

Your Network Foundation for the Digital Era in India

How network edge innovations can help push
business transformation to new heights



With a population of over 1.2 billion people and ongoing digital momentum, India is a vast market primed for unprecedented growth and opportunities. More than ever, organisations in India need to pivot and focus on fixing technology gaps, or ensuring the building blocks are in place for them to drive digital transformation.

Digital transformation in India is fuelled by a number of key technology trends. First, India is home to more than 460 million Internet users, boasting the world's second largest Internet user base after China.¹

What's driving the growth in Internet usage is the accelerated rate of smartphone adoption in India. According to the latest Cisco VNI Mobile Forecast (2015-2020), India's mobile data traffic grew by a staggering 89% in 2015, with smartphone users crossing the 239 million mark.² For many consumers in India, mobile devices remain the primary means of accessing web content and Internet services.

It was not that long ago when Internet users in India were still largely dependent on fixed broadband connections. Now, the explosive consumer demand for connectivity is increasingly being fulfilled by wireless broadband networks – opening up possibilities for digital access to be extended across the country.

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Under the Digital India initiative, the government is looking to further empower the local population with Internet access and make broadband connectivity a basic utility for every citizen.

Encouraging progress is already being made in projects such as BharatNet, bringing high-speed broadband connectivity to India's rural populations.³ By connecting around 250,000 village councils to provide broadband access for e-learning and other citizen services, the BharatNet project aims to connect 600 million rural residents across the country.

¹ <http://www.internetlivestats.com/internet-users/india/>

² <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html>

³ <http://digitalindia.gov.in/ebook/dot/page2.php>

Expanding the boundaries of wireless networks

What do these developments hold for India's digital future?

To be sure, the unprecedented growth in Internet penetration and mobile data usage in India is driving up wireless network demands to unprecedented levels. For businesses, this means both customers and employees are likely to have heightened expectations in terms of their digital user experience.

It is anticipated that network speeds in India will rise dramatically over the near term as well. Between 2015 and 2020, the average fixed broadband speed is projected to grow 2.5-fold to reach 12.9 Mbps, while mobile connection speeds will accelerate 3-fold to reach 3 Mbps.⁴

Here, efforts to expand broadband access across India will not be limited to a mobile-focused approach. The next generation of wired and wireless networks also play a key role in offloading the demands placed on mobile connectivity.

One of the other major trend is the rise of the Internet of Things (IoT). Machine-to-machine (M2M) connections across verticals are vital to the burgeoning IoT market in India, particularly in industries such as manufacturing, logistics, healthcare and retail.

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⁴ http://www.cisco.com/c/m/en_us/solutions/service-provider/vni-forecast-highlights.html

M2M modules in India are projected to grow at 21.1% CAGR to reach 362.9 million devices by 2020. Increasingly, the growing adoption of IoT/M2M applications is seen as a driving force for Industry 4.0 in India, having the potential to transform the country's large but fragmented manufacturing sector.

In fact, M2M modules are expected to account for 19% of all networked devices in five years' time. These connections are expected to put additional strain on existing network resources.

With the increase in mobile traffic, networked devices and IoT applications, wireless network architectures across India must evolve to address rising connectivity demands – in order for businesses to unlock the full potential of digital transformation.

This also means that while broadband access is shifting to wireless, the core of the network remains wired and should be given its due considerations – not only to address consumer expectations about network speed and performance, but also to cope with the data demands of *1.9 billion networked devices in India* by 2020. In other words, your Wi-Fi infrastructure still needs to connect back to a robust, high-performance wired network.

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Adapting your networks to the new digital business reality

There is no doubt that businesses in India are on the cusp of extraordinary change. From optimising production and supply chain to utilising data analytics to deliver enhanced customer experiences, new technologies are poised to help organisations make the next leap in digital success.

But that's only half of the story. The new digital landscape can also be intimidating in terms of its unpredictability. With digital transformation, no one knows exactly what the future holds.

What's clear is that the demands on the network will be greater than ever before. The growth of IoT, cloud applications, security threats and even augmented reality will put added pressure on organisations to reinvent their networks to keep pace with the new digital business reality.

