely.

Ingo Voss,
Head of Platform Development

Platform Development

The Platform Development team is responsible for the technical rollout of new IXs and cloud locations, and the expansion of DE-CIX locations to additional sites, as well as the integration of new products or features into our platforms and technical project management to coordinate and organize all working areas in the team. The team is distributed across Germany, Austria, Spain, Belgium, and the USA. Critical implementation work is carried out during night shifts in the relevant local region by engaging remote hand services from the data centers, or sending our own engineers on-site. The work of the team comprises:

- **Network engineering**, needed for the configuration of routers, switches, and servers, and skills in programming in this area are required to automate processes and production steps.

- **Systems engineering**, the knowledge of which is needed to set up all the servers, virtual machines, and the DE-CIX services running on them for our end customers.

- **Project Management**, for managing collaborative projects, including other teams like Network Design, Software, Customer Service, Product Management, Network and Systems Operations, and handling third-party suppliers as well as customers and partners.

2023 in Review

The work of the Platform Development team in 2023 included the rollout of infrastructure and migration of customers on the SwissIX in Switzerland to the DE-CIX Apollon platform technology stack and the replacement of all NOKIA XRS20 systems through the integration of cutting-edge NOKIA SR-14s, involving the migration of over 1000 customer ports in Frankfurt. The team was also responsible for the rollout of DE-CIX's new IXs in the Nordics and the first of DE-CIX's dedicated Cloud Exchanges in Seattle (USA), Osaka and Tokyo (JPN), with work undertaken on a fourth to go live in 2024. Furthermore, the DaaS IXs in Africa and Jordan were commissioned, and work was undertaken on the rollout of DaaS IXs in Iraq, Malaysia, and Pakistan, which were launched in early 2024.

Robert Finze,
Head of Network Operations

Network Operations

The Network Operations team is made up of Network Operations Engineers and one Principle Network Reliability Engineer, and is based in Frankfurt, Germany, from where all global operations are conducted. The central responsibility of the team is the stable and reliable operation of the DE-CIX network services. Among these are the global backbone, metro networks, optical networks, and the management network. The team is on-call 24/7 to handle incidents at any time and ensure high service quality. One of the strengths of the team is its people: All team members, despite different backgrounds and experience, have the same responsibilities and share duties. In this way, they are able to support each other in any way necessary.

While incidence response relating to hardware, 3rd party services, and configuration is the core task of Network Operations, collaboration with other teams, such as Customer Service and Platform Development, is also an important aspect of the work. The Network Operations team supports the Customer Service team with troubleshooting when customers experience issues. The team also supports the rollout of new locations and expansions, so that potential errors can be detected and remedied early, in order to ensure a seamless transition from build to operations. The team is also developing its own software tools to increase the level of automation and further improve overall service quality.

Marcos Sanz,
Head of Global Software

Software

The Software team is responsible for developing and running the software that drives the DE-CIX interconnection platform: This software is at the engine of each IX, enabling the interaction of users and customers with the platform and the orchestration of servers, network equipment, and service providers, like cloud providers, in the background. The secret to the success of the team lies in its highly skilled cross-functional staffing and the so-called "DevOps" approach: joint activities of development and operation of software. This creates a tight loop in which productive issues can be found and fixed faster and new needs quickly identified, thus creating better software and happier customers in the long run.

Ongoing work on the open standard IX-API and its implementation, the DE-CIX API, allows us to offer a "programmable DE-CIX" as a prominent example of Infrastructure as Code for our customers. Among other things, DE-CIX contributed our proprietary cloud router extension to the IX-API standard in 2023. The new Service Insights system was made available in the DE-CIX self-service portal in 2023, and as a next step, these insights are also to be serviced via API.

+14

**NEW LOCATIONS
IN 2023**

Global and Regional Growth 2023

Christian Reuter,
Chief Sales Officer

2023 was another year of growth and records for DE-CIX around the globe. Key drivers were the demand for high bandwidth interconnection across the entire global ecosystem – visible in the connected customer bandwidth, the number of connected networks, and record traffic peaks – and strongly growing demand for cloud connectivity. This growth is evidence of the increasing need for direct interconnection and the provision of secure, low-latency connectivity for entities across many sectors, including not only the traditional wholesale peering customers but also customers like enterprises and organizations.

As a result, 2023 also saw the structural transformation of the sales arm of DE-CIX, to prepare the company for the interconnection needs of the coming decade. The new Customer Success Management, Presales and Consulting Team and the revamped Partner Program (which you can read more about in Chapter 6) are a testament to our ambition to be the interconnection service provider of choice not only for multinational Fortune 500 corporations that wish to build out and control their own digital infrastructure, but also smaller enterprises and organizations that want to source excellent connectivity to clouds via trusted partners. Achieving this requires working together with our valued traditional wholesale and reseller partners, but also establishing new partnerships in a range of sectors, from transport partners through to enterprise-facing partners.

This chapter reports on the growth of DE-CIX owned and DE-CIX operated Internet and Cloud Exchanges. DE-CIX also provides connectivity to further markets via our trusted IXP Partners (Prague, Czech Republic; Warsaw, Poland; Sofia, Bulgaria; Bucharest, Romania; and Manila, the Philippines), which can also be integrated into the design of interconnection solutions via the DE-CIX self-service portal and API.

The year 2023 in Review

Globally, DE-CIX experienced growth in connected networks of 16.4%, reaching a total of 3630 in 2023. Connected customer bandwidth increased by 14% to 140.98 terabits. This was the result of not only the 16.5% increase in 100GE ports (totaling more than a thousand by the end of the year), but also the increasing traction of 400GE ports in Frankfurt. Regional highlights can be found in the section below.

In terms of the growth in services, several projects were undertaken to design and implement bespoke solutions for larger enterprise and strategic customers, involving collaboration between the DE-CIX consulting, solution design, value engineering, peering management, cloud connectivity, and technical teams, together with the partner program and a range of partners from various categories. More about these projects can be found in Chapter 6.

Cloud connections on the DE-CIX platform jumped by 50% during the year, demonstrating the enormous demand for secure and low-latency access to clouds. A general preference for larger bandwidths was clearly discernible in 2023, with 60% of the total number of

connections to clouds using bandwidths of at least 5G. 5G connections to clouds grew by close to 60% during the year, while 10G connections more than doubled in 2023. 1G cloud connections also grew by 20%, making up 20% of total cloud connections by the end of the year. At the end of 2023, there was close to 4 terabits of booked capacity to clouds, an increase of 160% on the figures for 2022. Four of the five largest cloud customers in 2023 were partners, selling the services on to their enterprise customers. This demonstrates the importance of enabling a greater range of partners access to the DE-CIX service portfolio.

