



中国电信（欧洲）有限公司
China Telecom (Europe) Ltd.



Company Overview

Our comprehensive solutions at a glance

www.chinatelecomeurope.com

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WHO WE ARE

The demand for high-quality international communications is soaring. Multinational enterprises, carriers, telecommunication service providers and their consumers are all looking for resilience and speed. And the links between China and the West are a crucial element of any new infrastructure.

So we've built a Digital Silk Road to link Europe and China-APAC. It consists of a world-class portfolio of Voice, Data, IP and ICT solutions, all backed up by superior customer service. We have six state-of-the-art terrestrial routes, enhanced by China Telecom Global's extensive international infrastructure.

Our Digital Silk Road is extending across the entire EMEA region and ultimately the whole world beyond. We're headquartered in London and already we have 18 branches and regions in Europe. We have 176 Points of Presence (POPs) in 33 countries and regions around the world.

CTE's unique heritage gives us an unrivalled knowledge of the Chinese market. We're ideally positioned as the partner of choice for Chinese businesses planning expansion into the European region, and for European businesses looking to tap into China and APAC. Our customers include many Fortune Global 500 companies.

Corporate Background

Our ultimate holding company is China Telecom, one of the world's leaders in integrated telecommunication services. It's the world's largest operator for both broadband and fixed lines, and it owns China's largest internet and optical fibre networks.

The international arm of the business is China Telecom Global Limited (CTG), which is based in Hong Kong. CTG currently has subsidiaries and offices in 26 countries and regions worldwide.

We are a subsidiary of CTG. Our full name is China Telecom (Europe) Limited. In addition to all the resources of our global organization, we also work seamlessly with an elite group of strategic partners to guarantee worldwide accessibility and top-class service capabilities.

Our Commitment to Customer

We serve European multinational enterprises, Chinese enterprises in Europe, carriers, telecom service providers and Europe-based Chinese consumers. Our European-Asia Network consists of more terrestrial and submarine routes than any of our competitors. By linking these to the largest digital network in China, you get superior lower latency, improved resilience and greater diversity – meaning the best possible experience when accessing business applications to and from China-APAC.

Best of all, you can get all the services you want from one provider. CTE seamlessly connects your global business to the world's largest single marketplace.

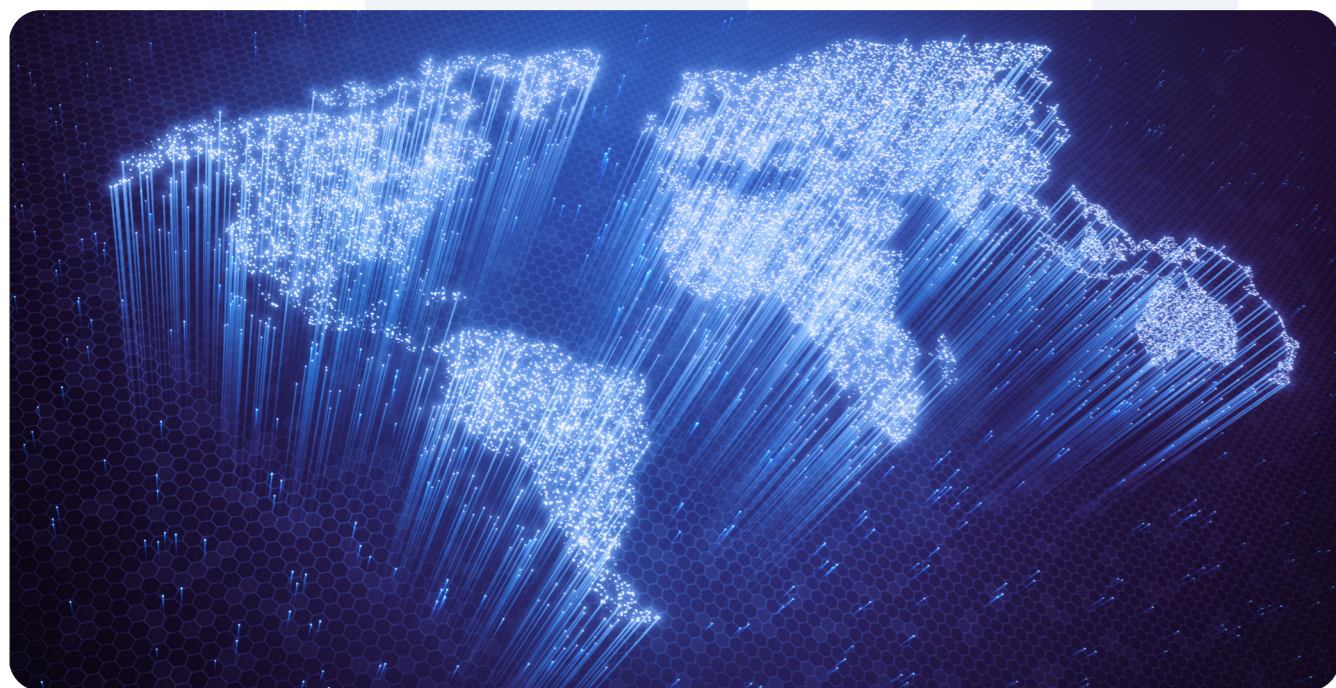
TRADITIONAL CONNECTIVITY

Transmission Solution connecting Europe and Asia

As the forces of globalisation become ever stronger, companies are looking for world-class transmission solutions. These solutions need to be future-proof, with sufficient bandwidth, low latency and full diversity to cope with the exponential growth in transactions and data exchange. At China Telecom, we're paving the future with our Digital Silk Road. We have 13 independent terrestrial cables and 5 independent submarine cables that connect Europe with Asia. If you're running big data operations or you need ultra-fast data transmission, we'll help you extend your global presence. Our Global SLA guarantees and excellent after sales service will help your business remain connected throughout any disaster.

How you Benefit

- Unparalleled service reliability with a high degree of route diversity, ring-structured cable and self-healing protection
- The highest possible level of network security and enhanced manageability
- Additional option for submarine restoration service to circumvent outages caused by unforeseen events
- Highly scalable bandwidth, from E1 (2Mbps) to STM-64 (10Gbps), which can be upgraded as your business grows
- Secure and dedicated L2 connectivity for EoSDH / EoDWDM technologies
- Extraordinary digital bandwidth of up to 800Gbps powered by our DWDM optical fibre systems
- Extremely low latency, supporting time-sensitive applications and short connection lead time
- Network redundancy, offering diversified and fully protected end-to-end network solutions, thanks to our European strategic partnerships



Why use China Telecom as your best possible partner?

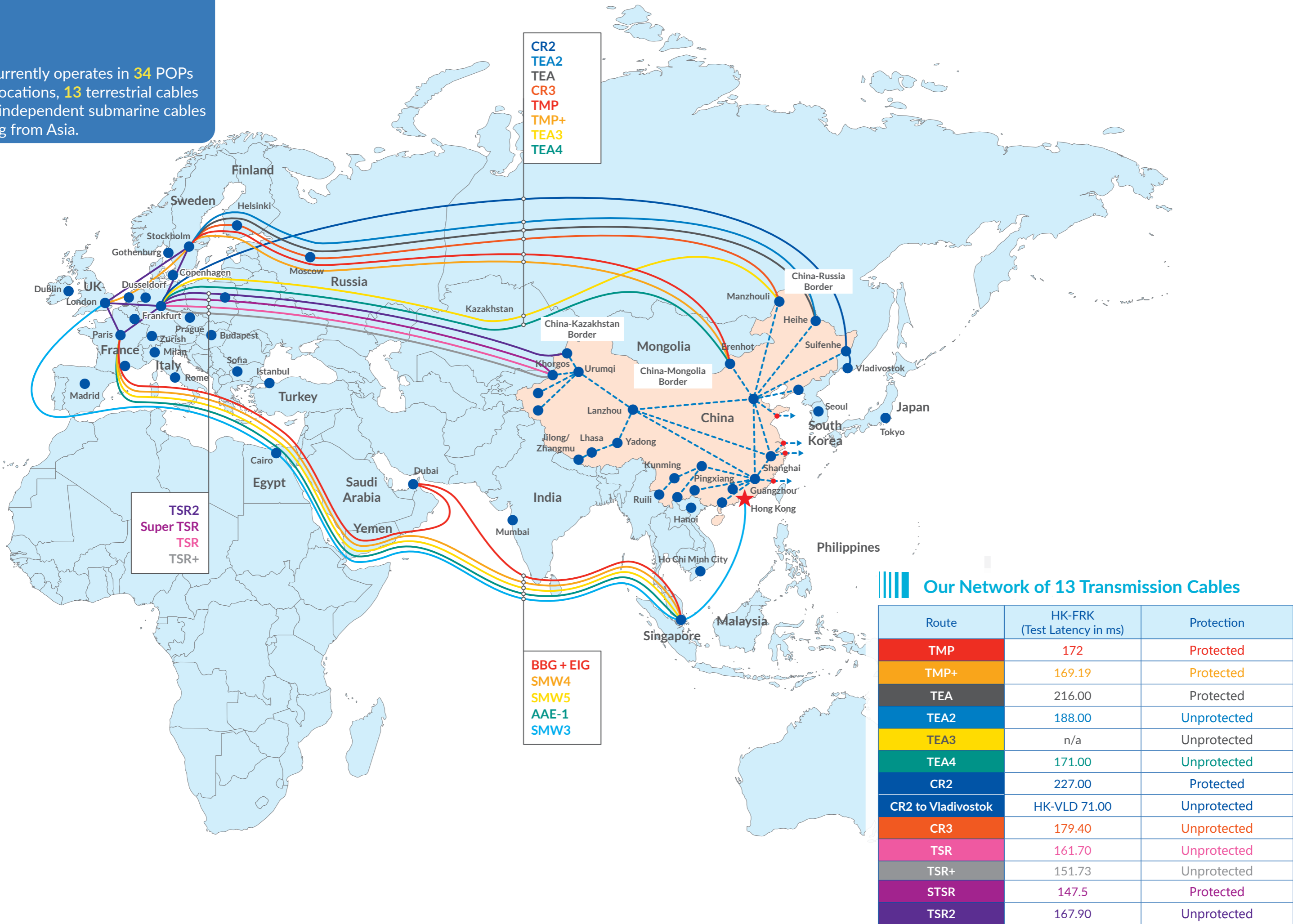
We have the largest communication network in China and an ever-expanding global network. China Telecom is in a unique position to provide businesses with the most cost-effective end-to-end communication solutions. Our Digital Silk Road stretches across China, the EMEA region, Asia-Pacific and services the entire globe. Our network has bilateral connectivity to over 100 countries. China Telecom can meet and exceed all your business communication needs, no matter where your data needs to be.



Find out more about the Digital Silk Road and our future-proof Transmission Solutions:

www.chinatelecomeurope.com

CTE currently operates in **34** POPs in **18** locations, **13** terrestrial cables and **5** independent submarine cables routing from Asia.



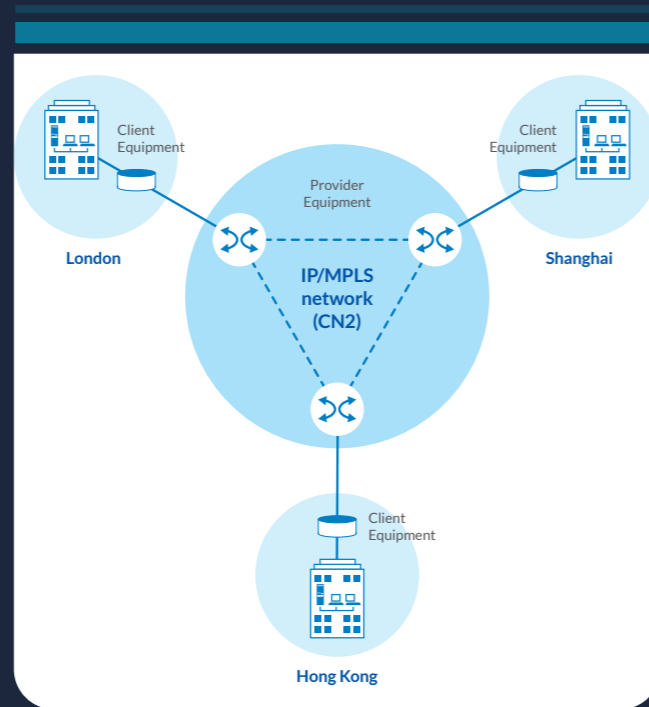
Our Network of 13 Transmission Cables

Route	HK-FRK (Test Latency in ms)	Protection
TMP	172	Protected
TMP+	169.19	Protected
TEA	216.00	Protected
TEA2	188.00	Unprotected
TEA3	n/a	Unprotected
TEA4	171.00	Unprotected
CR2	227.00	Protected
CR2 to Vladivostok	HK-VLD 71.00	Unprotected
CR3	179.40	Unprotected
TSR	161.70	Unprotected
TSR+	151.73	Unprotected
STSR	147.5	Protected
TSR2	167.90	Unprotected

Layer 2 VPLS VPN

You can share your core network infrastructure across geographically-dispersed sites using our Layer 2 VPN. The service is independent of the Layer 3 protocol. It is a Virtual Private LAN Service (or VPLS) that provides multipoint-to-multipoint or hub and spoke connectivity with standard Ethernet access interface. With China Telecom as your single supplier, you gain access to a network of over 40 POPs around the world and over 300 backbone nodes in China!

With our VPLS, you can efficiently control your WAN routing and eliminate security concerns such as IP route leaking. It effectively supports the seamless extension or interconnection of LANs across metropolitan and wide area networks – all on a cost-effective basis. With our robust CN2 network, any network failure means that traffic is redirected via the best alternative route, minimising any disruption in service. China Telecom is the only VPLS provider in mainland China.



Customer-edge routers seamlessly connect to our provider-edge routers giving you multipoint connectivity around the globe.

Empower your business to go global

When your business is expanding around the world, you need a trusted partner to keep your communications running smoothly. China Telecom can provide everything you need for your VPN network, on-time and on-budget. We keep the total cost of ownership low with a range of flat rates and free or discounted VPN port charges.

With a dedicated account manager, a project manager and round-the-clock professional customer service support, China Telecom will empower your business with the best communication solutions anywhere.



To learn more about how our VPN services can take you global

Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

Global Connectivity Solutions

As your organisation expands across the globe, you need robust and flexible communication networks. Security, speed and ability to scale – all of these are crucial to the growth of your business.

At China Telecom Europe, we meet those needs with highly dependable international private lines. We're the leading provider of private network services between Europe and China. We offer more networks than anyone else.

Our Europe-based service teams give you a single point of contact for all your needs: ordering, billing, customer service and operational support. We can rapidly provide you with tailored IPLC and IEPL services at highly competitive prices.

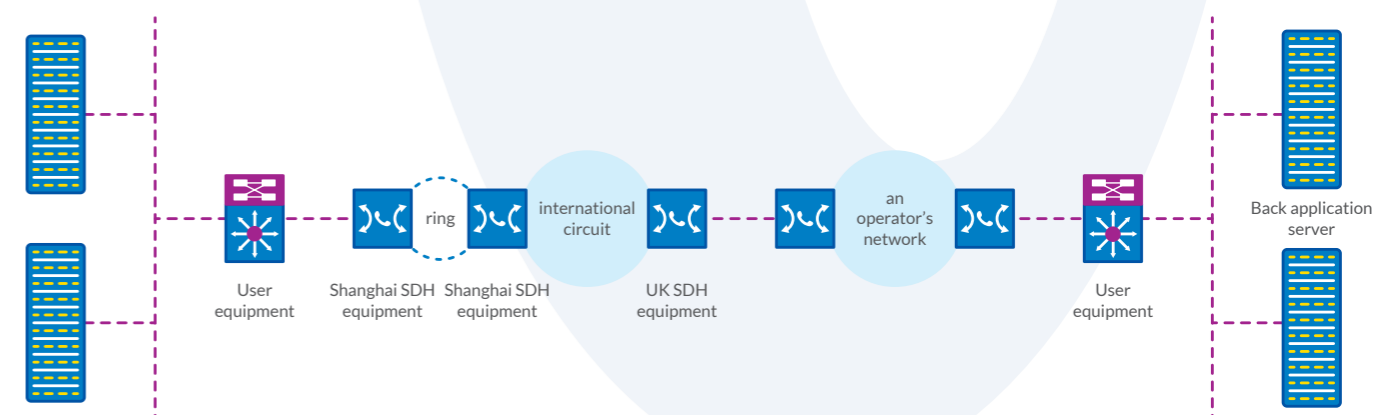
IPLC (International Private Line Circuits)

Our IPLC service is for multinational corporations that need fully managed and dedicated end-to-end, digital connections. It's designed for the demands of industries ranging from banking, finance and securities all the way through to media, web portals and education. IPLC provides you with flexible, high-quality and scalable dedicated connections to your offices, suppliers, and customers around the world. You get transparent data transmission for local area networks, regional data centres, and other mission-critical voice, data and video applications.

