

MEDIA COVERAGE

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Internet of Things vs Internet of Threats

Even though the Internet of Things (IoT) is poised to be one of the disrupting trends of the next decade. Fragmentation, security and lack of standards are some of the challenges looming large over IoT deployments.

Eighty billion connected devices by 2020, a \$14-trillion plus IoT market by 2022. IoT or in other words, a machine-to-machine technology enabled by secure network connectivity and cloud infrastructure, holds tremendous potential. Going by reports, IoT sensors mounted on machinery are already helping save 25-30% of maintenance costs through preventive maintenance and consistent levels of operation. Japan has achieved 35% energy saving via M2M adoption, whereas in Malaysia, agriculture productivity has improved by almost 40% using the technology. Propelling the growth of M2M is widely available broadband Internet,

low-cost of connectivity, plethora of wi-fi enabled devices, sensors built into them, and rising smartphone penetration. All these are facilitating machines to talk to each other and whichever sector it is, IoT has a role to play.

According to Cisco's Value Index survey of 7,500 decision makers across 12 countries, including India, the Internet of Everything, as Cisco calls it, is poised to generate at least \$63.3 billion in global corporate profits in the calendar year 2013.

The survey also says that corporation could potentially nearly double those profits by adopting business practices, customer approaches, and technologies that more fully leverage IoT.

But on the other side there are plenty of challenges as well, experts believe that any deployment of such nature is no cakewalk, despite the buzz around

this technology, there has been only 10% real deployment so far. Fragmentation, security and lack of standards are some of the challenges looming large over any IoT deployment.

Opportunities Galore
 According to Verizon IoT report 2015, organizations are seeing measurable benefits from Internet of Things projects. Transportation companies are saving millions of dollars by reducing fuel consumption using data captured, transmitted and analyzed in near real-time. Local government are making budgets and going further with LED smart street lighting that doesn't need regular maintenance, but can automatically report when it needs to be repaired.

Utility companies are eliminating costly and inconvenient home visits to read meters by introducing smart meters that report more granular usage data without human intervention.

According to IDC, by 2020, the global IoT spend is expected to reach \$8.9 trillion (CAGR 7.9%). The opportunities lie in delivering products and services with a significant portion coming in from services.

"Emergence of IoT will transform the way enterprises function in India. Adoption of IoT will only increase with roll out of 4G internet / broadband. The organizations that can effectively address security and seamless connectivity will be at the forefront of IoT. There is a lot of interest across market segments for IoT and the government is also actively looking at IoT as an industry to grow in size in coming years. Almost every IT organization is looking at IoT to generate newer business streams," says Rakesh Kaul, Director, Neoteric Infomatique.



The India government's draft IoT policy aims to create an IoT industry in India of \$15 billion by 2020, leading to an increase in the connected devices from around 200 million to over 2.7 billion by 2020.

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The opportunities are spread across connected devices and gateways, including both hardware platforms such as Arduino and software platforms such as TinyOS, device connectivity enabled through infrastructure, standards and protocols for the data exchange, the software platforms to support the interactions and the industry specific applications built on top of the platforms.

—Jai Ganesh.

Vice President & Head, Mphasis Next Labs

The most popular IoT sensors initially installed are those on items that provide remote monitoring (eg, wind turbines,



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ATMs/ kiosks, heavy equipment, drilling equipment, etc.) or are mobile (autos, aircraft & engines, people, packages, rail, medical equipment, etc.).

According to Bipin R R, VP-New Business, Product Engineering Business, Tata Elxsi, the offerings in this segment are spread across Connected Cars, Smart Cities and Industrial Automation segments. It provides E2E services for these segments ranging from Consulting to Design, Development, QA and Maintenance.

"In addition to our core engineering strengths, our unique differentiation is that we have our own Industrial Design Studio. This is the biggest in Asia with expertise across research and strategy, branding and graphic design, product design, UI design and design engineering. We have won several international awards for some of the User Experience designs created by our teams."

