



New research from ICT Intuition, LLC

What Do Enterprises Want?

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What Do Enterprises Want?¹

Another year, another prediction about digital services, machine-to-machine (M2M) communications, the Internet of Things (IoT), connected devices, or whatever term we choose to describe our relentless pursuit of networking everything. The past few years have been spent trying to figure out how to connect devices, appliances, automobiles, meters, and basically anything with an integrated circuit to the public network. And, in some respects, we've succeeded. Cisco reports in its annual Visual Networking Index (VNI) that in 2014 there were 7.4 billion mobile connections and that number is expected to reach 11.5 billion by 2019. While those predictions are a bit more conservative than previous forecasts, IoT and M2M continue to represent a vast new market for communication service providers (CSPs).

There are connected devices in our cars, utility meters, security systems, and appliances. Yet for all the connectivity and electronic intelligence at our fingertips, most businesses have yet to dive into the connected digital services pool for anything beyond basic Internet and carrier Ethernet services. CSPs are adding capacity at record rates and the fiber glut that was experienced less than 10 years ago is ancient history. What that reveals is that enabling devices to connect and communicate is easy; monetization of that connectivity by enterprises is not. The ability of CSPs to realize revenue from the expensive wireless, fiber, and cable infrastructure underlying all those connections relies on the ability of enterprises to make use of it and businesses have been slow to sign up for connected digital services.

Just because we can connect doesn't mean that there is value in it and that value has to be apparent to both businesses and CSPs. Digital services, M2M, and IoT have passed the hype stage and entered a more realistic phase of development where innovative

¹ Please note that the insights and opinions expressed in this assessment are those of ICT Intuition, LLC and are a result of the research and analysis process. These insights and opinions do not necessarily reflect the views of the company executives interviewed.

suppliers are solving tactical problems associated with defining, delivering, managing, and monetizing real products for real customers. That takes time, but the value is there and the market is now evolving at a much more realistic pace and so are CSPs.

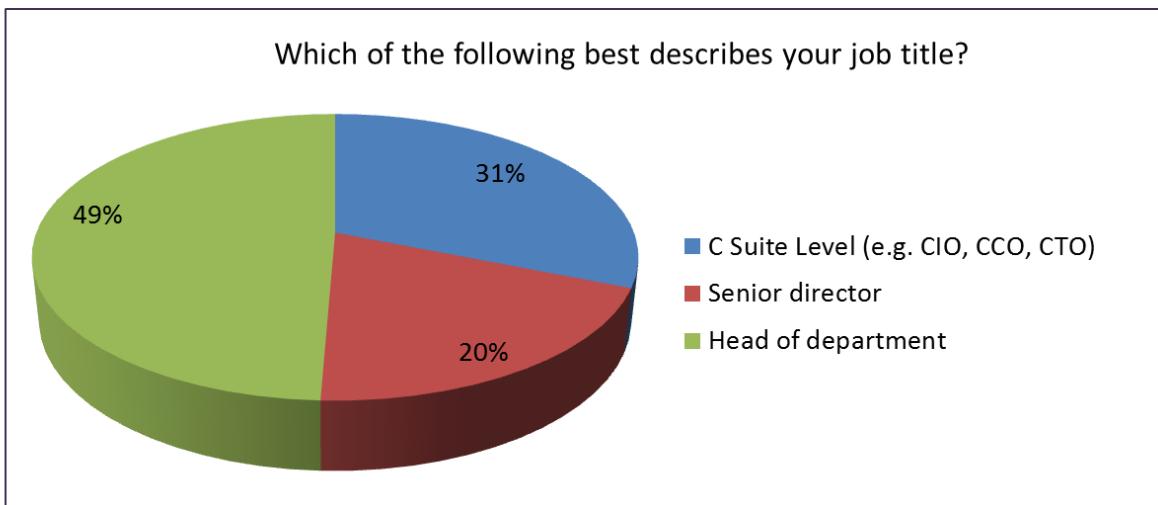
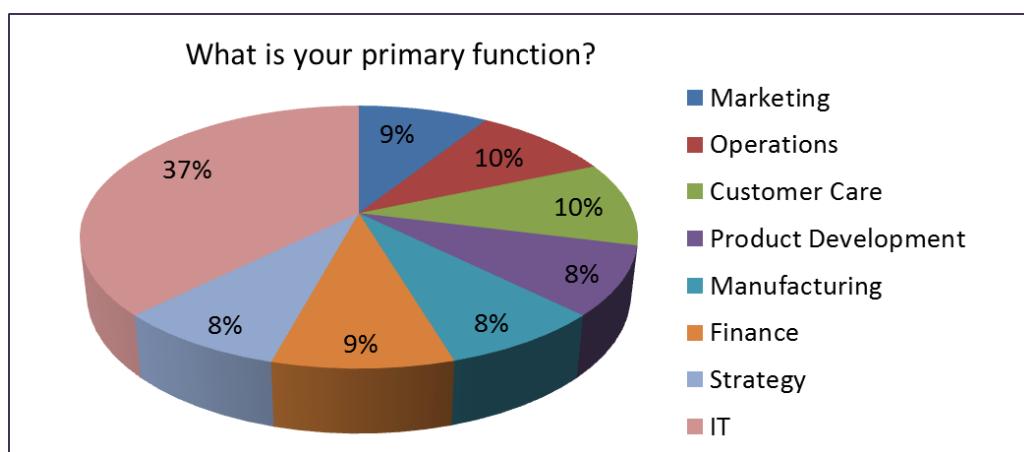
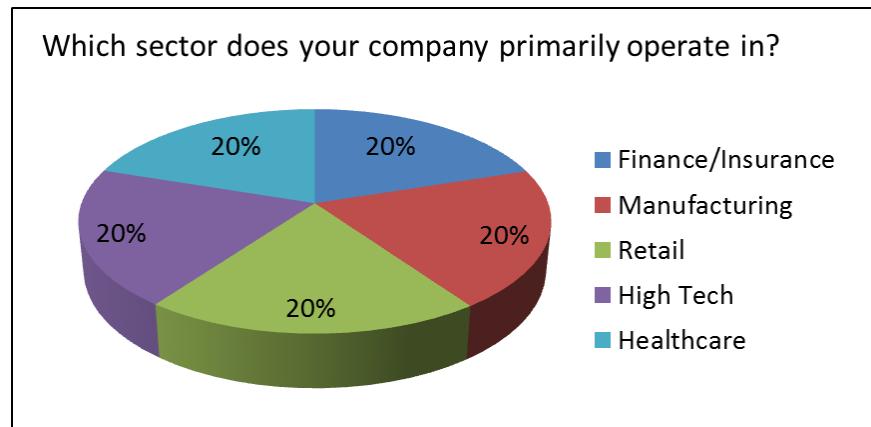
As users, we are able to easily engage with app stores and devices without much difficulty. For businesses, however, the ability to quickly connect and use cloud-based applications and connected services is much more difficult. Yet, that's what businesses want. There is also the need for security, interoperability with existing applications and data, and reliability. If a consumer app doesn't work, they can try again later. If a supply chain app doesn't work, businesses lose money. There is a void between businesses and the connected digital services that will meet their needs.