With China Telecom Europe's IPLC you get:

- Secure, reliable, end-to-end connections in Europe and China
- Connections that are ideal for international internet access, business data, video conferencing and more
- A fully redundant, self-healing SDH fibre network
- A wide range of circuit speeds, features and Service Level Agreements
- 24/7/365 proactive monitoring and management via our two Network Operation Centres
- A single point of contact for service ordering, billing, customer service and operational support

System Diagram



International Private Line Circuits

China Telecom's worldwide transmission network equips its IPLC service with a number of features such as multiple routing options, main and backup flexibility, high reliability, multiservices carrying and strong management ability.

With China Telecom Europe's IPLC you get:

- || High reliability and resilience
- || SDH protection switching function, capable of ensuring end-to-end dedicated international bandwidth with minimal transmission delay and maximum network security, supporting the applications of a variety of real-time critical tasks
- || Resilient system design and network implementation against single point of failure
- || Multiple protection technologies incorporated in self-healing and alternative routing capabilities
- || Service Level Agreement (SLA) with a comprehensive list of guarantees
- || Comprehensive connection options
- || Full spectrum of bandwidth options available, ranging from 64K to STM-64
- || Variable communication speed: NX64K, 2M, 45M, 155M, 622M, 2.5G, 10G, 100G
- || A variety of services: data, video, voice and other business transmissions
- || Security, effectiveness and flexibility
- || End-to-end physical isolation, customer dedicated bandwidth and protection
- || 99.9% or greater network availability in key customer demanding areas
- || Clear channel capability catering to a wide range of data types, from time-sensitive applications to high security needs
- || One-stop-shop service to facilitate ordering, contracting, provision, billing and management of service
- || Expert support
- || Real-time network performance monitoring
- || Mean time to repair ≤ 4 hours



IEPL (International Ethernet Private Lines)

Many of our carrier and enterprise customers need a private network for China, and our suite of fully-managed Ethernetbased network services are developed specifically to meet your demands for performance, speed and security.

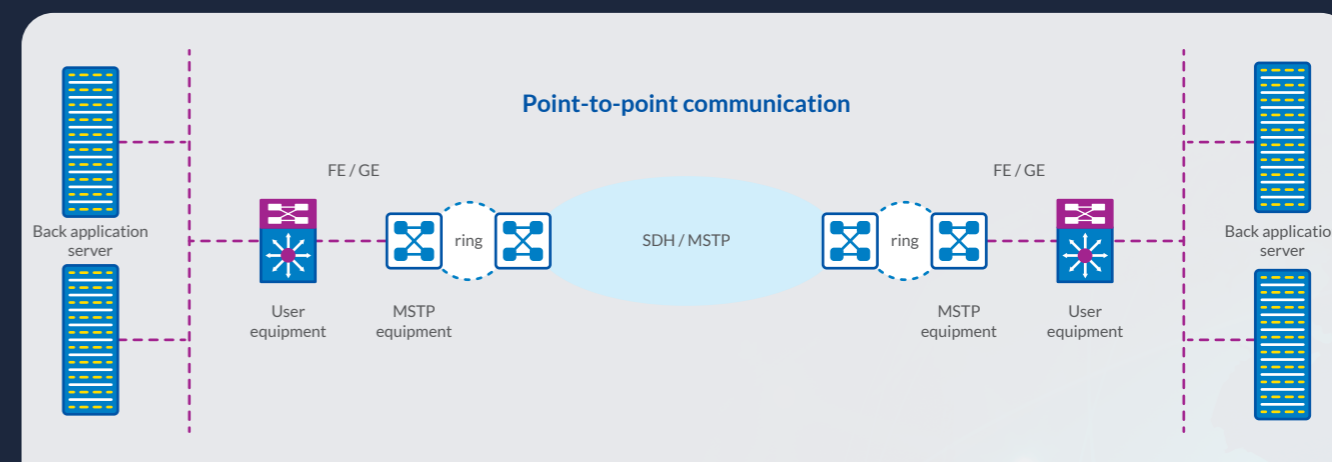
IEPL lets you choose dedicated, point-to-point or point-to-multipoint international connectivity both through China Telecom's own POPs and through services offered with our carrier partners around the world. The service offers high flexibility and security for easy LAN extension, WAN connection and high bandwidth or high traffic volume applications.

China Telecom IEPL adopts Ethernet over SDH technology to provide customers with long-distance/transnational Ethernet Private Line service with access rates between 2M and 10G, and allows point-to-point or point-to-multipoint communication.

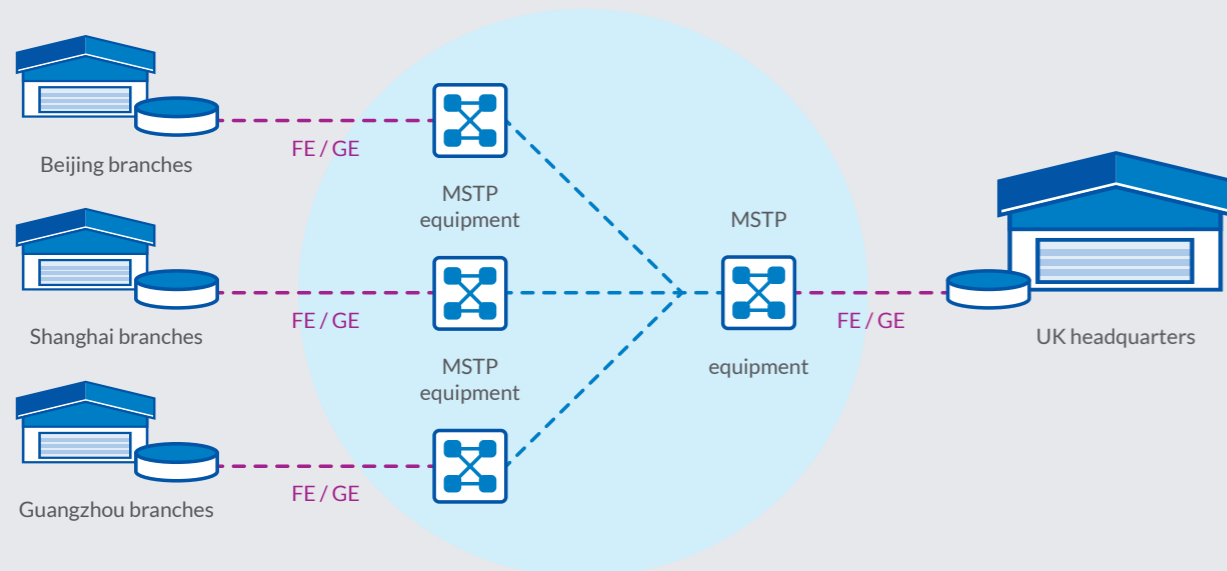
With China Telecom Europe's IEPL you get:

- || Global connectivity from our network of over 33 Submarine cables and high-speed terrestrial links with a total international transmission capacity of 840T, covering 72 countries and regions.
- || Fully-managed, international Ethernet-based network and bandwidth services
- || An end-to-end China private connectivity service based on our next generation SDH/ SoNet Multi Service Transport Platform
- || Options for dedicated, point-to-point, or point-to-multipoint connectivity
- || Connections through standard Ethernet interfaces (Ethernet, Fast Ethernet, Giga Ethernet, 10GE)
- || Easy LAN extension, WAN connection, high bandwidth or high traffic volume applications
- || Access rates between 2 Mbps and 100 Gbps

System Diagram



Point-to-multipoint communication



Key features and benefits

- || Low latency and high reliability
- || With qualifying standard certifications MEF9 and MEF14, we can provide global customers with International Ethernet Private Line services based on their own and other partners' network resources
- || Physical isolation between customers and exclusive bandwidth with high security and superior network performance
- || Enhanced flexibility and scalability
- || Flexible adjustment of bandwidth from 2M to 100 Gbps according to actual requirements
- || 99.9% or greater network availability in key demanding areas
- || Mean time to repair ≤4 hours
- || Cost effectiveness
- || Standard and widely applicable Ethernet interface, without new equipment investment, ensuring simple network upgrading and short delivery time



Focus on growing your business while we take care of the network infrastructure and give you the international support you need. To learn more about China Telecom Europe's private line services: Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

Global Wavelength Service

China Telecom Europe offers Global Wavelength Services to our worldwide customers with fully transparent circuit transmission.

Our Global Wavelength Services provide top quality large bandwidth data transmission products up to 100Gbps through our Optical Transmission Network (OTN), the first and only optical network connecting China and major countries around the world.

We're now unrivalled as an information hub in the Asia-Pacific Region. Using our far-reaching international land and submarine cable system, with 15 major routes across the Pacific, Europe and Asia, we have established a worldwide high-speed network with backbone bandwidth of more than 7000Gbps.

When you're looking for high-quality, high-volume international data transmission, our Global Wavelength Services deliver low latency, high speed bandwidth up to 100Gbps at competitive rates. We use the power of China Telecom's extensive global transmission network – an enormous land and submarine optical cable data backbone, delivering more than 7000Gbps across the Pacific, Europe and Asia.

With CTE's Global Wavelength Services you get:



Extensive coverage

China Telecom's International OTN network provides comprehensive coverage to all major cities in mainland China and to international centres including Hong Kong, Singapore, Japan, San Jose, Los Angeles, New York, Seattle, London, Frankfurt and Stockholm.



Accelerated speeds

We provide reliable data transmission rates in 10Gbps, 40Gbps, or 100Gbps packages, using our state-of-the-art optical networking technology. We support all standard interfaces (OTU2, 10GE LAN, 10GE WAN, OTU4, 100GE).



Reliable business protection

Our fully redundant, self-healing optical switch ensures high OTN uptime and a consistent, reliable data transmission service.



Fast and efficient provision

Sophisticated cross-scheduling capabilities allow us to respond quickly to changing customer requirements, including rapid service order delivery and capacity changes.

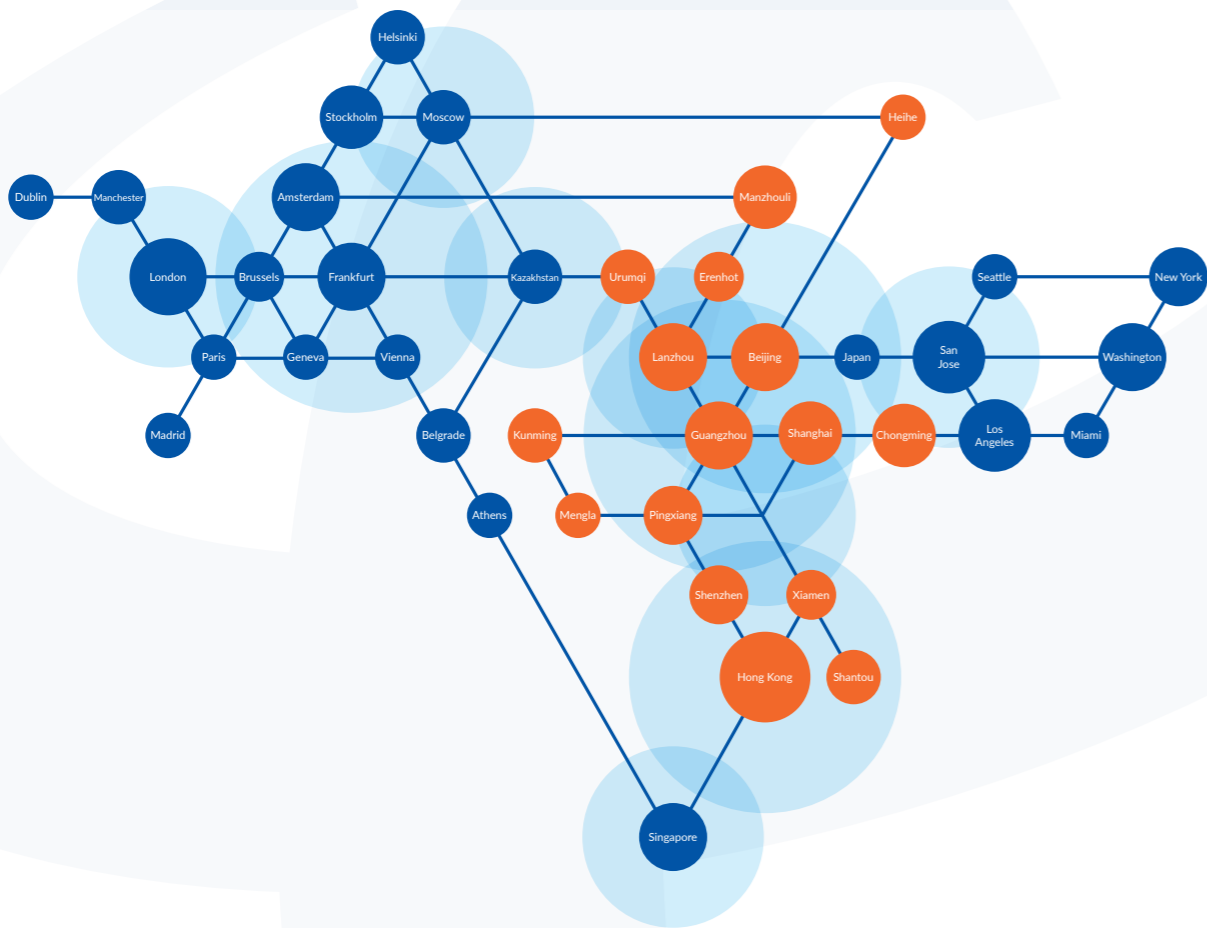


Exceptional emergency recovery

Our adaptive, state-of-the-art OTN network provides robust emergency recovery capabilities, delivering exceptional security, protection, and flexibility. Combined with our highly competitive SLA pledge security system, your data has never been better defended.

Global Coverage

China Telecom's International OTN network covers major cities in mainland China and across the globe.



To find out how you can bring the power of worldwide optical data to your doorstep:

Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

Content Delivery Network

Are you facing the challenge of delivering huge libraries of content? Content libraries are growing exponentially – whether you offer video, audio, online games, software downloads, websites or user-generated content. Meanwhile, audiences for live broadcasts, streaming or downloads are growing around the world. Expectations of speed and quality are increasing all the time.

To meet your ever-growing needs, China Telecom Global announces its industry-leading Content Delivery Network (CDN). This utilises our industry-leading internet backbone. Instead of using caching and streaming nodes around the globe, CDN intelligently targets the load to an area much closer to the audience.

How do you benefit?



Premium Performance

China Telecom Global CDN provides an exceptional enduser experience by committing to deliver your content libraries quickly and efficiently.



Customisation

We offer you a variety of content delivery solutions and features to support your unique business requirements. Whichever you choose, you'll benefit from our scalable network, international footprint and superior customer service.



Value

You can choose the optimal blend of price, scalability, feature quality and ease of use to suit your budget and ambitions.



End-to-end service

Enjoy the simplified and straightforward solution for content delivery; end-to-end support from acquiring broadcast video all the way through to online delivery.



If you're looking to speed up your connection, CDN is the perfect partner for edge distribution, media delivery and website acceleration. You get a high-performance and highly scalable service, all delivered in a simplified and cost-effective manner.

How CDN achieve industry-leading performance?

Network control

We have one of the most connected networks in the world. That means we control the routes and hand traffic off directly to last-mile eyeball-networks without relying on other transit providers and their routing policies.

Intelligent routing

We select best-path routing based on cost versus quality of service, capacity, visibility into carriers' networks and upstream routing conditions.

Direct traffic control

We directly manage performance on your network.

Strategic network visibility

We strategically place CDN nodes in your gateways to give capacity closest to the points at which traffic is exchanged with eyeball-networks or peers - all based on traffic flows and network conditions.

Platform intelligence

We optimise distance, network congestion and server load to ensure that content is served from optimal CDN nodes, including traffic handed off directly to eyeball-networks or peers.

Content analysis

We use industry-leading and extremely flexible Content Analytic tools for enhancing business intelligence.

Intelligent Traffic Manager (ITM)

We can provide numerous policy-driven options for managing CDN traffic across multiple sites and your own data centres.

