

Smart Enterprise Trends 2014

10 Strategic Drivers that will Empower the Smart Enterprise



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Integrated Mobility

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Competing in today's business environment is about meeting challenges, making decisions and innovating rapidly – using the best and most current technologies, tools and information.

With more than 100 years of excellence in both Information and Communications technologies, NEC shares its views regarding trends and technologies that in 2014 will drive productivity and provide businesses with superior customer service, a more flexible work environment and a competitive edge.

Cloud services, Mobile integration, Real-time Collaboration and High Availability are becoming essential ingredients for the Smart and Secure Enterprise. They are part of a rapidly evolving technology foundation by means of which NEC is not only enabling new approaches to how IT services are delivered and managed, but also new ways for businesses to grow.

NEC identifies and discusses the following top 10 Smart Enterprise Trends that will be strategic for many organizations and will have significant impact on their operations in the coming years.

Smart Enterprise Trends 2014

One

Integrating the Mobile Workforce

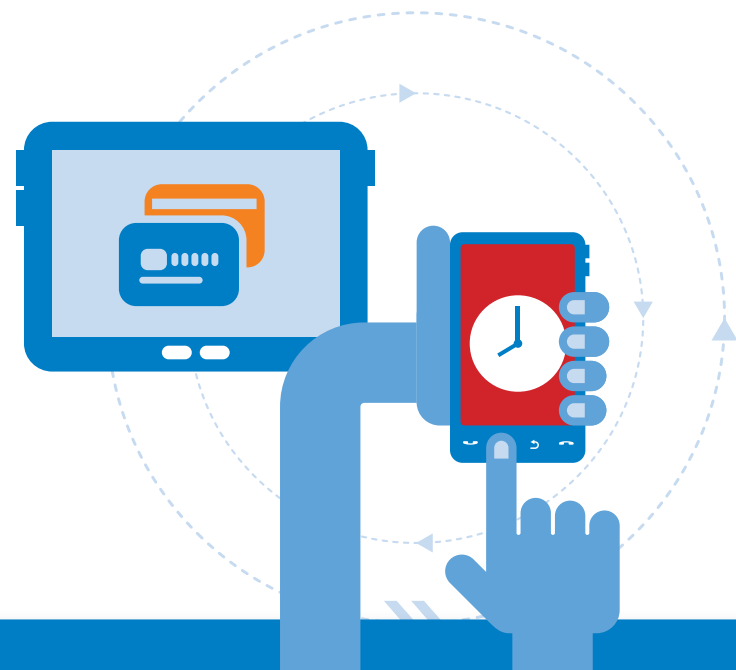
In today's flexible and fast-moving business environment, the size of the mobile workforce is increasing year over year. Employees are never in one place for very long and can be just about anywhere: at the office, between appointments, on business travel or working from home.

The pervasiveness of mobile connectivity, coupled with access to all relevant data and applications, supports the non-stationary workforce to conduct business regardless of location. Location becomes unimportant, while presence becomes all the more crucial.

With their smartphones and media tablets as most common business tool, mobile workers need to – similar to their desktop phones and computers – be fully integrated with a company's network and its business applications. This seamlessly extends enterprise telephony functionality and applications to these mobile devices, providing single number reachability, least cost routing through the company network, access to company directories, data and more.

Fixed Mobile Convergence supports smartphones anywhere in the world as an integrated extension of a company network, enabling switching from cellular networks to WiFi networks.

When integrated, personal devices can be used in conjunction with enterprise security credentials – securing enterprise information and supporting 'Bring Your Own Device' (BYOD) policies.



With organizations becoming increasingly fragmented, departments more flexible and employees more mobile, Unified Communication and Collaboration (UC&C) enables working together, in real time, and interacting efficiently and effectively with co-workers, with clients and suppliers.

With advanced tools such as instant video conferencing, shared workspace, calendar coordination and rich presence, UC&C drives productivity across an organization and reduces latencies in all areas, creating an informed and connected workplace.

It offers business enhancements such as the ability to optimise processes, integrate multiple communications channels, utilise smartphones and tablets and integrate business applications, including those used for product development, process control and customer services.

UC&C uptake will surge as applications and tools are introduced that make set up and use of conferencing and file sharing easy – from any desktop or mobile device, inside or outside the office. The speed,



flexibility and the cost & time effectiveness of such collaboration sessions will make them become the defacto standard, significantly reducing the need to meet in person and thus for business travel.