ICT Intuition, LLC set out to uncover the reasons why businesses aren't embracing digital services beyond basic bandwidth and storage. We surveyed 1003 business leaders and decision makers across four global regions and five business sectors to understand what's missing in current digital services offerings and what CSPs need to do to engage business customers and monetize connectivity. Key findings include:

- *72% are considering buying industry-specific applications as a service*
- *66% want the platforms and services to be managed by someone else*
- *71% would like to bundle connectivity into products they sell*
- *95% would partner with a CSP to offer connected products*

Results were captured equally from North America, South America/Latin America, Europe/Middle East, and Asia/Pacific. The respondents represent a variety of industries and business functions. With few exceptions, the responses from these business leaders were surprisingly consistent across industries and geographies. Connected digital services will become increasingly popular with enterprises worldwide if, and it's a big if, the providers of those services make them secure, affordable, easy to buy, and easy to use.

C-level executives, senior directors, and department heads were eager to share their opinions and insights on the current market for connected digital services and what they hope to see from providers going forward.



Source: ICT Intuition

n=1003

Enterprise Scale

CSPs already handle trillions of transactions, including each minute of use, SMS, call, connect and disconnect as well as millions of health and status events from network elements, IT elements, customer devices, services, applications, and users. Multiple estimates indicate that the number of connected users and devices will continue to grow at a compound rate of 8%-9% per year for the foreseeable future and the amount of data transferred, currently measured in petabytes, will continue to multiply. Consequently, as more connected devices come on line; the volume of data, number of connections, and operational events increase by orders of magnitude.

For enterprise customers, CSPs must not only scale OSS/BSS solutions to manage hundreds of thousands of subscribers but also accommodate hundreds of unique service instantiations of physical and virtual network and service components. When millions of end-point devices, servers, storage, and applications must be delivered in a secure multi-tenant fashion, the scale of CSP operations reaches well beyond anything that has been previously experienced.

Delivering connected digital services for businesses requires CSPs to collect data and deliver it to a variety of service and operations support applications that will make use of it. There are many variables associated with delivering data for each enterprise customer, including collection frequency, volume, storage, parsing and correlation. Also, there may well be policies applied that dynamically adjust service quality and direct when data is collected, how often, and where it is sent.

Each participating provider, partner, and business will also want to get paid. The challenges that exist around accurately collecting transaction data, billing multiple parties, reconciling payments to numerous providers, revenue assurance, and fraud are monumental. Existing OSS/BSS solutions are rapidly being replaced and upgraded to add flexibility, but not all solutions will be capable of meeting the demands of multi-tenant business services across multiple industry verticals.

Not as Easy as it Looks

With all this demand, why wouldn't CSPs take advantage of existing investments in security, data handling, performance management, and customer relationships to put together targeted industry-specific services that appeal to businesses? The answer, for now at least, is that it's difficult. Specifically;

Volume – While CSPs do have access to every transaction that traverses the network, the volume is staggering and growing daily. Quarterly data consumption is currently measured in petabytes and continues to grow exponentially. There are hundreds, and for some CSPs thousands, of systems and data collection points in use and isolating reporting information for potentially hundreds of business tenants, settling with partners, managing access, and ensuring performance is difficult using existing OSS/BSS solutions.

Congestion – Examining trillions of packets from thousands of devices creates a bottleneck. Correlating and distributing that data to hundreds of applications creates another one. Multiple parallel interfaces whether from OSS/BSS or enterprise applications requires tremendous processing power and each application must have the ability to evaluate and correlate the incoming data stream.

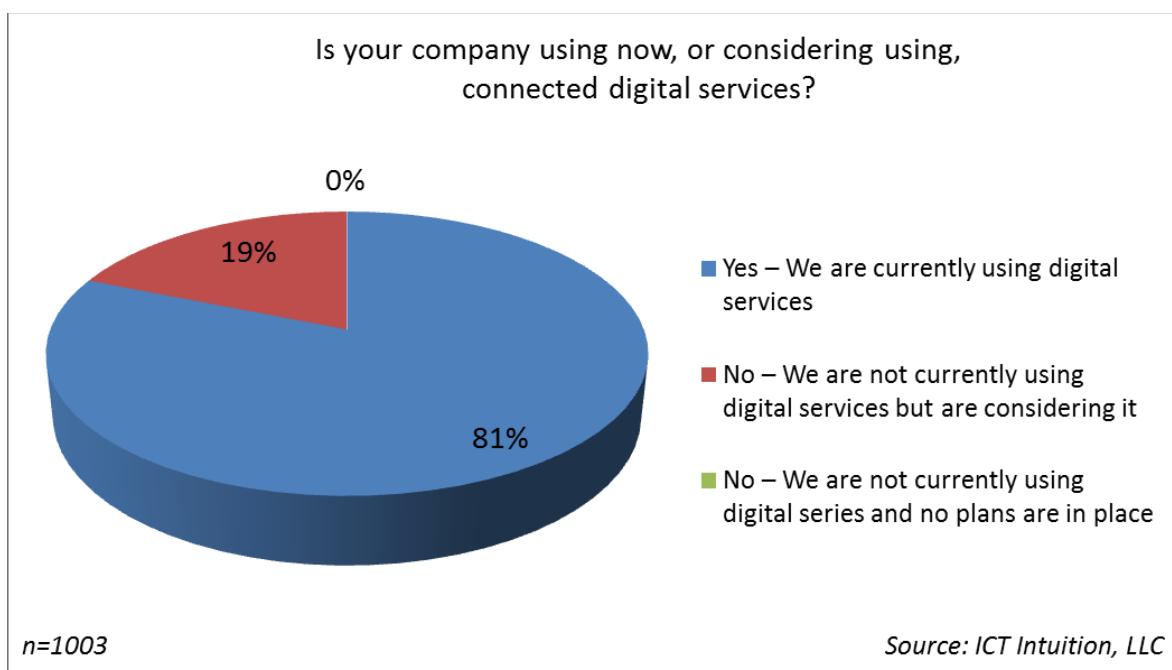
Cost – High speed, high reliability, and high bandwidth networks are expensive and that doesn't include costs for security, applications, processing, storage, or management. CSPs must implement and maintain expensive discovery probes and correlation engines in addition to a substantial library of adaptors to interface with all the necessary network elements, probes, and management systems. Interface requirements are repeated for each enterprise. Monitoring and distributing transaction data for business customers in addition to existing CSP assurance requirements multiplies costs.