Deliver a variety of content including:

- Video downloads
- Streaming video (on-demand and live)
- Online games
- Software downloads and patches
- User-generated content (UGC)
- Music and audio downloads
- Websites



Find out more about how China Telecom's CDN can help you deliver content fast at:

Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

Types of content in the CDN

Static Content

Highly cacheable content which does not change often, e.g. a company logo. This can be accessed by many users once it is in the CDN cache.

Dynamic Content

Content that has poor cacheability since it is specific to a user or a group and it changes for each user. Often the content is assembled by the origin server and sent to the CDN in real-time, based on reaching locally-stored user data called a "cookie", e.g. a Netflix Queue. Since the CDN has to retrieve dynamic content from the origin server every time a user asks for it, the only way to speed up dynamic content is to optimize the internet path between the origin server and the requesting CDN cluster.

Long Tail Content

This is content seldom accessed by end users, causing it to fall out of cache.

What we offer as part of the CDN



Storage

External File Storage, Original Storage and Cloud Storage to provide large-scale storage requirements.



Caching and Download

Caching, Download and HTTP Download for widespread deliveries.



Streaming

Broadcasting Audio & Video Streams, Windows Media, Adobe Flash, Adobe Zeri, Microsoft Smooth and Apple QuickTime for widespread deliveries.



Reporting

Dashboard for CDN Activities, Media Portal, Content Analytics and Log File Collection to monitor CDN activities and measure effectiveness and reach.

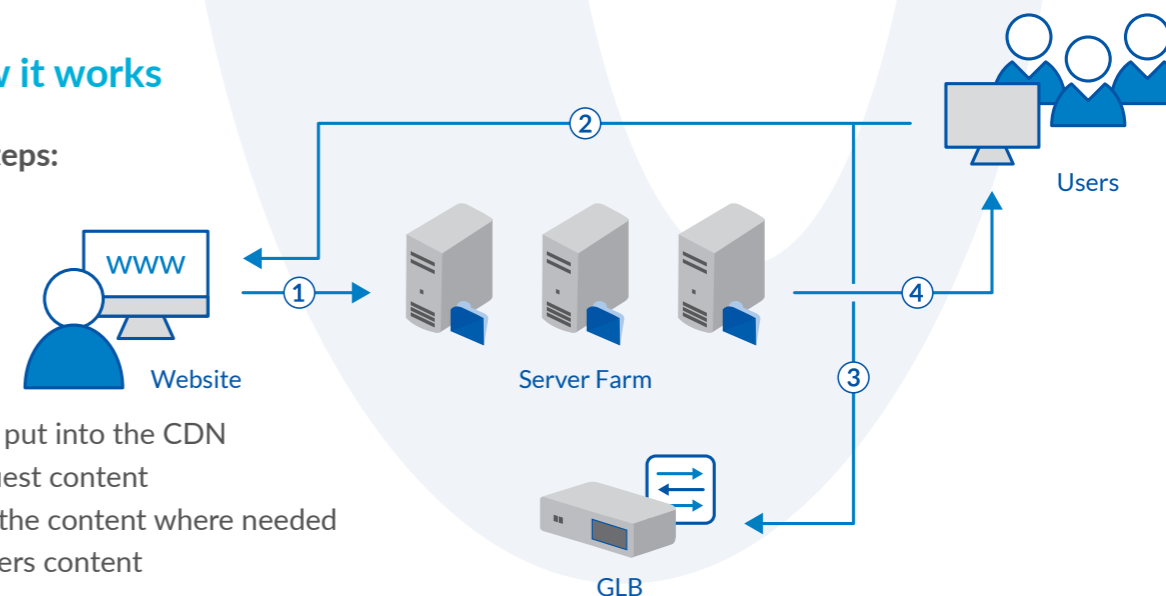


Security

Content Protection, Geographic IP Filtering, Token Authentication and Secure Sockets Layer (SSL) to prevent or enable deliveries to specific geographies and secure the connection.

How it works

The basic steps:



1. Content is put into the CDN
2. Users request content
3. CDN gets the content where needed
4. CDN delivers content

CLOUD PORTFOLIO

Cloud Solutions

As cloud computing continues to grow, more and more decision-makers are finding that public cloud platforms are putting a strain on their IT architecture. With offices around the globe and a dispersed workforce, they are looking for cloud solutions which offer more control, speed and flexibility.

We offer four types of service to help keep your users connected and your IT assets secure.

Hybrid Cloud

Our secure hybrid cloud bridges private and public clouds. It's the perfect solution for enterprise customers, helping you to balance connectivity with other crucial factors like cost and security.

There's no need for delays or costly capital spending. The assets are already in place, and we keep your running costs to a minimum. Enterprise-grade security comes as standard, with integrated monitoring services.

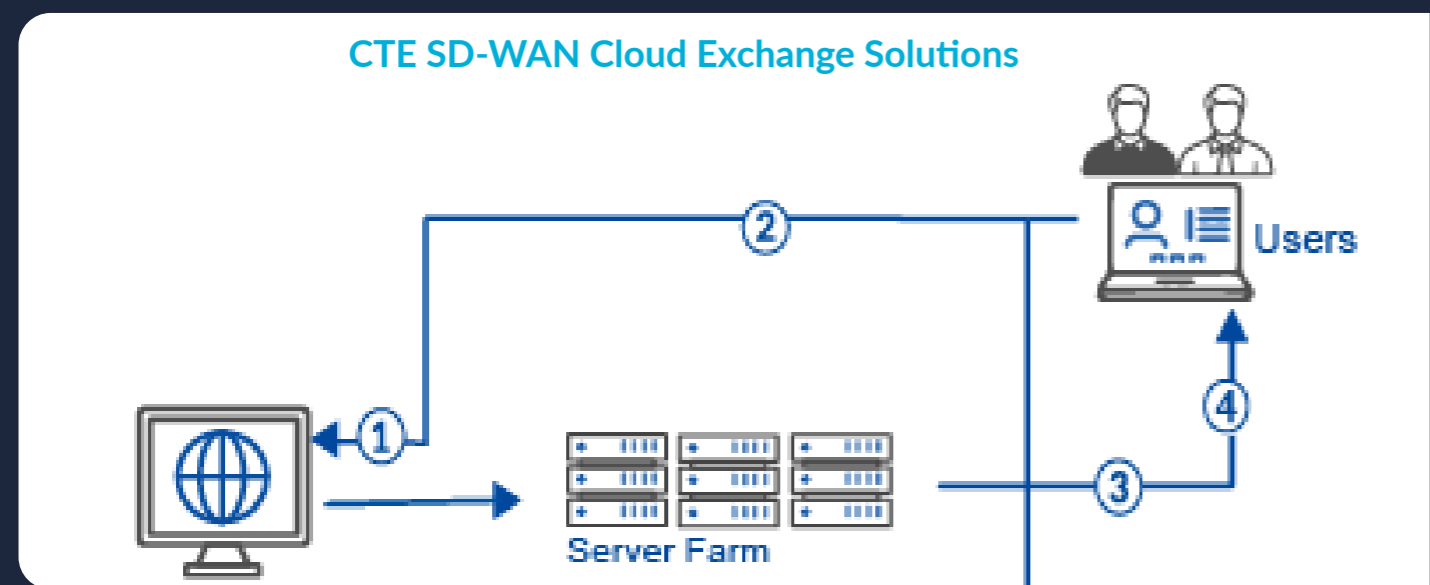
Cloud Exchange

This is a single solution that lets you reach multiple public cloud platforms like AliCloud, AWS and Azure. We offer a dedicated network of AWS/Azure gateway nodes in Beijing, Shanghai, Hong Kong, Singapore, Frankfurt, San Jose and Washington, DC.

You can establish fast, reliable and secure connections from your offices, data centres or colocation environments around the world. There's great support for connections from MPLS, IEPL and IP. Multiple virtual links can also be set up from a single port.

You only pay for what you use – and you can choose bandwidth speeds from 10Mbps to 1Gbps.

Our Cloud Sites Coverage



Software Defined WAN

If you are continually migrating services to the cloud, you need a secure, flexible, cheaper integrated connectivity solution.

SD-WANs help you to manage complex connectivity challenges. They're the ideal solution for the Internet of Things – with billions of data dots; and for global logistics operations – with flexible access over a huge area; and for rapidly growing organisations – with ever-changing topologies.

Our SD-WAN service is simple to set up and manage – with automated activation of cloud gateways and terminals. You can change network policies or bandwidth in real time.

It also gives you intelligent routing. The cloud gateways automatically analyse the congestion rate and intelligently routes to the optimum path.

Managed Services

Our additional managed services, such as website hosting, disaster recovery and business continuity services, make our team an extension of yours. With end-to-end multi-lingual support, our customers can benefit from even greater peace of mind. Keep your people, data, applications and data resources connected and working effectively. No delays, no downtime.

 **Contact us today to find out more**
Call CTE on +44 020 7537 7156 or
email us at info.europe@chinatelecomglobal.com

Data Centre Services

Many companies don't want the hassle or expense of running their own data centres, which are costly, complex and time-consuming to build and manage.

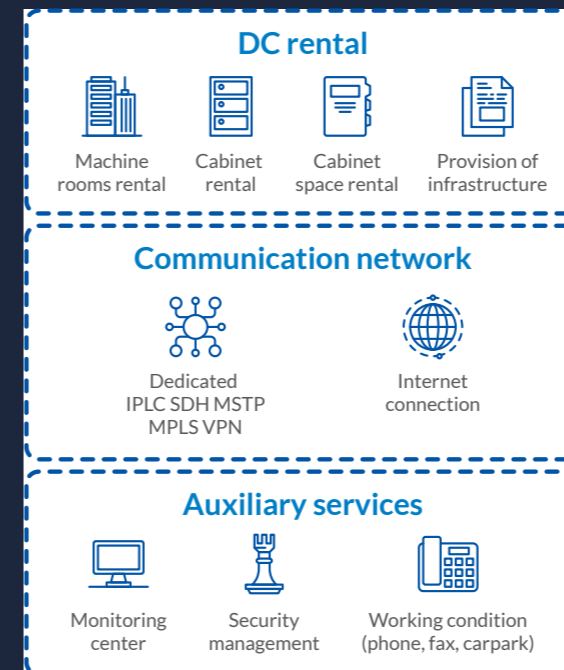
China Telecom's Internet Data Centres span the globe, providing secure hosting and high availability. Our additional managed services, such as website hosting and disaster recovery services, make our team an extension of yours.

We provide all the tools, expertise and service excellence necessary for a successful off-site IT infrastructure build. Our facilities are designed and built according to industry best practices for high-performance computing environments. They are protected by the most up-to-date network, storage and physical security technologies.

How do you benefit?

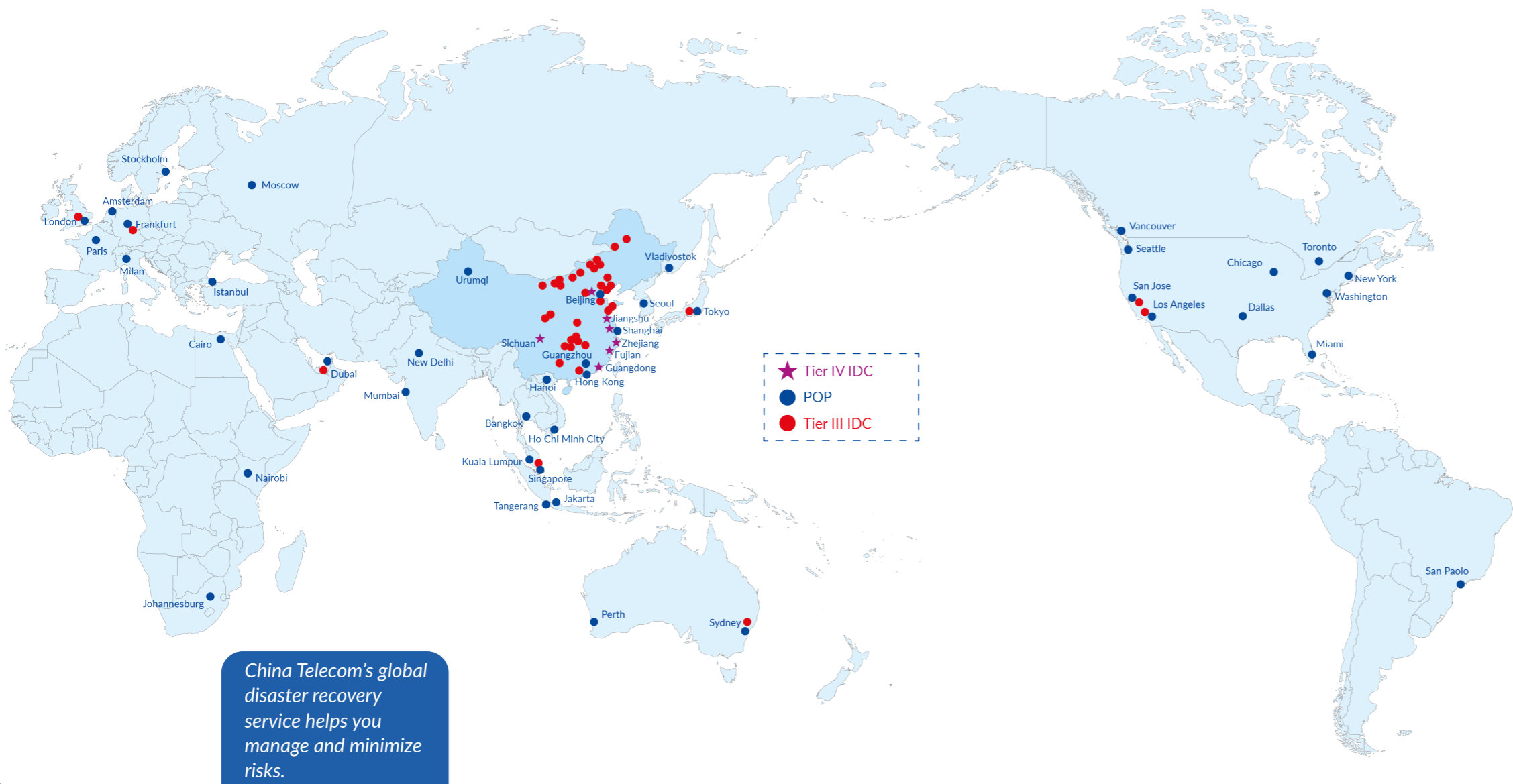
Our data centre and colocation services include:

- || Website hosting and virtual hosting
- || Internet access
- || Cage and rack space for colocation
- || IP address space
- || Data recovery and disaster protection
- || Network management outsourcing
- || Security systems including firewall management, anti-virus scans, intrusion detection and Distributed Denial of Service (DDOS) protection
- || Systems integration



- DC planning
- DC construction
- Security services
- DC design
- Data storage services
- Network optimization
- DC migration
- Performance management / monitoring
- Disaster recovery / backup
- Maintenance services
- Other services (Cloud computing)

China Telecom can take care of all your IDC needs, from facility lease to overall construction, operation and maintenance services.



China Telecom's global disaster recovery service helps you manage and minimize risks.

