Why Telstra for Next IP®

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Introduction

The journey to digital has unleashed a tsunami of data and the networks that carry that data have never been more important. Demands on the network are growing and customer behaviour is changing. A strong, reliable and secure network is crucial for organisations that want to thrive in a more connected digital future.

This document is designed to provide readers with a comprehensive understanding of Telstra's Next IP® network. It communicates the credentials and capabilities of Next IP® with a focus on "6 powerful proof points", demonstrating why Telstra's Next IP® network is among the world's most powerful and reliable. A network so powerful we rely upon it ourselves.

About Telstra

Telstra creates better ways to empower everyone to thrive in a connected world.

We provide network services and solutions to more than 200 of the world's top 500 companies. They rely on us to do business across 230 countries and territories and to enable greater productivity, efficiency and growth.

Our solutions offer the best of all worlds – skilled people and a rich portfolio of services delivered on our world-class Telstra Next IP® network and the Telstra Mobile Network. To ensure reliable performance, they're monitored and maintained from our dedicated centres using advanced management and operational systems.

And they're backed by Telstra Enterprise-grade Customer Service® and one of Australia's largest and most qualified field and technical workforce.

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Trends and patterns

Year 2006

| Voice	Data

Year 2016

Voice	Data

The journey to digital has unleashed a tsunami of data and the networks that carry that data have never been more important.

Cloud, video, applications and mobility are the main trends that are driving the insatiable demand for more bandwidth. But bandwidth alone doesn't solve everything. What's critical is the end-to-end capabilities of the network - and the network provider.

Demands on the network are growing

Customer behaviour is changing
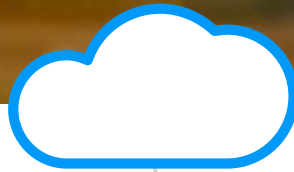
Australia's Fixed/Wired IP traffic grew 39% in 2015 (Cisco VNI Forecast 2016)

1/3 of business leaders expect at least **15% of companies growth in the next 3 years to be driven by digital initiatives** (McKinsey 2014 Survey)

Flexible work arrangements and anytime/anywhere collaboration are high priorities for data network considerations (Telstra IPVPN Research Dec 2013)
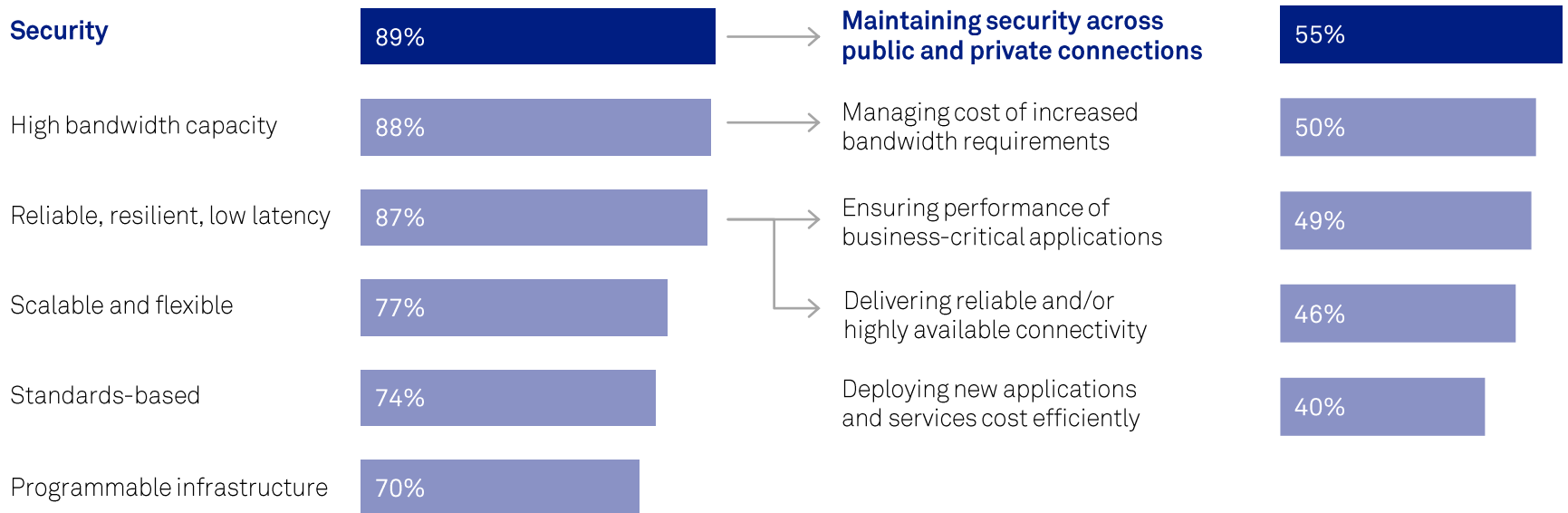
89% of applications will be delivered from the cloud by 2018

There will be a 3 fold growth in Asia Pacific of IP traffic and a compound annual growth rate of 21 per cent from 2014 to 2019. Internet traffic will increase 24 per cent, and IP video traffic will increase 26 per cent [Cisco 2016)

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What is worrying you?

Regarding your corporate data network/telecom technology (WAN, LAN, WLAN), how important are the following:

Security	89%
High bandwidth capacity	88%
Reliable, resilient, low latency	87%
Scalable and flexible	77%
Standards-based	74%
Programmable infrastructure	70%

What are your organisation's top challenges in network/WAN management at branch office locations?

Maintaining security across public and private connections	55%
Managing cost of increased bandwidth requirements	50%
Ensuring performance of business-critical applications	49%
Delivering reliable and/or highly available connectivity	46%
Deploying new applications and services cost efficiently	40%

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In today's connected world, your networks are key to business performance.

But all too often, network technologies restrict business initiatives rather than support them.