Multiple Interface Standards – Network probes, elements, and element management systems (EMS) utilize a variety of formatting approaches for status and monitoring data. Any application accessing data from any of those sources would have to accommodate each of those interface types. As enterprise elements and devices are added, interface

adaptors are added and those adaptors must also be monitored, updated, and tested to ensure continued interoperability. As the number and type of connected devices grows, so too will the cost to maintain interface adaptor libraries.

Selling Into the Enterprise

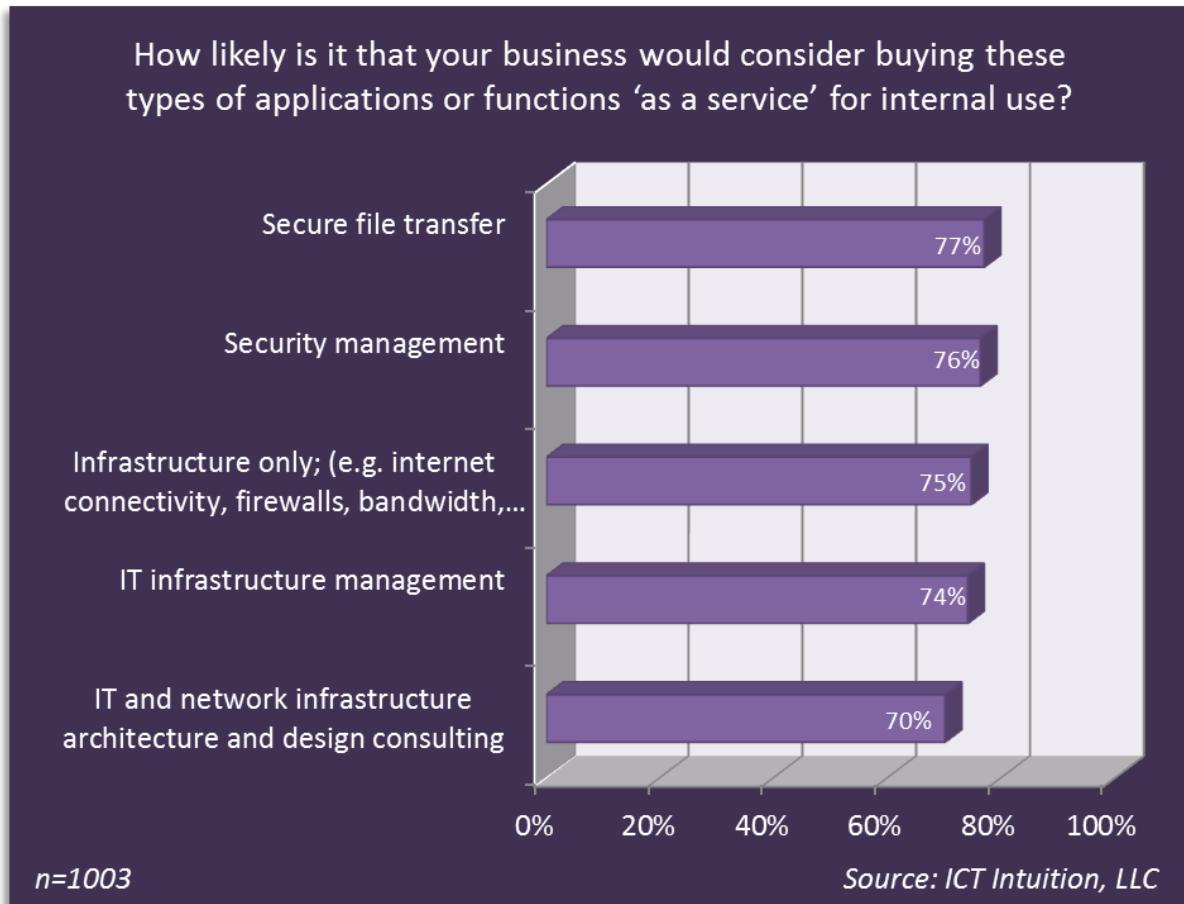
Digital services are not new to enterprises. Nearly every business has internet access and regularly connects to partners or external applications using public internet or virtual private networks (VPNs). Every business leader and decision-maker surveyed is either currently using or considering using connected digital services.



Businesses of all sizes buy infrastructure services. They have no desire to purchase, manage, and maintain servers, data bases, routers, switches, firewalls, applications, and the management platforms that each requires.