Instant Collaboration Reduces Latency and Drives Productivity

Beyond Virtualization towards Services Centric Operations

Companies are increasingly turning to virtualization as the answer to their IT challenges. A virtualized infrastructure improves business continuity through system-level fault tolerance to protect mission-critical applications. It minimizes capital expenditure and operating cost by consolidating multiple physical servers on a single host, running Virtual Machines.

But virtualization offers much more than simple server consolidation and cost savings. Virtual work environments support workers anywhere and deliver individual workers more freedom within their jobs. Through desktop virtualization, employees can access their applications and data very safely over a network, minimizing the risk of data loss.

Virtualization becomes the catalyst in the shift from device centric toward services centric operations. In addition to enterprise cloud, the personal cloud will gradually replace the PC as the location where individuals keep their personal content and access their services.

The personal cloud shifts the focus from the client device to cloud-based services delivered across devices. Specifics of devices become less important and personal cloud services become the new hub for content that is always at hand – the smart and secure workplace.



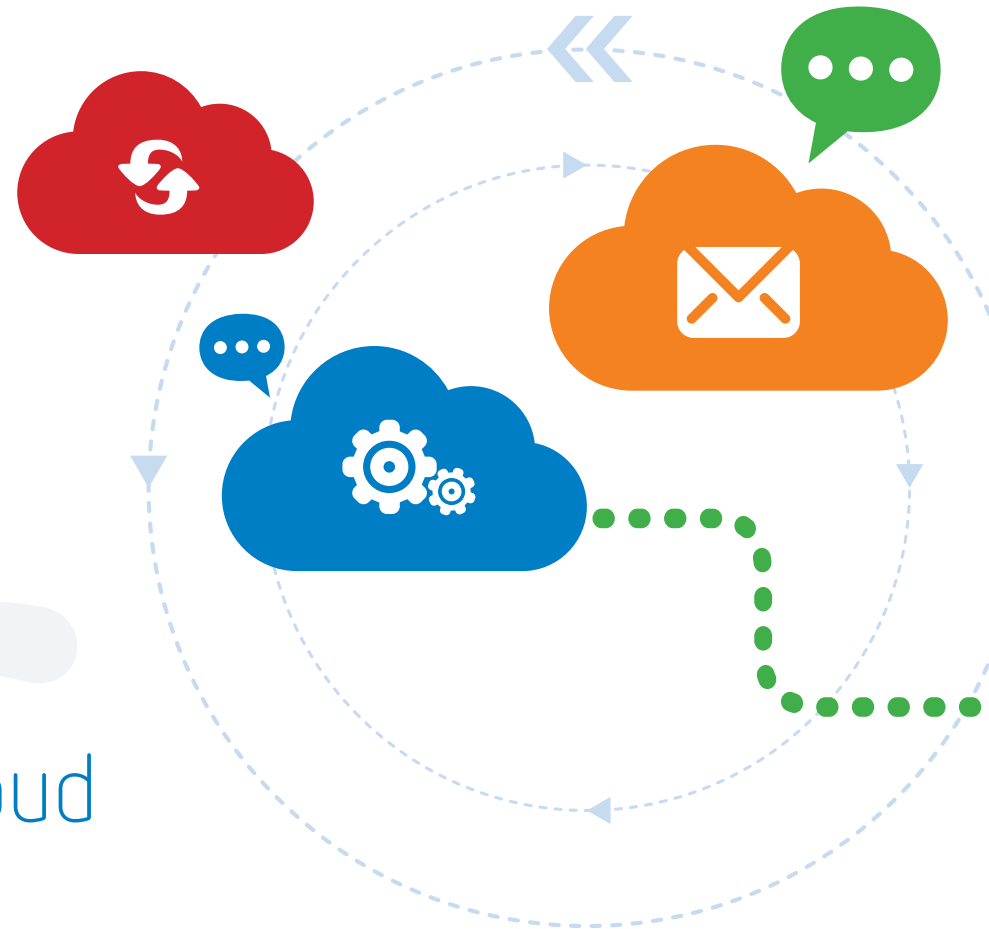
Cloud computing is changing the enterprise's approach to IT and communications, with more flexible architectures and cost structures.

Businesses are increasingly turning to hybrid cloud solutions to reduce costs and enable scalable business processes. While they use public clouds for less sensitive applications, they prefer to use private clouds for their most vital processing tasks.

Hybrid clouds can quickly scale to a company's needs and can be operated at all times, from any part of the world. This gives them a global reach for businesses beyond geographic boundaries. Enterprises should therefore design private cloud services with a hybrid future in mind and make sure future integration and interoperability is possible.