Research shows that there is a consistent need for:

The need for security – data and applications

The need to do more with less (money and people resources)

Bandwidth to service more applications with anywhere, anytime access, but done so in an optimised way to ensure application performance

Networks that can grow and flex as you need

More than ever, it's essential to integrate your network strategy with your business strategy.

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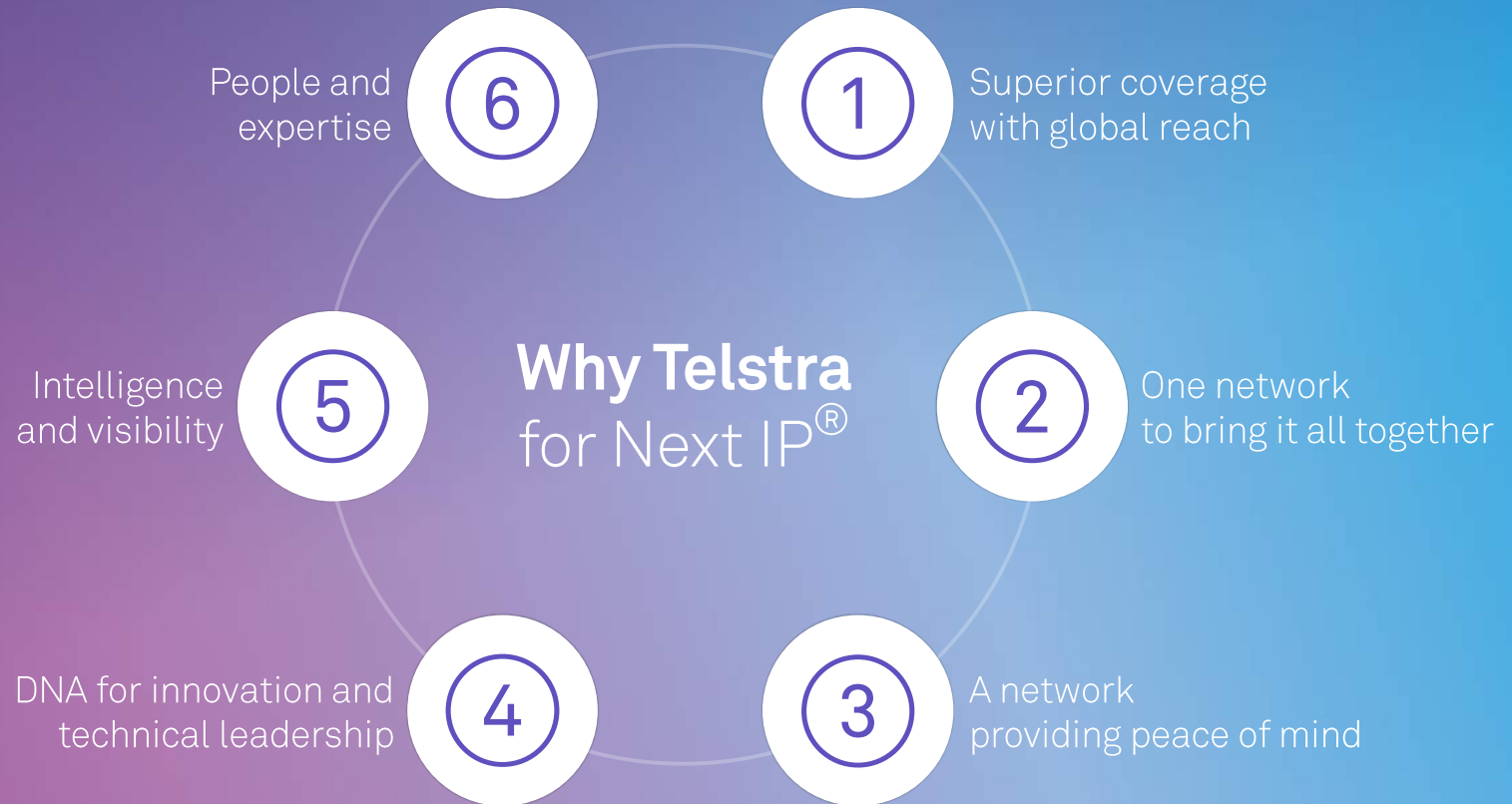
The Telstra Next IP® Network

A network with more. More than just a network.

The Next IP® Network is the enabler of all the solutions you need to thrive in a more connected digital future. It's more than just a connection; it's an IP network with embedded access to future cloud environments, collaboration tools and applications. At Telstra we have DNA for innovation and technology leadership with a roadmap of world-class solutions to keep our customers at the forefront of technology innovation.

With a core target availability of 99.9995%, and over 2,000 PoPs in 230 countries and territories across the globe, the Telstra Next IP® network is among the world's most powerful and reliable. The Next IP® Network is the backbone of Telstra's own IT infrastructure; a network so powerful we rely upon it ourselves.

The 6 proof points of Next IP®

So why should you choose Telstra for your IP connectivity?
Click through the 6 proof points of Next IP® to find out why.

Why Telstra
for Next IP®

People and expertise — 6

Superior coverage with global reach — 1

Intelligence and visibility — 5

One network to bring it all together — 2

DNA for innovation and technical leadership — 4

A network providing peace of mind — 3

>> Click icons to navigate <<

1. Superior coverage with global reach

The Next IP® Network lets your business grow faster, easier and with more secure reach. Get the right coverage for your business at home and abroad.

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Domestic coverage

The Telstra Next IP® Network is the largest fully integrated national wireless and wireline IP network in Australia. **When integrated with the Telstra Mobile Network you can reach 99% of the Australian population**, the largest geographic coverage of any network in Australia. With Next IP® customers have access to Telstra's 4G/LTE mobile network, extensive fibre network and even access via the National Broadband Network.

This lets you enjoy:

Largest coverage

Enjoy Australia's largest network covering more than 2.4 million square kilometres of land – vastly more than any other mobile network in Australia.