Sunil Lalvani, MD, BlackBerry India, opines: Connected devices are rapidly becoming the norm in the enterprise space and simply put the potential of M2M technology and IoT is limitless. The ecosystem of connected devices and machines will grow exponentially in the coming times. Internet enabled smartphones, watches, white goods, home entertainment systems, controlled lighting systems, reading devices; robotic healthcare systems are all bringing together a connected world. Smartphones and mobility devices in the hands of the common man today, have the potential to spearhead the Internet of Things movement.

With growing popularity of new technologies and the opening-up of the telecommunications market, the IoT movement has gained a new impetus.

BlackBerry has recently launched its Internet of Things (IoT) platform. Initially targeting the automotive and asset tracking industries, The BlackBerry IoT Platform will leverage the company's extensive technology portfolio, extending its best-in-class security and reliability to emerging IoT applications. The BlackBerry IoT platform will also be extended into the smart energy sector and the healthcare field.



Hackers will continue to follow the path of least resistance as more and more devices are connected to the network. Vulnerabilities that Black Hat hackers will look to exploit will include consumer home automation and security systems, as well as webcams, which we are already beginning to see. On the Enterprise side, Network Attached Storage and Routers will continue to be targets, as will critical infrastructure such as Human Machine Interfaces (HMI) and Supply Chain systems.

—Rajesh Maurya
Country Manager, India and SAARC, Fortinet

Some of the key challenges of IoT are security, scalability and sustainable business model. Security is an important aspect to guarantee that the data carried over networks and stored is extremely reliable as decisions will have to be made based on these data. Integrity and non-repudiation of such data is a key challenge. With billions of connected devices, ability to scale for such high numbers while meeting the varied requirements of different services will be paramount.

—Nishant Batra
Head of Engagement Practices, Ericsson India



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Security leads the pack of challenges. The increasing digitization and automation of the multitudes of devices deployed across different areas of modern urban environments are set to create new security challenges to many industries. As Sanjay Sapru, Regional Director Enterprise - South Asia at Alcatel-Lucent Enterprise Market Group, puts it, "significant security challenges will remain as the big data created as a result of the deployment of myriad devices will drastically increase security complexity. This, in

turn, will have an impact on availability requirements, which are also expected to increase, putting real-time business processes and, potentially, personal safety at risk."

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Rajesh Maurya, Country Manager, India and SAARC, Fortinet, says: "Hackers will continue to follow the path of least resistance as more and more devices are connected to the network. Vulnerabilities that Black Hat hackers will look to exploit will include consumer home automation and security systems, as well as webcams, which we are already beginning to see. On the Enterprise side, Network Attached Storage and Routers will continue to be targets, as will critical infrastructure such as Human Machine Interfaces (HMI) and Supply Chain systems."

Besides, security related challenges there also is the issue of complexities in terms of interconnected systems. As there is diversity of sensor types and functions... the relationship between base parts, sub-assemblies, subsystems and the final vehicle is essential to understand. From a data perspective these relationships are hierarchical and can be complex to represent accurately and conveniently. "Add to this the complexity that parts are very often reusable across multiple vehicle models and option combinations and that 'look across' is also important to understand," adds Sunil Jose, Managing Director at Teradata.

Enterprises will have to ensure that the devices have appropriate authorizations and that there is encryption between devices and servers. The other challenge is that of power consumption,

IoT Initiatives

■ Fujitsu has launched a new initiative called "Human-Centric IoT" which is designed to facilitate the creation with customers of valuable new businesses that, based on an understanding of customers and consumer needs, employ all kinds of digital information, with the goal of spurring new business and social innovation. To bring about Human-Centric IoT, Fujitsu is building a global ecosystem with business partners and launching an IoT platform to serve as a venue for generating innovation with customers.

■ Brocade's acquisition of Connectum extends its leadership in software networking and virtualized network functions, by enabling service providers and enterprises to offer ubiquitous connectivity between mobile and IoT devices, data centers, as well as public and private clouds.

■ Red Hat offers operating platform and middleware offerings that are embedded as the basis of many IoT solutions, helping to meet the scalability, reliability and security needs of these IoT-based systems.

■ netCORE has recently launched its IoT platform for real-time data capturing and analysis, comprising a microcontroller platform and a server platform. The Micro-controller Platform integrates with machines and physical assets through sensors, captures ambient data or directly captures machine data. The data integrates with workflow applications through the netCORE IoT Server Platform and allows organizations to leverage the information for operational efficiencies.