THE DIGITAL BUSINESS REALITY

The demand on your network will grow exponentially



Internet of
Things



Cloud hosted
applications



Sophisticated
threats



Augmented
reality

The growth of IoT, cloud applications, security threats and even augmented reality will put added pressure on organisations to reinvent their networks to keep pace with the new digital business reality.

As your organisation transitions to digital, your network needs to evolve to better support the growing number of employees, customers and businesses.

Key network considerations for your organisation include:

- Are your current network capabilities able to cope with the growing number of connected devices, and increased user and application requirements?
- How do you ensure that your network infrastructure can address your employees' evolving mobility expectations?
- What are the best ways to upgrade your Wi-Fi equipment to deliver more bandwidth and faster wireless speeds via 802.11ac Wave 2?
- What are the best ways to secure your networks and keep potential cybersecurity threats at bay?

At the very heart of this digital transformation is the **network edge**.

Consider the network edge as being the bridge between your organisation and customers spread across widely dispersed locations in India, or even the globe. Both your customers and employees have heightened expectations about digital services, and your network edge has to adapt quickly to meet these demands.

Or, think about how the network edge can be your vantage point to see all data traffic – including users, devices, applications and potential threats – happening within your business.

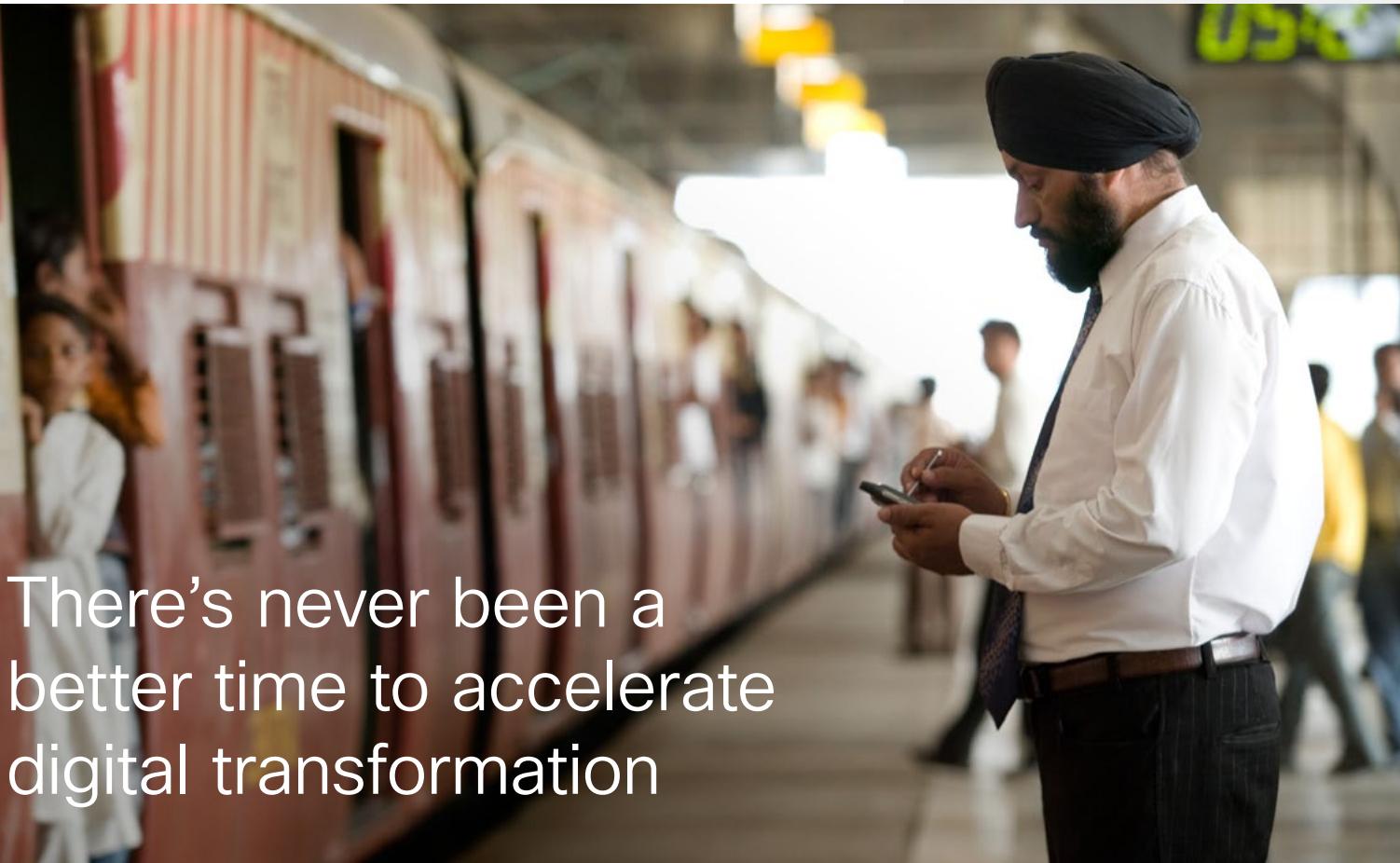
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By leveraging data and analytics at the edge, your business can gain actionable insights to make better decisions to support employees, as well as reduce risk and cost.