IDC Services in China

China Telecom has over 600 Internet Data Centres across mainland China, from Beijing to Shenzhen and from Shanghai to Guangzhou. Our products and services include:

- || Exclusive VIP area cage hosting
- || High power density hosting areas
- || Multi-carrier network access
- || Office seats, business recovery seats and NOC centre
- || Managed operation and maintenance services

With China Telecom Europe's Colocation Services you get:

Global reach
Fully diversified network connections that connect every continent in the world

99.99% facility uptime
Backed by comprehensive service level agreements (SLAs), 24/7/365 technical support and dedicated NOC-based engineering personnel

High performance
Up to 100Gbps high speed internet access, and low-latency private line service available. Our high-performance Tier IV facilities are designed with high density power and cooling infrastructures to support the latest generation of servers

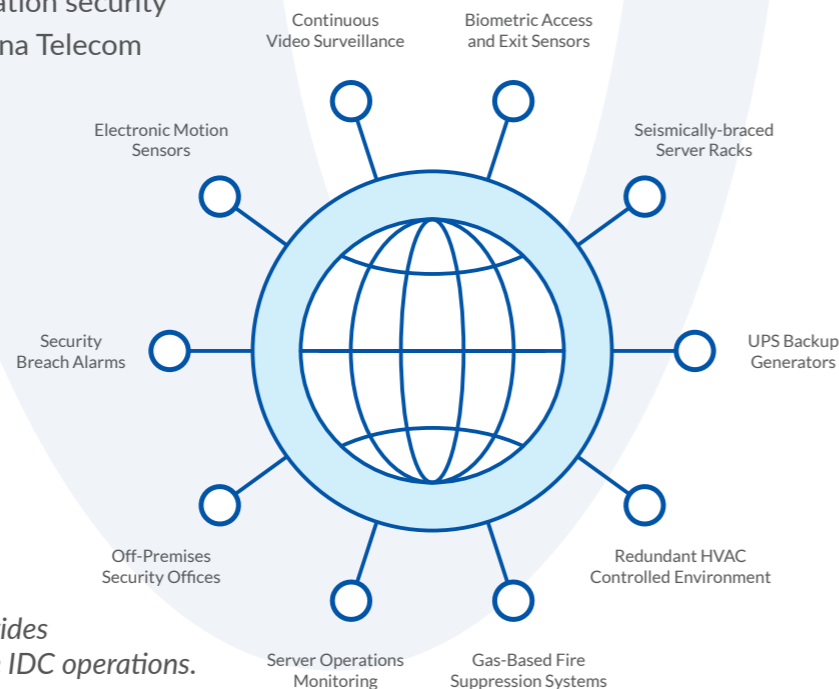
Full redundancy
N+1 redundancy for UPS, generators, power distribution, cooling security and network resilience systems

Facility safety
All facilities are protected by 24/7 environmental control monitoring and alerts, dry pipe fire suppression systems and global disaster recovery solutions. State-of-the-art security measures, including 24/7 CCTV monitoring and bio-authentication security systems, are in place at all China Telecom data centres

Scalable packages
Our flexible, highly customisable data centre architectures allow us to deliver the exact service solution you need to meet your specific business requirements

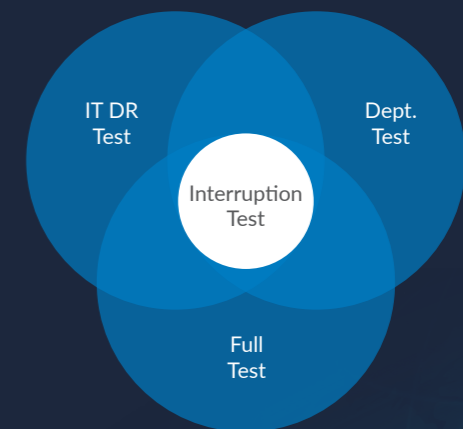
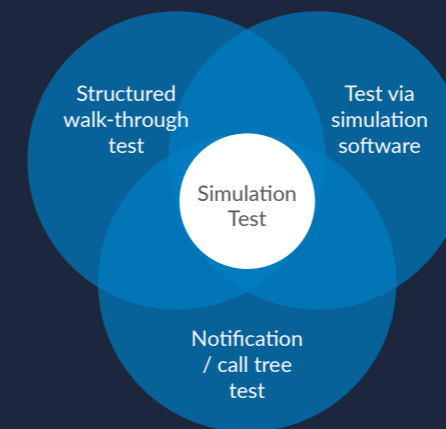
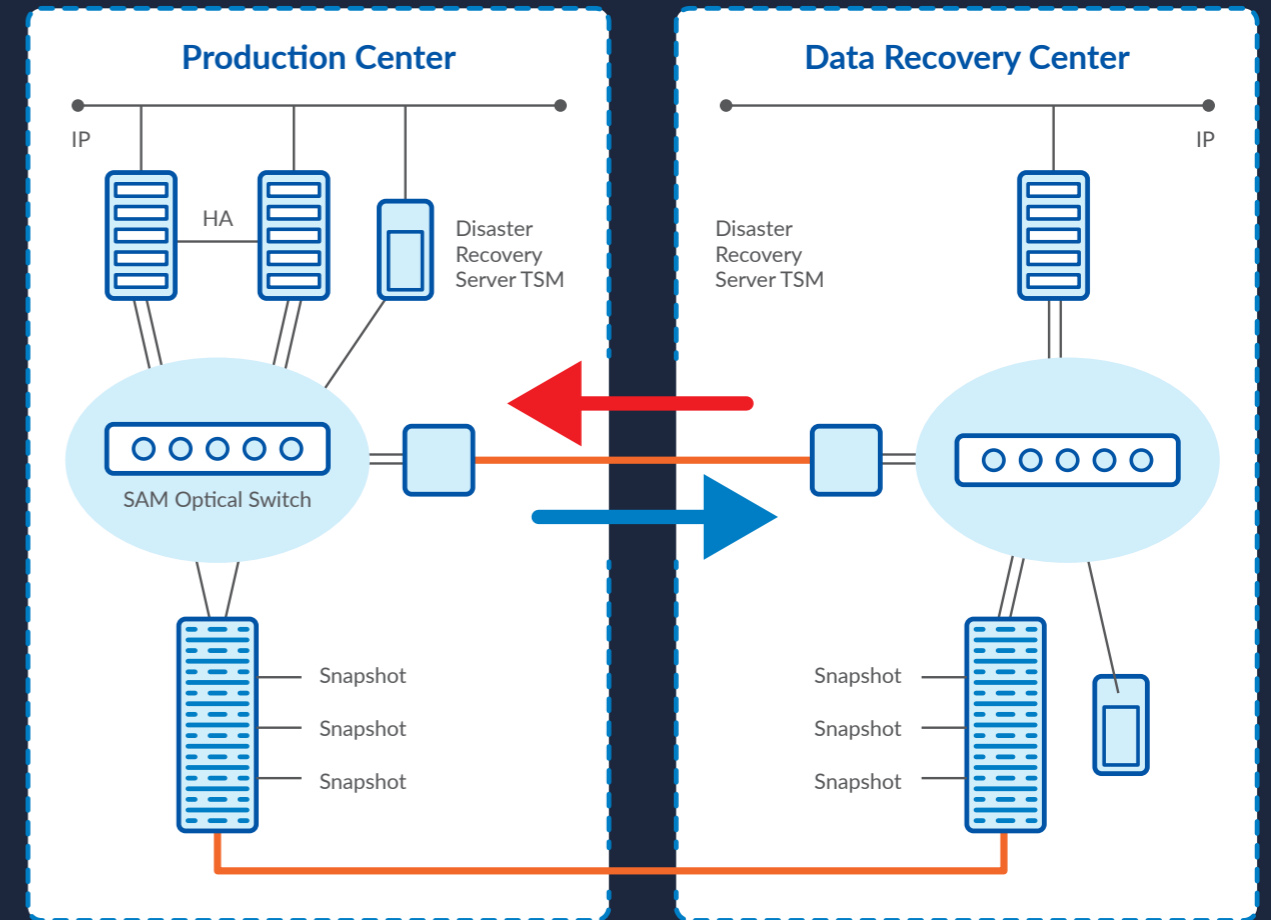
Industry certifications and best practices
China Telecom remains committed to the highest level of technical excellence and dedicated service. In addition to our five-star global IDCs, we adhere to the industry's best practices, and our data centre engineers hold internationally-recognised certifications such as Cisco Certified International Experts (CCIE) and Cisco Certified Network Professionals (CCNP). China Telecom Europe holds ISO27001 (Information Security Management System) and ISO9000 (two-part quality management system) certification compliance

Green energy consumption
As part of our commitment to environmental protection, China Telecom has established comprehensive energy efficiency and other green operational policies at all our data centre facilities



China Telecom provides best-in-class secure IDC operations.

- High Capacity Bandwidth for Data Synchronization
- 1. Hong Kong – China as dual backup center (Primary + DR)
- 2. High Capacity Data Synchronization between cross-border data centers for highly reliable business continuity



With over 600 IDCs in our global network, we have a proven track record of providing a first-class one-stop service. To find out more about how we can free you from the pressures of setting up your own in-house data centre: Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com



INTERNET SERVICES

Global Internet Services

China's economy is vast. It has the world's second largest GDP (close to the US at number one), and the world's largest by purchasing power parity. It also has the world's largest banking sector assets, the world's largest manufacturing base, and the world's fastest growing consumer market. There are more than 800 million internet users in China.

But internet communication between global enterprises and mainland China can be challenging. China Telecom offers a variety of business grade Internet Services to connect with this huge market.

Our four service options

1 ChinaNet Paid-peering provides worldwide telecom operators with one-hop access to China's vast internet resources. That includes 2.3 million websites managed by ChinaNet – this equates to more than 70% of China's total internet content.

ChinaNet also services millions of users with high-speed video, online trading, real-time chat, search engines and information services. Over 150 million people subscribe to ChinaNet's cable broadband – over half the broadband access market in China. A further 300 million-plus people subscribe to ChinaNet's 3G/4G mobile internet services.

2 China Access gives regional or local ISPs and ICPs cost-effective access to Chinese internet resources. Powered by the extensive interconnection with other telecom operators in China, China Access offers customers a cost-effective internet resources solution. By connecting to ChinaNet (AS4134), customers are able to access Chinese content and millions of internet users in China.

3 Global Transit provides telecom operators with global internet service, backed up by SLA guarantees. Our internet service extends everywhere around the world via CN2 (China



Telecom Next Generation Carrier Network AS 4809). There are more than 300 POPs worldwide. CN2 offers the highest levels of resiliency and redundancy with low latency. By connecting to CN2, China Telecom provides global telecom operators with differentiated Internet transit services of scalable bandwidth, outstanding connectivity, flexible billing options and rich product features. With a raft of benefits such as light loading, multiple access options and a comprehensive web-based customer information portal, Global Transit is a great solution for telecom operators.

4 Global Internet Access (GIA) provides premium internet access between mainland China and other countries, backed up by SLA guarantees to regional/local ISP/ICP and enterprise customers. With a dedicated path and the lowest latency routes on CN2, GIA provides

enterprises with premium quality access to the world's most extensive Chinese Internet Information Centres.

GIA provides a variety of access options, via China Telecom's CN2 through BGP-4 or static routing with various access speeds on bandwidth ranging from 1M to 100 Gbps, and internet access technologies including dedicated circuits access and optical access.



www.chinatelecomeurope.com

Quality service guarantee

Global Internet Access provides 24/7 performance monitoring services, ensuring network flow and service quality. We also offer the highest SLA in the internet industry, powered by our high-quality internet backbone service.

- Network Availability 99.99%
- Service Availability > 99.9%
- Average Network Latency:

Hong Kong - Mainland China < 50 ms
Singapore - Mainland China < 80 ms
Asia (Intra-Asia) < 150 ms
Europe - Asia < 240 ms
Transatlantic < 90 ms
Transpacific < 130 ms

Tailored information and communication solutions

We also provide enterprises with information, connection and transmission, business application support and other value added services such as:



Plus IDC Services

With access to the Data Centres of China Telecom and our global partners, you can achieve high speed access to both local and global Internet resources



Plus Managed CPE services

Based on global ICT implementation capabilities, we offer you internet and network terminal equipment integration services



Plus IP Sec services

With integration of the Global Internet Access Service and IP Sec platform, you can receive a more comprehensive and cost-effective VPN service



Plus Anti DDoS prevention service

With professional black-hole and cleaning pipe for mitigation of DDoS attacks, we protect your daily business operation from DDoS attacks



China Telecom is a global leader in internet services. To find out how you can take advantage of our unparalleled internet communication capabilities:



Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

www.chinatelecomeurope.com

MANAGED SERVICES

Global ICT Services

China Telecom provides professional ICT services across the globe. Locations include America, Europe, the Middle East, Africa and Asia-Pacific (including mainland China and Hong Kong). Our powerful team of experts provide a service platform that offers communications solutions, reliable services and a one-stop integrated information system wherever you are in the world.

We offer a vast range of managed services which you can combine to suit your specific needs: WANs, Customer Premises Equipment, Data Centres, Intelligent Buildings, IT Infrastructure, Security and much more.



Managed WAN (Wide Area Network)

Poor network performance and availability can result in lost revenue and reduced employee productivity. Regardless of your organisation's size, a high-quality network is essential. That requires time, effort and focus.

A managed WAN creates a secure environment for inter-office connections without sending traffic over the internet. We help connect multiple network sites across Europe, China and worldwide, with the tools and support your business requires.

The benefits of a managed WAN include reduced costs from sharing resources across sites; LAN-like applications for remote clients; the ability to respond to changing network conditions and prioritise mission-critical applications.

Our commitment is to create high availability network solutions with complete, end-to-end management. Entrust your WAN to our highly-trained multilingual network team, so that you can focus on your business growth initiatives.

Intelligent Building System (IBS)

We integrate computer technology, communication technology and information technology to provide automated management for a variety of properties such as commercial buildings, residential areas, hotels, factories and business parks.

Everyone benefits. Residents and visitors have a safe and comfortable working and living environment. Property managers get a service management platform. Investors see lower operational costs and enhanced profitability levels.

Our engineering services include Building Automation, Office Automation, Communication Automation and Security Automation Systems.

Managed CPE (Customer Premises Equipment)

Running a successful enterprise network requires more than a good combination of technologies. You also need dependable management and administration – in particular, reliable oversight of the performance and operating efficiency of your network routers and switches.

Our low-cost Managed CPE solution means outsourcing router and equipment management to China Telecom Europe. Our engineers can design, build, and maintain your network with flexible, cost-effective management solutions that don't strain your budget or force you to sacrifice performance. We provide customisable solutions for the unique requirements of each site, fully optimising our customer's WAN architecture. These solutions range from onsite hardware maintenance and upgrades, via software configuration changes, all the way up to infrastructure project design and execution.

With Managed CPE, we'll help you get the most value out of your IT and network. You don't have to spend time and money worrying about the performance of your data connections. Our proactive monitoring solution may be able to detect and fix the issues before you notice any downtime.

Internet Express

Internet Express allows your global organisation to access wide-ranging Chinese content. Our business grade internet network provides lower contention ratio to provide better user experience.

Protection against viruses and hacker attacks is builtin. We also offer 24/7 service line support, network monitoring, on-site maintenance (parts and labour), and configuration backup and restore.

Managed IPT (Internet Protocol Telephony)

Our IPT services range from basic phone applications to mobile and video. Our solutions include IP video gateways and IP PBX. We can provide online performance monitoring and calling analysis on a 24/7 basis.

With onsite maintenance (parts and labour), technical support, and configuration backup and restore, our managed IPT can provide a better for service at a low cost.

Data Centre Engineering

We use new technologies and concepts to improve the overall efficiency of your data centre operations – reducing operation, maintenance and energy consumption costs.

We also implement highly cost-effective data centre engineering protocols, to maximize your data centre's investment value.

IT Infrastructure Deployment

We provide tailored IT Infrastructure deployment schemes suitable for your business development.

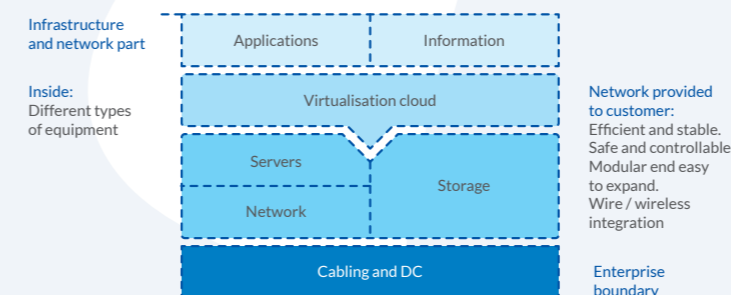
With our rich experience in IT consulting, planning, design, deployment, operation and further optimisation for our global corporate customers, we can deploy best of breed infrastructure that is best for you.

At China Telecom Europe, we provide our customers with the highest standard of managed IT services

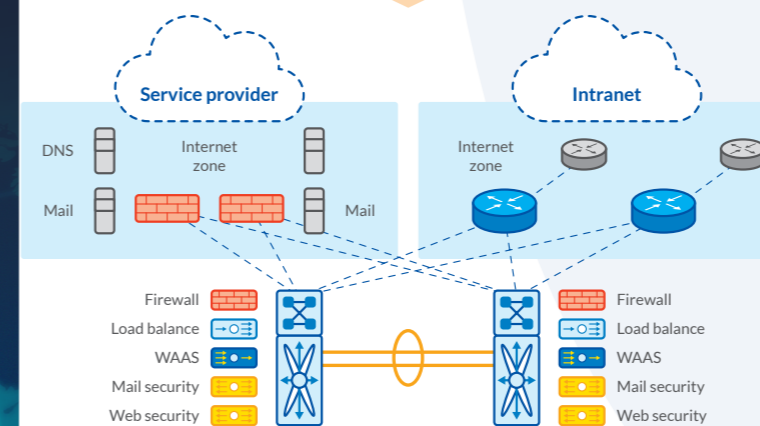
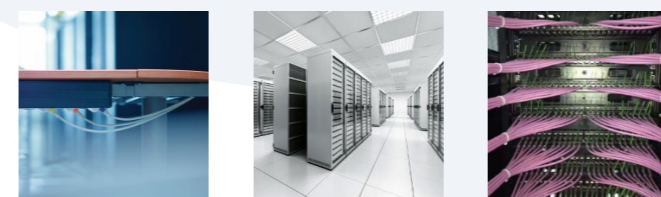
We offer a one-stop global services solution for business consulting, business acceptance, technical support, troubleshooting, billing and accounting services.