Cloud-based voice services enable access to PBX-like features from any location. Unlike a call that is simply forwarded to a remote office or home, a virtual PBX will allow the remote user to access all the features typically found in a business environment from a home phone or mobile device from the cloud when initiating or receiving a call.

Combining the best features of both public and private clouds, the hybrid cloud infrastructure offers beyond doubt true benefits to companies aiming to stay ahead in their markets.



The bright Future of Hybrid Cloud

Five

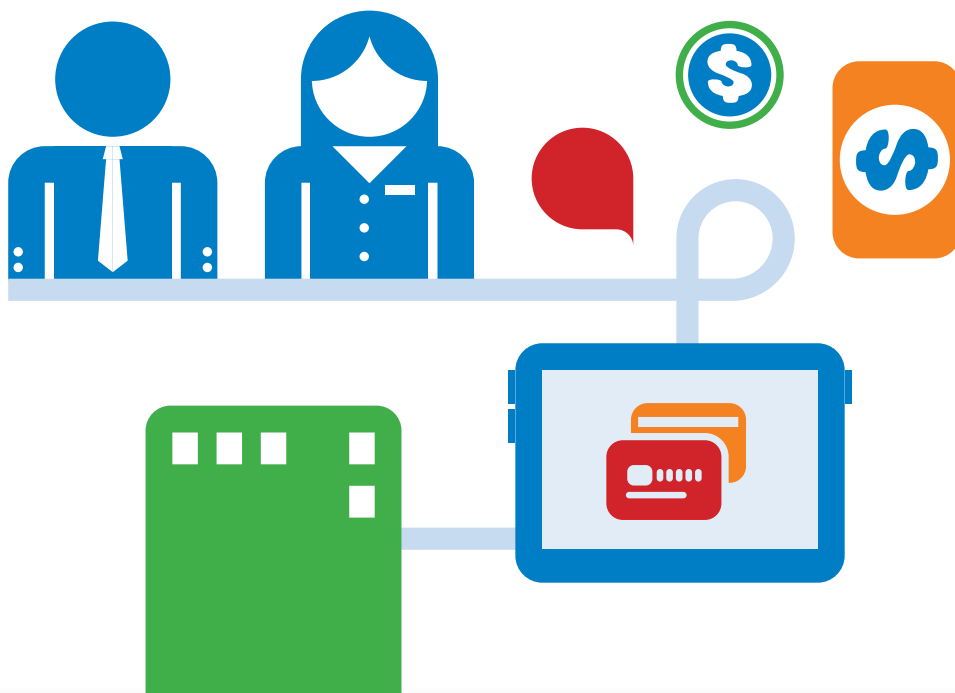
Modularity – Pay just for what you Use

Enterprises need to align their IT infrastructure capabilities with expanding business requirements. This can be a complex endeavour, not in the least in deciding where and how to deploy new equipment to accommodate current and future increases in demand.

Modularity allows investing only in what is needed today, trimming up-front costs and leaving open the possibility of expanding or incorporating new technologies in the future. Organizations which deploy only the technology needed to run today's needs, have evident CAPEX and OPEX benefits. In essence, they just pay what and when they need it.

Cloud is a special case for modularity; it's not about how to divide a physical space into different areas, but rather how to allocate specific functions or workloads to an off-premise facility.

Many organizations are rapidly approaching a critical decision point: they need to maintain the ability to deploy applications across the full range of today's alternatives (physical, virtual, private cloud, public cloud) and manage OPEX – which accounts for the majority of equipment– to ensure that they are cost-competitive in their markets. The clear implication of these factors is that executives need to make decisions on their IT equipment – whether to replace, revitalize, and/or outsource some or all of their equipment.

