The ACMA Communications report 2016–17 (the Communications report) draws on data from a range of sources including the ACMA’s own databases, information reported by industry, the ACMA’s research using third-party public sources, and commissioned surveys and analysis.

The ACMA has a statutory reporting obligation under section 105 of the Telecommunications Act 1997 that requires it to collect data from industry for monitoring and reporting purposes. The ACMA will continue to work with industry participants to identify opportunities to streamline regulatory reporting arrangements as part of the Australian Government’s regulation reform agenda.

Disclaimer
The information in this document was obtained from sources the ACMA believes to be reliable. However, the ACMA does not guarantee the accuracy, completeness or adequacy of the information. To the maximum extent permitted by law, the ACMA is not liable for any errors, omissions or inadequacy in the information, or for any reliance on the information. Predictions and forward-looking statements in this document are based on information existing and known at the time of the publication, and are subject to risks, uncertainties and changes in circumstances beyond the control of the ACMA. Opinions and positions stated in this document are subject to change without notice.

Comments
The ACMA welcomes feedback on the Communications report. Comments and enquiries about the scope, content and format of the report should be sent to research.analysis@acma.gov.au.

Further information
For further information about the ACMA and links to the Communications report, please go to www.acma.gov.au/commsreport.

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13 November 2017

Senator the Hon. Mitch Fifield
Minister for Communications
Parliament House
Canberra ACT 2600

Dear Minister,

**ACMA Communications report 2016–17**

I am pleased to provide you with the **ACMA Communications report 2016–17**.

It is a report on the performance of the telecommunications industry for 2016–17, prepared in accordance with section 105 of the **Telecommunications Act 1997**.

The ACMA’s statutory reporting obligations under section 105 of the Act are fulfilled in the following chapters of the report:

- For paragraphs 105(3)(a) and (b) of the Act, which relate to the efficiency of the supply of telecommunications services, and the adequacy and quality of such services—chapters 1, 2, 3 and 5.
- For paragraphs 105(3)(c) and (d), which relate to carrier and carriage service provider obligations under Part 6 of the Act with respect to industry codes and standards—Chapter 5.
- For paragraphs 105(3)(e) and (ea), and subsection 105(4) of the Act, which relate to industry performance in fulfilling universal service and Customer Service Guarantee obligations—Chapter 5.
- For paragraphs 105(5A) of the Act, which relate to national interest matters and cooperation with law enforcement agencies—chapters 1 and 4.

Please note that subsection 105(7) of the Act requires that you table the report in each House of the Parliament within 15 sitting days of that House after you have received the report.

Yours sincerely,

Nerida O’Loughlin
Chair and Agency Head
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Chair’s foreword

I am pleased to present the ACMA Communications report 2016–17. The report presents a comprehensive and timely overview of the communications and media environment in Australia.

In 2016–17, the transformation of the communications sector continued, driven by expanding consumer demand for content, services and connected devices. Subscriber numbers to fixed networks increased, largely driven by the volume of premises connecting to the internet over the National Broadband Network (NBN). Over 2.44 million premises were connected to the NBN by June 2017, an increase of 1.34 million since June 2016.

With nine in 10 Australian adults connected to the internet, demand for data continues on its exponential trajectory. The volume of data downloaded increased by 43 per cent between the June 2016 and June 2017 quarters to over 3.1 million terabytes, with 2.9 million terabytes delivered over fixed-line broadband.

The mobile handset, having been the most popular communications device for a number of years, is also now the most popular and frequently used device for internet access, driven by the availability of smartphones and the popularity of applications.

Mobile phone operators have announced over $2 billion in investments in improvements to 4G networks and are looking to the next generation of 5G networks while closing legacy systems such as 2G. The government’s Mobile Black Spot Program has also assisted in upgrading mobile base stations, with $60 million provided to target 125 specific priority locations across Australia.

Australians are increasing their use of connected devices, with smart TVs becoming more and more popular for accessing the internet. The Internet of Things (IoT) is growing rapidly, and in the year to June 2017 major telecommunications carriers made firm commitments for network investments, technology trials and commercial deployments of this technology. Together, these developments have the potential to drive significant social and economic impacts.

Traditional broadcast television remains the most popular viewing platform, but Australians are consuming more video content over the internet, with 59 per cent watching content online at June 2017. Burgeoning consumer demand for online video content, reflected in the volume of data downloaded, has seen service providers expanding platforms and services to meet their customers’ online needs.

The Communications report provides an insight into the rapidly changing communications sector, and how Australians are using products and services. It paints an informative picture for industry and consumers, and is a useful source of evidence for policy-makers and regulators. I commend the report to you.

Nerida O’Loughlin
Chair
Introduction

Legislative basis
The Communications report 2016–17 fulfils multiple legislative obligations under the Australian Communications and Media Authority Act 2005 (ACMA Act). These include the requirement that the ACMA reports to the Minister for Communications on the telecommunications industry and matters affecting consumers of carriage services, conducts research on community attitudes to broadcasting programs, and advises the minister on service and industry trends in the broadcasting and internet industries and content services.

The report also fulfils the ACMA’s statutory reporting responsibilities under the Telecommunications Act 1997 (Telecommunications Act). Section 105 of the Telecommunications Act requires the ACMA to report annually on the performance of carriers and carriage service providers (CSPs) in meeting regulatory obligations, with specific reference to consumer satisfaction, consumer benefits and quality of service. Information about the broadcasting industry’s performance in meeting regulatory obligations is also included in this report.

Scope and structure of the report
The Communications report comprises five chapters:

> **Chapter 1: Industry supply of communications services**—detailed analysis of key supply-side developments in the Australian communications and media markets during 2016–17. It focuses on the supply of communications and content services in Australia, including the number of carriers, CSPs and services in operation; developments with the rollout of communications infrastructure; and the delivery of communications services.