Thanks to our expertise in operating carrier-class service networks, our globally distributed technical support centres and local service teams are able to provide you the best managed services and be a trusted partner.

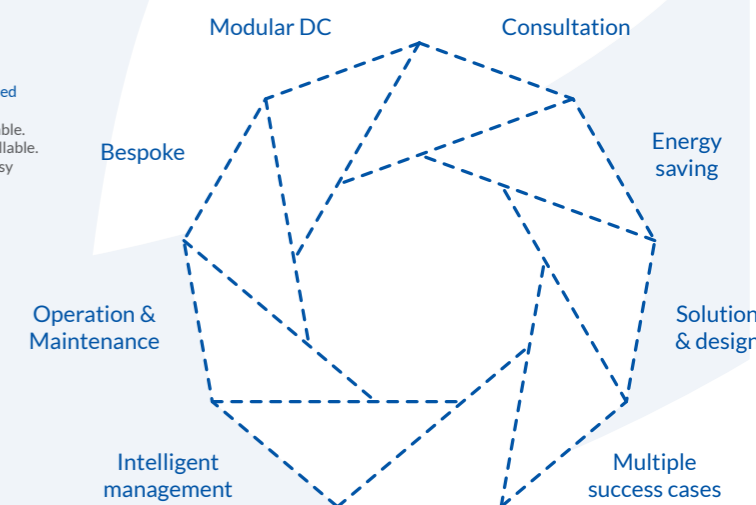
Enterprise network and IT applications architecture



Beautiful and neat. Convenient and firm.



Enterprise server room solution



Construction & implementation

High flexibility DC solutions



To learn more:

Call CTE on +44 020 7537 7156 or email us at info.europe@chinatelecomglobal.com

Netcare is the value-added option of a proactive real-time network monitoring service. A comprehensive customer web portal provides our customers with useful information such as network performance, circuit and equipment inventory, bandwidth utilisation statistics and the ability to provide SLA reports – anytime, anywhere – saving your IT department’s time and money.

Here is some of the 24/7 real-time information that you could choose to monitor:

- || MPLS quality of service
- || Customer network IP SLAs – jitter, packet-loss and delays
- || Netflow, including source IP, destination IP and protocol monitoring
- || Layer 7 flow, including abnormal flow, alarm analysis, notification and fault handling
- || VOIP – MO5, jitter, packet-loss and delays.



NetCare’s dashboard screens give you real-time network information, 24/7.

China Telecom uses the latest models of Cisco Routers for the CPE. These can be provided with 24x7x2 support or 5x8xNBD depending on the requirements.



Contact us today to find out more

Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

With international trade reaching record levels, companies of all sizes need to speak across borders. Businesses everywhere – from SMEs to global giants - are looking for international voice telecoms which are straightforward and cost-effective. But traditional providers have been slow – or unwilling – to keep up.



Now you can reach every corner of the world, effortlessly. Our Corporate Voice Solutions are ideal for companies needing a simple and efficient voice infrastructure. With our state-of-the-art soft-switch technology and a variety of intelligent platforms, we provide you with cost-effective ways to handle both internal and external communications.

Read on to find out more about our specific services: our Overseas Enterprise SIP Trunk service, our Global Virtual PBX product, and Cloud Conferencing.

Overseas Enterprise SIP Trunk service

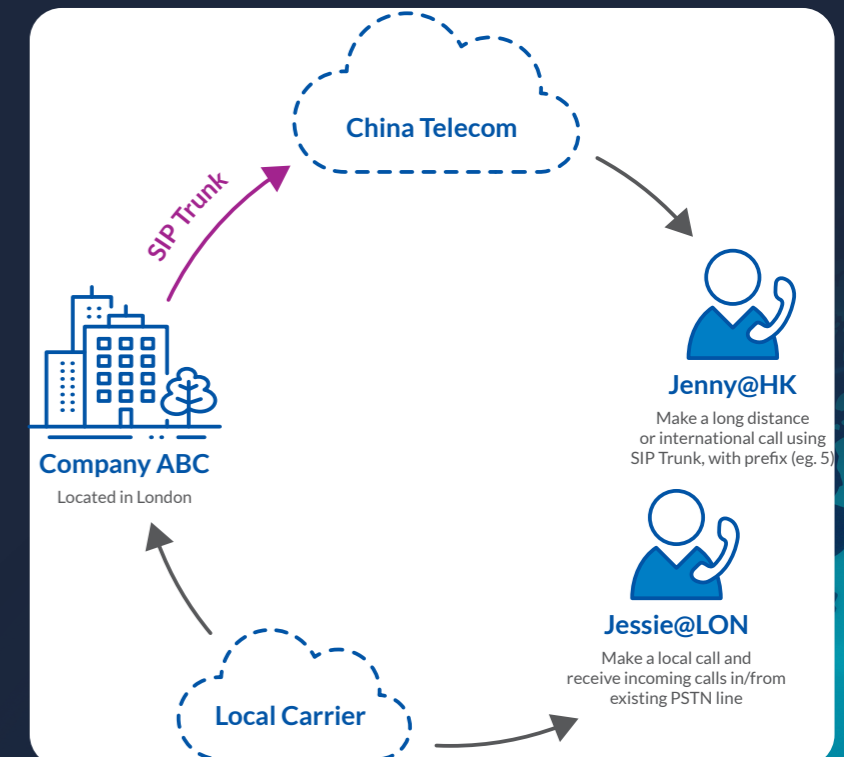
Do you have one or more private telephone networks in your organisation? They’re known as Private Branch Exchanges (PBXs). They help you to communicate internally.

We can connect your PBXs to each other and to the outside world. With an IP connection and our overseas soft-switch network, you could reach other branch offices, or customers worldwide, simply by dialling a prefix number together with a phone number. It’s simple to use and very cost-effective.

Key features

- || Worldwide long distance calls to any location, internal or external*
- || Local calls
- || Inbound calls from any carrier

*Service Coverage: Currently our Overseas Enterprise SIP Trunk service is available in Hong Kong, Singapore, USA, Canada, United Kingdom and Germany, and outgoing calls can reach around 70 countries.



How you benefit

Cost effectiveness

There are no hardware or maintenance costs involved, and international calling costs are much lower compared with the traditional model.

Guaranteed voice quality

Voice quality is significantly improved by CTG's dedicated enterprise network.

Easy set-up

If you're an existing user of China Telecom's internet access, you can top up with this value-added service directly.

Great service

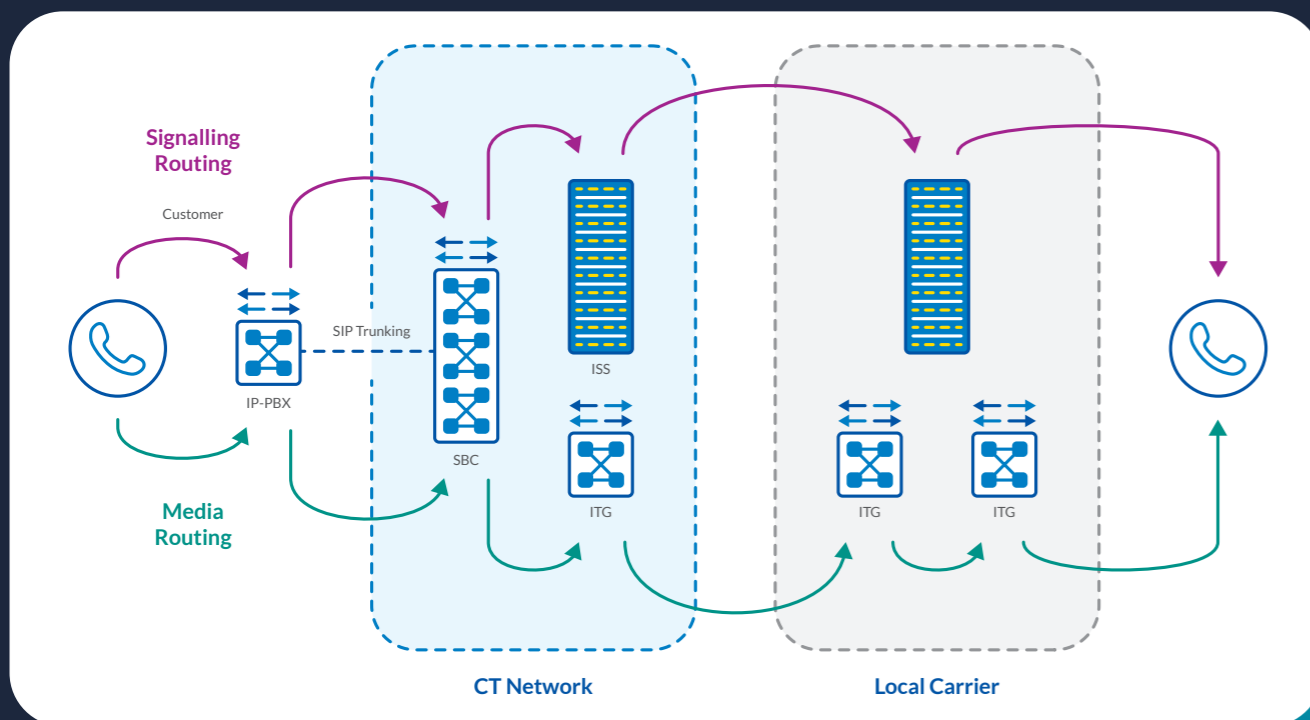
CTG provides highly efficient service delivery and speedy one-stop support.

How it works

The Overseas Enterprise SIP Trunk Service uses China Telecom's overseas soft switch network to carry traffic. The network consists of Soft-Switch devices (SS), Trunk Gateways (TG) and a Service Border Controller (SBC).

The SBC is located between the soft-switch core network and the users. It provides SIP service access and interoperability, supports FW/NAT traversal of SIP trunk business, and realises the SIP trunk media transit, bandwidth control, routing and resource control, as well as IP address reporting, QoS implementation etc.

The customer's network must include IP-PBX to communicate all endpoints over an IP network. It also switches calls between VoIP users on local lines while allowing all users to share a number of external phone lines. The IP-PBX can also switch calls between a VoIP user and a user using traditional phone calls, or between two traditional phone calls in the same way a conventional IP-PBX does.



Global Virtual PBX

If you're seeking to save on call charges between offices, you need our Global Virtual PBX service. You can reach your colleagues in world-wide branch offices simply by pressing an extension number. No matter where your offices are, or which fixed-network telecom operator you are using, you can speak to your colleagues as though they were in the next room.



How you benefit

Cost effectiveness

There's no initial hardware setup cost or maintenance costs. And you'll save on international direct dialling and roaming costs with our very competitive calling rates.

Enhanced productivity and reputation

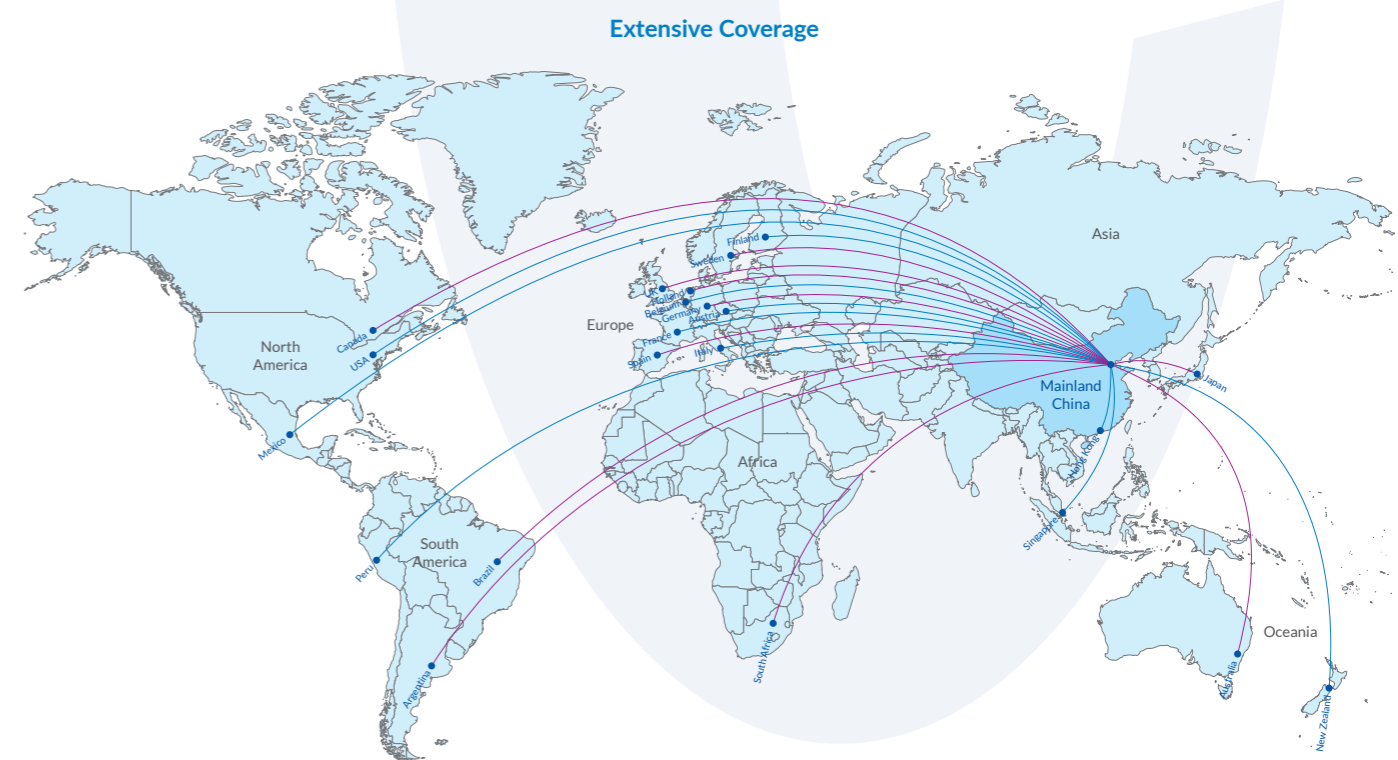
Never miss an important call. Our call forwarding service automatically transfers unanswered calls to the number you assigned.

Easier internal communications

The conference systems and extension calling make it simple for your colleagues to speak to one another.

Easy set up

You can benefit as soon as you subscribe, as no hardware installation is required. And you can customise your service through the self-service web portal at any time.



Cloud Conferencing

Multinational organisations increasingly need conferencing services on a global basis. Our Cloud Conferencing service allows you to join from anywhere in the globe, using almost any device: fixed phone, mobile phone, SIP terminal or PC terminal. There's no configuration involved, and the participants can be on any telecom network.

How it works

All the host needs to do is send out an access number for invitees. The invitees dial in and are automatically connected to China Telecom's international switching network. This network is responsible for promoting the flow of telephone traffic, and for connecting the calls to the cloud conferencing platform.

The conference access service covers 51 countries and regions and the outgoing conference call service covers 77 countries and regions; it guarantees voice quality for customers through the voice communication network exclusive to China Telecom.

How you benefit

- || Unlimited participants with free ITFS connection
- || No configuration needed; simple two-step connection
- || Free calls using SIP
- || Guaranteed voice quality thanks to China Telecom's voice communication network
- || Outgoing conference calls with multiple options



To learn more about how our Corporate Voice Solutions help you reach the world (and save money too):

Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

Cloud Contact Centre Solution

China Telecom's Cloud Contact Centre Platform delivers outstanding business value. Ever-evolving products and services, scalable capacity, secure connections and unparalleled performance are at the heart of our service. Your business and your customers will benefit from our mature technologies in the field of customer experience and our proven capabilities and capacity in serving a wide variety of industries, organisations and functions.



The Major Challenges You Face

International expansion and meeting local regulations

Are you looking to expand your business from Europe to China? There's a lot to consider. Your business must comply with demanding local regulations and meet the IT requirements of your partners and customers. Does it sound complex? It can be. With us at your side, you can untangle this complexity.