+16.4%
Connected Networks
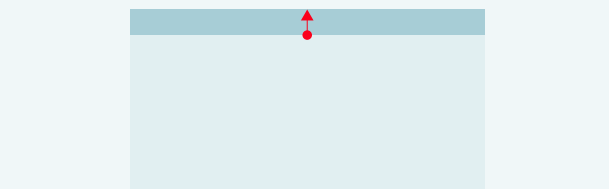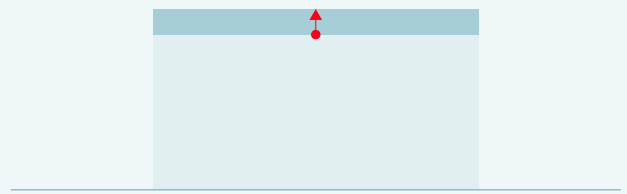
+16.5%
100GE Ports

+50%
Cloud Connections
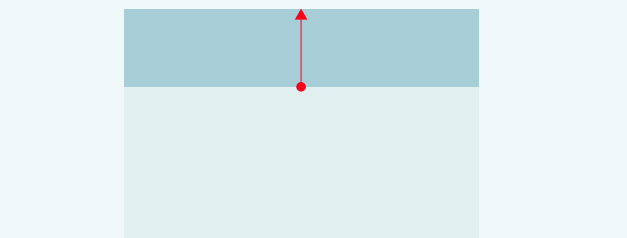
4
Terabits booked Capacity to Cloud

DE-CIX's regions around the world

Ed d'Agostino,
Vice President DE-CIX
North America

DE-CIX North America: Continued strong growth across entire ecosystem

DE-CIX North America continued to grow strongly in 2023, with increases in networks, booked capacities, and data traffic, as well as new locations. Numerous developments illustrate the dynamism of the market. Data throughput at peak times at DE-CIX Dallas increased by 43% to 897 Gbit/s, rapidly closing on the 1 Tbit/s milestone. At DE-CIX New York, peak traffic grew by 22% to 1.6 Tbit/s during the year. Double-digit growth in network connections across the North American ecosystem brought the total to over 500 in 2023. An increase of 34% in the number of 100GE ports sold further illustrates the demand for low-latency, high-bandwidth connectivity.

Geographically, the sixth location in the USA, the DE-CIX Cloud Exchange in Seattle, which was established in late 2023, is the global first of a new concept in the DE-CIX location portfolio. As a dedicated Cloud Exchange, it offers access to data center and carrier neutral, distributed, enterprise-grade cloud connectivity solutions.

Additionally, the expansion to Mexico, also in late 2023, means that DE-CIX's Internet Exchanges in Mexico City and Queretaro will act as a gateway for traffic flows between North and Central America and serve the needs of network operators and enterprises in Mexico for interconnection and cloud connectivity. The DE-CIX Mexico distributed platform is available from four data centers in Mexico City and Queretaro, with plans to connect directly with DE-CIX Dallas, further extending the reach of the North American ecosystem.

In its first year after inauguration, DE-CIX Richmond is poised to become the international gateway to the US especially for networks coming from Southern Europe (over MAREA) or Brazil (over BRUSA) via sea cable

connections. With more content networks deploying, the IX is destined to attract regional network interest. International networks that take colocation in Richmond can use DE-CIX Richmond to peer with DE-CIX New York and DE-CIX Dallas, without needing to build out beyond Richmond. A major advantage that will bring further momentum to the market.

In Phoenix, the Digital Realty (120 Van Buren) and DCX sites, also in the process of being enabled at the end of the year, will have a dramatic impact on sales by the end of Q2 2024, which will, in turn, position the IX more strongly in the market.

In 2023, partnerships and relationships with strategic customers were also strengthened. Three additional Equinix data centers were enabled in the Chicago, Dallas, and New York markets during the year. In May 2023, DE-CIX and Connected Nation Internet Exchange Points (CNIXP), a joint venture between nonprofit Connected Nation and Newby Ventures, announced a strategic partnership to close the Digital Divide in the US. The partners agreed to establish and operate edge IXs in unserved and underserved markets across the US. Furthermore, DE-CIX and CR8DL, a front-runner in cloud-based high-performance computing, announced a transformative partnership aimed at propelling discovery across an array of scientific fields. Finally, strategic customers connected to or expanded their connectivity to DE-CIX IXs in North America, with SpaceX becoming the inbound network with the biggest capacity in New York and Dallas, and Charter Communications, a leading broadband connectivity company and cable operator, going live in New York, Dallas, and Chicago.

EXPANSION TO MEXICO

Highlights for DE-CIX
North America

Regional Highlights

The number of 100GE ports grew by **34%** across the North American ecosystem, underlining the demand for high bandwidth access.

Total connected customer capacity increased by **27%** to close to 25 terabits.

Increasing by **13%**, network connections in North America exceeded **500** by the end of the year.

New York

Peak data traffic increased by **22%** and amounted to 1.6 Tbit/s in December 2023.

The number of connected 100GE ports increased by **21%**.

Total connected customer capacity at DE-CIX New York grew by **16%**, adding up to 14 terabits, with 280 networks connected.

Chicago

DE-CIX Chicago saw an increase of **64%** in 100GE ports sold.

Total connected customer capacity grew by **55%** to 2.3 terabits.

Connected networks increased by **50%** to **48**.

Dallas

At DE-CIX Dallas, data throughput at peak times increased by **43%** to 897 Gbit/s by the end of 2023, rapidly closing on the 1 Tbit/s milestone.

The number of 100GE ports grew by **42%**.

Connected customer capacity at the IX grew by **33%** to over 7 terabits, with over 150 networks connected.

Phoenix

At DE-CIX Phoenix, the total connected customer bandwidth increased by **124%** to 1.4 terabits.

The number of connected networks rose to **24**.

Theresa Bobis,
Regional Director
Southern Europe

DE-CIX in Southern Europe: Strong growth in bandwidth and traffic across the ecosystem

The year 2023 was filled with highlights for the DE-CIX Southern European region. Counting Lisbon, Madrid, Barcelona, Marseille, and Palermo, DE-CIX operates five Internet Exchanges in the region and thus forms the largest neutral interconnection ecosystem in Southern Europe, distributed across 13 data centers.

Connected customer capacity in the Southern European ecosystem increased by around a third to 11.7 terabits, with close to 500 network connections across the ecosystem by the end of the year. 100GE ports sold in the region also increased by 49%.

Established in 2016 and acknowledged as the flagship DE-CIX IX in Southern Europe, DE-CIX Madrid celebrated a new record in peak data throughput of 1.5 Tbit/s in December 2023, an increase of close to 44% since 2022. DE-CIX Marseille increased its connected customer capacity by 65% to 2.9 terabits. DE-CIX Lisbon also increased its connected customer capacity by 42% and more than

doubled its peak data throughput in 2023. At DE-CIX Barcelona, data throughput at peak times tripled during the year, and there was an increase in customer bandwidth of 50%.