> **Chapter 2: Consumer engagement with communications and media**—information about consumer engagement with communications services and the benefits derived from these services. It notes changing consumer service preferences, reports on current levels of consumer satisfaction with communications services, and compares Australia with international trends in service take-up and use.

> **Chapter 3: Television, radio and online content developments**—highlights changes in delivery of audio and video content, including viewing behaviours for television, subscription and online content. It also discusses the performance of Australian broadcasters in meeting their regulatory obligations for digitalisation of broadcasting services, and complaints to the ACMA about broadcasting matters and prohibited online content.

> **Chapter 4: National interest issues**—information about the performance of the emergency call services, the cost of maintaining both communications interception capabilities, and the disclosure of customer information in support of law enforcement and national security investigations.

> **Chapter 5: Telecommunications consumer safeguards and quality of service**—examines the performance of key communications safeguards. These include the Customer Service Guarantee Standard, priority assistance and the Network Reliability Framework; the Do Not Call Register; and related unwanted communications rules covering telemarketing and spam complaints. It also examines number portability code compliance and complaints to the Telecommunications Industry Ombudsman (TIO).
Executive summary

The key themes to emerge in this year’s Communications report are expanding digital connectivity, with an ever-increasing demand for, and use of, content and services.

Key highlights for 2016–17

> Connectivity has continued to intensify—shown by an overwhelming majority of Australian adults (89 per cent) accessing the internet, with universal access among those aged 18–34. This was reflected in the increasing number of internet subscribers and growth in volume of data downloaded.

> Consumers are diversifying their use of connected devices, with smart TVs becoming increasingly popular as a way to access the internet. The year to June 2017 saw major telecommunications carriers making firm commitments for network investments, technology trials and commercial deployments of the Internet of Things (IoT).

> Subscriber numbers to fixed networks increased, driven by the volume of premises connecting to the National Broadband Network (NBN). Increased connections to the NBN were also reflected in the rising number of voice services subject to the Customer Service Guarantee (CSG).

> The mobile phone is now the most popular and most frequently used device to go online. The shift to mobile phone-only for communication continues, with 6.67 million Australian adults having a mobile phone and no fixed-line telephone at home. The popularity of communications apps on mobile phones has also continued, with eight in 10 internet users having used an app to communicate.

> Content use and, more specifically, demand for video content over the internet, is increasing, with 59 per cent of Australians having watched content online at June 2017. Service providers are responding by expanding platforms and services to meet their customers’ online needs. Australians continue to spend a majority of their viewing time watching broadcast television.

Infrastructure investment increases

In 2016–17, providers continued to invest heavily in networks to meet the continued and unabated demand for data. The volume of data downloaded has continued its exponential increase for more than a decade, reaching 3.171 million terabytes in the June 2017 quarter over both fixed and mobile networks (up 43 per cent from the June 2016 quarter).

Operators of mobile networks now cover between 96 and 99 per cent of the Australian population and have announced over $2 billion of investments in improvements to 4G networks. Operators are conducting technology trials for the next wave of mobile developments including 5G, while closing legacy systems such as the 2G network, and exploring emerging mobile technologies, particularly Voice over Wi-Fi (VoWiFi) product offerings and Long Term Evolution broadcast (LTE-B) technology.

The Mobile Black Spot Program continued to deliver new mobile base stations across Australia. In addition to the $160 million committed to rounds 1 and 2 of the program, the government committed a further $60 million to target 125 specific priority locations across Australia.

The fixed network rollout accelerated in 2016–17, with the number of premises activated over the NBN increasing by over 1.34 million to reach a total of 2.44 million at the end of June 2017. The declining trend in fixed-line services in operation has slowed for the second year in a row, largely driven by NBN fixed-voice connections. NBN Co Limited (NBN Co) also announced a new type of technology to be added to its multi-technology mix—fibre-to-the-distribution-point (FTTdp), also known as fibre-to-the-curb (FTTC).

New submarine cable infrastructure investments were confirmed—a contract was finalised to build the Australia Singapore Cable system, connecting Perth to Jakarta and Singapore, and designed to carry 40 terabytes per second at a minimum across four fibre pairs.
From Internet of Things to internet of every thing

The IoT is moving mainstream. The year to June 2017 saw Australia’s telecommunications carriers make firm commitments for network investments, technology trials and commercial deployments of IoT. Telstra announced plans to build a national IoT network in partnership with Ericsson. Vodafone completed a successful trial of Narrowband Internet of Things (NB-IoT) technology with utilities and technology partners, with plans to launch commercial services in Melbourne late in 2017. Optus completed its NB-IoT trial early in 2017 (a date for the launch of its services had not been announced at the time of publication).

The adoption of the IoT in Australia has grown rapidly, with the technology embraced across industries and locations—from smart bins in Bondi to monitoring water tanks on rural properties. Consumers have also adopted IoT technology, with an increased proportion of Australian adults connecting smart TVs to go online within the home.

Industry forecasts indicate that 29 billion devices will be connected worldwide by 2022, of which 18 billion will relate to IoT.

Ongoing shift to mobile

In June 2017, 36 per cent of Australian adults were mobile-phone-only, going without a fixed-line telephone in their home.

While mobile phone use appears to have reached saturation levels, demand for smartphones continues to increase. At June 2017, eight in 10 (81 per cent) Australian adults owned a smartphone, up 17 percentage points from 64 per cent five years ago. This reflects consumer demand for new technologies rather than an increase in subscriber numbers.

Mobile phones were clearly the most used device to access the internet, both in terms of the proportion of people using and frequency of use. Eighty-four per cent of online Australians used a mobile to access the internet at least once a day, well ahead of laptop computers (69 per cent) and desktop computers (54 per cent).

Apps proved a popular way to communicate with family and friends. In the six months to June 2017, 88 per cent of online Australians used an app to communicate via either messages or voice or video calls.