More reliable speeds

Enjoy a faster data experience in more places with the largest 4G coverage area of any other mobile network.
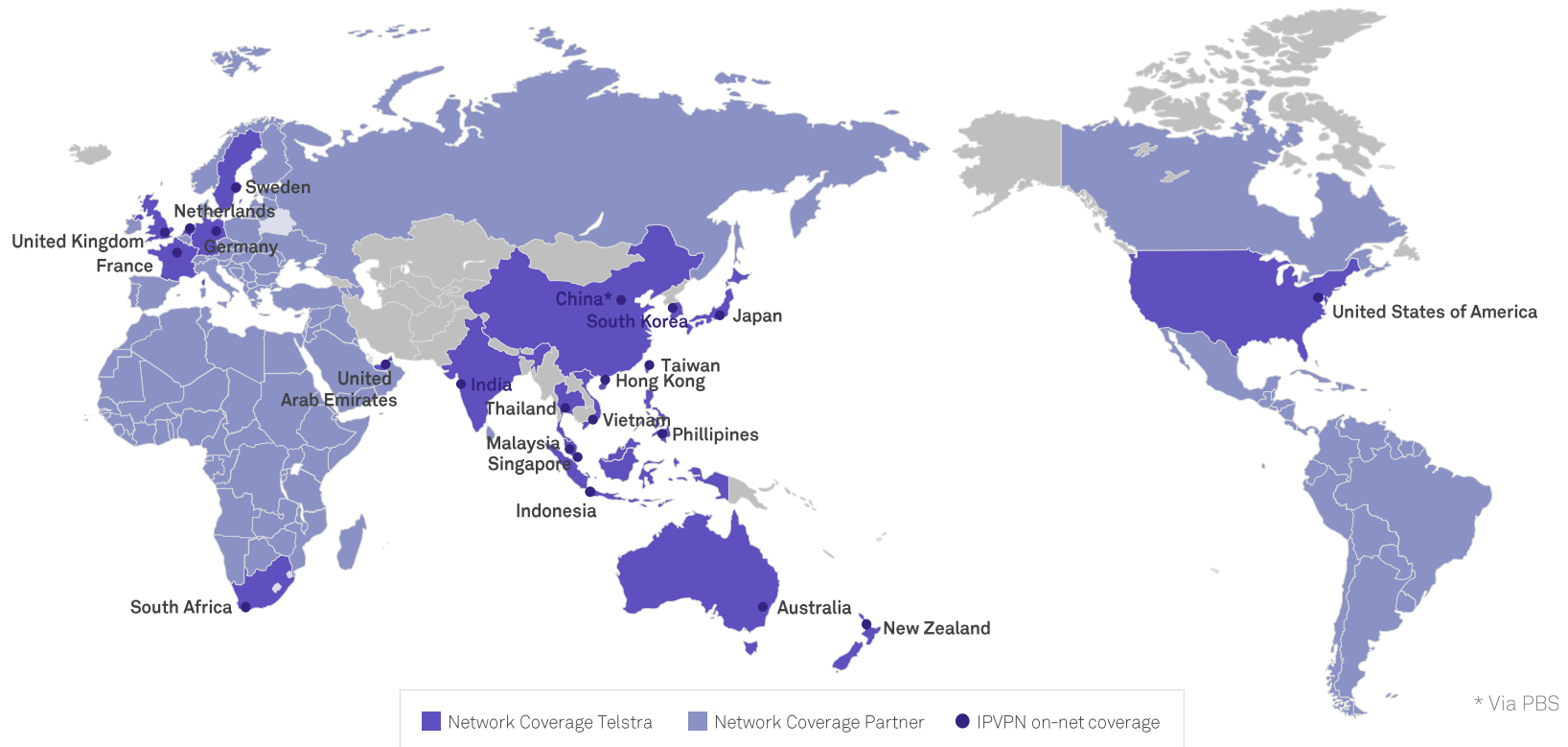
Fewer dead spots

Telstra has invested in more coverage sites across city and country (>8,200) so you can enjoy greater and more reliable coverage with fewer dead spots.

Fewer drop outs

Enjoy a more reliable connection across our national network that works better in more buildings and provides the nation's lowest mobile call drop-out rates.

Global reach

Network Coverage Telstra   Network Coverage Partner   ● IPVPN on-net coverage

Sweden, Netherlands, United Kingdom, Germany, France, United Arab Emirates, India, China*, South Korea, Japan, Taiwan, Hong Kong, Thailand, Vietnam, Phillipines, Malaysia, Singapore, Indonesia, South Africa, Australia, New Zealand, United States of America

* Via PBS

Global services are underpinned by our subsea cable network, one of the largest in the Asia-Pacific region, with licences in Asia, Europe and the Americas, and access to more than **2,000 Points of Presence around the world.**

Telstra provides **satellite services that reach over two thirds of the Earth's surface.** With more than 30 operating antennas at our world-class teleports in Hong Kong, Perth and Sydney and our robust terrestrial network around the globe, Telstra provides integrated satellite and terrestrial solutions of the highest standard. We offer customised satellite solutions at competitive rates, supported by expert technical personnel.

The Next IP® Network

Cloud Networking · Telstra Mobile Network · Collaboration Solutions · Global IP Network
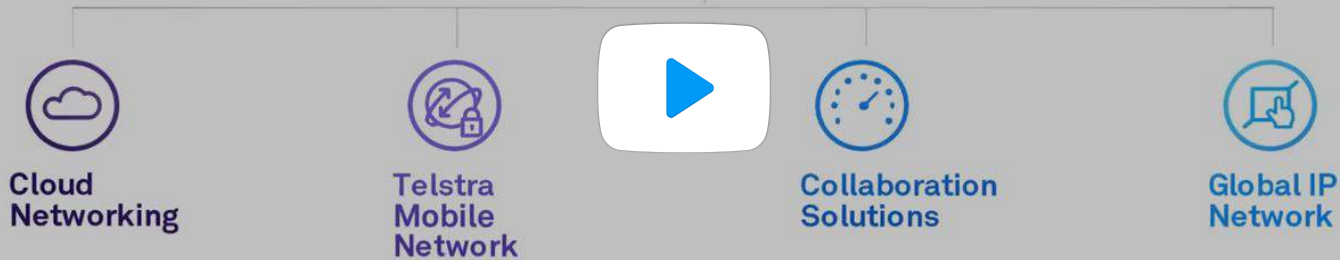
2. One network to bring it all together

Telstra is proud to be a full service provider, and we believe the network is key to all the elements coming together and operating seamlessly. The Next IP® Network is the enabler of all the solutions you need to thrive in a more connected digital future. It's more than just a connection; it's an IP network with embedded access to future cloud environments, collaboration tools and applications.