Notably, DE-CIX Southern Europe is proactively positioned for the evolving landscape of cloud connectivity for businesses. The ongoing growth in DE-CIX traffic serves as a strategic preparation for the anticipated surge in cloud traffic development, highlighting DE-CIX's commitment to staying ahead of industry trends and facilitating seamless connectivity in the digital era. Beyond its operational achievements, DE-CIX Southern Europe is dedicated to global knowledge sharing to enable the further development of the Internet worldwide. Together with the Universitat Pompeu Fabra (UPF) in Barcelona, DE-CIX launched the global Interconnection Academy in April 2023. The courses are interactive, fully online, free-of-charge, and openly accessible worldwide, covering the entire value chain of the interconnection business.

Highlights for DE-CIX
Southern Europe

Regional Highlights

The number of 100 GE ports across the regional ecosystem enjoyed significant growth of **49%**.

The interconnection ecosystem of DE-CIX in Southern Europe saw an increase in connected customer capacity of **31%** to 11.7 terabits.

Close to **500** network connections across the ecosystem.

Madrid

Connected customer capacity at DE-CIX Madrid increased by **20%** to 7 terabits.

The number of 100GE ports in Madrid increased by **27%**.

At DE-CIX Madrid, peak data throughput increased by **44%** and amounted to 1.5 Tbit/s in December 2023.

Lisbon

Connected customer capacity at DE-CIX Lisbon increased by **42%**.

Peak data throughput at the IX more than doubled in 2023.

Connected networks grew to **57**.

Marseille

Connected customer capacity at DE-CIX Marseille increased by **65%** to 2.9 terabits, with **115** networks connected to the Exchange.

The number of 100GE ports in Marseille increased by **163%**.

Peak data throughput increased by **35%** at DE-CIX Marseille, exceeding 350 Gbit/s.

Barcelona

DE-CIX Barcelona saw an increase in customer bandwidth of **50%**, with connected networks growing to **43**.

Data throughput at peak times tripled during the year.

Andreas Sturm,
Chief Business Development Officer,
Sales Central Europe

DE-CIX in Germany: Impressive growth in Frankfurt and the regions

The year 2023 was filled with highlights for DE-CIX's six exchanges in Germany, counting Frankfurt, Hamburg, Munich, Dusseldorf, Leipzig, and Ruhr-CIX powered by DE-CIX. In 2023, the DE-CIX ecosystem in Germany comprised 1800 network connections and counted more than 86 terabits of connected customer capacity.

DE-CIX Frankfurt is the largest and most important Internet Exchange in Europe. Its exceptional network density and unparalleled data throughput have made it a global leader in digital networking. In 2023, DE-CIX Frankfurt saw two new traffic peaks: The IX exceeded 15 Tbit/s in September and 16 Tbit/s in November, coinciding with the start of the UEFA Champions League season 2023/24. This marks an increase in peak traffic at the company's flagship exchange of 15% over the course of the year. Overall, 40 exabytes of data were exchanged at DE-CIX Frankfurt in 2023, an increase of almost a quarter compared to 2022. Enterprise connectivity was also an important growth area for DE-CIX in Germany,

with the number of cloud connects increasing by more than 50% in 2023. DE-CIX Germany witnessed a doubling of 10GE cloud connects, underscoring the region's rapid embrace of direct cloud connectivity solutions.

To better cope with ongoing and forthcoming growth and to future-proof the interconnection platform, DE-CIX invested heavily in new cutting-edge technology over the course of 2023. With the increasing demand for higher bandwidth and better performance, DE-CIX introduced a new generation of optical transceivers, the 100G LR-1 in Frankfurt. Also, in 2023, DE-CIX successfully migrated over a thousand customer access ports at DE-CIX Frankfurt to the latest Nokia SR14s FP5-based routers. The migration was necessary to meet the high demand for 100GE and 400GE access ports, while also supporting future growth in Frankfurt.

Frankfurt was not the only German location that saw growth and innovation in 2023. All regional DE-CIX Exchanges registered a growing demand for bandwidth and thus increasing numbers of 100GE ports sold, as well as an overall increase in connected

customer capacity. Over the last three years, DE-CIX Munich has doubled its peak traffic, and at the end of 2023 counted 228 networks connected. DE-CIX Dusseldorf reached 2.25 terabits in connected customer capacity, with 278 networks connected to the IX. DE-CIX Hamburg is the most important IX in Northern Germany and a gateway to the North, interconnected with DE-CIX's exchanges in the Nordics. With over 200 connected networks and peak traffic throughput of 202 Gbit/s, it is the central hub for data exchange in the region.

IMPRESSIVE GROWTH
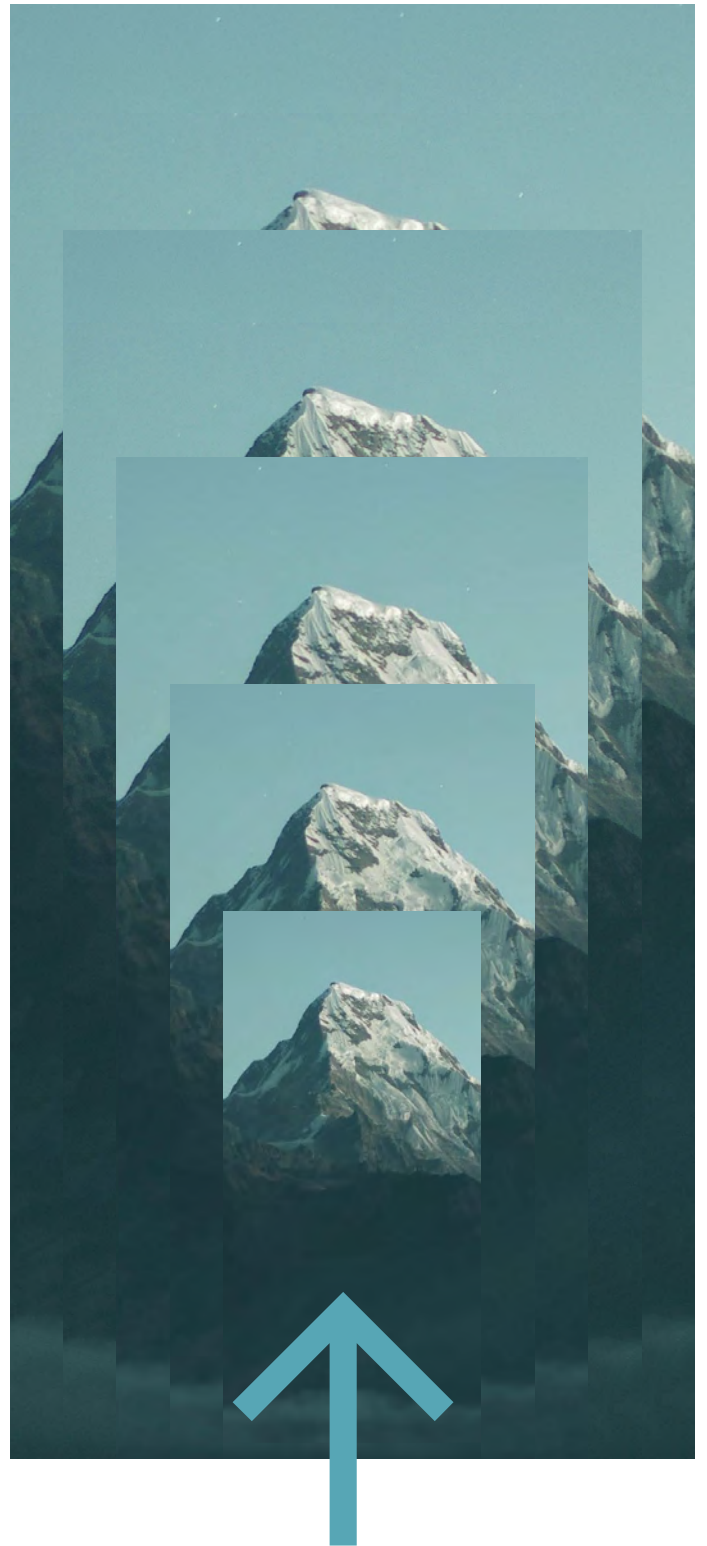
Highlights for DE-CIX
in Germany