■ As far as Teradata's IoT deployments are concerned, JSON is a very common data interchange format. It can be stored along with structured data in the Teradata Database and used directly in queries along with the other data in the data warehouse. Integrating multi-structured JSON data into the Teradata Database offers new flexibility and enables organizations to monetize the flood of data coming from the Internet of Things and elsewhere.

■ The BlackBerry IoT Platform combines technology from QNX Software Systems, a BlackBerry company whose software powers mission-critical embedded systems in cars, industrial applications, and medical devices, with BlackBerry's secure network infrastructure and device lifecycle management software. The BlackBerry global network infrastructure today handles approximately 35 petabytes of mobile data per month in data centers located around the world and manages peering connections with more than 300 mobile operators and 400 partner networks worldwide.

■ Altimetrik has been partnering with global enterprises in their customer-centric transformation initiatives using connected solutions and Internet of Things (IoT). It is working on business models that are about creating superior experiences and value.

■ Tech Mahindra has launched an Internet of Things platform called Jampstart IoT, in partnership with US-based firm Aeris Communications.

when several IoT devices send data between each other it shoots up the power consumption leading to rapid battery drain. Given the large number of interconnected devices, bandwidth consumption could also pose a challenge to IoT connectivity.

Arun Kundu, Director, Professional Services, Asia Pacific and Global Strategy, Verizon Enterprise Solutions sees the challenge in fragmentation and a lack of standards. "Businesses struggle with having to buy a smart technology from one company and a network from

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another and perform their own backend integration," he adds.

"Connecting will require new approaches to addressing and identifying devices by IP. Further device manufacturers need to embrace standardized and open protocols so that data can be easily accessed and leveraged across the IoT implementation eco-system," opines Kalpit Jain, Chief Operating Officer, netCORE.

Experts also say that the low adoption rate is due to a complex and costly development process. For example, if an energy company wants to deploy three million connected meters in seven years, what type of backend infrastructure should they build? Do you build to scale up to three million or do you build to support what's in the field?

For the industrial internet and IoT technologies to thrive, lower cost asset connectivity is required. It's fine to connect a \$25,000 vehicle or a \$300 electric meter that's tied to a \$5 billion electric generation plant, but what about a \$20 pallet or 40 million manhole covers? How do we connect those? One way to do that is by participating at that sensor level and getting more and more devices on the network by bringing down the cost of cellular.

"With so many players involved with the IoT, there are bound to be ongoing turf wars as legacy companies seek to protect their proprietary systems advantages and open systems proponents try to set new standards. There may be multiple standards that evolve based on different requirements determined by device class, power requirements, capabilities and uses. This presents opportunities for platform vendors and open source advocates to contribute and influence future standards."

IoT has the potential to catalyze innovation and offer new value to people, society and businesses; it also comes with its share of challenges and concerns. For example, the sheer scale of components that will be connected to the Internet will amplify the issues we've encountered in the Internet of data.



Significant security challenges will remain as the big data created as a result of the deployment of myriad devices will drastically increase security complexity. This, in turn, will have an impact on availability requirements, which are also expected to increase, putting real-time business processes and, potentially, personal safety at risk.

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—Ashish Gulati
Country Head India, Teit Wireless Solutions



Security will be more complex and bigger in this scale, requiring the need for new approaches and techniques. With IoT increasing the connectedness between machine and man, there will also be a need to develop consensus within society with regard to how we deal with the ethical problems that will arise, says Mehul Doshi, Country Head for Data Centers, Products & Solutions in India, Fujitsu.

From network point of view the challenge is with regard to managing the scale and the traffic demands that come with it. "When billions of devices are connected to the Internet and most

are at an "always on" mode, the scale of traffic we're talking about is gigantic. Networks need to evolve to being highly scalable, flexible, agile and at the same time be cost-effective to enterprises and service providers who will be running the data centers at the end that support this flow," points out George Chacko, Systems Engineer Manager, Brocade India.

However, this can be addressed by new IP technologies which focus on building networks that are increasingly open, software-driven, and user-centric, he adds.

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