

SD-WAN Paves the Way to a 5G Future SD-WAN 為 5G 新時代開拓康莊大道

CITIC Telecom International CPC Limited
中信國際電訊 (信息技術) 有限公司

One can imagine how much more difficult it would be to stay at home because of a pandemic, without high-speed Internet. Back to the time of using traditional mobile internet, it is not possible for us to use a wide range of modern applications and services. Thanks to the fast and reliable “broadband” connectivity, online shopping and generally searching for information has become almost instantaneous, not to mention the convenience of cloud-based services for email, videos, games, music and even TV programs. The revolution of 5G network, not only can facilitate our communications but also make our communications with devices like IoT, vehicles, wearable devices become easier. Speaking of the cloud, we can “work from home” via the corporate private network, securely accessing the company server and systems, collaborating with workmates and transferring large files, as if we were physically on the office network. Even video conferencing is seamless and simple.

The mobile Internet has similarly revolutionized work and leisure. We depend on our smartphones for GPS maps and directions, receive news and message alerts, pay with e-wallets, and send chat emojis more than make phone calls. Many industries, such as manufacturing and e-commerce, have already begun to leverage ubiquitous mobile connectivity for new workflows that are faster, more cost-effective, and can deliver higher value to every supply chain participant. These digitalization enhancements include RFID, GPS, and Internet of Things (IoT) for monitoring and tracking of the realtime status and location of raw materials, finished goods, warehouse inventory and even end-user delivery and returned merchandise. Retail customers can examine realtime stock availability and order delivery status, on a global scale.

The New World of 5G

5G promises to further enhance industries’ workflows and end-user experiences, building upon the groundbreaking advances of previous generations of mobile connectivity, including 2G (digital mobile voice), 3G (mobile data) and 4G (mobile broadband). 5G offers much higher throughput (over 100 Mbps average data rates with 20 Gbps peak rates), almost negligible latency, 100-fold traffic capacity increase, and many other improvements over 4G, all to support massive volumes of IoT monitoring and tracking devices for manufacturing, healthcare, security, and other industries. It will enable next-generation autonomous vehicles (including self-drive cars and delivery drones), smart security cameras, and much more.

In most countries, 5G is still in its early adoption phase, but momentum is growing rapidly, particularly in APAC which will likely lead the world in 5G innovation. This coincides with the general need for enterprises to seek new ways to cope

試想像在當今疫情下，在家抗疫的生活如果沒有穩健、高速的網絡支持，大家能如何面對挑戰，克服困境，共渡時艱。回想在傳統網絡通訊的年代，我們根本不可能使用現今各式各樣的先進應用程式和數碼化服務。現今快速且可靠的網絡服務為我們帶來無限的便利，網上購物及搜索資料經已成為日常生活中不可或缺的一部分，更不用說種種令生活更便利的雲端服務如電郵、短片、遊戲、音樂以至電視節目等。而革新的 5G 網路，更將不只限於連結「人」與「人」，同時將連接更多「人」與「物」，如物聯網、車載、穿戴式裝置等等。此外，雲端其實也是現今「在家工作」的重要一環；因為雲端，我們才可以透過企業專用網絡安坐家中工作、安全連接公司伺服器及系統、與同事溝通合作和互傳大型檔案，簡易流暢地舉行視像會議，一切猶如置身於辦公室中。

另一方面，流動網絡在工作和娛樂方面亦帶來了革命性的改變。我們現在都仰賴智能電話，如手機內的全球定位系統 (GPS) 來找尋交通路線、利用應用程式來接收時事新聞及訊息提示、使用電子錢包付款，甚至以發送表情符號取代電話通話。許多行業如製造業和電子商務，亦已經開始運用這無處不在的流動網絡，令工作流程更加快速、增加成本效益，並為供應鏈上的合作夥伴提供更優質服務。這些優化的數碼技術，包括無線射頻辨識 (RFID)、GPS 和物聯網 (IoT)，能夠用以實時監察和追蹤原材料、製成品、倉庫庫存，送貨和退貨商品的實時狀況和位置。而零售客戶亦可以此檢視全球的實時庫存量及訂單狀況，無遠弗屆。

5G 網絡新世界

建基於前幾代流動通訊技術的突破性發展，包括 2G (數碼化語音傳輸)、3G (流動數據) 和 4G (流動寬頻)，5G 致力進一步改善不同行業的工作流程和用戶體驗。5G 提供了更高傳輸量 (超過 100 Mbps 的平均速率和高達 20 Gbps 的峰值速率)、微乎其微的網絡延遲、100 倍增的網絡容量，以及不少在 4G 技術上的改進。以上一切皆有助支援 IoT 設備在監察和追蹤過程中產生的龐大數據，惠及製造業、醫療保健業、保安業及其他各行各業。此外，5G 也是下一代無人駕駛交通工具 (包括自動駕駛汽車和送貨無人機)、智能監控鏡頭和更多產品的基礎。