Regional Highlights

The number of 100GE ports at the DE-CIX IXs in Germany increased by **8%**.

The total connected customer capacity in Germany rose by **8%** to 86 terabits.

Network connections grew to **1822** across the German ecosystem.

Frankfurt

At DE-CIX Frankfurt, peak data throughput increased by **15%**, with record peak traffic of 16.6 Tbit/s in November 2023.

Connected customer capacity increased by **8%**, totaling 79.9 terabits by the end of the year.

The number of 400GE ports increased by 25% and 100GE ports by **9%**.

Munich

At DE-CIX Munich, peak data throughput increased by **34%** to 241.74 Gbit/s.

The number of 100GE ports increased by **8%**.

At the end of 2023, there were **228** networks connected to DE-CIX Munich.

Dusseldorf

DE-CIX Dusseldorf saw an increase in peak data throughput of **23%** to 179.95 Gbit/s.

Connected customer capacity reached 2.25 Terabits, with **278** networks connected to the IX.

Erik Norup,
Business Development Manager,
Cloud & Interconnection Services

DE-CIX enters the Nordics: Providing enterprise-grade interconnection services at five new locations

2023 was an exciting year for DE-CIX in the Nordics. DE-CIX expanded to three Nordic countries during the year – Norway, Finland, and Denmark – taking five locations live. The data center and carrier neutral IXs in Norway, DE-CIX Oslo and DE-CIX Kristiansand, were launched in early May 2023 in collaboration with BULK Infrastructure Group AS, which has connected three of their data centers to the DE-CIX network. In late May, DE-CIX continued its expansion by launching a new Internet Exchange in Finland, DE-CIX Helsinki, which is available in the Equinix data center in the Finnish capital. To complete the 2023 expansion story in the Nordics, DE-CIX extended its presence to Denmark with two further IXs, DE-CIX Esbjerg in the BULK data center and DE-CIX Copenhagen in the Digital Realty data center in mid-June.

All IXs in the Nordics are built using the DE-CIX Apollon technology, and offer low latency, secure, and resilient cloud connectivity, with a cloud routing service to enable robust hybrid and multi-cloud scenarios, as well as other enterprise-grade interconnection services. DE-CIX's InterconnectionFLEX service, which provides a holistic bundled solution for peering, cloud connectivity, and private network interconnects, was the initial focus in the region.

In 2023, DE-CIX's activities in the Nordics focused on local events to grow the ecosystem and explain the benefits of direct interconnection. The first networks were connected to each of the exchanges during the year.

Darwin da Costa,
Business Development Manager,
SE, Africa & LATAM

DE-CIX in Africa – Rapid growth and strong demand for interconnection

2023 saw the establishment of the first two DE-CIX as a Service (DaaS) IXs on the African continent. AF-CIX (African Cloud Interconnection Exchange) powered by DE-CIX in Lagos, Nigeria, hosted in the data center of Rack Center, was launched in April. A month later, ACIX (Africa Congo Internet Exchange) powered by DE-CIX in Kinshasa, in the Democratic Republic of the Congo (DRC) – operated by DE-CIX for the NGO 'Internet pour tous' and hosted in the data center of UNITED S.A. was also launched.

Both IXs grew strongly in their first year, connecting in total 34 networks across the African ecosystem, including Internet service providers, carriers, mobile operators, and systems integrators supporting enterprise digitalization in Africa. ACIX finished the year with connected customer capacity of 122 gigabits and 13 networks connected or connecting, while AF-CIX reached 145 gigabits of connected customer capacity and 21 connected networks. These two exchanges are set to grow rapidly in the coming years and develop into strong African ecosystems.

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NETWORKS ACROSS AFRICA

Marco Brandstaetter,
Regional Director Middle East
& India

Bülent Şen,
Regional Director Turkiye

DE-CIX in the Middle East: Strong demand for neutral interconnection

DE-CIX is seeing strong and growing demand for neutral interconnection in the Middle East. In 2023, technical work was carried out on establishing three new exchanges, significantly broadening the scope of DE-CIX's activities in the region. Aqaba-IX powered by DE-CIX went live in 2023, while the technical prerequisites were put in place during the year for IRAQ-IXP powered by DE-CIX and Pakistan Internet Exchange (PIE) powered by DE-CIX, which went live in early 2024. By the end of 2023, more than 6 terabits of customer capacity were connected across the entire region.

UAE-IX powered by DE-CIX: The leading distributed IX in the Middle East

In its more than 10 years of operation, the UAE-IX powered by DE-CIX in Dubai has

grown from an empty Internet Exchange to an important international interconnection hub. In 2023, UAE-IX powered by DE-CIX had the highest peak traffic of any IX in the Middle East, growing by 53% to reach 598 Gbit/s. Furthermore, the number of connected networks grew to 105, making it the largest IX in the region.

One of the most important developments in 2023 was the connection between UAE-IX powered by DE-CIX and SmartHub IX Fujairah. Thus, for the first time, the partners established a seamless nationwide integrated ecosystem. The aim was not only to enable all customers to interconnect for remote peering, regardless of their telecom provider in the UAE, but also to attract new customers. As a result, the first networks from Pakistan were onboarded in 2023. Finally, DE-CIX organized the UAE-IX Peering Workshop & Cruise again in 2023, and attended other events in the region, including MENOG and Capacity Middle East.