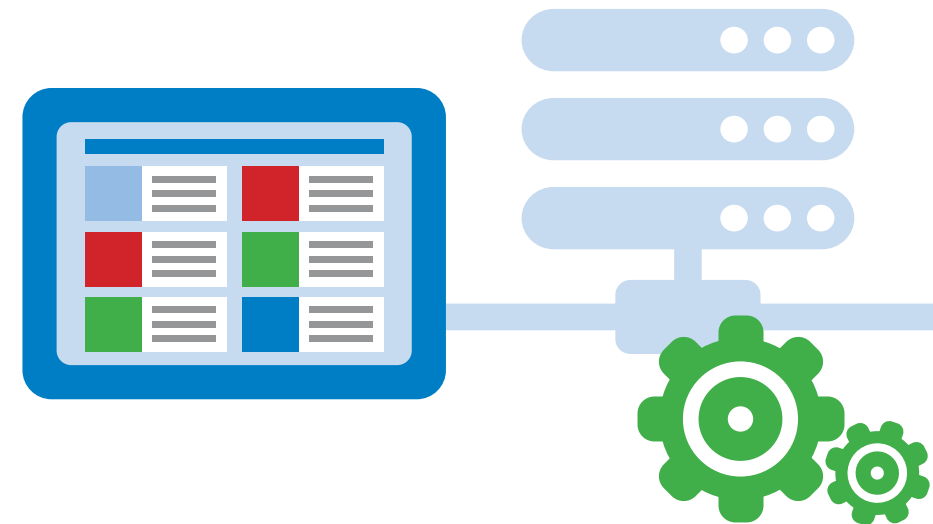


Numerous organizations depend on generic or specific IT applications in support of their day to day operation and services, which makes it a necessity to guarantee the continuous operation of all essential systems. It has become a matter of course for services to be offered 24 hours a day, 365 days a year across countries. As a result, IT systems need to be extremely reliable and the application of High Availability to IT systems becomes one of the most important challenges in IT strategy.

IT managers need to protect data and applications, from sudden hardware, OS and application failures to sudden natural disaster. To achieve a high level of operational uptime, infrastructure components must be fault tolerant with the ability to recover from complex failures. This is all the more important in mission-critical environments, such as healthcare, banking, insurances, e-commerce or web services.

A virtualized infrastructure improves business continuity. In order to continue the workflow on standby systems without stopping business operations when failure strikes, the best solution is to have

one are another form of clustering solution. This can be clustering software to fault tolerant server solutions delivering exceptional uptime through dual modular hardware redundancy. These servers provide continuous availability through hardware redundancy in all components: processors, memory, motherboards, I/O, hard disk drives and cooling fans, for optimal data integrity.



Ensuring Business Continuity by High Availability

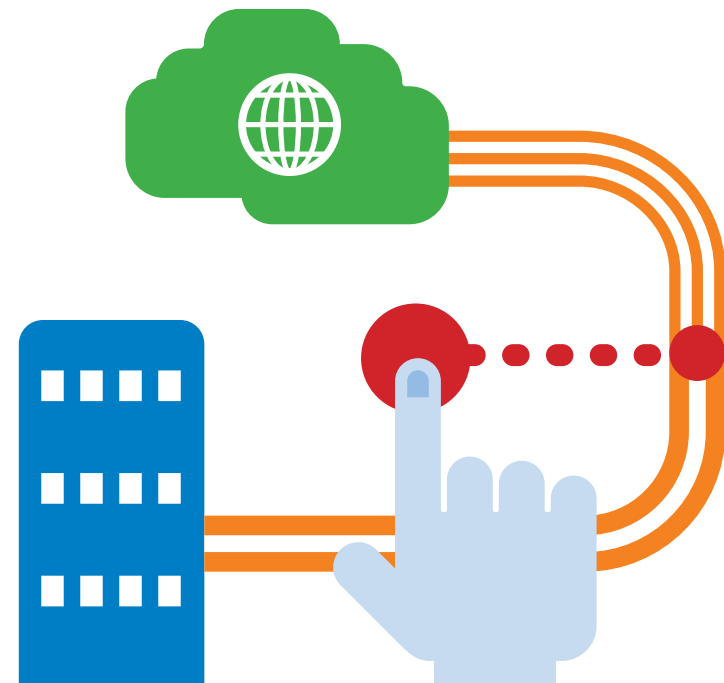
Software Defined anything

Software-defined anything (SDx) is defined by 'improved standards for infrastructure programmability and data center interoperability, driven by automation inherent to cloud computing, DevOps and fast infrastructure provisioning'. Customers will benefit from simplicity, cost reduction opportunities and the possibility for consolidation.

Leading the charge is software-defined networking (SDN), a technology to abstract network architecture and make network devices programmable. Its goal is to make networks more dynamic and allow network engineers and administrators to respond quickly to changing business requirements.

In an SDN, a network administrator can shape traffic from a centralized control console without having to touch individual switches. The administrator can change any network switch's rules when necessary – prioritizing, de-prioritizing or even blocking specific types of packets with a very granular level of control. This is especially helpful in a cloud computing multi-tenant architecture because it allows managing traffic loads in a flexible and more efficient manner. Essentially, this enables the administrator to use less expensive,

commodity switches and have more control over network traffic flow than ever before. SDN is expected to extend to all aspects of the infrastructure. Currently, the most popular specification for creating an SDN is an open standard called OpenFlow. OpenFlow lets network administrators remotely control routing tables.