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Next IP® Network

Cloud Networking

Telstra Mobile Network

Collaboration Solutions

Global IP Network

>> Click icons to learn how the Next IP Network can help you get the most out of your solutions <<

One network to bring it all together

Cloud Networking

With the Next IP® network you can achieve the full value that the integration of Cloud and Network offers.

Connect sites, data and applications over a dedicated network with a cloud that suits your business needs. Telstra's established connectivity plus choice of global leading clouds offers our customers tailored, integrated solutions to ensure a secure and reliable application experience end-to-end.

Reduce IT complexity

Simplify IT management with a single point of accountability and intelligent tools for cross domain solutions.

Flexible integrated solutions

Telstra and our national network of solution partners can bring together best of breed technology into innovative solutions tailored to our customer's diverse needs.

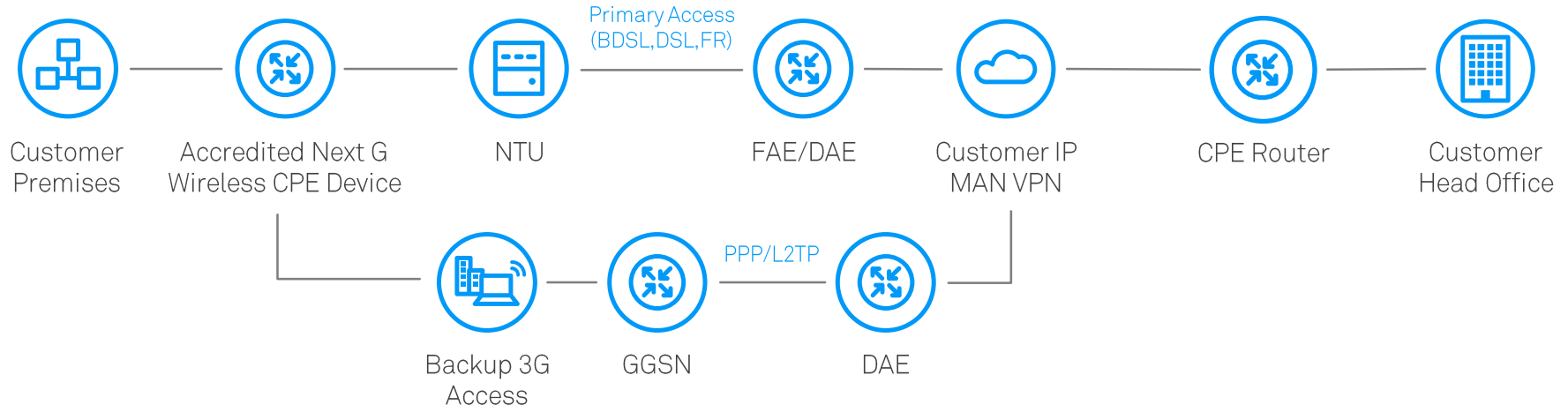### Security and reliability end-to-end

Protect your assets with a private and secure highway to keep your data encrypted and separate from the public internet with geographic redundancy to ensure uptime.

Telstra Mobile Network

Integrate the Next IP® Network with our mobile network to offer the largest geographic coverage of any network in Australia.

The Telstra Mobile Network can be used for primary or backup to the Next IP® Network.

Customer Premises — Accredited Next G Wireless CPE Device — NTU — Primary Access (BDSL,DSL,FR) — FAE/DAE — Customer IP MAN VPN — CPE Router — Customer Head Office

Backup 3G Access — GGSN — PPP/L2TP — DAE

Collaboration Solutions

Get the most out of your collaboration tools with a network built to accommodate bandwidth hungry applications and high powered services.

An ideal way for organisations to converge their voice and data traffic over the Telstra Next IP® network is SIP Connect. By using SIP over IP, you can combine your voice and data requirements into one private line.

Global IP Network

Integrated with
the Global IP Network

So you can connect to over 2,000 Points of
Presence in over 230 countries around the world

3. A network providing peace of mind

The network underpins all your business operations. You need peace of mind that you have a secure and powerful network that you can rely on. With a core network built with triple-path redundancy and designed to 99.9995% availability, the Next IP® Network is the backbone of Telstra's own IT infrastructure; a network so powerful we rely upon it ourselves.

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ASIO T4–certified Security Operations Centre and our core network is **ISO 27001 certified**
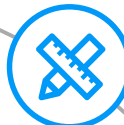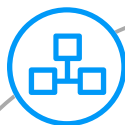
Designed and maintained in line with **worlds best practices**

26 Core Routers

206 Edge Routers

15,809 Switches

Ranked 1st High-Capacity and Low Latency Network[1]

Positioned in the **Visionaries Quadrant**[2]

24/7 Proactive capacity management

Monitored through the **Global Operations Centre**

Scalable network, with capacity to handle large increases in traffic

Architecture for high reliability

The Telstra Next IP® network offers end-to-end resiliency and failover models from the customer premises through the access, edge and core network.