The success of the UAE-IX powered by DE-CIX clearly demonstrates the benefits of establishing an Internet Exchange, as key findings of a study published by DE-CIX in January 2023 underline. Back in 2012, 90% of local data traffic needed to be transported outside of the GCC (Gulf Cooperation Council) – to Europe, Asia, or North America – to be exchanged, resulting in huge delays, poor Internet performance, and regular outages. Today, 90% of locally bound data remains local, reducing round-trip times and improving resilience. Key benefits for the region are:

- Latency has dropped from 200 milliseconds (ms) in 2012 to less than 3 ms in 2022.

- The international IP transit price has fallen by 98% and broadband Internet prices by around 85%.

- The number of data centers has more than tripled (from 5 to 17).

- The number of locally-registered networks has grown by a factor of eight (from 10 to 79).

DE-CIX Istanbul: Underlining the value of neutral interconnection and low latency

As the gateway between the Middle East and Europe, more and more customers are recognizing the importance of DE-CIX Istanbul. This is reflected not only in the number of connected networks, which grew by 15% to 54 during 2023, but also by the impact of reducing latency. Content delivery networks like Meta, Akamai, and Tencent connected to the ecosystem in its eighth year of operation

to take advantage of this and serve content in lower latency to customers in Turkiye and beyond.

DE-CIX Istanbul continues on the path of success. DE-CIX added IX-PANSE as a premium enabled site and MARS and Comnet as enabled sites in 2023. The partnership with Comnet, one of Turkiye's leading Internet service providers, is of particular importance, because both companies can grow together. Wherever Comnet is present, it delivers the infrastructure services for the DE-CIX interconnection ecosystem. Also in 2023, Exodus Clouds became a new cloud partner for DE-CIX DirectCLOUD, further driving the already highly successful cloud connectivity business for DE-CIX in Turkiye. In 2023, DE-CIX Istanbul not only continued to demonstrate the value of neutral interconnection, but also of low latency connectivity to the cloud.

Furthermore, in 2023 DE-CIX Istanbul organized a series of round tables dealing with its customers' key topics. Together with the business magazine Fortune Turkiye, DE-CIX Istanbul invited industry representatives, experts, and customers to the discussions. The aim was to gain insights into the Turkish market and understand the role that interconnection services play in the business models of banks and insurance companies, in e-commerce, and in the automotive industry. These discussions followed on from the summits and community events of previous years. Fortune Turkiye, as media partner, reported on the results and the importance of DE-CIX Istanbul for Turkiye, the Middle East, and beyond.

Highlights for DE-CIX
in the Middle East

Regional Highlights

The ecosystem saw increasing demand for access: The number of 10GE ports grew by **20%** to more than 200, and 100GE ports by **13%**.

Total customer capacity across the Middle Eastern ecosystem increased by **16%** to 6.4 terabits.

The number of network connections grew by **25%** to **177**.

UAE-IX powered by DE-CIX

At UAE-IX powered by DE-CIX, data traffic throughput at peak times increased by **53%** up to 598 Gbit/s.

Total customer capacity grew by **14%** to 3.4 terabits by the end of 2023.

Demand for 100GE ports increased by **18%**. Furthermore, the number of connected networks grew by **11%** to **105**.

DE-CIX Istanbul

Total customer capacity increased by **9%** to 2.8 terabits in December 2023.

The number of connected networks grew by **15%** to **54**.

Increased demand for 100GE ports remained persistent throughout 2023.

Sudhir Kunder,
Chief Business Officer – DE-CIX Interwire,
India

DE-CIX India: Fostering rapid digital transformation across the region

With more than 600 network connections and an overall growth of 27% in the number of 100GE ports, DE-CIX India's carrier and data center neutral IX ecosystem continued evolving in 2023. This is also reflected in the total connected customer capacity, which increased by 16% to 9.6 terabits. Furthermore, at DE-CIX Mumbai – in its fifth year of operation – not only did the connected customer capacity increase by 14%, but data throughput grew by 32%, reaching 1.5 Tbit/s at peak times and underlining the importance of the location as the region's flagship IX.

But DE-CIX India is not only growing in terms of customers, it is also growing geographically: DE-CIX India opened its fifth presence on the Indian subcontinent in 2023, introducing new interconnection possibilities in Hyderabad, a major center for the tech industry. The interconnection platform is available at the STT Hyderabad data center. The new platform accelerates data exchange for local or locally-bound traffic, fostering rapid digital transformation across the region and bringing the advantages of low-latency, high-speed data exchange closer to end users and businesses.

Highlights for DE-CIX
India

Regional Highlights

The overall number of 100GE ports grew by **27%**.

The total connected customer capacity increased by **18%** and grew to 9.6 terabits in 2023.

More than **600** network connections across the ecosystem.

Mumbai

At the region's flagship IX, the connected customer capacity increased by **14%**.

Data throughput at peak times grew by **32%**, reaching 1.5 Tbit/s.

The number of 100GE ports increased by **25%**.

Chennai

Data throughput at peak times grew by **73%**, reaching 114 Gbit/s.

The connected customer capacity increased by **35%**, adding up to 1.2 terabits.

Furthermore, there was **31%** growth in connected networks in 2023.

Delhi

Data throughput at peak times jumped by **24%** to 245 Gbit/s at DE-CIX Delhi.

In 2023, the connected customer capacity increased by **16%** and grew to 1.6 terabits.

The number of 100GE ports continues to grow.

Frank P. Orlowski,
Executive Vice President Corporate
Development

DE-CIX in Southeast Asia: A new hub to expand digital horizons

In Southeast Asia, DE-CIX established more partnerships in key markets, while keeping the distributed interconnection platform at steady growth. DE-CIX has a strong focus on serving customers in all major ASEAN markets. Interconnection in the region is set to change massively; major hubs such as Singapore and Hong Kong are no longer the epicenter of growth due to power and space limitations for data centers (SG) and strong political influence from China (HK). This has sparked major investments in infrastructure across ASEAN, mainly in Jakarta, Manila, Johor Bahru, and Bangkok.

Throughout the entire region, the total number of customer networks connected climbed by 21% to 86 networks. The connected capacity increased by 44%, resulting in 1.9 terabits by the end of 2023. Furthermore, in the Singapore / Johor Bahru metropolitan market, connected customer capacity increased by 63% to 1.3 terabits in 2023.

In July 2023, DE-CIX entered the Indonesian market through a joint venture with IDMarco Digital Solusi, a subsidiary of the Salim Group. Named PT DE-CIX Indonesia Pratama, the joint venture will establish a distributed Internet Exchange across multiple data centers in Jakarta. DE-CIX Jakarta will offer both local interconnection as well as access to the DE-CIX ASEAN distributed ecosystem to combine local and regional exchange functionalities.