Continued intensity of internet use

The majority of Australian adults are frequent internet users and go online multiple times a day. In the six months to June 2017, 89 per cent accessed the internet, increasing to all of those aged 18 to 34. Almost 13.5 million Australians (71 per cent) accessed the internet three or more times a day.

The majority of Australian adults were generally satisfied with their communications services. The highest levels of mobile phone dissatisfaction were with data speeds and internet access (both 20 per cent), consistent with the popularity of using a mobile phone to access the internet.

Media market

Australians continued to spend a majority of their viewing time watching television on the day of broadcast. While there has been a gradual decline in free-to-air (FTA) viewing over the last six years, in 2016–17 it held the largest share of viewing hours at 50 per cent. FTA broadcast programs remained the most watched of any type of content, with older Australians spending most of their viewing time watching FTA TV.

Providers invested in the local market and enhancing user experience on their platforms—Netflix commissioned its first Australian production, Seven West Media developed a new catch-up app and Optus launched Yes TV by Fetch Multiroom.
More than three-quarters (80 per cent) of adults who accessed the internet viewed video content online in the six months to June 2017, while 60 per cent of Australians who accessed the internet listened to audio content online, such as internet radio or podcasts. Younger Australians aged 18–34 spent most of their total viewing time watching online content.

Consumer enthusiasm for subscription video on demand (SVOD) continued to increase. At June 2017, Netflix Australia had an estimated 2.02 million subscribers (paid and non-paid), with a 55 per cent share of the SVOD market. Stan had the second largest share with 24 per cent, and other services the remaining 21 per cent.

In the four months to August 2017, there was a 25 per cent increase in streaming television, as more Australians turned to online catch-up and live viewing services to watch broadcast TV.

Online and television media continued to attract the major share of advertising expenditure. In the 2016 calendar year, total advertising expenditure across the main media categories—print, television, radio, online, outdoor and cinema—increased to $15.3 billion, an increase of 7.8 per cent. The share of expenditure devoted to online advertising increased substantially by 23 per cent to reach $7.4 billion over the 2016 calendar year.

**Telecommunications consumer safeguards**

The number of services subject to the CSG Standard increased for the first time in a number of years (up two per cent to 6.22 million services). The number of instances in which consumers waived their rights under the CSG Standard increased by 43 per cent to over 1.45 million. TPG accounted for 56 per cent of waivers and iiNet for 30 per cent.

All qualifying CSPs reported that they met the CSG performance benchmarks. Compensation paid to customers as a result of service providers failing to meet CSG Standard time frames totalled $20.80 million for 2016–17, compared to $16.17 million during 2015–16—an increase of 29 per cent. This increase is, in part, a reflection of the transition to services over the NBN and retailers of these services claiming fewer exemptions from the CSG service standards.

There were 158,016 new complaints made to the TIO in 2016–17. While this represents an increase of 41.1 per cent from 2015–16, the number of complaints made to the TIO was significantly lower than the peak year for complaints in 2011–12. NBN-specific complaints rose by 159 per cent, comprising fault complaints (16,221) and connection delays (11,224).

ACMA consumer survey data shows that, while Australians aged 18 and over experienced relatively high satisfaction with fixed telephone, mobile and internet communications services, they were the least satisfied with internet services.

The number of complaints received by the ACMA about telemarketing increased by 22.5 per cent from 23,014 in 2015–16 to 28,197 in 2016–17.

The number of telephone numbers listed on the Do Not Call Register (DNCR) rose by 3.5 per cent in 2016–17 to 11.02 million.
National interests

In 2016–17, there were just over 8.5 million calls made to the emergency call service numbers—Triple Zero and 112. Almost 70 per cent of emergency calls were made from mobile phones, up from 69.7 per cent (5,777,477 calls) in the previous 12-month period, while 29.5 per cent came from fixed-line telephones, including public payphones (2.3 per cent of the total).

In April 2017, the ACMA revised the regulatory arrangements for prepaid mobile services to (among other things) make it simpler for mobile providers to supply prepaid mobile services for people in emergency situations where they can’t return home due to natural disasters or because of family violence.

The number of disclosures made by CSPs and carriers (reported under section 308 of the Telecommunications Act) decreased by 4.4 per cent in the year to June 2017. The cost to industry of providing interception capabilities decreased by 2.7 per cent from $22.6 million in 2015–16 to $22 million.

Note on ACMA consumer survey methodology

In 2016, the ACMA-commissioned survey used a different methodology from previous ACMA-commissioned surveys. In 2017, the methodology was refined to ensure a more representative sample could be obtained by shifting to a probability-based sample. This means that some differences between 2016 and 2017 may be explained by the methodology rather than any significant change.

Care should therefore be taken when comparing 2017 consumer survey data with figures from previous years. Where this is the case, the tables and charts in the report show a dotted line between the 2016 and 2017 figures, as shown in the example below.

The change in methodology is further explained in the appendix to this Communications report.
# Key indicators—at a glance

## Telecommunications services

### Number of telecommunications services in operation (millions)

<table>
<thead>
<tr>
<th></th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile services (voice and data)*</td>
<td>31.09</td>
<td>31.01</td>
<td>31.77</td>
<td>32.59</td>
<td>33.64</td>
<td>3.2</td>
</tr>
<tr>
<td>Fixed-line telephone services§</td>
<td>9.42</td>
<td>9.19</td>
<td>8.50§</td>
<td>8.48†</td>
<td>8.46</td>
<td>−0.2</td>
</tr>
</tbody>
</table>

*Change in data source from ACMA annual industry data request in June 2013 to company annual reports from June 2014.

§Includes public switched telecommunications network and other fixed-line telephone services.

*Methodology change from 2015 to report total resale (retail services directly connected via another network) and retail services in operation, but not wholesale services in operation. Previously, the ACMA reported total retail and wholesale services but not resale services.

†June 2016 data was revised by the ACCC and differs from what was reported in 2016.