China Telecom's Cloud Contact Centre Platform overcomes these hurdles

- || Compliance with Chinese and European local regulatory requirements including GDPR
- || Specifying and sourcing a tailor-made integrated CRM platform with a customisable interface
- || Upgrading, updating or working around aging hardware
- || Understanding and choosing between multi-cloud and hybrid cloud setups
- || Managing budgetary pressures
- || Ensuring business continuity with the transition to a cloud solution
- || Balancing the high resource requirements of business expansion and acquisition, in multiple locations with an existing need for agility and flexibility

Key Benefits of our Cloud Contact Centre Solution



Global availability, localised delivery, operation and maintenance



Proven capability serving a **wide variety of industries**



Low latency, stable and secure connections for clear calls and fast connections



Intelligent availability, flexible capacity



Fully compliant with Chinese regulations and local regulations including GDPR



Scalable as your business grows, delivers outstanding business value



Excellent customer service experience: fast feedback, on-demand

Contact centre services for any location, at any time

Our leading capabilities that enable success:

Strong management

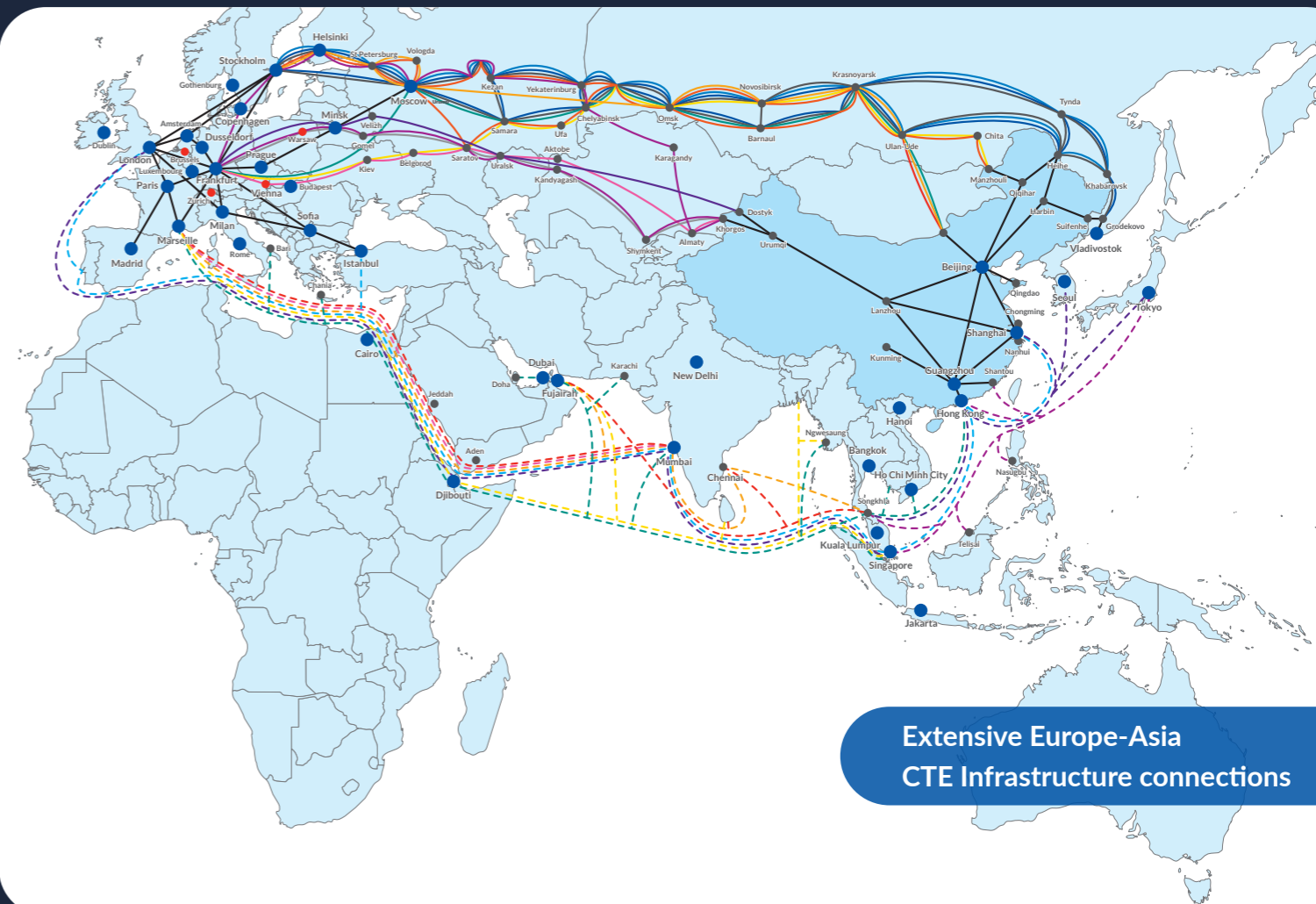
- Interactive Voice Response (IVR) supporting large volumes of calls
- Telephone management that is flexible, compatible and stable
- Agent Queue that provides increased productivity, SmartRouting

Intelligent features to work smarter

- Versatile AI-enabled software and data management tools for robust analytics
- Pop-up screens delivering context based, userfriendly information that is comprehensive
- Customer profiling capabilities with procedures to guarantee data consistency

Extend what your platform can do

- Use SMS for personalised, context-aware messages that abide by your policies
- Service records that are easy to access and allow for comprehensive tracking
- Assistive features supporting a wide range of third party plug-ins

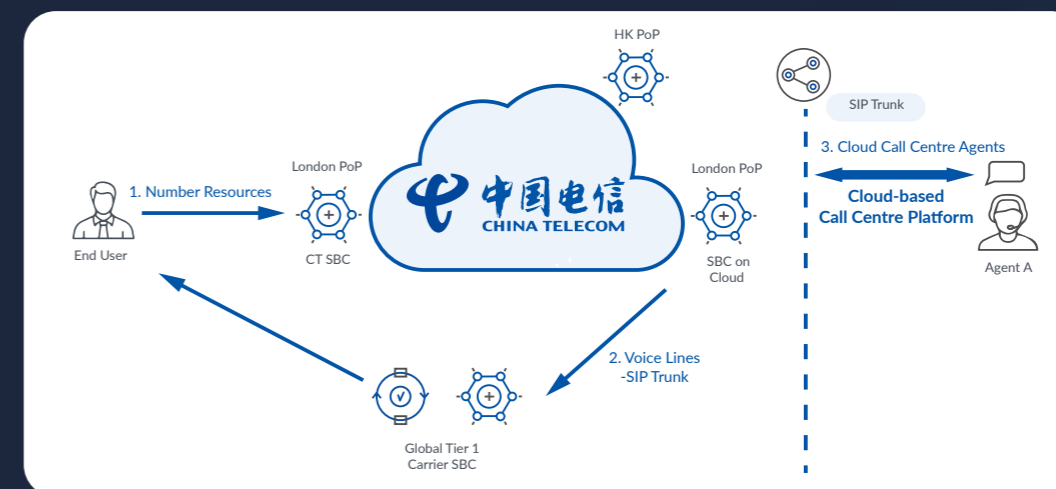


**Extensive Europe-Asia
CTE Infrastructure connections**

What's included in the Cloud Contact Centre Solution?

- Number resource service including International Toll Free Numbers, DID numbers and PSTN numbers from China Telecom
- International Direct Dialling (IDD) support outbound calls to more than 120 countries or regions around the world
- Interactive Voice response (IVR) and call queue waiting functions, prevention against missing calls or potential business
- Stable and high availability SIP Trunk services from China Telecom
- Cloud Contact Centre SaaS application

Diagram of our Cloud Contact Centre Solution



A2P Messaging

Application-to-Person messaging (A2P) is SMS message traffic sent from an application. Companies use A2P to reach and engage their customers quickly, reliably and conveniently.

If you've received promotional offers, notifications, one-time passwords or room booking confirmations from an app, or had a conversation with a chat bot, you've probably used A2P messaging.

Banks and OTT (Over-the-Top) service providers use A2P for password notifications and security alerts, when a high delivery rate, high security level and low latency messaging service is essential. The retail and travel industries require low costs and satisfactory delivery rates for sending high volumes of SMS.

Now retailers can quickly and cheaply notify customers of new promotions or discount offers. Hotels and airline companies can send room booking confirmations and flight information as well as promotional offers, knowing their customers will receive them securely and fast.

A2P for better customer messaging



Personalised, automated messaging

Send relevant messages to your customers and increase your conversion rate with powerful automated workflows. China Telecom (Europe) (CTE)'s platform connects directly to MNO and SMS providers in over 200 countries.



Self-service SMS Portal

Ready to use, with no extra interconnection required. You can get your A2P messaging up and running easily, without specialist support.



Secure delivery and high delivery rate

CTE's A2P SMS supports different types of messages including one-time passwords for account security. Messages are sent via public IP or IPSEC interconnection (HTTP/HTTPS/SMPP), enabling secure and efficient delivery.

Why partner with China Telecom (Europe) for A2P?



Expert Support, worldwide coverage

CTE is supported by a premium global network and has a leading position in the telecom industry. You can rely on our expertise and wide experience in China and APAC.



Better customer communications

Our high quality customised SMS solutions help you increase customer engagement and enhance your brand image.



User-friendly operation

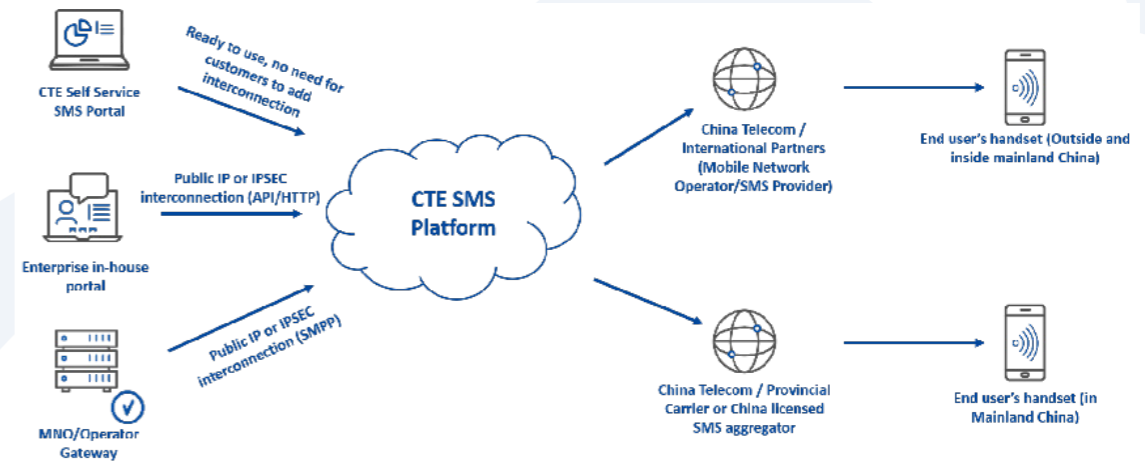
Our A2P SMS supports different interconnection methods via a simple user interface, including SMPP, API or CT self-service portal



Reliable service

We offer secure services and 24x7 multilingual customer support, giving you the peace of mind that comes from working with a trusted partner.

How CTE's SMS Platform works



How A2P supports clients in different industries

These are just a few examples of industries that can benefit from A2P solutions.

OTT Industry

An internet company provides live broadcast services for thousands of users in many different countries. They send a one-time password SMS to every user who registers for an account. That adds up to almost 1 million SMS sent every month.

CTE provides an API gateway, supporting multiple connection methods and backup routings for each destination, and ensuring excellent routing quality at a manageable cost per SMS.

Service Industry

As more people use online shopping and home delivery services they also expect detailed information on delivery times. Now, courier companies can keep their customers up to date via SMS to improve efficiency.

CTE provides a retail web portal where our courier clients can log in and send those SMS messages directly. Our clients enjoy a user-friendly solution, delivered quickly and without having to pay for system development.

Retail Industry

Many retailers want to keep in touch with their potential customers and VIPs, especially during seasonal promotions and flash sales.

CTE provides an API gateway and retail portal for retailers to send personalised promotional messages and discount information by SMS. They're finding the retail portal is particularly useful for engaging with their loyal customers.



Contact us today to find out more

Call CTE on +44 020 7537 7156 or email us at info.europe@chinatelecomglobal.com

TECHNOLOGY INNOVATIONS

The Internet of Things

Most people's understanding of connected devices is limited to the ones they see every day such as voice-activated assistants, music players and televisions. In fact, the network of billions of connected devices known as the Internet of Things (IoT) is transforming businesses around the world, and driving growth across industries including energy, healthcare, logistics, retail and transport.

At a time when network coverage, connectivity, availability and device management capacity are critical for your business, turn to IoT solutions from China Telecom (Europe), CTE, to connect your operations in ways you never imagined.



How IoT is changing the world

4 connected devices per person by 2023 (Cisco estimations)

US \$1.1tn company revenue generated worldwide by 2025

11% of the global economy by 2025 (forecast from GSMA)

20-30% efficiency gains in operations made by businesses adopting IoT

Why choose IoT from China Telecom (Europe)

- Global leaders in IoT – Largest IoT Network infrastructure worldwide
- Integrated and mature solutions – Ever-expanding IoT ecosystem, with CTE packaging thousands of IoT devices and solutions
- Think-tank of experts – 1000+ device connection testing practitioners and a Device Connection Platform (DCP) Member to ensure your IoT project succeeds

- Secure, compliant platform – Robust certified European and Chinese presence and operational capability, with secure IoT devices protected from hackers
- One-stop shop – Full range of compliant IoT solutions for your business, using our high quality global network and industry expertise



Contact us today to find out more

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Narrowband IoT - the future of embedded connectivity

Narrowband carries voice data on a limited number of frequencies, using lower bandwidth. So with NB-IoT you get better coverage and indoor penetration, and optimise power consumption and spectrum efficiency.

CTE has 101 commercial NB-IoT networks in 55 countries around the world. Look to us to keep your business ahead in digital transformation when the 2G/3G mobile network is phased out.

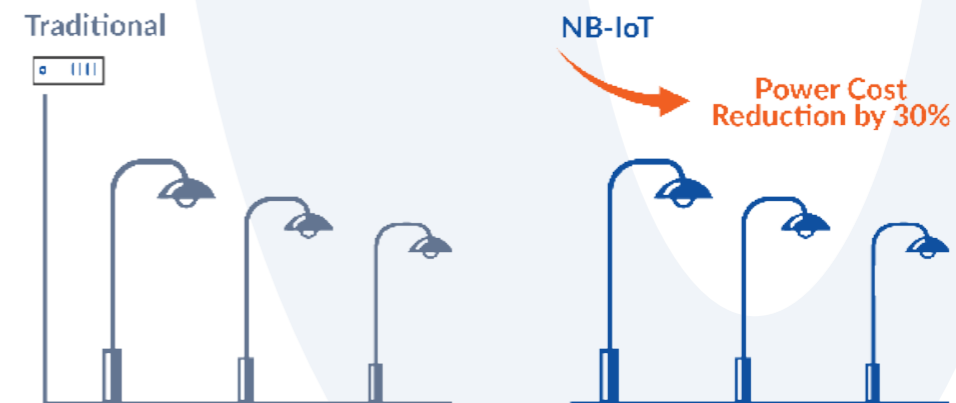
Sector	Numbers of different CTE Solutions available										
Transport	11 Tracking Solutions										
Energy	06 EV Charging	02 Sockets	02 Ventilation Solutions								
Fire Control	29 Smoke Sensors	07 Fire Hydrants	06 Gas Alarms	04 Electric Monitoring							
Public	17 Water Meters	08 Gas Meters	06 Electric Meters	01 Heating Meter							
Environment	16 Air Sensors	13 Soil Sensors	05 Humidity Sensor	04 Liquid Level Sensors	02 Weather Stations						
Consumer	23 Locks	11 Water Purifiers	04 Bands	03 Gate Controls	02 One Key Alarms	01 POS	01 Air Conditioner	01 Sphygmomanometer			
Municipal	19 Manhole Covers	06 Underground Vehicle Sensor	06 Trash Bins	06 Street Lamps	06 Pressure Sensors	05 Enforcement Instruments	02 Infra Sensors	01 Human Body Sensor			

Why choose NB-IoT from China Telecom (Europe)

- Well-established and successful with 60 million connections in China (December 2020)
- Mature solution with 325 TSLs (Thing specification language)
- Competitive module pricing to fit your business
- Trusted network of 32 Chip manufacturers, 183 module manufacturers, 1500+ vertical industry partners, 200+ bulk application deployment methods

Smart Street Lights - Case Study

Optimise your business mechanisms to improve the success rates of batch control



- Fine management of single street lights
- Private enterprises bearing the cost of transformation, sharing power-saving revenue

Efficient, cost-effective cross border device connections

Now that billions of new mobile devices are connected worldwide, roaming data is a vital element of a successful business. IoT providers need mobile connectivity suppliers to provide reliable connectivity at the lowest cost, wherever their IoT devices need to access mobile networks. Every sector has its own requirements, and they become increasingly complex when devices need to connect across national borders.