雖然大部分國家的 5G 發展仍處於初步試驗階段，但進展可謂一日千里，當中亞太地區更有望引領全球 5G 技術創新。在新冠疫情下，企業需要面對新的營運模式 (包括員工之間須保持社交距離和在家工作)，5G 技術正好解決了他們的需求，亦有助他們應對市場現存的種

with COVID-19 impacts (including staff social distancing and working from home), in addition to managing preexisting market challenges such as heightened competition, more demanding customers, the need for faster time to market, and other factors. Companies dependent upon physical customers are struggling, and must eventually adapt to the New Normal to sustain their businesses. Indeed, today's winners are those businesses either directly offering consumer cloud services or utilizing cloud infrastructure to enhance backend physical systems for supporting their retail, warehousing and delivery services.

Success via SD-WAN

The key for struggling businesses to effectively and efficiently capture new opportunities afforded by upcoming 5G infrastructure, is to leverage Software Defined Wide Area Network (SD-WAN) solutions to maximize return on investment, and optimize administration and utilization of enterprise cloud services, alongside 5G. Because of more emphasis on online processes and business digitalization, the New Normal business landscape demands large scale, high throughput cloud management. For example, to imagine that retailers can further enhance fulfillment with a massive fleet of self-drive trucks and delivery drones. Even restaurants can become virtualized, using robots to cook and deliver food, reducing infection risk, and improving efficiency.

Recognizing the significance of these emerging market forces, CITIC Telecom CPC launched TrueCONNECT™ Hybrid, a fully managed and secured SD-WAN connectivity solution for all sized organizations. TrueCONNECT™ Hybrid gives companies much-needed agility to implement new cloud applications and strategies. Through the centralized management portal, companies can quickly monitor and adapt their networks to new business models, geographies, and markets, especially in today's challenging situation. As a managed service, deployment is easy and fast, with limited or zero on-site IT personnel. CITIC Telecom CPC has nearly 50 SD-WAN gateways by far. They widely spread around in Mainland China and the key cities along the 'Belt and Road' and also cover various regions across Asia Pacific as well as Europe in support of enterprises' needs of global digitalization. Optional WAN optimization can bring even greater speed and application performance. Essentially, TrueCONNECT™ Hybrid can be considered a crucial "network glue" for streamlining modern topologies to reduce cost and complexity, while maximizing utilization and creativity. Recently, a global logistics and transportation company (with 70 offices worldwide) leveraged TrueCONNECT™ Hybrid to connect its global branch offices, users and applications. Despite the significant network footprint and complexity, TrueCONNECT™ Hybrid helped the company gain better overall network visibility, higher efficiency, optimized performance, simplified management, and more robust security, all supporting its global expansion and digitalization strategy.

種挑戰，如日趨加劇的競爭、更高的客戶要求及更迅速的供貨時間等。依賴實體客戶的公司正面臨艱巨挑戰，最終必須轉型以適應新常態。無可否認，現今佔優的企業都是那些直接向消費者提供雲服務，又或使用雲端基建去增強後台系統的企業，他們能藉着雲端技術來優化其後台系統，以支援企業的零售、倉務及送貨服務。

藉 SD-WAN 取得成功

想有效地捉緊 5G 基礎建設所帶來的新機遇，關鍵在於利用混合式軟件定義廣域網 (SD-WAN) 解決方案聯同 5G 技術，優化企業雲服務的管理及應用，達致更高投資回報率。在新常態的商業格局下，改革的重點將落在網上流程和業務數碼化上，因此企業必須配備大規模及高傳輸量的雲端管理系統。舉個例子，想像將來零售商可配置大量自動駕駛貨車和送貨無人機去進一步提高貨運量。即使餐廳也可以實踐虛擬化，利用機械人去煮食和送餐，從而降低病毒感染風險和提高營運效率也是指日可待。