Source: See Chapter 1. Further explanatory details for this data can be found in the source chapter.

## Number of internet subscribers (millions)

<table>
<thead>
<tr>
<th></th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total mobile subscribers</strong>‡</td>
<td>25.80</td>
<td>26.52</td>
<td>29.66</td>
<td>30.86</td>
<td>32.44</td>
<td>5.1</td>
</tr>
<tr>
<td>Mobile handset subscribers</td>
<td>19.65</td>
<td>20.57</td>
<td>23.65</td>
<td>24.82</td>
<td>26.33</td>
<td>6.1</td>
</tr>
<tr>
<td>Mobile wireless broadband (e.g., dongle/datacard) subscribers</td>
<td>6.15</td>
<td>5.95</td>
<td>6.00</td>
<td>6.04</td>
<td>6.11</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Total fixed internet subscribers</strong></td>
<td><strong>6.21</strong></td>
<td><strong>6.53</strong></td>
<td><strong>6.76</strong></td>
<td><strong>7.26</strong></td>
<td><strong>7.64</strong></td>
<td><strong>5.3</strong></td>
</tr>
<tr>
<td><strong>Total internet service subscribers</strong>‡</td>
<td><strong>32.00</strong></td>
<td><strong>33.05</strong></td>
<td><strong>36.41</strong></td>
<td><strong>38.12</strong></td>
<td><strong>40.08</strong></td>
<td><strong>5.2</strong></td>
</tr>
</tbody>
</table>

*Sum of mobile phone handset and mobile wireless broadband subscribers. ABS has revised 2015 and 2016 figures for mobile handset subscribers and they are different from those previously published.

‡Including mobile phone handset, mobile wireless broadband, fixed-broadband, satellite, fixed-wireless, other broadband and dial-up subscribers.

Note: Counts of subscribers published in previous communications reports may vary due to revisions by the ABS. Percentage changes are calculated on non-rounded data.

Source: See Chapter 1. Further explanatory details for this data can be found in the source chapter.

## Have a fixed-line telephone, smartphone or are mobile-phone-only (millions)

<table>
<thead>
<tr>
<th></th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed-line telephone at home</td>
<td>13.34</td>
<td>13.37</td>
<td>13.07</td>
<td>12.56</td>
<td>11.92</td>
<td>−5.0</td>
</tr>
<tr>
<td>Own or use a smartphone</td>
<td>11.19</td>
<td>12.07</td>
<td>13.41</td>
<td>13.75</td>
<td>15.45</td>
<td>n/a†</td>
</tr>
<tr>
<td>Mobile phone users without a home fixed-line telephone</td>
<td>4.01</td>
<td>4.90</td>
<td>5.32</td>
<td>5.78</td>
<td>6.67</td>
<td>15.4</td>
</tr>
</tbody>
</table>

†2017 data for smartphone users is not comparable with previous years due to a change in methodology.

Note: Data relates to people aged 18 years and over. Percentage changes are calculated on non-rounded data.

Source: See Chapter 1. Further explanatory details for this data can be found in the source chapter.
Payphones (number)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>29,523</td>
<td>28,068</td>
<td>25,876</td>
<td>24,573</td>
<td>23,226</td>
<td>–5.5</td>
</tr>
</tbody>
</table>

Source: See Chapter 5. Further explanatory details for this data can be found in the source chapter.

Customer Service Guarantee (CSG)—services covered and waivers (millions)

<table>
<thead>
<tr>
<th>Number of telephone services covered by the CSG Standard*</th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.68</td>
<td>6.54</td>
<td>6.34</td>
<td>6.11</td>
<td>6.22</td>
<td>1.8</td>
</tr>
</tbody>
</table>

| CSP customers who have waived their rights under the CSG | 0.248 | 0.324 | 0.867 | 1.024 | 1.446 | 41.3 |

*Relates to the number and value of compensation payments made by CSPs to customers occurring during the financial year.
Source: See Chapter 5. Further explanatory details for this data can be found in the source chapter.

Communications network and service providers (number)

<table>
<thead>
<tr>
<th>Members of the TIO scheme*</th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,360</td>
<td>1,384</td>
<td>1,539</td>
<td>1,599</td>
<td>1,518</td>
<td>–5.1</td>
</tr>
</tbody>
</table>

| Licensed carriers | 201 | 208 | 229 | 250 | 276 | 10.4 |

| Number of ISPs† | 77 | 71 | 69 | 66 | 63 | –4.5 |

*Carriers and eligible CSPs to join the TIO scheme. Eligible CSPs are those providers who supply fixed standard telephone, mobile or internet services to residential and small-business customers.
†Internet service providers with more than 1,000 subscribers operating in Australia as reported by the ABS.
Source: See Chapter 1. Further explanatory details for this data can be found in the source chapter.
## Volume of broadband and mobile data downloaded (TB and GB)