Monitoring includes 24/7 proactive capacity management, performance and assurance management

Telstra provides three target levels of availability:

Core

Network availability of the Telstra Next IP® network core

- Node Diversity
- Fibre Diversity
- Utilisation Management

Edge

Access network availability up to, and including the IP VPN edge devices

- Router Diversity
- BGP based routing
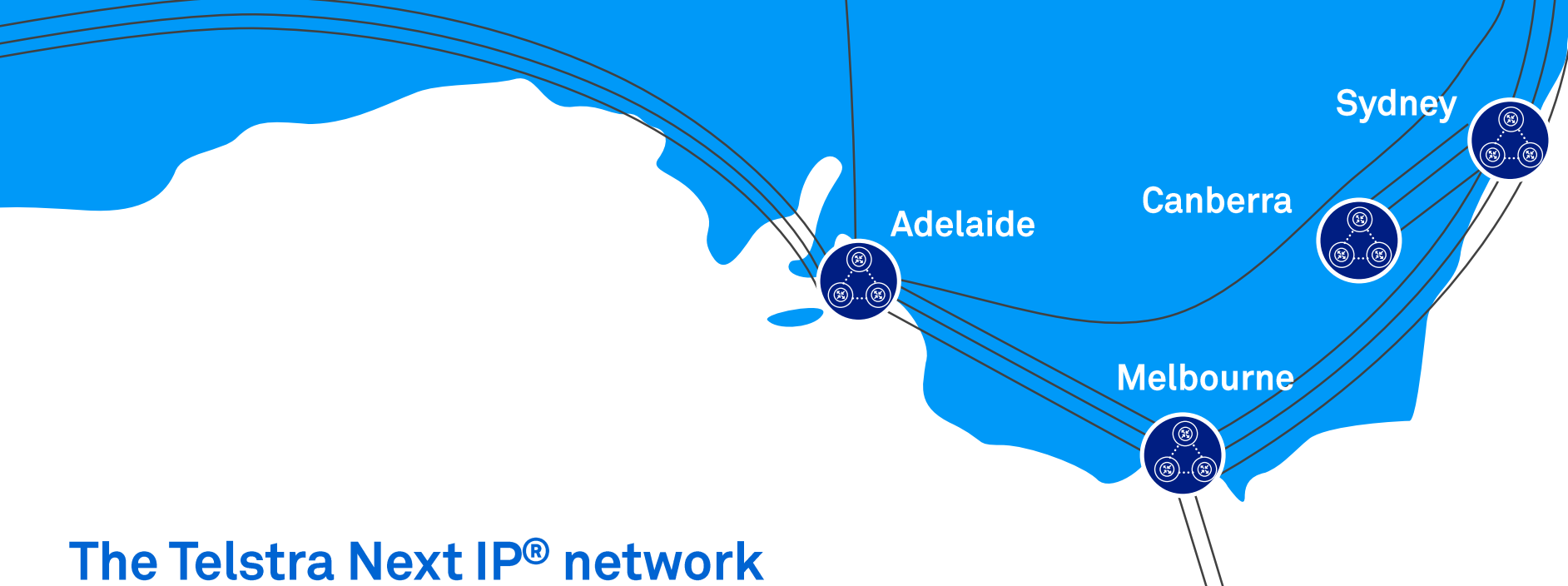- Exchange Diversity

Access

Service availability of the access service into the IP VPN

- Range of Access types
- Dual and Diverse features
- CPE Options

The Telstra Next IP® network core is rated at 99.9995% target availability achieved through:

- A triple-path ladder topology, with three inter-connected Provider (P)-routers at each major location. The triple path topology protects against simultaneous dual-path failure.

- Proactive capacity management of the link utilisation means traffic is carried on the two main paths between major locations and the network capacity on each of these paths is carefully managed.

- Separate core and edge routers. The core P-routers are low-touch devices whereas the Provider Edge (PE) routers are used for customer-related configurations. Importantly, core routing devices are located in different exchange buildings in each major location.

Architecture for security

Our focus on security, as validated in our ISO 27001 certification, provides our customers the confidence that security considerations permeate Telstra services, including physical, logical and procedural. **Our Security Operations Centre is maximum security ASIO T4–certified** to give you the confidence to thrive in a more connected digital future.

The Telstra Next IP® network is a closed circuit Private IP VPN. Customer traffic starts and ends on our network and we know and manage every hop while the traffic is in transit. No traffic ever traverses the internet, and internet users are not even aware of the customer VPN.

The multiple layers of security include:

Physical

- Infrastructure Diversity
- Telstra Secure Facilities
- Authorisation

No traffic ever traverses the internet, and internet users are not even aware of the customer VPN. Telstra facilities are secured and access is strictly via authorised personnel only.

Logical

- Authentication and privileges
- Policy Management
- Configuration Generator

Our Config Generator maintains and tracks network configurations. Only authenticated Telstra users may access network elements.

Procedural

- Monitoring
- Advanced Threat Analysis
- Certification

Our Security Operations Centre is maximum security ASIO T4-certified, and our network is ISO 27001 certified. The Global Operations Centre manages the network by monitoring national and world events that may create demands on the network.

	Traditional				
	Fixed Bandwidth	Rigid annual contracts	Inflexible configuration	Fixed physical hardware	Manual provisions
Next Generation	Bandwidth on demand	Network as a service	Modifiable configuration	Virtual routers, firewalls and other services	Service delivered in minutes

4. DNA for innovation and technical leadership

We offer a roadmap of world-class solutions to keep our customers at the forefront of technology innovation. Our investment in our Programmable Network and technologies such as Software Defined Networking (SDN) and Network Function Virtualisation (NFV) align with our vision to be a world-class technology company that empowers people to connect.