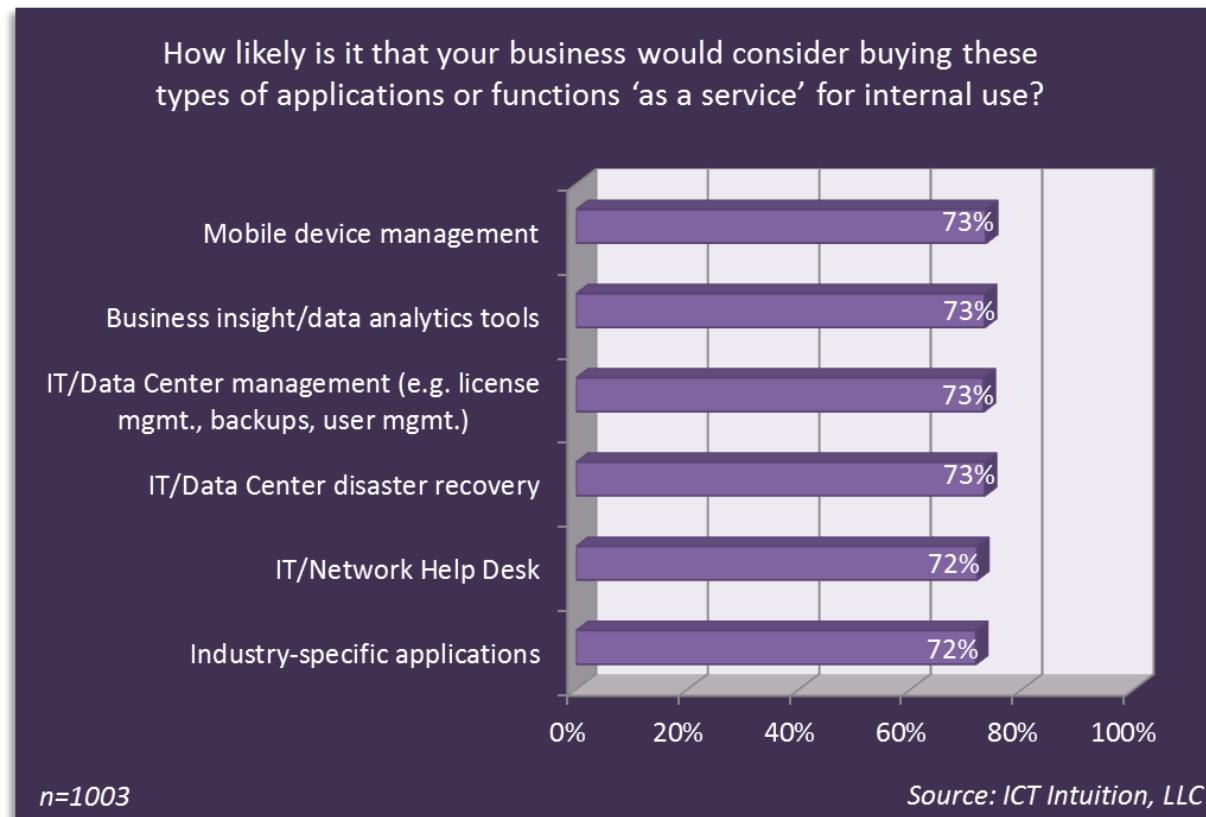
However, the types of connected digital services available to enterprise customers are very limited. Bandwidth, of course, but bandwidth and computing infrastructure are commodities like water or power. So where are the killer business apps? Enterprises are becoming very comfortable with cloud infrastructure and buying access to

applications of all types as-a-service, yet unlike consumer app stores, business apps are sparse and buying them is difficult. Based on this research, the appetite among businesses for bundled, connected digital services is substantial yet few businesses are actively engaged.



And business customers have been underwhelmed by the applications coming to market for connected devices. Tracking the date on the milk bottle via the refrigerator is no better than opening the door and looking at the date on the lid. However, calling up that date on a smartphone whilst at the grocery store could be useful. What hasn't happened is the connection of devices to enterprise applications that can analyze the data and make it useful at the right time and place. The device is not the user, the device collects data and the data must then be correlated, analyzed, and presented to a user that will benefit from it or to an application that can act upon it. For all the interest in digital services, uptake is surprisingly limited.

Business leaders were asked about a wide variety of connected digital services including basic access, video, development platforms, and industry-specific applications. Across the board, high percentages of respondents were ready to buy, yet many haven't actually purchased the services yet. From IT Helpdesk to business insight and analytics, businesses are increasingly using cloud-based services but need a provider that can deliver an end-to-end connected solution.

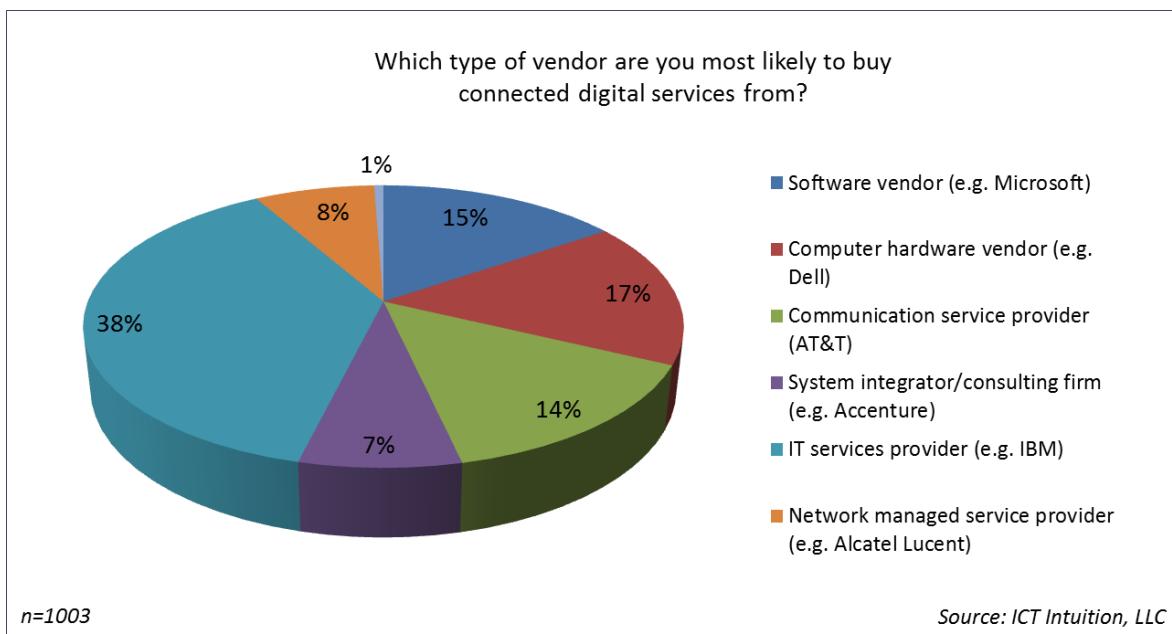


The challenge for enterprises and CSPs alike is complexity. CSPs are faced with trillions of transactions, thousands of devices, hundreds of applications, and dozens of partners; yet most enterprises aren't in business to manage connections and applications. Enterprises want providers of digital services to bundle in simplicity as well as connectivity. For enterprises:

- The right applications, features and functions are not available as a connected service that can seamlessly support business users in and out of the office.

- Services are too complex and require substantial after-market integration to ensure interoperability, reliability, and performance.
- Services are difficult to buy and configure. The majority of businesses do not have the staff or skills required to integrate IT infrastructure, network infrastructure, applications, storage, and data into a secure and reliable operational system.

Enterprise customers want an enabler, a genuine service provider that removes the complexity, bundles the necessary elements into a service, and bills accordingly. As a result, enterprises are forced to bundle offerings from a variety of sources.



To become an enabler of IoT, M2M, and connected digital services for businesses, CSPs must help enterprises put the pieces together. Enterprises need a fully formed strategy for both using and reselling connected digital services.