<table>
<thead>
<tr>
<th></th>
<th>Qtr to Jun 13 (TB)</th>
<th>Qtr to Jun 14 (TB)</th>
<th>Qtr to Jun 15 (TB)</th>
<th>Qtr to Jun 16 (TB)</th>
<th>Qtr to Jun 17 (TB)</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed-line broadband*</td>
<td>629,964</td>
<td>963,429</td>
<td>1,349,975</td>
<td>2,049,553</td>
<td>2,913,245</td>
<td>42.1</td>
</tr>
<tr>
<td>Wireless broadband†</td>
<td>27,232</td>
<td>32,731</td>
<td>38,673</td>
<td>48,100</td>
<td>82,727</td>
<td>72.0</td>
</tr>
<tr>
<td>Mobile handset internet</td>
<td>19,636</td>
<td>38,734</td>
<td>71,572</td>
<td>121,147</td>
<td>175,076</td>
<td>44.5</td>
</tr>
<tr>
<td>Total volume of data downloaded‡</td>
<td>676,832</td>
<td>1,034,894</td>
<td>1,460,220</td>
<td>2,218,801</td>
<td>3,171,048</td>
<td>42.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>(GB)</th>
<th>(GB)</th>
<th>(GB)</th>
<th>(GB)</th>
<th>(GB)</th>
<th>(GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average per fixed-line broadband subscriber</td>
<td>107.9</td>
<td>155.0</td>
<td>207.0</td>
<td>291.9</td>
<td>394.4</td>
<td>35.1</td>
</tr>
<tr>
<td>Average per wireless broadband subscriber</td>
<td>4.3</td>
<td>5.4</td>
<td>6.3</td>
<td>7.8</td>
<td>13.0</td>
<td>66.7</td>
</tr>
<tr>
<td>Average per mobile phone handset internet subscriber</td>
<td>1.0</td>
<td>1.9</td>
<td>3.0</td>
<td>4.9</td>
<td>6.6</td>
<td>36.2</td>
</tr>
</tbody>
</table>

TB=terabyte, GB=gigabyte.

*ADSL, cable, fibre and other fixed-line broadband.

†Includes satellite; fixed wireless; mobile wireless via a datacard, dongle or USB modem; and other wireless broadband. Excludes subscriptions via mobile handsets.

‡Total includes dial-up volume.

Source: See Chapter 2. Further explanatory details for this data can be found in the source chapter.

## Australians accessing professionally produced online content services (millions)

<table>
<thead>
<tr>
<th></th>
<th>May 13</th>
<th>May 14</th>
<th>May 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessed professionally produced online video content</td>
<td>7.86</td>
<td>8.22</td>
<td>9.62*</td>
<td>11.50</td>
<td>11.35</td>
<td>n/a†</td>
</tr>
<tr>
<td>Accessed online news sites</td>
<td>11.39</td>
<td>10.79</td>
<td>10.28</td>
<td>13.01</td>
<td>12.73</td>
<td>n/a†</td>
</tr>
<tr>
<td>Paid for an online news subscription</td>
<td>1.08</td>
<td>1.18</td>
<td>1.24</td>
<td>1.39</td>
<td>n/a</td>
<td>n/a†</td>
</tr>
</tbody>
</table>

n/a=not available.

*Calculated on changed basis from 2015. Data is at June 2015.

†2017 data is not comparable with previous years due to a change in methodology.

Base: Australians aged 18 years and over.

Note: Content accessed in the six months to each date.

Source: See Chapter 3. Further explanatory details for this data can be found in the source chapter.
Australians’ online participation—have broadband or accessed the internet via mobile phone (millions)

<table>
<thead>
<tr>
<th></th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a broadband connection at home</td>
<td>13.15</td>
<td>14.64</td>
<td>15.72</td>
<td>15.76</td>
<td>16.04</td>
<td>1.8</td>
</tr>
<tr>
<td>Accessed internet via mobile phone during last six months*</td>
<td>10.91</td>
<td>12.50</td>
<td>13.21</td>
<td>12.75</td>
<td>14.37</td>
<td>n/a</td>
</tr>
<tr>
<td>Number of ‘.au’ domain name registrations†</td>
<td>2.67</td>
<td>2.86</td>
<td>2.97</td>
<td>3.04</td>
<td>3.11</td>
<td>2.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of e-commerce ($A)‡</td>
<td>$246</td>
<td>$267</td>
<td>$286</td>
<td>$321</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

n/a=not available.

*In six months to May 2013 and May 2014. 2017 data is not comparable with previous years due to a change in methodology.
†Excludes domain names registered under ‘.gov.au’.
‡The ABS defines internet e-commerce as the purchase/order of goods and services online regardless of whether or not the purchases were paid for online.

Note: Data relates to people aged 18 years and over.
Source: See Chapter 2. Further explanatory details for this data can be found in the source chapter.

Broadcasting licences

Broadcasting licences for commercial radio and TV, and subscription TV (number)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial radio</td>
<td>274</td>
<td>274</td>
<td>274</td>
<td>274</td>
<td>274</td>
<td>0.0</td>
</tr>
<tr>
<td>Commercial television</td>
<td>73</td>
<td>69</td>
<td>69</td>
<td>69</td>
<td>69</td>
<td>0.0</td>
</tr>
<tr>
<td>Subscription television*</td>
<td>2,735</td>
<td>2,735</td>
<td>2,735</td>
<td>2,835</td>
<td>2,835</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Each subscription service is licensed separately.

Note: Commercial radio and television licence numbers for the periods 2012–13, 2013–14, 2014–15 and 2015–16 have been amended to correct a reporting error.
Source: See Chapter 1. Further explanatory details for this data can be found in the source chapter.

Number portability

Local and mobile numbers ported (millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local geographic numbers</td>
<td>0.763</td>
<td>0.866</td>
<td>1.224</td>
<td>0.991</td>
<td>1.320</td>
<td>33.2</td>
</tr>
<tr>
<td>Mobile numbers</td>
<td>1.743</td>
<td>1.668</td>
<td>1.721</td>
<td>1.734*</td>
<td>1.871</td>
<td>7.9</td>
</tr>
<tr>
<td>Freephone and local rate</td>
<td>0.013</td>
<td>0.011</td>
<td>0.0125</td>
<td>0.012</td>
<td>0.011</td>
<td>–10.7</td>
</tr>
</tbody>
</table>

*Mobile number portability figure for June 2016 has been revised.
Source: See Chapter 5. Further explanatory details for this data can be found in the source chapter.
National interest matters

Calls to emergency service numbers Triple Zero and 112

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of calls offered (millions)</td>
<td>8.855</td>
<td>8.481</td>
<td>8.377</td>
<td>8.351</td>
<td>8.580</td>
<td>2.7</td>
</tr>
<tr>
<td>Total percentage of calls answered</td>
<td>96.0</td>
<td>96.0</td>
<td>96.0</td>
<td>96.0</td>
<td>96.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Note: 'Calls offered' refers to the number of calls waiting (at time zero) at the instant the four-second recorded voice announcement finished.