因應這些關鍵的市場新趨勢，中信國際電訊 CPC 推出了 TrueCONNECT™ Hybrid (軟件定義廣域網方案)。TrueCONNECT™ Hybrid 是一項全面託管、高度安全性，兼適用於各種企業規模的 SD-WAN 方案，能夠給予企業所需的靈活性去推行新的雲端應用程式和策略。企業可因應業務模式、地區及市場的最新變化，透過中央網上服務管理平台迅速地監察及調整網絡部署，這在現今充滿挑戰的市場環境中尤其重要。作為一個託管式服務，TrueCONNECT™ Hybrid 的部署簡單快捷，過程只需少量甚至無需 IT 人員在場。中信國際電訊 CPC 至今於全球擁有接近 50 個 SD-WAN 網關，廣泛分佈在中國大陸及「一帶一路」重點城市，SD-WAN 網關亦覆蓋亞太地區以及歐洲，全面支持企業不同的需要。用戶更可自行選配廣域網絡優化服務 (WAN Optimization)，進一步提升網絡速度及應用效能。簡而言之，TrueCONNECT™ Hybrid 是簡化網絡拓撲架構的關鍵，既可減低複雜性和提升成本效益，又能把使用率和創造力提升到最高。最近，一家在全球擁有 70 個辦事處的物流運輸企業就使用了 TrueCONNECT™ Hybrid 以連接旗下辦事處、用戶及各種應用程式。儘管該公司需要的網絡覆蓋面積和複雜性頗高，TrueCONNECT™ Hybrid 仍能協助客戶獲得更好的整體網絡可視性、更高的效率及優化性能表現、更簡易的管理系統以及更嚴密的網絡安全。以上種種優勢，大大推動了該公司的全球業務拓展及數碼化策略。

TrueCONNECT™ Hybrid 內置了新一代防火牆技術，比其他 SD-WAN 方案多一重防護；若客戶想得到更全面的安全保障，中信國際電訊 CPC 的 TrustCSI™ 信息安全服務 (MSS) 便成為企業的信心之選。中信國際電訊 CPC 一系列的解決方案，都得到公司世界級的基礎設施以及優質的全球網絡所支援，包括全球超過 140 個網

While TrueCONNECT™ Hybrid is already secured with embedded next-generation firewall technology, further enterprise protection can be achieved with CITIC Telecom CPC's TrustCSI™ Managed Security Services (MSS) to additionally enable comprehensive edge-to-edge security. Both these solutions, and others in the extensive CITIC Telecom CPC solution portfolio, are supported by and operate across the company's world-class infrastructure comprising carrier-class global network, over 140 points of worldwide presence, 18 cloud service centers, 30+ data centers, and two dedicated 24x7 Security Operations Centers. We offer 24x7x365 native language support, plus certified professionals well-versed in worldwide data privacy and security requirements to help CITIC Telecom CPC's customers ensure they comply with the European Union's GDPR and China's MLPS 2.0 and other such regulation, when their global networks cross into these territories.

Transforming Threats into Advantages

When environmental conditions change, introducing new threats and other unprecedented pressures, the key to survival is adaptation. Enterprises striving to succeed must undergo their own evolution, and maximize the opportunities and possibilities of advanced cloud platforms and upcoming 5G infrastructure to create innovative goods and services suitable for a new market environment, addressing new desires and requirements from consumers and businesses. Aside from overcoming "pandemic pains", there are additional opportunities to be captured from the mega-frameworks of One Belt One Road and Greater Bay Area. SD-WAN solutions, such as TrueCONNECT™ Hybrid, are well positioned to be key success factors for enterprises retooling themselves to adapt to the New World, helping to pave a path toward and beyond the 5G rollout. At the same time, SD-WANs can immediately solve existing network challenges and empower organizations of all scales with the ability and scalability to seize upon disruptive technologies (including IoT, Big Data, hybrid clouds, and 5G), and even disrupt the new threats and convert them into advantages against competitors who are unable to transform quickly enough along the roadmap toward a post-pandemic 5G future. ●

絡服務據點、18 個雲服務中心、超過 30 個數據中心和 2 個全天候安全運作中心。我們的在地支援團隊全年無休，加上擁有獲得認證並精通全球數據私隱和安全要求的專業團隊，能確保中信國際電訊 CPC 的客戶在透過全球網絡連接不同地區時，亦能遵守當地相關法律如歐盟的《通用數據保障條例》(GDPR) 和中國的《網絡安全等級保護制度 2.0》(MLPS 2.0) 等。

化威脅為先機

環境不停轉變，面對嶄新威脅及其他前所未有的壓力時，逆境致勝的關鍵在於「適應」二字。成功始於進化，企業必須把先進的雲端平台和未來 5G 基礎架構所帶來的機遇和可能性盡情發揮，從而創造合適的創新產品及服務，滿足客戶和企業的新需求。除了要克服疫情所帶來的影響外，企業亦要及時把握「一帶一路」及大灣區帶來的機遇。SD-WAN 解決方案如 TrueCONNECT™ Hybrid 正是適應新世界的重要踏腳石，有助企業步入全新的 5G 時代。與此同時，SD-WAN 亦可即時解決現存的網絡挑戰，讓各大小企業有能力及能耐去擴展各樣突破傳統的創新技術（包括 IoT、大數據、混合雲和 5G），甚至化威脅為優勢，在後疫情的 5G 新時代早著先機。●