Understanding what products and services will benefit the customers of each business and how those products are built, delivered, supported, and monetized will ensure that

CSPs offer the most desirable and convenient services. CSPs have all the building blocks required to bundle useful and economical connected digital services, but enabling enterprises requires more than bandwidth and an application platform; it requires creativity, insight, and seamless integration.

Time to Go Over the Top

CSPs don't need to build the devices or the applications; they need to build the ecosystems, bundle the applications, protect the users, and broker the data. In short, CSPs need to become over-the-top (OTT) providers.

Enable Device Interconnection – This is the easy part for CSPs but something that most enterprises struggle with. CSPs can connect devices worldwide to the public Internet and provide the ability to rapidly and seamlessly order, provision, activate, monitor, and bill for their usage. The market is becoming less about the devices and more about the applications and data. Enterprises want the devices connected, managed, and disconnected quickly, accurately, and cheaply. CSPs know how to do that.

Enable Application Interconnection – CSP OTTs are establishing ecosystem platforms that enable any provider from chip makers to app developers to participate. Business customers want to connect to centralized cloud-based applications for processing, storage, and distribution of data. The transaction data collected by CSPs enables monitoring and management of large, distributed business networks of devices, applications, users, partners, and customers. Ecosystems are essential, but must be accompanied by support for application development, integration, and management to create the OTT service experience that enterprises want.

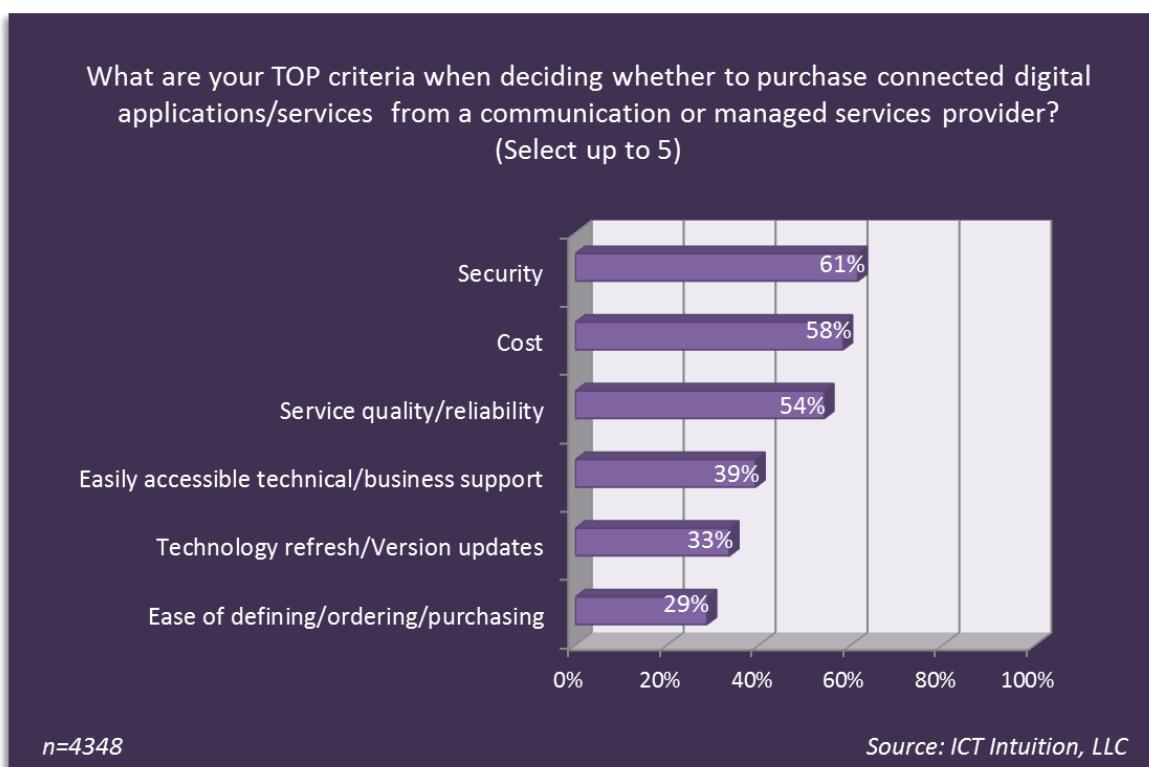
Be the Broker – CSPs can use real-time traffic and transaction data to provide security services, critical event monitoring (e.g. for healthcare), billing, content management, and assurance services to enterprises, supply chains, and governments or create customer-specific ecosystems for retailers. While large players like Google and Amazon continue to collect that type of data from secondary sources, CSPs have it readily

available. They need to use it. Legally, discreetly, securely, and with all the necessary assurances of privacy—but they need to use it.

As Internet connectivity becomes critical infrastructure, CSPs must divorce the infrastructure business from the product business. Infrastructure will continue to be regulated and structural separation is essential to competing with OTT providers.