Source: See Chapter 4. Further explanatory details for this data can be found in the source chapter.

Disclosures of customer information by carriers and CSPs to support law enforcement and national security agencies (number)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of disclosures</td>
<td>685,757</td>
<td>748,079</td>
<td>824,841</td>
<td>667,792</td>
<td>638,371</td>
<td>–4.4</td>
</tr>
</tbody>
</table>

Source: See Chapter 4. Further explanatory details for this data can be found in the source chapter.

Complaints and investigations

Telemarketing and spam complaints/reports/enquiries (number)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TIO total new complaints</td>
<td>158,652</td>
<td>138,946</td>
<td>124,417</td>
<td>111,989*</td>
<td>158,016</td>
<td>41.1</td>
</tr>
<tr>
<td>Telemarketing complaints and enquiries</td>
<td>30,604</td>
<td>31,797</td>
<td>30,293</td>
<td>29,799</td>
<td>33,743</td>
<td>13.2</td>
</tr>
<tr>
<td>Spam complaints, reports and enquiries</td>
<td>412,725</td>
<td>349,319</td>
<td>352,362</td>
<td>535,198</td>
<td>851,386</td>
<td>59.1</td>
</tr>
</tbody>
</table>

*The figure for 2015–16 has been revised to be consistent with data published in the TIO 2016–17 annual report.

Source: See Chapter 5. Further explanatory details for this data can be found in the source chapter.

Broadcasting complaints (number)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcasting written enquiries and complaints</td>
<td>2,178*</td>
<td>1,593</td>
<td>1,012</td>
<td>1,232</td>
<td>1,028</td>
<td>–16.6</td>
</tr>
</tbody>
</table>

*This does not include 2,680 complaints and enquiries received about 2DAY’s Summer 30 program broadcast on 4 December 2012.

Source: See Chapter 3. Further explanatory details for this data can be found in the source chapter.
1. Industry supply of communications services

This chapter reports on the adequacy, quality and efficiency of the supply of communications services. It examines the major developments that have occurred in the availability and use of communications and media services in Australia. This includes communications products and services, consumer take-up and use of services, and communications infrastructure developments. This chapter addresses the statutory requirements under paragraphs 105(3)(a) and (b), and 105(5A) of the Telecommunications Act.

Key points for 2016–17

> Smartphone ownership continued to grow, in contrast to the downward trend in the number of fixed-line telephone services in operation. Mobile network operators reported strong growth in machine-to-machine (M2M) communications services. Increasingly, growth continued to be driven by rising appetite for data.

> Reliance on the mobile phone as the sole communication device increased, with 36 per cent of the Australian adult population becoming mobile-only phone users (without a fixed-line telephone in their home).

> Providers announced a range of technology network investments and technology trials, along with commercial developments for IoT.

> The expansion of key communications infrastructure continued with:

  > acceleration of the NBN rollout
  > improvements to the 4G network in preparation for increased data usage and to allow for unprecedented level of connectivity arising from the IoT
  > new mobile base stations as part of the Mobile Black Spot Program
  > continued testing of 5G technology
  > proposed installation of submarine cables and exploration of emerging mobile technologies, particularly VoWiFi product offerings and LTE-B technology.

> Mobile network operators closed down networks that rely on legacy technologies such as 2G (GSM network), with the last 2G network, owned by Vodafone, to close down by 31 March 2018.

> Online advertising expenditure grew, along with total advertising expenditure across the main media categories.

1.1. Fixed-line service availability

There were 8.46 million retail and resale fixed-line telephone services in operation at June 2017, compared to 8.48 million services at June 2016 (Table 1.1), a net decline of 0.2 per cent. Telstra retail services accounted for 63 per cent of fixed-line telephone retail and resale services at June 2017, a decline of four percentage points from June 2016.

In 2017, Telstra experienced a decline in the number of retail fixed voice lines in operation, reporting a loss of 347,000 services—a reduction of 6.1 per cent (Table 1.1).

Telstra’s fixed voice revenue decreased by 9.1 per cent to $3.1 billion, while fixed data revenue grew by 1.6 per cent to $2.6 billion.¹
Table 1.1  
Fixed-line telephone services in operation (millions)

<table>
<thead>
<tr>
<th></th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15#</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total retail and resale</td>
<td>9.42</td>
<td>9.19</td>
<td>8.50</td>
<td>8.48*</td>
<td>8.46</td>
<td>–0.2</td>
</tr>
<tr>
<td>Total Telstra (retail only)</td>
<td>6.53</td>
<td>6.25</td>
<td>5.98</td>
<td>5.71</td>
<td>5.36</td>
<td>–6.1</td>
</tr>
</tbody>
</table>

*ACCC has revised the 2016 figures for total retail and resale subscribers and they are different from those previously published.

*Methodology change from 2015 to report total resale (retail services directly connected via another network) and retail, excluding wholesale services in operation. Previously, the ACMA reported total retail and wholesale, excluding resale services in operation.

Source: Total retail and resale data: 2015–17 figures are ACCC data collected from the providers stated in the Division 12 Report Record Keeping and Reporting Rules. 2014 figure is ACCC and ACMA data collected from the top six service providers. 2013 figure is ACMA data collected from these service providers. Total Telstra (retail only): Telstra annual reports.

The number of Australian adults with a fixed-line telephone service at home continued to decline—64 per cent (11.92 million) had a fixed-line telephone at home at June 2017, down from 75 per cent four years ago (Figure 1.1).

Figure 1.1  
Australians with a fixed-line telephone service at home (percentage)

Base: Australians aged 18 years and over, in the 12 months to June of each year.