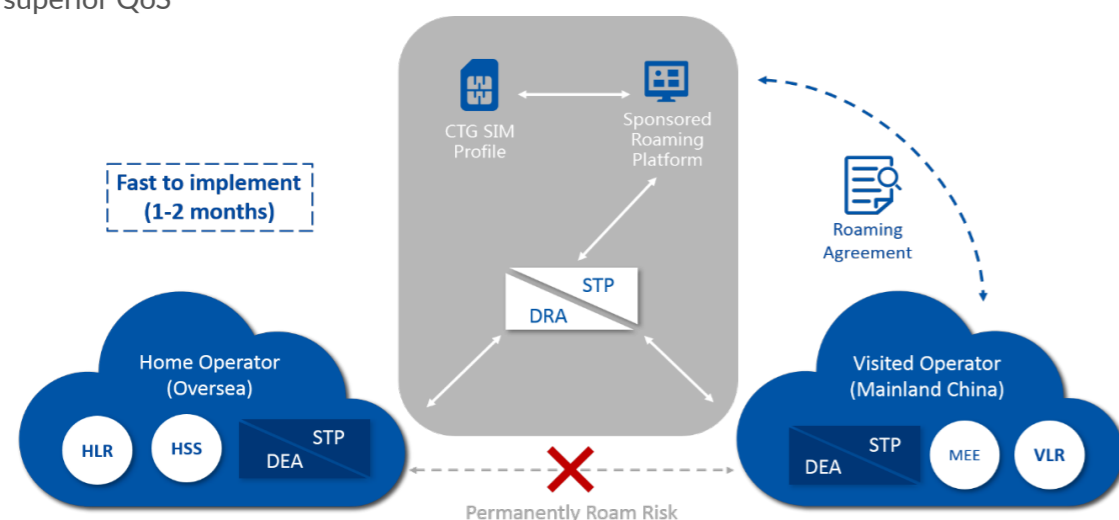
Common issues faced by mobile connectivity providers

In China, where there are 6 billion IoT mobile connections, businesses often turn to local partners to ensure they comply with local regulations. That's just one of the challenges your business must overcome, including:

- || Complying with roaming regulations in complex markets (China, Turkey, India, Brazil)
- || Driving revenue from roaming services outside Europe
- || Unclear charging models and multiple bills
- || Unpredictable quality of service (QoS) using foreign networks
- || Losing control and visibility of your subscribers to a foreign network
- || Set-up costs of building strong bilateral relationships in foreign countries

How our E2E roaming overcomes your challenges

- || The only operator that provides NB-IoT network sponsored roaming covering all China
- || Global team of experts ready to customise and support your solution
- || Seamless connectivity, low latency and a superior QoS
- || World's largest FDD and NB Network with 99% national coverage
- || 18 Million 4G Base stations, delivering a high QoS even in remote areas and dense urban areas
- || DCP (Device connection platform) member






Contact us today to find out more

Call CTE on +44 020 7537 7156 or email us at info.europe@chinatelecomglobal.com

Reinventing the business of a European vehicle manufacturer

Working with an established European vehicle manufacturer, China Telecom (Europe)'s IoT business was able to deliver a stand out use case for telematics for insurance on motor vehicles.

What the business wanted




-  **Digital Transformation:** Smart monitoring equipment to collect relevant data from motor vehicles to better understand their customers driving activity.
-  **Connectivity:** Low latency data transmission to a central server to efficiently collect and make use of customer data.
-  **SaaS (Software as a Service) Platform:** A way to optimise insurance algorithm models to significantly reduce the cost of vehicle insurance for customers, making them more likely to buy the vehicles produced by the manufacturer.

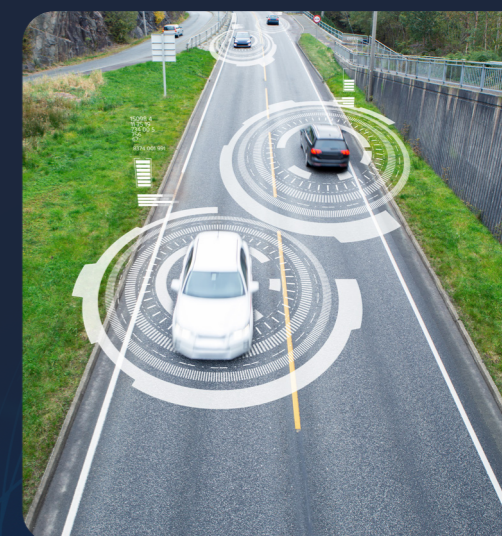
How China Telecom (Europe) helped

China Telecom (Europe) acted as an integrator, partnering with a local SaaS provider who developed the insurance software application and an on-board diagnostics (OBD) supplier to provide a complete solution to our manufacturing client.

1. CTE provided comprehensive, compliant cross-border solutions. It acted as a one-stop shop for IoT services, using its status as a global MVNO service provider, its localised mobile operating licenses and the tax arrangements it has set up across Europe.
2. CTE took advantage of the economies of scale it enjoys as the world's largest mobile operator to provide advanced, cost effective IoT Solutions.
3. CTE packages continued to add value after the initial set up, for our manufacturing client and its customers. The manufacturer's smart models and smart devices improved the safety of their vehicles, and insurers lowered their rates to the drivers of the vehicles made.

A results driven partnership

-  In 2020, the manufacturer's sales in their home country increased by a third and was the best-selling and most-searched motorcycle company there.
-  After-sales data is improving the business' customer targeting by helping them design customised insurance packages that can help their buyers save money.
-  Together, we built a cutting edge use case of telemetry data that can help transform and create new business models today.



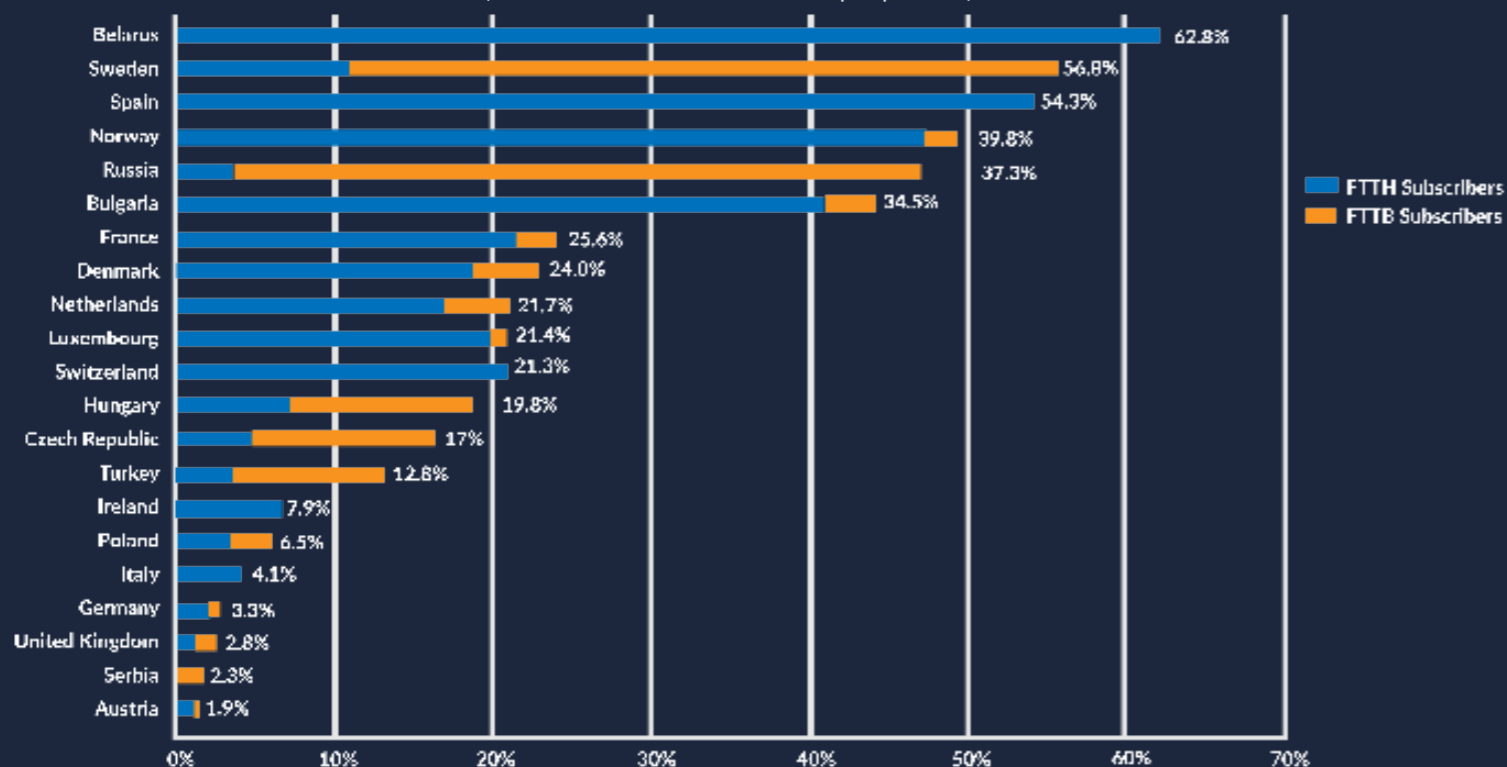
5G CPE for more bandwidth, high speed and wide coverage

2021 will see the widespread rollout of 5G CPE – CPE (Customer Premise Equipment) which relays 5G mobile phone signals around your buildings. 5G CPE supports IoT devices with demands for greater data volumes as well as those that need ultra-low latency to be effective – allowing your business to use advanced IoT solutions.

5G brings high-speed internet access to hard-to-reach areas that require it most. It's replacing expensive FTTH (Fibre to the home) installation in countries with low fibre connectivity rates due to lower population density such as agriculture areas and more remote locales. 5G CPE can help your business take advantage of the rapid deployment of 5G.

European FTTH/B Rankings

(Source: IDATE for FTTH Council Europe April 2020)



Why choose China Telecom (Europe) for 5G CPE?

- Your one-stop shop for 5G CPE indoor solutions and coverage
- Support for multiple frequency bands in major regions and operators worldwide
- Cost-effective alternative to expensive fibre connections
- Global infrastructure and supply chain to source and integrate the equipment you need
- Support for flexible expansion of Mesh Wi-Fi technologies, enhancing your indoor connectivity
- Indoor and outdoor solutions, including necessary infrastructure such as masts and poles.
- Fully compliant with EU and UK requirements and regulations



Contact us today to find out more

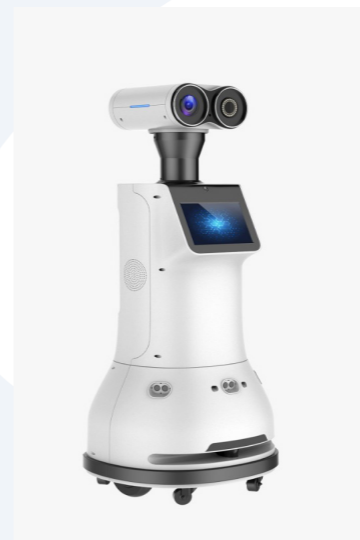
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IoT and robotics in the workplace

The dream of using IoT in warehouses, factories and offices is fast becoming a reality. These environments provide the ideal platform for launching IoT projects and taking immediate advantage of the benefits of the technology.

SmartSafe Robots reduce risk



Maintaining the health and safety of your work environment is critical for any business all the time – not only during a global pandemic. By making use of the most up-to-date technologies, you can keep your employees and visitors safe, and reduce the risk to your business.

Our SmartSafe Robots:

- Disinfect and sterilise surfaces to keep areas clean
- Take contactless temperature screenings for safe checks
- Record and transmit data over your network to inform and alert your team
- Work autonomously when staff aren't available

Picking Robots improve delivery

Smart picking robots choose the most efficient travel paths to achieve accurate, speedy order delivery. The robots are powered by advanced machine learning algorithms to improve pick performance.

Our Picking Robots:

- Triple your labour picking rate
- Improve picking accuracy (up to 99.99%)
- Deploy fast (1-3 months)
- Give you rapid ROI (2-3 years payback period)



Picking Robots improve delivery



Using the latest in laser navigation methods, these robots schedule their own routes around your factory or warehouse. They deliver pallets and racks smoothly, avoiding any obstacles in their path.

Our Pallet Moving robots:

- Adapt to different scenarios with flexible modules (eg rollers, tools, special equipment)
- Minimise risks using secure safety multi-sensors
- Integrate with all kinds of machinery systems thanks to PLC: Programmable logic controller

Inbound calls

Customers service agents log into the Cloud Contact Centre solution and answer calls from end users/clients via the agent's computer and mobile phones.



Outbound calls

Customers service agents make outbound calls to end users/clients via SIP trunk service based on the needs of the business.



Choose a contact centre package to match your business needs

Our packages and bespoke service let you choose the service that's right for your business, today and in future.

Standard Contact centre features	Advanced With Omni Channel & Collaborative Features	Smart With AI & Analytical Features	Innovative Integration & Standardisation
Inbound Call (CRM Integration) IVR & TTS ACD CDRs & Recordings (12mo) SMS Voice Mail Real-time Monitoring Intervention Standard Reporting Call Back-Scheduling	Omni Channel Mobile App Visitor Journey (Web & IM) Conference Call Work Order Management Salesforce & Zendesk Integration Dashboard Knowledge Base	Smart Quality Control Work Order Quality Control Predictive Dialer Voice Bot Text Bot Workforce Management Remote Assistance Agent Assistance	SDK API Local Service Integration SaaS PaaS

Every package includes: Preview Dialler, Customer Profiling, Risk Management, WebRTC/IP/Mobile, Privacy Protection and National & Global Numbers.



Contact us to find out more

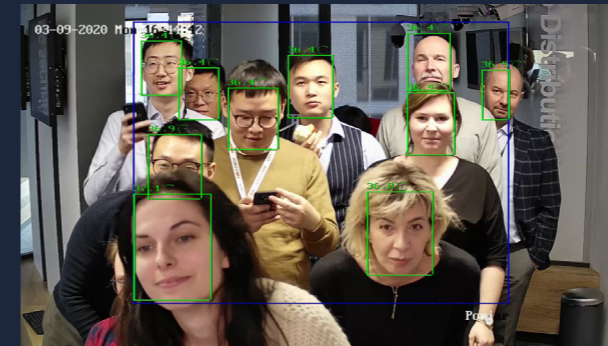
Call CTE on +44 (0) 20 7537 7156 or email us at info.europe@chinatelecomglobal.com

Body Temperature Screening Systems

Are you prepared for the challenges ahead?

Today, businesses and organisations operate in a world that's more complex than ever before. People are more connected. They travel widely and frequently for work and leisure. Businesses trying to maintain the health and safety of their employees are facing new and growing challenges because of this increasingly connected environment.

Safeguard your workplace with our body temperature screening systems



Temperature screening from China Telecom (Europe) Ltd. (CTE) provides rapid, accurate results when you want to keep your workplace safe. CTE's body temperature screening system features multi-point temperature detection, real-time monitoring, multi-person detection and over-temperature alarm. It works in dense crowds, so it's suitable for areas with large numbers of people.

Why choose CTE temperature screening?

Contactless

Our scanners work without touching test subjects. That makes them ideal for large crowds and high volume inspections.

Rapid response

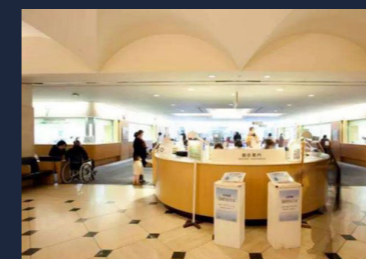
Our body screening systems work in real-time for large numbers of people. The over-temperature alarm gives you speedy notification when you need to take action.

Highly accurate

We offer measurement accuracy variation of just $\pm 0.5^{\circ}\text{C}$, so you can trust the results and be sure of when to take action.