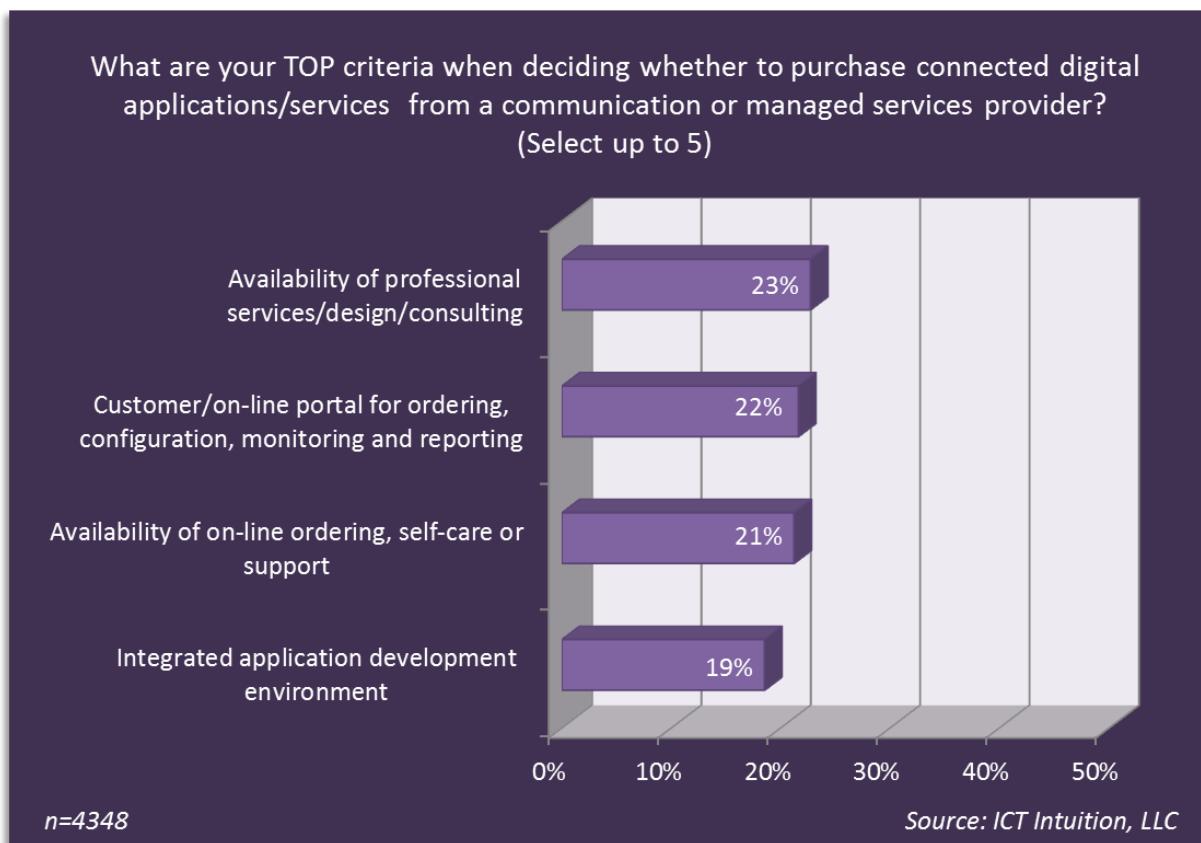
Integration is Everything

CSPs that are interested in delivering connected digital services to enterprise customers must assume the role of system integrator. Businesses have neither the time nor the resources to define a digital strategy, architect a solution, analyze the market for the required systems, procure the necessary systems, and implement a solution. Systems integration is the critical missing link for businesses trying to understand how connected digital services will benefit the enterprise. Initial forays into the market are being guided by IT services vendors (38%); however there is plenty of room for competitors that bring the right combination of platforms, connectivity, applications, and consulting.



Business leaders were asked what criteria are most important when deciding to purchase connected digital services from a communication or managed services provider. Not surprisingly, security and cost are at the top of the list but enterprise customers also place an emphasis on service quality, technology refresh, and support.

Although many business leaders are willing to buy consulting and professional services, when it comes to connected applications and digital services they prefer to buy products as evidenced by these lowest ranking purchasing criteria. Enterprises don't want an integrated application development environment because they don't want to develop applications.



When asked about customer portals and service level agreements, business leaders were tepid. Consistent with previous research in this area, ICT Intuition found that only 25% of business customers actually utilize the customer portal provided by CSPs, but those 25% are the largest and most lucrative business customers which ensures that

customer portals will continue to be part of the service delivered to every business customer. Still, if those portals were easier to use and more informative, businesses might use them more and CSPs would get a better view into the experiences and needs of their business customers.

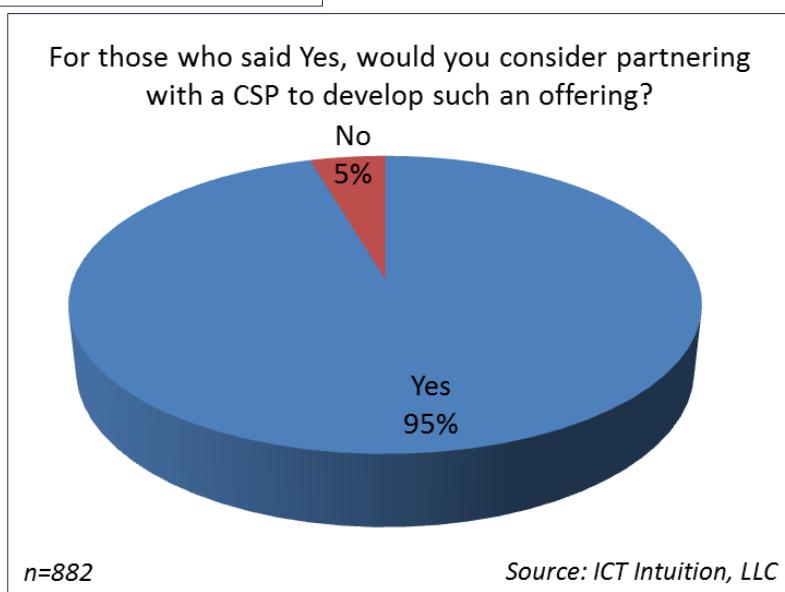
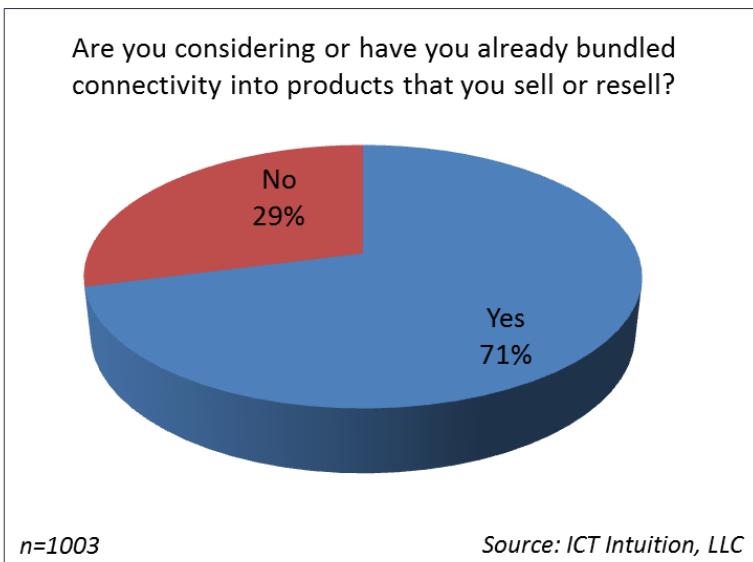
Service level agreements (SLAs) continue to be a struggle for businesses. SLAs are either so complex that it costs businesses too much to enforce them or SLAs are simplified to the point that it covers only catastrophic failure. Enterprises want connected digital services to perform critical business operations and that means that reliability, performance, availability, and end-to-end service quality must be maintained at the highest possible levels.



Overall, only 39% of business leaders surveyed believe that SLAs with CSPs are always effective and that figure drops another 10% in North America and Europe. Yet, while business users don't wish to rely entirely on SLAs, they are relatively confident that CSPs can deliver outstanding service (67%). The immediate challenge for CSPs is that they are not the first choice for businesses that want to use and resell connected digital services. But they could be.