Furthermore, in December, DE-CIX Malaysia announced a partnership with Digital Penang to establish the Penang IX (PIX) powered by DE-CIX. Technical work on building the PIX powered by DE-CIX began in 2023. The new Internet Exchange, scheduled for launch at the beginning of 2024, is set to propel the region's digital capabilities to new heights through faster, more affordable, and more resilient Internet connectivity.

Highlights for DE-CIX
Southeast Asia

Regional Highlights

Connected customer capacity increased by **44%** to 1.9 terabits in 2023.

The number of network connections grew by **21%**.

Market entry into Indonesia, the largest market in Southeast Asia.

Singapore / Johor Bahru metropolitan market

Connected customer capacity increased by **63%** to 1.3 terabits.

The number of network connections increased by **38%**.

Demand for 100GE ports grew throughout 2023.

Kuala Lumpur

There were more than **50** networks connected to the IX by the end of 2023.

Brunei

In Brunei, the number of connected networks more than doubled during 2023.

Driving Customer
Success

50+

How DE-CIX services and interconnection technology support digital business

With our concept of "build your own Internet", DE-CIX began several years ago to build bespoke technical possibilities for interconnecting companies beyond the boundaries of their corporate LAN. Projects involve the collaboration of multiple DE-CIX teams, providing consulting services, network design and technical implementation, the integration of partners and partner services, 24/7/365 customer service, and the development of innovations on the product side. Along with the technical teams introduced in Chapter 4, this also includes a range of teams introduced in this chapter: the Customer Success Management, Presales and Consulting, Products, and Customer Service teams, and the DE-CIX Partner Program.

More and more multinational enterprises have placed their trust in DE-CIX's technology, design, consulting, and implementation. When enterprises and organizations have understood the importance of controlling their data flows, ensuring data sovereignty and security, and interconnecting with external networks securely and with the best possible performance and agility, they can turn to DE-CIX to find the best solution for their individual needs.

Leveraging DE-CIX's presence in over 50 markets worldwide and its global backbone, as well as its unsurpassed ecosystem of network operator and data center partners, DE-CIX can design a resilient and secure network environment, tailor made for the specifics of the business case. Whether a company needs to interconnect securely with its ecosystem of business partners, build up a resilient multi-cloud environment across national borders or continents, connect global branches and plant locations and provide low-latency access to enterprise-grade applications, or overcome any other interconnectivity challenge, DE-CIX makes interconnection easy, anywhere.

On pages 58-59 is a selection of use cases from real life – illustrating some of the projects that have been brought to fruition, enabling enterprises to "build their own Internet".

Use cases
from real life

01

Using the DE-CIX Closed User Group to interconnect securely with business partners

Company: A large commercial vehicle manufacturer

Revenues: around €11 billion (2022)

Workforce: 35,000

Scope of Business Activities: Global

This company uses the DE-CIX Closed User Group to enable business partners to interconnect. No more MPLS (multiprotocol label switching) structures, but a separate exclusive environment established on the DE-CIX platform for the exchange of data between the commercial vehicle manufacturer and its partners. The advantage of this is obvious. Each partner is free to decide how they connect themselves to the infrastructure – directly via Layer 2 from one of the hundreds of German data centers connected to DE-CIX, or via a DE-CIX partner who bundles its transport service with access to this Closed User Group. This means that the central administration and laborious set-up of MPLS is history, and we are able to provide fast, ideally on-demand switching. The possibility to connect to DE-CIX and thus also to this Closed User Group from any DE-CIX or DE-CIX-partner location worldwide is an unparalleled advantage for companies operating globally.

02

Automated provisioning at the click of a button: Using the DE-CIX API for agile cloud connectivity

Company: A globally operating automotive manufacturer

Revenues: around €150 billion (2022)

Workforce: 170,000

Scope of Business Activities: Global

This manufacturer uses the DE-CIX API interfaces globally to establish cloud connections from its own software to Azure, AWS, Google, and IBM via DE-CIX DirectCLOUD. The user experience is therefore unsurpassed. In the in-house provisioning portal, the necessary preparatory work is carried out and approvals are obtained which, after confirmation, are automatically provisioned via the DE-CIX infrastructure – all within a few minutes. The connections to the cloud can be established on-demand at any time, but can also be decommissioned again automatically. This setup has contributed significantly to increasing efficiency and standardization, as well as supporting new innovations through cost reductions and agility. Making interconnection easy.

03

Bundling connectivity services with InterconnectionFLEX for a flexible global network

Company: A multinational company present on all continents

Revenues: around €50 billion (2022)

Workforce: 100,000

Scope of Business Activities: Global

The company uses the DE-CIX infrastructure not only for peering, the connection to Microsoft's M365, and cloud connectivity, but also for consuming services provided by DE-CIX's partners within the ecosystem. This includes, on the one hand, for example, IP-Transit, which is provided by the IP-Transit partner via the interconnection platform using Layer 2. On the other hand, in regions where DE-CIX peering is not available, peering via local non-DE-CIX IXs is integrated via the DE-CIX platform. The global connectivity between the DE-CIX locations (e.g. New York > Frankfurt or Seattle > Singapore) also offers first-class interconnection of company locations. Simple scaling, transparent knowledge of cable routes and redundancies, best-of-interconnection at each location, agreed under one contract, this InterconnectionFLEX service bundle provides the optimum package for interconnecting multiple continents to simplify the network infrastructure. Enabling interconnection everywhere.

Customer Success Management, Presales and Consulting

Harald Kriener,
Head of Global Presales, Consulting and Customer Success Management

Enterprise needs for excellent connectivity are growing rapidly. However, this requires more than simply the services of a Cloud Exchange. Today, and even more so in the future, a holistic cloud connectivity scenario also requires peering with clouds, between clouds, and between single devices. The pathways that enterprise data takes between networks and to and between clouds need to be controlled, and enterprises require transparency as well as business continuity built into their solutions.

The DE-CIX Customer Success Management, Presales and Consulting team was established in 2023 to support the delivery of high quality DE-CIX services for enterprise and large-scale customers. The team works with other DE-CIX teams as well as partners throughout the sales and implementation process for enterprises. It supports with solution design and value engineering in order to visualize the value of DE-CIX interconnection services for individual customers. In this way, the team provides customers with transparency as to how the source and destination of data are interconnected.

Customer Success Management

The Customer Success Management team provides an easy entry point for enterprise customers, complex projects, and key partners. The Customer Success Management team accompanies the customer on the journey to harvest the greatest possible value out of the solution that they acquire. The team supports a seamless and high-quality onboarding experience. Customer Success Management is a "human" translator between our technicians, the technology involved, and our customers' needs. Ongoing customer success management maximizes the value of our services for the individual customer.