Where to use body temperature screening?

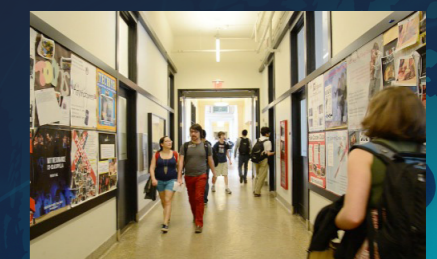
Our devices are adaptable for use in a wide variety of buildings and situations. CTE body temperature screening is suitable for:



High traffic public areas, for example a hospital information desk.



Places needing quick screening, such as passenger channels on transport networks.

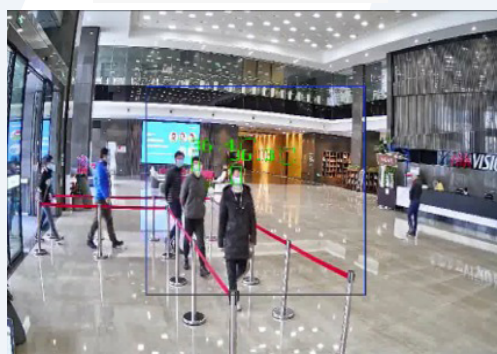


Regular monitoring for corridors and entrances in workplaces, including schools.

CTE body temperature scanning devices

High resolution online body temperature screening camera

Our body temperature screening camera covers open areas and operates between 10°C and 35°C. Alarm system connects through your server for instant alerts, with high quality image detail.

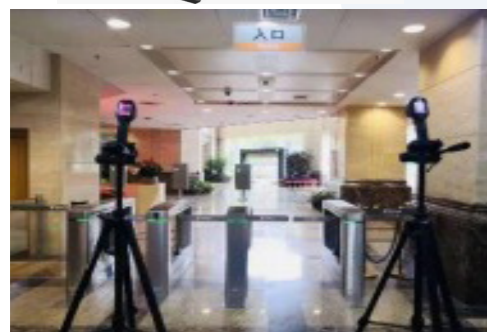


Technical specifications

- || Thermal resolution: 384 x 288, lens (10/15mm)
- || Optical resolution: 2688 x 1520, lens (4/6mm)
- || Temperature measurement range: 30 °C - 45°C
- || Temperature measurement accuracy: ±0.5°C
- || Install methods: wall mounted
- || Installation height: 1.7-2.5 metres
- || Detection distance: 3-9 metres (depending on lens used)
- || Simultaneous screening of up to 30 people
- || Supports real-time audio alarm monitoring fully connect to your server
- || A.I. human body detection system to reduce false alarms that may happen in temperature screening

Portable indoor temperature screening

Our portable body temperature scanner works in small spaces. Light and easy to use all around your workplace.



Technical specifications

- || Thermal imaging resolution: 160x120
- || Optical resolution: Max 8MP
- || Temperature measurement range: 30 °C - 45°C
- || Temperature measurement accuracy: ±0.5°C
- || Screen size: 3.5" LCD touch screen
- || Install methods: hand held or on tripod
- || Installation height: 1.5 metres
- || Detection distance: 1.5 - 3 metres
- || Supports real-time audio alarm and WiFi hotspot
- || Automatic screenshot and upload of detected person to mobile thermal app



Contact us today to find out more

Call CTE on +44 020 7537 7156 or email us at info.europe@chinatelecomglobal.com

SmartSafe Robots

How prepared are you for the challenges ahead? Is your business adequately prepared to cope with the challenges of today's ever-more complex world? Especially with the growing problems of dealing with the continuing repercussions of the Covid-19 pandemic? Controlling infection is hard when people move about so much for work and leisure, especially as restrictions are relaxed.

The challenges in maintaining the health and safety of your employees, and the people who visit your sites, are changing all the time. It's critically important to keep public spaces safe, while protecting the staff performing this vital work and keeping everyone alert.

Protect your organisation with CTE SmartSafe robots

CTE SmartSafe robots help you keep your workplaces safe for everyone who passes through. They can help you clean your working environment, screen visitor temperatures, encourage mask wearing, direct and inform visitors and provide live updates to everyone on site. Indoors or outdoors. And because robots operate remotely, you're not putting your staff at risk.



Consistent and accurate results



Safely disinfect and patrol



Highly mobile and autonomous

Choose the CTE SmartSafe robot that's right for your workplace

Features	CTE SmartClean	CTE SmartPatrol	CTE SmartScreen	CTE SmartRanger
Disinfects and sterilises	✓	✓	✗	✓
Screens body temperature without contact	✓	✓	✓	✓
Checks for mask-wearing	✗	✓	✓	✓
Broadcasts directions, guidance and warnings	✓	✓	✓	✓
Records and transmits data	✓	✓	✓	✓
Displays information	✗	✓	✓	✗
Allows remote video communication	✗	✓	✓	✓
Self-drives and navigates	✓	✓	✓	✓
Enables emergency calls	✗	✗	✗	✓
Works outdoors	✗	✗	✗	✓

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A CTE SmartSafe Robot for every workplace

CTE SmartClean robot: clean your workplace, screen your staff

The self-driving CTE SmartClean robot **disinfects your workspaces** after hours using UV and ozone. During working hours, your CTE SmartClean robot **monitors body temperatures**, checking up to 10 people simultaneously in the same area with ± 0.5 °C accuracy.

Your team gets reports directly from the robot, so they can act on the data, including broadcasting safety messages from the robot itself.



CTE SmartPatrol robot: safety for queues and crowds



The CTE SmartPatrol robot can **check temperatures for up to 200 people** a minute, with ± 0.3 °C accuracy. It can also recognise whether visitors are **wearing masks** with 99% accuracy, with audio reminders to those who aren't. Your CTE SmartPatrol robot also **cleans and disinfects quickly** and safely using common spray disinfectants, 24 hours a day.

Real-time data reporting, including PM2.5, temperature and humidity, allows your team to monitor the situation surrounding the robot. The operations team can also broadcast information and get alerts from the robot to help keep the area safe.

CTE SmartScreen robot: guide, communicate, respond

The CTE SmartScreen robot's video screen helps you to keep your customers and staff informed and connected. You can use it, combined with the broadcast function, to provide **guidance and alerts for your visitors**, including reminders of the latest restrictions, and direct them to where they need to go. Video guides can help your visitors after hours, or answer simple questions.

The screen also allows **remote video connection** – use it for staff to consult medical advisors, doctors to talk with nurses, students to speak to school admin or families to remote visit isolated patients.

On-the-move **temperature-screening and mask-checking** ensure that visitors and staff are protected throughout your workplace. Keep on top of the situation, and respond quickly, using real-time reporting, information and alerts.



CTE SmartRanger robot: screen and clean outdoors, and call for help



The CTE SmartRanger robot can work for 24 hours uninterrupted, **screening and cleaning your outdoor spaces quickly**. It does so with safety and efficiency in mind. It's self-driving, so you can program it to cover your sites after hours, or during quieter times.

It keeps your workplace safe by **broadcasting safety messages, and by checking people's body temperatures and mask-wearing**. It also reports data back and alerts your team.

The CTE SmartRanger robot also has a one-button emergency call connected to your control room for passers-by to call for help using voice and video.

Useful wherever you work

There's a CTE SmartSafe robot that's right for your organisation. They can adapt easily to a wide variety of work and public spaces, from the largest to the smallest.

All of the CTE robots send and receive information securely through 5G / 4G / WiFi multi-standard, high bandwidth, low latency network access. So your health and safety teams can respond quickly and alert others when necessary.



Hospitals, residential lobbies, industrial spaces

Airports, transportation hubs, public transport stations

Government buildings, libraries, schools

Parks, campuses, outdoor transport hubs



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	CTE SmartClean	CTE SmartPatrol		CTE SmartScreen	CTE SmartRanger
Technical specifications	<ul style="list-style-type: none"> Dimension: 55cm X 55cm X 130cm~190cm Weight: 80kg Speed: 1m/s (3 levels) Turning radius: spot-turn Location accuracy: ±2 cm Chassis: double shock absorber Battery life: ≥8 hours Charging duration: ≤4 hours Operating temperature: 0°C - 40°C 	<ul style="list-style-type: none"> Dimension: 1257mm X 537mm X 537mm Weight: 60KG Thermal imaging temperature range: -20°C ~150°C Battery life: ≥8 hours Operating temperature: 0°C - 40°C 		<ul style="list-style-type: none"> Dimension: 1393mm X 630mm X 537mm Weight: 45KG Color: white, silver Head screen: 11.6" touch screen 1920x1080 Motion speed: 0.3m/s, 0.5m/s, 0.7m/s Operating temperature: 0°C - 40°C 	<ul style="list-style-type: none"> Dimension: 1540mm X 890mm X 1930mm Weight: 300KG Material: alloy steel plate + ABS Operating speed: rated speed of 1m/s, maximum speed of 1.5m/s Passing capacity: ≤80mm(height), ≤200mm(width) Wading depth: ≤100mm Protection level: IP55 Operating temperature: -40°C - 70°C
Specifications of sensors and capabilities	<ul style="list-style-type: none"> Max disinfection efficiency: 60m³/h UV light power: 4x14W Radiative illumination value: 4x40uW/cm² Ozone disinfection: available Infrared thermometers: 10 people max at a time Infrared thermometer accuracy: ≤0.5°C Assets inventory: available Platform elevating: available 	<ul style="list-style-type: none"> Infrared temperature detection accuracy: ±0.5°C Identification accuracy without masks: 99% Storage quantity of disinfecting solvent: 5L*2 Integrated camera: RGB-D depth camera Positioning cruise: high precision lidar, pressure sensor, ultrasonic sensor 		<ul style="list-style-type: none"> Head sensor: 6+0 microphone array Waist sensor: Depth camera, electronic skin on arm, pressure sensor on the back of hand Chassis sensor: ultrasonic sensor X6, infrared sensor X9, lidar X1, 9 axis gyroscope sensor X1, temperature and humidity sensor X1 Infrared temperature detection accuracy: ± 0.5°C 	<ul style="list-style-type: none"> Camera: Main camera & thermal imaging temperature measuring camera Positioning cruise: 3D lidar, 2D Lidar, left/right loop camera, front/back loop camera Storage quantity of disinfecting solvent: 18L Support emergency on-click help

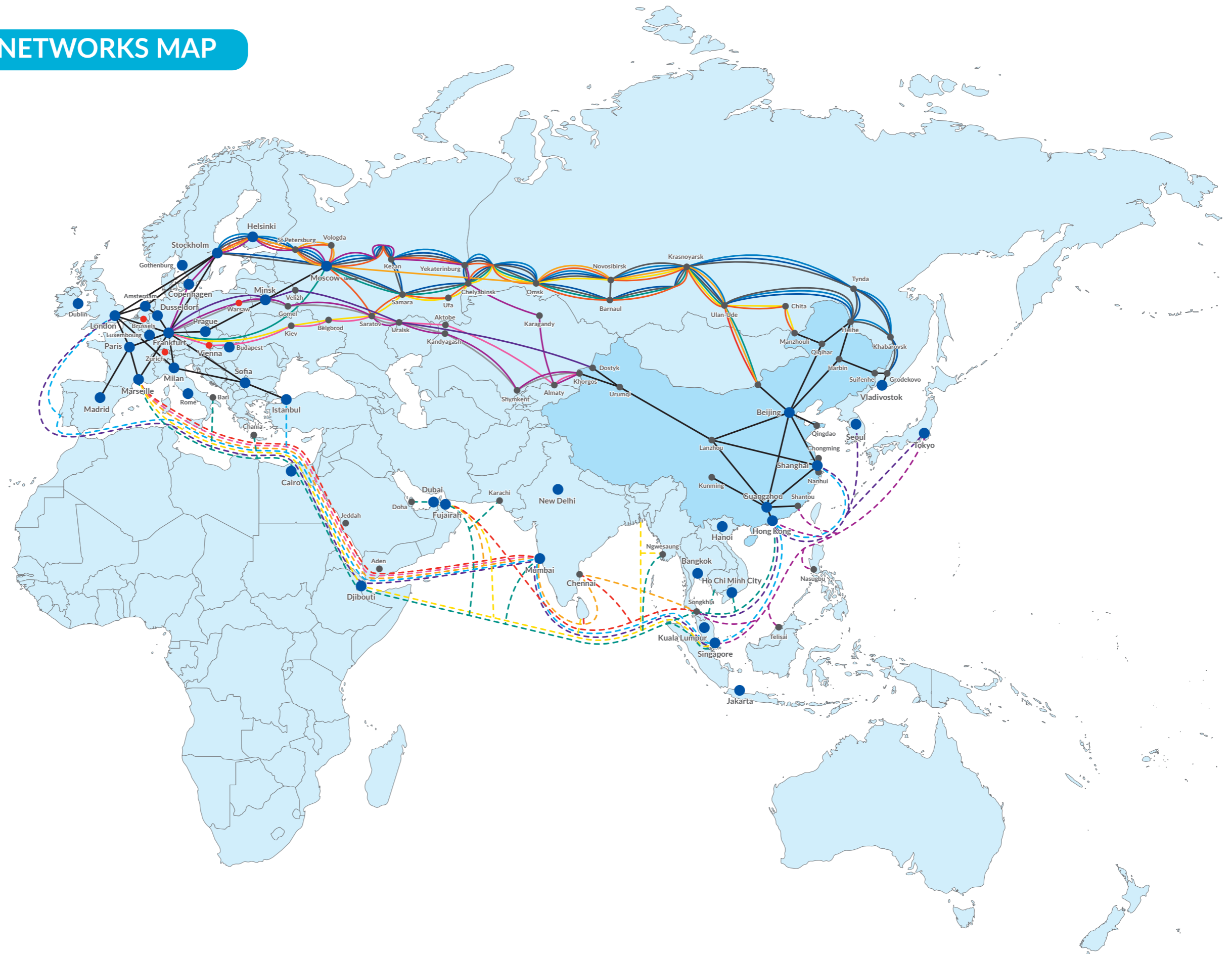
EUROPE-ASIA NETWORKS MAP

Terrestrial Cables

- TEA
- TEA2
- TEA3
- TEA4
- TMP
- TMP+
- CR2
- CR2 to Vladivostok
- CR3
- TSR
- TSR+
- STSR
- TSR2

Submarine Cables

- - - SMW3
- - - SMW4
- - - SMW5
- - - TGN-EA
- - - BBG+EIG
- - - FEA
- - - SJC
- - - AAE-1
- POP
- Extended POP





ABOUT CTE

China Telecom (Europe) is your digital silk road between Europe and China-APAC markets. We are a strong APAC region partner for your digital transformation initiatives wherever, whenever you need telecommunication infrastructure and technology services.

Established in 2006 in London, CTE continues to develop across the continent. With a presence in 21 European countries, we provide integrated telecoms and technology services.

CTE seamlessly connects global business to the world's largest single marketplace, China. With a Europe-Asia network of terrestrial and submarine cables, China Telecom also provides a superior low latency and improved resilience to and from China – Asia Pacific region. Beyond just networking, we provide a range of services in cross border communications and digitally transformative technology, including but not limited to SD-WAN, Multi-cloud connectivity, Internet of Things (IoT) and Cloud Contact Centre.

CTE is a wholly owned subsidiary of China Telecom Global and is an ideal partner for European and Asian businesses such as Multinational enterprises headquartered in Europe, Chinese-APAC Enterprises in Europe, carriers, telecom service providers. China Telecom offers a world-class global capacity, delivering approximately 70T with 200 POP sites distributed globally.

CTE Key Facts



Extensive European-Asia Network – transiting TMP, TEA, TEA2, TEA 4, CR2, TSR, SMW3, SMW4 and SMW5 cable systems



World's largest 4G LTE FDD mobile operator (323 million mobile subscribers)



World's largest broadband operator (127 million subscribers)



Owns comprehensive Trans-Pacific capacity on different cable systems such as: APCN2, Japan-US, Faster, NCP, TPE, UNITY, PC-1 and AA.



Owns and operates ChinaNet, China's largest Internet network



Owns and operates China's largest MPLS VPN network, based on our next-generation, carrier-class, IPv6-capable Internet backbone network



Primary service provider in all 21 southern provinces in China



Owns comprehensive trans-Pacific cable systems, including China-U.S., Japan-U.S., SE-AME-WE3 in APCN2, SMW3, SMW5, FASTER, Flag, TAE, etc.



International bilateral connectivity to 100+ countries



More than 670,000 professionals employed around the world

#158

on Fortune's Global 500 in 2020



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