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Programmable Network

Telstra is investing in **Software Defined Networking** and **Network Function Virtualisation** technologies to create the next generation of world-class products that will support customers' need to be agile; providing the flexibility to scale quickly, be innovative and thrive in a connected world.
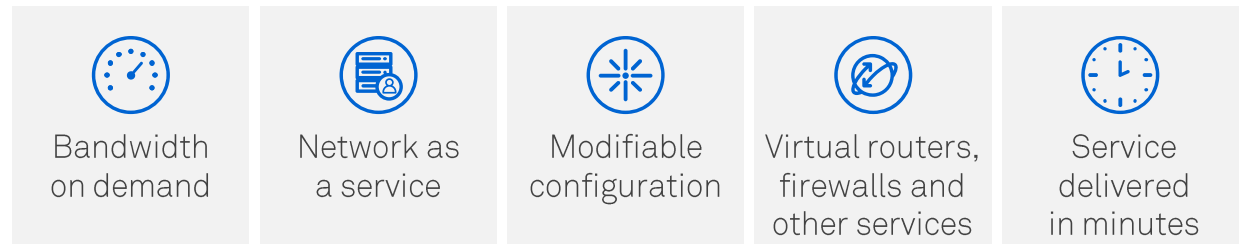
These technologies are bringing about the **next generation of enterprise networking.** They can substantially reduce the time to deliver network services, improve network security, and enable network related OPEX savings through increased flexibility.

At the heart of our SDN and NFV investment is our Programmable Network; a network that adapts rapidly to changing demands with you in control. It enables organisations around the world to redefine how they create, consume, and adapt connectivity for their business and application needs. Our Programmable Network puts you in control, allowing you to quickly implement and configure network services such as creating links between new offices and provisioning applications via the cloud.
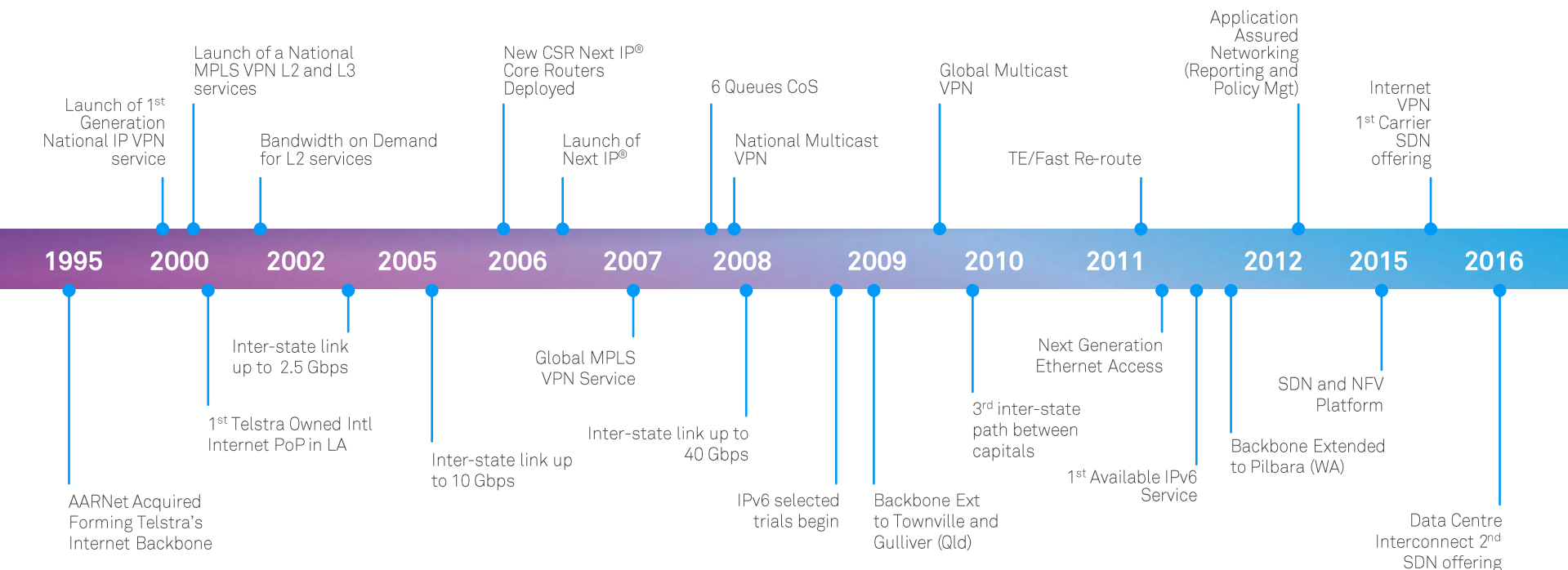
Traditional

Fixed Bandwidth	Rigid annual contracts	Inflexible configuration	Fixed physical hardware	Manual provisions

Next Generation

| Bandwidth on demand	Network as a service	Modifiable configuration	Virtual routers, firewalls and other services	Service delivered in minutes

Our technology journey

We operate in a competitive landscape and we will need to continually invest and improve to maintain our advantage. We are committed to maintaining our network leadership and the quality of services across our network, on which our customers rely. We want to offer superior experiences for what matters most to customers – coverage, call and speed reliability, fewer drop outs and the reliable delivery of content.

Timeline

Launch of 1st Generation National IP VPN service

Launch of a National MPLS VPN L2 and L3 services

Bandwidth on Demand for L2 services

New CSR Next IP® Core Routers Deployed

Launch of Next IP®

6 Queues CoS

National Multicast VPN

Global Multicast VPN

TE/Fast Re-route

Application Assured Networking (Reporting and Policy Mgt)

Internet VPN 1st Carrier SDN offering

| 1995 | 2000 | 2002 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2015 | 2016 |

AARNet Acquired Forming Telstra's Internet Backbone

1st Telstra Owned Intl Internet PoP in LA

Inter-state link up to 2.5 Gbps

Inter-state link up to 10 Gbps

Global MPLS VPN Service

Inter-state link up to 40 Gbps

IPv6 selected trials begin

Backbone Ext to Townville and Gulliver (Qld)

3rd inter-state path between capitals

1st Available IPv6 Service

Next Generation Ethernet Access

Backbone Extended to Pilbara (WA)

SDN and NFV Platform

Data Centre Interconnect 2nd SDN offering

Maintaining our world-class networks

We have a **world-class network** today and are undertaking initiatives to stay at the forefront of technology innovation.
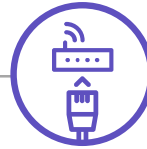
Ethernet
We are over half way through a large investment in the Strategic Ethernet Platform (SEP) based on Cisco ASR9K technology which will provide Telstra's customers with higher capacity and greater availability. This technology refresh also streamlines the network and consolidates a number of existing domains.
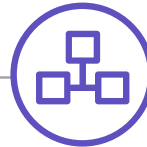
Data Centre Network Rings
We are expanding the Evolved Optical Network to all capital cities, which is the highest resiliency transport network. This will increase resiliency across the network and reduce the time to repair should there be an interruption.