Presales and Consulting

The Presales and Consulting team offers consulting and design for enterprise and large-scale customers across its four sub-teams: Value Engineering, Solution Design, Cloud Connectivity, and Peering Management. Insights from the team are leading to insights for new services, as well as new implementation designs, which can then be transformed into a more generalized service offering.

With Value Engineering, DE-CIX supports enterprise customers to gain the greatest value out of the usage of DE-CIX connectivity services across the platform. Through our close engagement with enterprises and through analyzing their needs, new ideas emerge as to how DE-CIX can simplify and secure interconnection for enterprises and their digital business.

The Solution Design team translates the value statements from either the Value Engineering team or the customer directly into feasible technical requirements. Based on these, the team builds a solution and makes it easy for the customer to consume. The added value of this process is that it also enables the delivery of a transparent view of where the data flows, as well as alternate pathways in the event of outages. The solutions designed by the team are then executed either by the DE-CIX technical team or by our valued partners. DE-CIX is unique in the enterprise market in offering such a service.

The Cloud Consulting team is a dedicated team working on cloud connectivity, not only to individual clouds, but also between clouds. Cloud-to-cloud connectivity is the foundation of future workloads like Artificial Intelligence because the lowest latency is required for such applications to work efficiently.

Peering Management lies at the foundation of DE-CIX's success. The team increases the quality of customer peering, thereby reducing the latency of connections and ensuring that traffic can flow seamlessly. Active peering management is statistically proven to lead to much faster growth in data traffic, as it brings the traffic to the locations where it is needed – both on the receiving and delivery side. Therefore, the next step is to automate and simplify peering management with intelligent tools, creating AI-supported peering management to increase our efficiency.

In addition, for new (premium) enabled sites, Presales and Solution Design develop the benefits and unique selling point of the specific data center in combination with DE-CIX interconnection services to create the foundations of success upfront.

Partner Business and the DE-CIX R³ Partner Program

Mareike Jacobshagen,
Head of Global Business
Partner Program

Resell – Refer – Reach

Digital value chains are at the heart of what DE-CIX does: delivering a platform that interconnects its participants in the most transparent, high-performance, and secure way. Together with our partners – data centers, resellers, managed service providers, and others – we nurture the leading neutral interconnection ecosystem worldwide. The attractiveness of our services for partner portfolios, the support that we provide to make partners successful, and the DE-CIX brand partners benefit from: There are many good reasons to partner with us. By working together, we can grow for our mutual benefit.

More than ever before, business value chains need a robust digital infrastructure. DE-CIX enables the cloudification of enterprises by providing an easy, flexible, efficient, and highly secure path into any cloud. Enterprise customers are beginning to see the relevance of holistic connectivity solutions in their migration to the cloud, encompassing cloud connectivity and access to applications like the DE-CIX Microsoft Azure Peering Service (MAPS). In turn, partners are beginning to realize that they need access to the network and connectivity as-a-service business stack. Our partner network can leverage the DE-CIX platform and customized network design to support their customers with the best possible solutions for all their interconnection needs.

2023 in Review

In 2023, it became clear that the global DE-CIX partner community is embracing cloud and enterprise interconnection services. In fact, out of the five largest consumers of the DE-CIX DirectCLOUD service, four were partners delivering these services to their end customers. This not only demonstrates the strength of interest in secure and low-latency connectivity to the cloud via the DE-CIX platforms, it also demonstrates how easy

it is for end customers like enterprises and organizations to consume DE-CIX services via one of our valued partners.

As an example of the work of the DE-CIX partner team, ten new **reseller and referral partners** were onboarded in the US during 2023. These partners include **cr8dl.ai**, a front-runner in cloud-based high-performance computing, **DCX.us Data Center**, a premier provider of fully managed hyper-density colocation solutions, and **Capcon Networks**, an industry leader in carrier agnostic connectivity uniquely positioned to address the US rural telecommunications market.

The partner ecosystem also continued to grow globally in terms of **reach partners** in 2023. In the US, the strategic partnership with **CNIXP**, a joint venture between Connected Nation and Newby Ventures, bore first fruit, with the announcement of funding to establish an IX under the DE-CIX as a Service (DaaS) label in Wichita, Kansas. Multiple DaaS IXs were taken live for partners during the year, these being **ACIX powered by DE-CIX** in Kinshasa, Democratic Republic of the Congo, **AF-CIX powered by DE-CIX** in Lagos, Nigeria, and **Aqaba-IX powered by DE-CIX** in Jordan, while a further three (**Penang IX powered by DE-CIX** in Malaysia, **Pakistan IE powered by DE-CIX** in Karachi, Pakistan, and **IRAQ-IXP powered by DE-CIX** in Baghdad) prepared for launches early in 2024. In Germany, the data center operator **Grass Merkur** in Hannover became an additional Premium Enabled Site for DE-CIX Frankfurt, with a focus on Cloud Exchange functionality. All such projects generate mutual follow-up business with local enterprises, enabling DE-CIX and DE-CIX's partners to grow in parallel.

Finally, the leading partners in 2023 were selected to become DE-CIX Premium Partners. These DE-CIX Premium Partners include:

Arelion solves global connectivity challenges for multinational enterprises whose businesses rely on digital infrastructure, offering the world's #1 ranked IP backbone and a unique ecosystem of cloud and network service providers and connecting directly to cloud services across North America, Europe, and Asia.

As a Hybrid IT Service Provider, CANCOM accompanies organizations into the digital future. CANCOM supports customers in/ by simplifying complex enterprise IT and increasing their business success through the implementation of modern technology. In order to comprehensively meet the IT needs of companies, organizations, and the public sector, CANCOM delivers tailor-made IT end to end from a single source.

Core-Backbone GmbH is an established and successful carrier headquartered in Germany, which operates a global network on three continents.

envia TEL is a leading provider of digital infrastructure in Central Germany.

RETN is one of the fastest growing independent Eurasian network service providers, with unique resources to connect Europe and Asia. Offering a wide range of connectivity services, such as IP transit, Ethernet & VPN, Capacity, Remote peering to major IXPs, Colocation and Cloud Connect, RETN's network encompasses more than 132,000km across 865+ PoPs, with maximum control of its physical network.

TelemaxX is a leading regional provider of holistic solutions in the areas of telecommunications, data centers, cloud services and managed services, headquartered in Karlsruhe, Germany.

Türk Telekom International is a leading telecommunication operator in the Central and Eastern European (CEE) region, Turkey, Caucasus, Middle-East and Asia, providing a full range of Internet/data services, infrastructure, and wholesale voice services.