Performance improvement and cost reduction of sensors and processing technologies spurs data collection and information extraction across a wide range of sectors – such as industry, energy & transport, wireless communications, defence, security and medical sectors.

From imaging and pattern recognition to location detection and magnetic sensing, all these techniques aim to provide relevant data to empower accurate decision making at the time and place of action.

In particular biometric technology – using biological attributes of a person – has matured rapidly over recent years, and its use for security and authentication purposes has become increasingly common. Fingerprints, facial definitions, body contours, retinal scans and voice files – all can be composited through software to identify and recognize individuals, to make them stand out from the crowd, to enable them to identify themselves without additional data or devices, to enable speedy and secure contextual interaction.

Whether at airports, border crossings, football stadiums or public transportation entry points, use of effective biometrics is a fast, efficient way of quickly identifying large numbers of people.



Biometrics goes hand in hand with data analysis to create useful insights when combined with personal preferences, location, environmental characteristics and/or social information. Coupled with advanced communications and messaging solutions, it becomes an indispensable part of context-aware solutions – from public safety and institutional security, to wearable smart electronics and automatic medication delivery to patients.

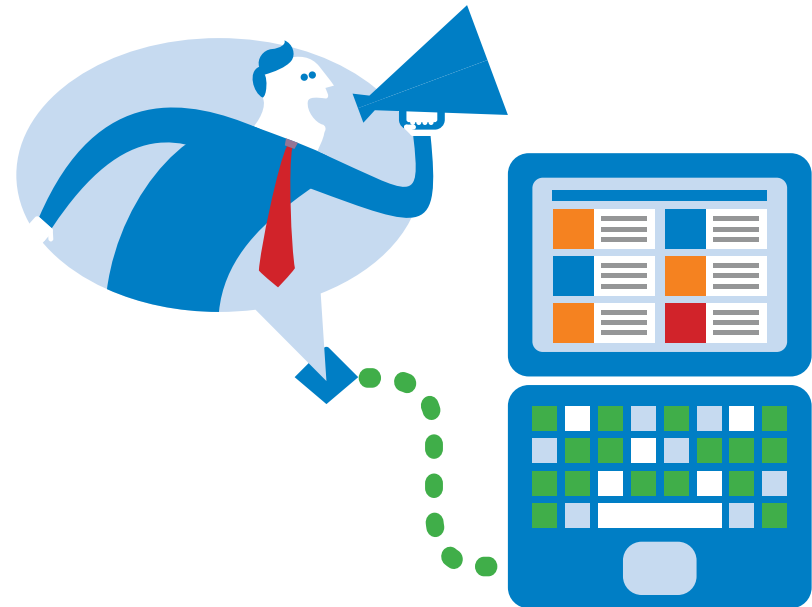
Sensing & Biometrics – Insight in the Blink of an Eye

Contextual Data Analysis for Fast and Accurate Decision Making

Contextual data spans the last mile of personal and business productivity. It provides new insights to guide public, private and business decisions. Smart devices and smart machines combining inputs from multiple sensors will 'outsmart' human beings in terms of speed, accuracy and alertness.

'Meta-information' will accompany voice, video, chat and text communications to provide fuller context for interactions. Contextually aware presence allows employees to receive information on content, tools, and services based on contextual information, such as the geographical location, personal preferences, and current activities of group members.

Enterprises are deploying Big Data projects to drive better business intelligence, product development and customer service. This includes the unstructured data as captured from mobile devices, social media, log files, emails, images and video, which are used to perform real-time analytics. Social media for instance is making marketing more targeted and effective, and businesses will start integrating marketing data from multiple sources.



The surge in data drives storage solutions to become more flexible and scalable as organizations find it increasingly complex to store, protect, and manage all their information. New storage solutions will focus on the need for simple manageability, while providing excellent reliability.

Information and Communications Technology will play an increasingly vital role in an energy efficient society, required to balance energy supply and demand.

Smart Buildings achieve enhanced environmental and economic performance by producing, storing, efficiently managing and optimally controlling energy. Building Energy Management Systems will play an increasingly vital role in such Smart Buildings.

Energy waste can be minimized through location information enabling automatically controlling air conditioning and lighting. Linking building automation systems that perform integrated equipment surveillance, security systems and systems to monitor energy usage, can provide location data on individuals to enhance security.