Equipment Upgrades
We continue to upgrade our network and basement switches to the latest generation to maintain service reliability and provide modern capabilities.

5. Intelligence and visibility

As you become more reliant on your network and traffic continues to grow, you need to ensure you have visibility and control.
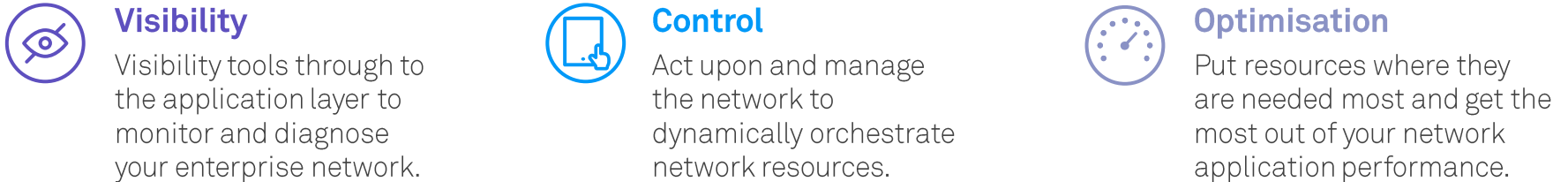
The Next IP® Network gives you full visibility of what is happening within your network, and the tools to optimise and prioritise as you see fit. You can dynamically manage the network and better orchestrate the use of network resources to support your future business needs.

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Optimising your network to achieve efficient use and performance of applications is key to your employees and customers.

Our powerful management and reporting features give you greater visibility and control of your network so you can make simple changes easily.

Visibility
Visibility tools through to the application layer to monitor and diagnose your enterprise network.

Control
Act upon and manage the network to dynamically orchestrate network resources.

Optimisation
Put resources where they are needed most and get the most out of your network application performance.

So for example you can prioritise important traffic (like voice and video) over traffic that is not as important (like YouTube or Facebook).

CRM

YouTube

Voice
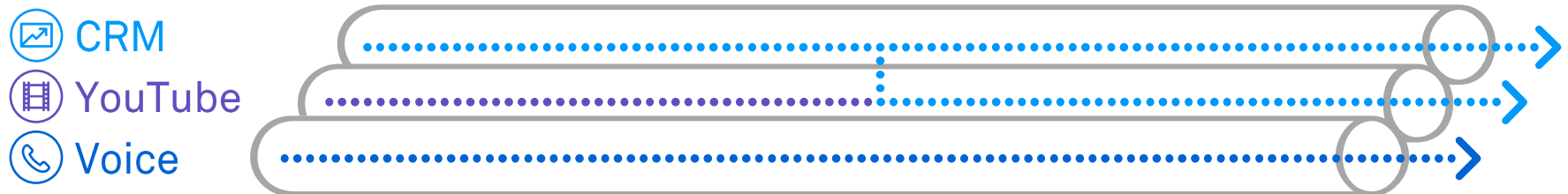
We'll give you the network insights you need to make smarter business decisions that could lead to better business outcomes.

Some of the great tools and applications available to Next IP® customers include:

Application Assured Networking

Provides detailed data to help you align your network and applications with business priorities, to deliver more value.
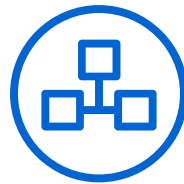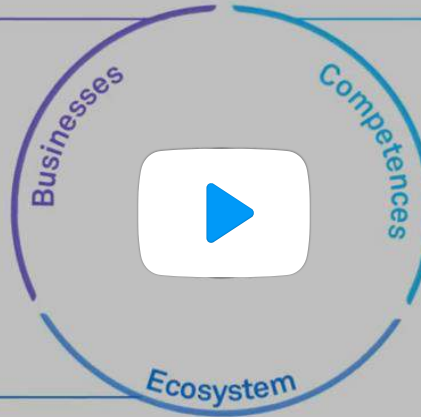
My Network

An online application which enables you to access information about your Telstra IP and Managed Data networks. It includes network diagrams, service details, reports and real time diagnostic tools.

Next Generation Data Reporting

Displays up to date and accurate information on the health of sites and services within your network. Users have access to key metrics including availability, utilisation, volume, packet discards and network latency, with the flexibility to view information at the relevant time, date and granularity.

Extensive partner ecosystem with
194 business and enterprise partners

Over **5,400** technology and technical specialists

Over **1,900** network planners and engineers
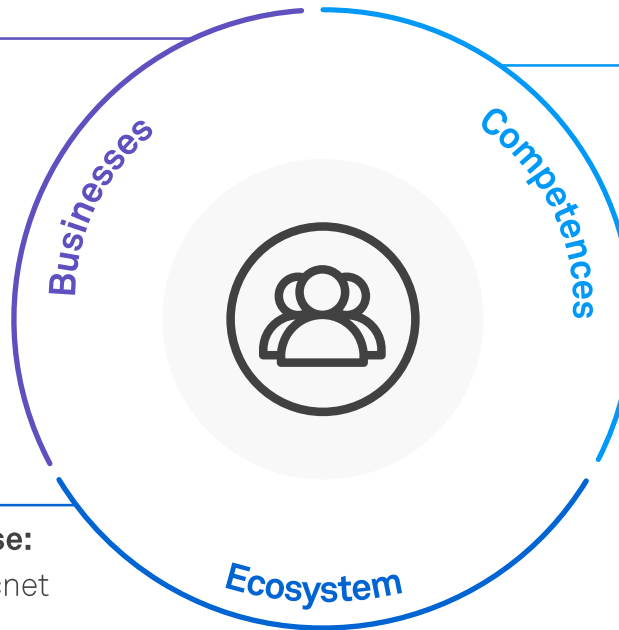
Over **3,100** field technicians

Businesses
Competences
Ecosystem

Acquisitions that improve our expertise:

Bridgepoint	NSC Group	Pacnet
O2	Telekomtelstra	JV with Telkom Indonesia

6. People and expertise

You need to ensure your technology partner has the expertise and experience to help your business grow.