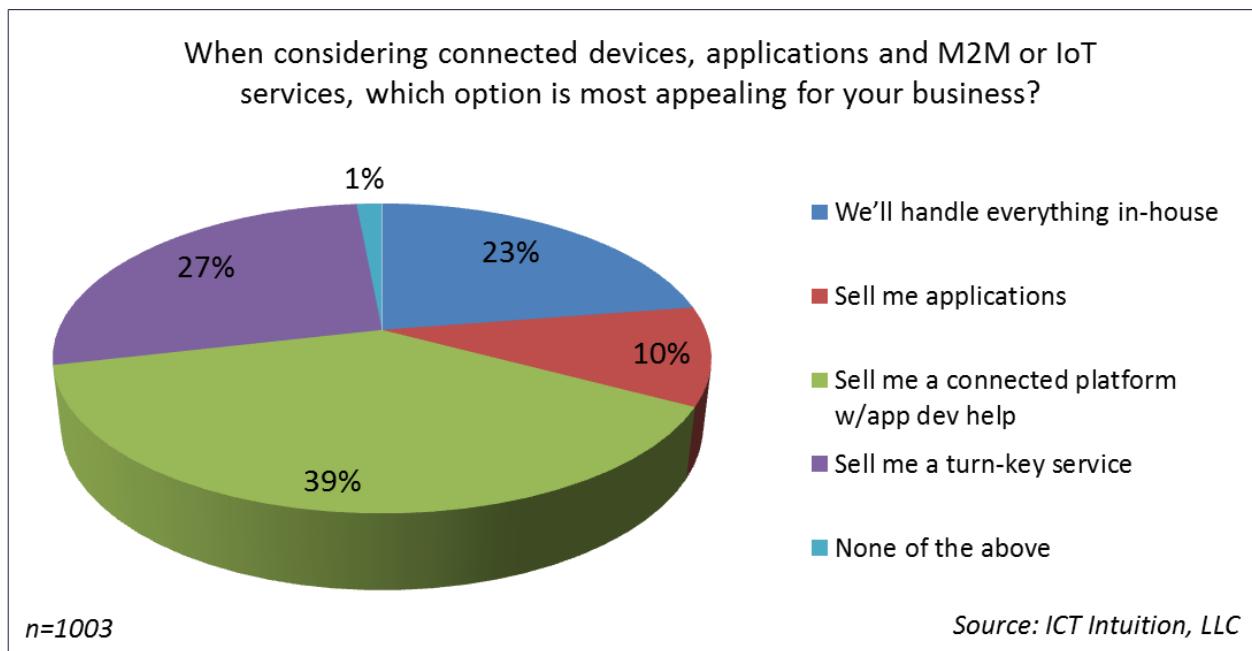
Bundling Connectivity and Generating Revenue

Connected digital services are valuable to enterprises for two different reasons. One is internal use by the business, its customers and partners. The other is the ability to bundle connectivity with existing or new products and services for resale. In addition to the productivity improvements associated with automation, connected employees and operations, there is a large untapped source of revenue that exists for businesses wanting to sell connected products and services. Beyond existing home monitoring and security services, there remains an entire universe of product potential that has yet to be developed.



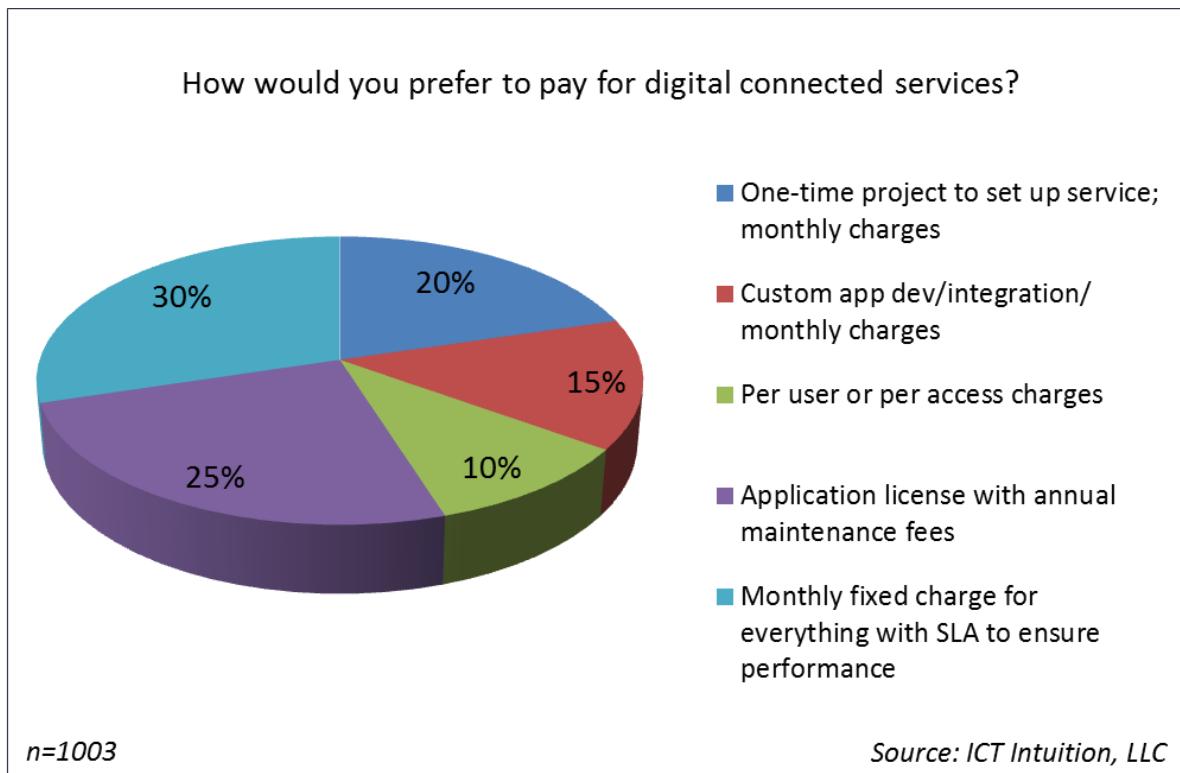
Businesses are aware of this potential and, more than that, they are anxious to start generating revenue. But they need a partner and the business leaders surveyed for this report overwhelmingly want to partner with CSPs to develop connected digital services.