The network edge can also be your critical first layer of protection against the latest malware attacks. Intelligence at the edge enables you to better manage user access to business assets and keep malicious threats out in an effective manner. Working in tandem with security solutions in the core and branch, you are better equipped to identify and remediate threats before they proliferate through the network.



There's never been a better time to accelerate digital transformation

For businesses in India, there's never been a better time to transform their networks and accelerate digital transformation – starting with network edge innovations based on Cisco's Digital Network Architecture (DNA).

Cisco's DNA approach is designed with modern network requirements in mind – a system that enables innovation across verticals, generates insights, automates critical processes, defends against threats and delivers enhanced customer experiences.

From Cisco's viewpoint, being digital-ready is not about addressing a single place within the network. It starts at the network access edge, and leverages common functionality across the core and the WAN to unlock innovation and intelligence everywhere across the network. Cisco's strengths in both core networks, as well as wired and wireless solutions, places us in a unique position to help you establish the critical digital foundations for business transformation.

Networks need to cope with data demands of 1.9 billion networked devices in India by 2020



Cisco DNA solutions for the network edge enable you to:

■ **Protect your business**

The edge is your first line of defence against malware threats. By using the network as both a sensor and enforcer, you can sharpen your ability to detect malicious activity at every network intersection, from the access to the core and branch.

■ **Simplify your business**

The edge is your gateway to a widely distributed organisation and your customers. It gives you greater agility to provision network resources and adapt rapidly to changes in business requirements.

■ **Analyse your business**

The edge sees everything: users, devices, apps and threats. Highly accurate insights from the network enable organisations to make more informed business decisions and conduct targeted threat forensics.

■ **Futureproof your business**

The edge adapts as your business evolves. For instance, it provides more flexibility to add new functionalities to your existing wireless access point footprint and support new capabilities without a forklift upgrade.

The digital age is moving faster than ever before in India. With Cisco DNA, you have the key foundations to build digital-ready networks that enable you to innovate faster, reduce the cost and complexity of network management, lower risks, and comply with regulatory compliance.

Contact us today if you wish to have a more comprehensive discussion about how Cisco's edge network solutions can help transform your network to meet the every demand of today's digital business.

Preparing your network for device growth

A high-performance wireless network is critical in keeping up with the increased bandwidth demands from a growing number of connected devices and applications, and for creating new mobile user experiences.

The latest 802.11ac Wave 2 Wi-Fi standard promises to speed up wireless adoption across the enterprise, offering more speed, capacity and reliability for a wide range of business-critical applications.

Multigigabit network technology is a chief consideration for any business looking to leverage the speed and quality of 802.11ac Wave 2. With Wave 2's extra wireless capacity, you can ensure that wireless data traffic doesn't face a bottleneck when it hits your wired LAN infrastructure.

Cisco's network edge solutions also include next-generation access points that enable organisations to meet tomorrow's business needs without additional expenses for network and cabling upgrades:

- **Cisco Aironet 3800** and **Aironet 2800** series provide the flexibility to adapt your mission-critical network to changing business needs
- **Cisco Aironet 1560** series facilitates small-to-medium outdoor Wi-Fi deployments and augments your wireless network coverage