Within enterprises and data centers an important focus will be on technologies that help save power, such as virtualization, more power-efficient equipment, and more efficient power distribution and air condition. Storing large volumes of electric power within a building

is also critical for optimizing the balance between power supply and demand. This requires energy storage systems with a long lifespan that do not take up a lot of space.

Furthermore, advances in renewable energy technology will also allow individuals to collect kinetic energy, which now goes to waste, and use it to help power our homes, offices and cities.



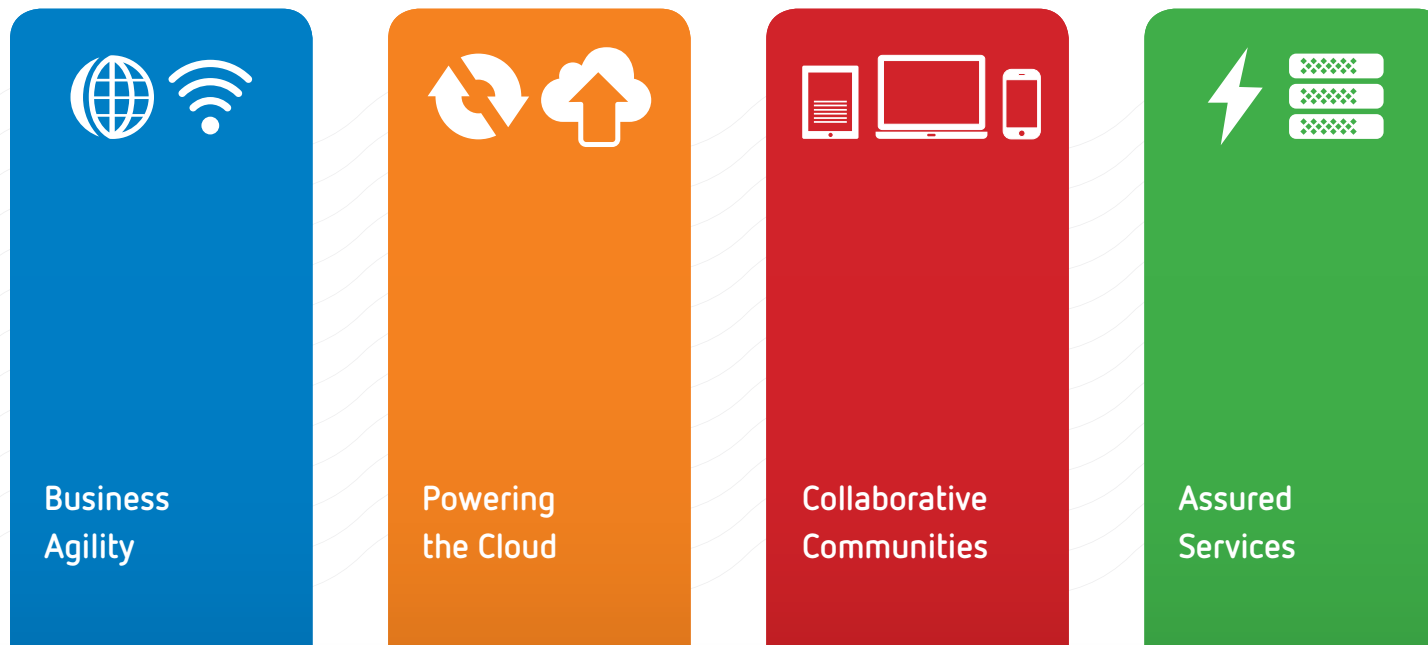
Smart Energy – across Buildings, Cities and Individuals

Pillars

Summing it up – Enterprise Value Pillars

Combining the rich portfolios of Communications and IT solutions, NEC is unique in being able to provide enterprises with solutions that cover the full spectrum of their operations.

The solutions offered can roughly be grouped into 4 main pillars of customer and business value. This is how NEC empowers the Smart Enterprise – and why the Smart Enterprise relies on NEC.





Empowering the Smart Enterprise

About NEC Corporation

NEC Corporation is a leader in the integration of IT and network technologies that benefit businesses and people around the world. By providing a combination of products and solutions that cross utilize the company's experience and global resources, NEC's advanced technologies meet the complex and ever-changing needs of its customers. NEC brings more than 100 years of expertise in technological innovation to empower people, businesses and society. For more information, visit NEC at <http://www.nec.com>.

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