Note: Roy Morgan Research changed methodology for this question in 2013.

Source: Roy Morgan Single Source.

1.2. Mobile service availability

An estimated 33.64 million mobile voice and data services were in operation in Australia at June 2017—an increase of 3.2 per cent on the previous year (Figure 1.2). The rate of growth observed in 2017 was similar to that seen in the previous two years.

Machine-to-machine (M2M) and wholesale services continued to be the largest contributors to the growth in mobile services. Telstra reported M2M revenues growing by 14.7 per cent in 2017. Vodafone reported large increase in wholesale (MVNO—mobile virtual network operator) customers of 28.7 per cent.

In 2016–17, postpaid mobile services (47 per cent) continued to comprise the largest proportion of all mobile voice and data services in Australia. This was followed by prepaid mobile services (27 per cent), mobile broadband (15 per cent), M2M (seven per cent) and wholesale services, including mobile virtual networks (four per cent). See Figure 1.2 for the actual numbers of mobile services in operation in Australia, in each category.
Carrier market share

During 2016–17, the market share for Australia’s three mobile carriers remained largely stable. Telstra’s share of mobile services decreased slightly by 0.4 of a percentage point to 54.1 per cent. Optus’s share increased by 0.4 of a percentage point to 29.0 per cent, while Vodafone Australia’s share remained unchanged at 16.9 per cent (Figure 1.3).

Figure 1.3 Mobile services in operation—carrier share and customer base (percentage)

Source: Telstra Corporation Limited – Financial results for the full year ended 30 June 2017 – CEO/CFO Analyst Briefing Presentation and Materials, 17 August 2017; Singtel Management discussion and analysis of financial condition, results of operations and cash flows for the first quarter and year ended 30 June 2017; and Hutchison Telecommunications (Australia) Limited ASX Half Year Information 30 June 2017.
**Mobile network coverage**

Mobile network operators continued to expand their network coverage and have committed substantial resources to further extend and enhance their network performance.

On 1 August 2017, Telstra announced its 4G coverage would reach 99 per cent of the population, following a completion of mobile sites in regional Victoria and regional Western Australia, coupled with 4GX upgrades on the east coast. In August 2017, Telstra had more than 7,000 4G sites across the country and 800 of these were upgraded to 4GX in the last six months.

Optus continued to invest in its 4G coverage and deepen its network for seamless delivery of bandwidth-intensive content, reaching 96 per cent of 4G population coverage with 5,872 sites upgraded to 4G. Of these, 4,893 have been upgraded to 700 MHz spectrum.

Vodafone’s 4G services reached more than 22 million Australians. During the 2016 calendar year, Vodafone added 111 new sites and performed over 2,200 upgrades across the country.

Network operators are increasing service efficiency by closing legacy technologies such as the 2G (GSM network). Telstra’s 2G network was closed on 1 December 2016 across Australia (excluding Christmas Island). Optus closed its 2G mobile services in Northern Territory and Western Australia on 3 April 2017, with remaining states and territories closed down in August 2017. Vodafone plans to close down its 2G networks by 31 March 2018.

**Future investments in 4G networks**

Telstra announced it would invest $1.5 billion in its networks over the next three years, with the aim of delivering double the speeds of standard 4G to 87 per cent of Australians by the end of June 2019. A significant proportion of capital expenditure is to be spent on extending their 4G and 4GX networks to deliver more coverage, more reliable voice and data, fewer dropouts and faster download speeds.

Optus committed $1 billion to improve and expand its mobile network in regional Australia by June 2018, building 500 new mobile sites in regional and remote areas, and upgrading more than 1,800 sites to 4G, as well as adding additional 4G capacity to more than 200 sites. Optus also pledged $17.5 million to improve 4G coverage in Devonport, Launceston, Hobart and the east coast, and another $20 million to its mobile network across the Gold Coast ahead of the 2018 Commonwealth Games.

On 1 August 2017, Vodafone announced an almost $2 billion spend to increase coverage, capacity and performance of its mobile network, including almost 1,800 new and upgraded sites, with approximately 450 new sites and site upgrades in regional Australia.

The future ability of mobile carriers to extend the reach and performance of their 4G networks relies on the availability and access of suitable spectrum. On 10 April 2017, the ACMA completed the auction of the remaining unallocated portion of the 700 MHz ‘digital dividend’ spectrum. This spectrum band is highly valued for mobile broadband, particularly 4G services. TPG Internet Pty Ltd secured 2x10 MHz for $1.26 billion, while Vodafone Hutchison Australia Pty Ltd secured 2x5 MHz for $286 million.

In early August 2017, the ACMA announced plans for a multi-band spectrum auction to be launched before the end of 2017, comprising lots from the 1800 MHz, 2 GHz, 2.3 GHz and 3.4 GHz bands. The spectrum auction is expected to be open to any organisation, though it is anticipated most of the interest will come from carriers for 4G and future 5G mobile broadband services.
Mobile Black Spot Program
The Australian Government continued to invest in the Mobile Black Spot Program, which aims to improve mobile coverage and competition across Australia. The government’s $220 million commitment to the program is being supported by co-contributions from the mobile carriers Telstra, Optus and Vodafone, state and local governments, businesses and community organisations.

Collectively, $385 million is being invested in round 1 to deliver 499 new mobile base stations across the country. On 1 December 2016, the government announced that round 2 of the program would deliver 266 new mobile base stations, for a combined total investment of $213 million for round 2.19

The government has allocated $60 million to target 125 specific priority locations across Australia.20

As part of the program:
- Vodafone is building 74 base stations.21
- Optus has secured $26.4 million in funding, and has pledged a further $36.4 million to provide connectivity to thousands of people across regional and rural Australia22, with a commitment to build 114 sites.23
- Telstra is deploying 577 new base stations and up to 250 4G small cells to improve and expand mobile coverage.24 During 2016–17, Telstra built 174 new mobile sites and more than 100 4G small cells in small regional and remote communities.25

1.3. Zooming in on mobile
Mobile phone use and ownership
At June 2017, eight in 10 Australian adults owned a smartphone (15.45 million). This number increased to 95 per cent for mobile phone use of any kind (‘smart’ or ‘dumb’ phone) and has remained steady over the past five years—between 93 and 95 per cent (Figure 1.4).