VTAL is an end-to-end digital infrastructure solutions company and holder of the largest neutral fiber optic network in Brazil, serving telecom operators, Internet providers and OTTs. They have an integrated portfolio of connectivity and infrastructure solutions. Currently, in addition to ground-based fiber optic infrastructure, which connects several municipalities in Brazil, they also have 26,000 kilometers of subsea cables that connect Brazil to Argentina, Chile, Venezuela, Colombia, Bermuda, and the United States, as well as edge data centers distributed between Brazil and Colombia.

Products

Dr. Christoph Dietzel,
Head of Global Products
& Research

DE-CIX is a world leader in interconnection. Alongside traditional peering, which has been a hallmark of DE-CIX's services for decades now, the DE-CIX service portfolio also encompasses interconnection services especially designed for enterprises and organizations. These services are the foundation of transformation and cloudification for companies and institutions and enable improved connectivity performance to clouds, applications, and other networks, with security and data sovereignty built in. In particular, DE-CIX **DirectCLOUD** supports secure and low-latency direct connectivity to cloud service providers; the DE-CIX **Cloud ROUTER** enables connectivity for multi-cloud and hybrid-cloud scenarios; and the **Microsoft Azure Peering Service (MAPS)** allows direct connectivity to the MS365 and MS Dynamics clouds for optimized performance of applications for a mobile and remote workforce, globally.

Today, peering is also becoming an attractive opportunity for companies and institutions to connect with relevant partner networks directly and securely. Here, two further services, **GlobePEER** and **GlobePEER Remote** also deserve mention. These services enable direct connectivity to any other network also connected to the global DE-CIX ecosystem – whether they are connected in the same location or distributed across multiple continents. In 2023, global traffic exchanged on the DE-CIX platform using the GlobePEER services reached an all-time record peak of 22.36 Terabits per second (Tbit/s), 19% up from the previous year. DE-CIX services bring networks together to exchange data and do business.

Finally, **InterconnectionFLEX** is a bundled offering, which is proving to be very interesting for large enterprises that want to increase their network footprint, but are not sure what capacity they will need of which interconnection product, where they will need

it, and when. By separating procurement and provisioning, DE-CIX's FLEX services enable enterprises to maintain their flexibility, supporting them in establishing both global and local connectivity.

2023 in Review

In 2023, both the portfolio of services and the uptake of DE-CIX services grew. The DE-CIX **DirectCLOUD** service experienced around 50% growth in cloud connections during the year. The availability of **MAPS** also more than doubled, with 10 new locations added to the global footprint. A new version of access to the DE-CIX platform, the **LR-1 Access**, was implemented in Frankfurt in 2023, and will be rolled out globally in 2024.

In addition, the DE-CIX **Cloud ROUTER** service was rolled out globally in 2023. There was significant demand for the DE-CIX Cloud ROUTER in 2023, with the first customers implemented. This service enables secure and low-latency cloud-to-cloud communication, including clouds like AWS, Google Cloud, IBM Cloud, and Microsoft Azure, as well as optimizing communication with on-premise data center equipment. The service is available at all locations globally, offering bandwidths from 0.1 to up to 400 Gbit/s. Deployment and management of the service can be handled using the DE-CIX API and self-service portal.

Outlook 2024

Based on feedback from customers, new features will be added to the DE-CIX Cloud ROUTER in 2024 to increase observability and traffic engineering capabilities. In addition, the Cloud ROUTER will be offered not only in all locations individually, as is currently the case, but will also be offered as a globally distributed service across location boundaries, enabling the world-wide distribution of workloads.

The virtual Cloud ROUTER is the first Network as a Service (NaaS) product in the DE-CIX portfolio. During 2024 and beyond, further NaaS products will be added, based on current research and development activities. Additionally, in a further research project, the first steps will be taken towards building a Quantum Internet Exchange to investigate the viability of offering simplified access to Quantum Key Distribution (QKD).

DE-CIX Customer Service – beyond Level 1 Support

Antoinette van der Stouwe,
Head of Global Customer Service

DE-CIX's 24/7 Customer Service exemplifies excellence in customer support within the digital connectivity landscape.

When clients reach out to DE-CIX Customer Service, they encounter a dedicated team of network service engineers ready to address their needs. These skilled professionals not only manage the installation of ordered services but also handle troubleshooting issues across all DE-CIX locations and products. By allocating colleagues in various countries, DE-CIX ensures that customers receive support tailored to their local time zones. This strategic deployment enhances accessibility and responsiveness, fostering stronger relationships with customers worldwide.

With an average of 500 cases handled and resolved each month, DE-CIX Customer Service performs a critical role in sustaining the seamless operation of digital infrastructure. A testament to the expertise of the Customer Service Team is that 97% of cases can be resolved directly by the team. For the remaining cases, additional support is provided by colleagues from Network Operations, who specialize in managing the DE-CIX backbone, ensuring that even the most complex issues are addressed effectively.

Moreover, DE-CIX Customer Service goes beyond reactive problem-solving by actively participating in DE-CIX projects. Whether it's installing new sites or executing upgrades to meet evolving customer demands, the team is integral to enhancing service capabilities and driving innovation within the organization.

Financial Results
2023

Sebastian Seifert,
Chief Financial Officer

The DE-CIX Group AG performed very well in the 2023 financial year and was able to achieve an increase in revenues of 14.4% through further growth in service utilization and expansion of the company's global IX presence.

In the consolidated annual financial statement for 2023, the global revenues of all company parts grew by 7.96 million to 63.34 million Euro, in comparison to the previous year's 55.38 million Euro. Revenues from international activities jumped by 26.5% in comparison to 2022 and represented 25 percent of total revenues in 2023. The EBIT for 2023 amounted to 3.8 million Euro and the EBITDA to 5.6 million Euro. In the 2023 financial year, no use was made of debt capital.

The Profit and Loss statement below provides further details on the consolidated global results of the DE-CIX companies in 2023.

DE-CIX Global Consolidated Profit and Loss Account 2023

In thousands of EUR	2023	2022
Revenue	**63,341**	**55,382**
Inventory Change	398	-2.6
Operating Result	**63,739**	**55,379**
External Services / Cost of Goods	-1,394	-933
Gross Income	**62,345**	**54,446**
Other Operating Income	2,363	2,146
Personnel Costs	-21,678	-18,190
Depreciation	-1,791	-1,563
Other Operating Costs	**-37,418**	**-33,244**
Operating Result/EBIT	**3,821**	**3,596**
Financial result	549	-15.3
EBT	**4,370**	**3,580**
Tax	-1,552	-1,474
Annual Profit/Loss	**2,818**	**2,106**
EBITDA	5,612	5,159

Publication
details

About DE-CIX

As the leading Internet Exchange operator and interconnection provider, we help companies to realize new opportunities and future-proof their connectivity needs to manage growing data volumes and new applications. From easy and secure cloud connection to creating interconnection ecosystems, we make interconnection easy. Anywhere.

Find out more at de-cix.net.

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