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Extensive partner ecosystem with 194 business and enterprise partners

Businesses

Competences

Ecosystem

Over **5,400** technology and technical specialists

Over **1,900** network planners and engineers

Over **3,100** field technicians

1,500+ experts in the practices. Supported by a deep pool of consultants and technology specialists across all disciplines.

Telstra is the most certified Cisco partner in Australia, with **1592** individual certifications across seven key solution areas.
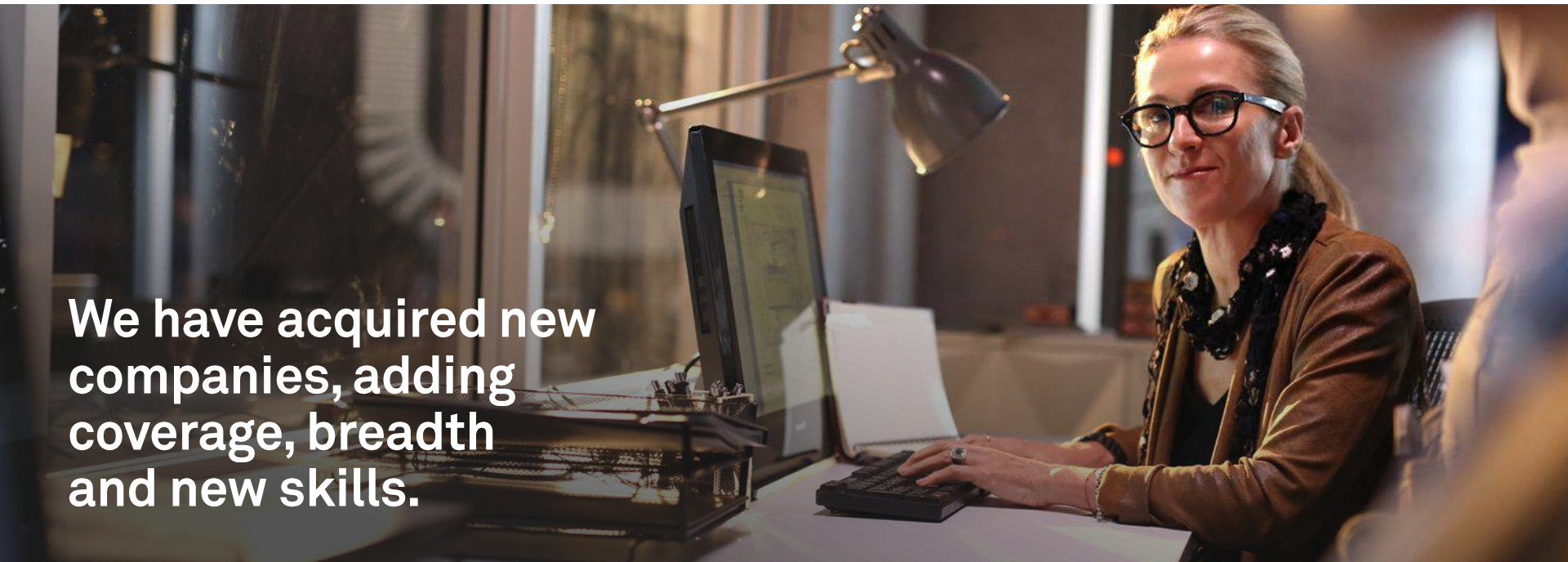
Largest number of **MEF Certified** employees in Australia (9th in the world).

Acquisitions that improve our expertise:

Bridgepoint   NSC Group   Pacnet

O2   Telkomtelstra – JV with Telkom Indonesia

Telstra have a comprehensive pool of expert resources across the globe. We respond to customer needs with a breadth of experience and expertise; leveraging our highly skilled people, extensive partner ecosystem and the knowledge acquired from our global acquisitions.

We're also investing in programs to attract and retain employees with the skills and passion to help transform Telstra into a world-class technology company.

Business acquisitions

We have acquired new companies, adding coverage, breadth and new skills.

Strategic investments include:

Bridge Point Communications
Adds information security, network integration and data management.

Kloud
Added a missing piece to our cloud strategy - the ability to migrate solutions to the cloud.

O2 Networks
Added depth and coverage for network integration.

Pacnet
Added the scale and scope of our international connectivity assets including the largest privately owned intra-Asia cable network + 29 Data Centres and 109 Points of Presence.

Expertise

Telstra's Business Technology Services bring together a deep pool of consultants and technology specialists across all disciplines with best-of-breed vendors, to deliver optimal solutions for the needs of each customer.

This team is made up of over 1,500+ business and technology experts.

We also bring together over 5,400 technology and technical specialists, over 1,900 network planners and engineers, and over 3,100 field technicians to ensure your needs are met.

Alliances and partnerships

Our Business and Enterprise Partner Program totals 194 organisations.

Technology, strategic and alliance partners can help us innovate, provide thought leadership, help create a great experience for our customers and improve their competitive advantage.

Compliance to industry best practice

Most certified
Cisco partner in Australia
with 1592 individual certifications
across seven key solution areas

Largest number
of MEF Certified employees
in Australia (9th in the world)

Get in touch

Contact your Telstra account executive

1300 Telstra

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Click here to register your interest and one of our experts will get in contact with you

Go to top