That said, businesses are not necessarily demanding that CSPs deliver turn-key services that bundle IT infrastructure, connectivity, devices, and applications; although that is exactly what more than one quarter of those surveyed would prefer. However, a nearly equal number would prefer to go it alone. But there is a larger group that would prefer a one-stop shop for the ecosystem and all the right components combined with help pulling together applications that improve productivity, generate revenue and ultimately differentiate the business.



Simplicity is the theme for businesses. Enterprises want connected digital services that are easy to access, easy to use, easy to buy, easy to own, and easy to pay for. Most businesses are not interested in managing partner settlements or payments to content providers. They want a secure, reliable service that is a genuine service; not a loose collection of components. More than half want to pay one fee for access to an application or turn-key service and accept the inevitability of maintenance fees. Least

desirable are the traditional per use or user charges and additional fees for customization and integration.

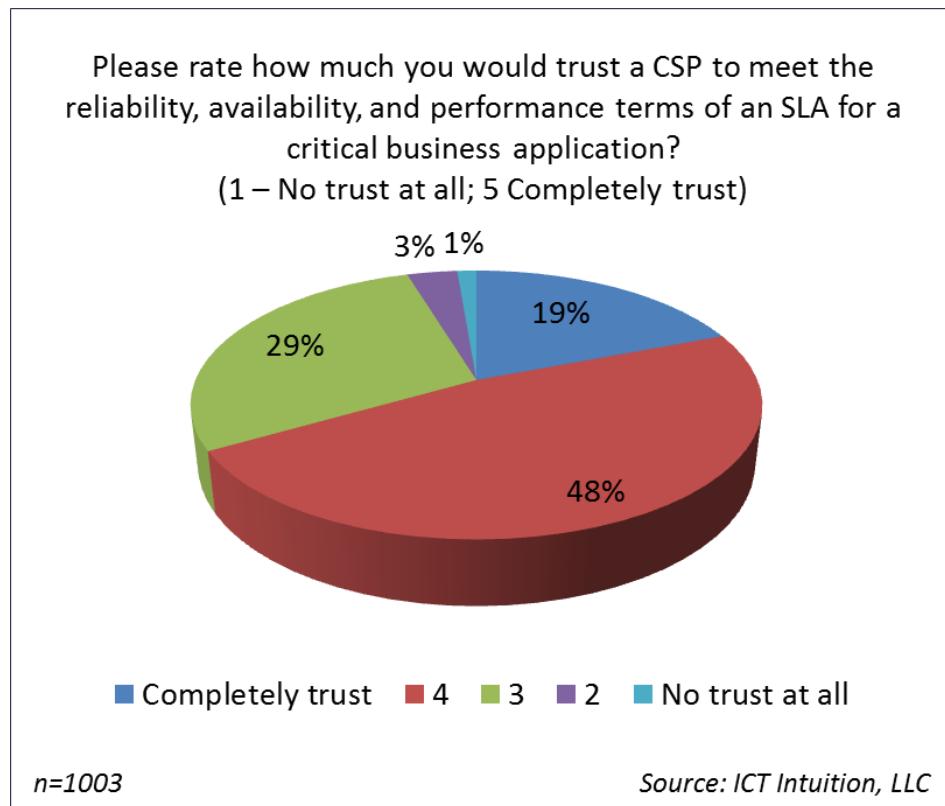


Most businesses operate some version or variation of commercial off-the-shelf software applications. That means that pre-integration with applications like Microsoft Office, Seibel, or SalesForce.com is valuable to businesses. Even more valuable is a platform that seamlessly integrates those applications into the connected digital service and minimizes management of multiple licenses, vendor agreements, maintenance agreements, fees, and users.

While most businesses will stop short of saying they want to outsource IT, many are taking steps in that direction. CSPs that can marry the elements of IT service management, network management, and application management into a secure solution that is easily implemented and accessed will find a market with enterprises worldwide.

A Matter of Trust

CSPs tend to support their business customers using a scaled-down consumer business model. Scaling up operations to support large numbers of independently operating business users, devices, and applications will not work without architectures, processes, and OSS/BSS strategies that are enterprise-specific. While CSPs retain a high level of trust and respect from the business community, there is still room for improvement.



The perfect intersection of connected digital services and big data lands squarely on the CSPs. For their part, no business is more trusted with that data than CSPs, as demonstrated by the launch of mobile money services, and CSPs continually invest in security and privacy. CSPs have proven they can be trusted so now it's time to leverage both the capabilities and the trust.

Conclusions

CSPs are in the unique position of being able to offer customers a vendor-neutral alternative to utilize innovative applications that connect devices and people to solve problems, improve productivity, and generate revenue. Security and reliability are primary concerns and most businesses are able to devote only a fraction of the time and resources that CSPs spend on security, technology refresh, support, and operations. CSPs also maintain strong relationships with hardware and software vendors of all types and are in an excellent position to deliver a wide menu of connected applications to enterprises while ensuring that customers are well supported and all the partners get paid.

Because there are few alternatives for network connectivity, CSPs wrongly assume that connectivity is the same as enterprise digital services enablement. Connectivity is only a small part of the equation and CSPs need to go over the top to bundle offerings that incorporate all of the essential elements required to build and operate these services or they will be commoditized as infrastructure providers.

CSPs will benefit from participating in the industries they wish to serve and helping them understand both the opportunities and solutions available from connected digital services. As work continues to standardize protocols and interface methods, it is important to avoid endorsing protocols and interfaces in an industry-specific vacuum. By recognizing and understanding the efforts of standards bodies across industries, synergies can be realized rather than prevented.

With few exceptions, most businesses and governments are quickly reaching the conclusion that they can't do this alone. The opportunities to increase revenue, reduce cost, and better serve customers using connected digital services are real; provided that strategy development, planning, and deployment are done thoughtfully and with an eye toward business outcomes. CSPs are uniquely qualified to help enterprises overcome network and IT complexity by offering connected digital services that work for business.

Power, water, computing, and even network infrastructure are commodities to enterprises. And before the CIO can say, "I told you so," it is important to note that business units outside of IT are increasingly being allocated their own IT and technology budgets, which implies that software applications will also soon become a commodity.

What remains, and what differentiates businesses and products is innovation. Innovative architectures, innovative designs, innovative marketing, and innovative integrations of commodity technologies into unique applications. That will power success for businesses and that's what enterprises want from connected digital services and connected digital services providers.

ICT Intuition, LLC delivers an innovative approach to market analysis from ICT analysts with decades of experience defining, managing, and delivering the business, operational, and marketing strategies critical to communication service providers, utilities, government, and the vendors that serve them.