While the use of a mobile phone overall appears to have reached saturation levels, smartphone ownership grew in 2016–17, increasing by 17 percentage points from 64 per cent four years ago. This growth is reflected by the number of mobile phone shipments to Australia, which grew by 18.4 per cent to reach 2.16 million phones for Q2 2017.26 This number is forecast to rise to over nine million handsets in 2018, boosted by Nokia’s re-entry into the market under HMD and Amazon’s launch into Australia.27

The mobile phone was also the most often accessed internet device. In the six months to June 2017, eight in 10 online Australians (79 per cent) used a mobile phone multiple times a day to access the internet. This figure dropped to between 41 and 45 per cent for devices such as tablet, laptop and desktop computer. Chapter 2 provides more detailed information on internet activities and devices.
Figure 1.4 Use of mobile phones and ownership of smartphones (percentage)

Base: Australians aged 18 and over, in the last six months to May/June.

Note: The changes in methodology in 2016 and 2017 mean that some differences between these years may be explained by the methodology rather than any significant difference.

Source: ACMA-commissioned surveys.

Apps used for communication

Over-the-top (OTT) services are delivered over the internet and bypass traditional distribution by network operators. Examples include communications apps such as Facebook, WhatsApp, Skype, Snapchat and FaceTime.

At June 2017, 80 per cent of Australian internet users had used an app to communicate with others in the past six months. Sending messages was the most popular way of communicating via apps (84 per cent of app users). More than half (55 per cent) used an app to make voice calls, while 52 per cent used an app to make video calls.

Nearly three in 10 (29 per cent) app users preferred to use an app over mobile credit to send messages. Just over one in five (22 per cent) app users preferred to use an app for phone calls, while 73 per cent used apps over mobile credit for video calls.

Sixty-seven per cent of those who preferred to use apps over mobile credit did so because their friends or family chose to communicate via apps. Saving on mobile credit, lower international call costs and having a better experience were other popular responses offered by this group (50 per cent for each). Interestingly, being able to tell when recipients read their messages was a reason reported by one third of those who preferred to use apps.

Further details about mobile app use can be found in Chapter 2.

Mobile-only phone use

Many mobile providers now offer unlimited calls and texts. For many Australians, it has become more economical to use a mobile phone and a lot harder to justify the expense of keeping a landline. An increasing proportion now rely solely on their mobile phones to stay in touch with others, with mobile-only consumers—those who only have a mobile phone and no fixed-line telephone at home—continuing to grow. At June 2017, 36 per cent of Australian adults (6.67 million) were ‘mobile-only for phone’, up from 31 per cent in 2016 (Figure 1.5).
The trend to go mobile-only for phone is being echoed internationally. In the second half of 2016, 51 per cent of American households were mobile-only, an increase of three percentage points on the same period in 2015. In the UK, Q1 2017 data shows that 18 per cent of adults lived in mobile-only households, an increase from 14 per cent a year earlier.

Figure 1.5  Mobile-only for phone and no fixed-line telephone at home (percentage)

Base: Australians aged 18 years and over in the 12 months to June of each year.
Note: Roy Morgan Research changed methodology for this question in 2013.
Source: Roy Morgan Single Source.

Mobile-only for internet

Mobile-only can also be extended to internet access, giving rise to an emerging concept of ‘mobile-only for internet’. This refers to those who only use their mobile phone to access the internet and do not have a fixed-internet connection at home. At June 2017, 19 per cent of Australian adults used either a mobile phone or mobile broadband to go online, or accessed the internet from a location outside of the home. In the same period, six per cent of Australian adults used only their smartphone to access the internet.

1.4. Internet service availability

Number of internet service providers (ISPs)

At June 2017, there were 63 ISPs with more than 1,000 subscribers operating in Australia, down 4.5 per cent from 66 at June 2016. Compared to June 2016, distribution of ISPs by number of internet subscribers was:

> 32 with 1,001–10,000 subscribers, down from 33
> 22 with 10,001–100,000 subscribers, down from 23
> nine with 100,001 or more subscribers, down from 10.

Table 1.2 provides a snapshot of internet services in operation by number of subscribers in the Australian market for the top four ISPs—Telstra, Optus, TPG (which includes iiNet) and Vocus Communications (which includes M2 Group).

Telstra reported a decline in its fixed internet subscribers—a decrease of 1.9 per cent while the total number of broadband subscribers grew for Optus, TPG and Vocus. All providers at least doubled their NBN connections, with growth ranging from just over 100 per cent (Optus) to over 160 per cent (Vocus).
Table 1.2  Internet services in operation for key Australian ISPs (number)

<table>
<thead>
<tr>
<th>ISP</th>
<th>Type of service</th>
<th>2015 ('000)</th>
<th>2016 ('000)</th>
<th>2017 ('000)</th>
<th>2016–17 change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telstra</td>
<td>Fixed-broadband retail</td>
<td>3,145</td>
<td>3,379</td>
<td>3,511</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Fixed-broadband wholesale</td>
<td>840</td>
<td>840</td>
<td>683</td>
<td>−18.7</td>
</tr>
<tr>
<td></td>
<td>ISDN access (basic line equivalents)</td>
<td>1,137</td>
<td>1,049</td>
<td>973</td>
<td>−7.2</td>
</tr>
<tr>
<td></td>
<td><strong>Total fixed internet subscribers</strong></td>
<td><strong>5,122</strong></td>
<td><strong>5,268</strong></td>
<td><strong>5,167</strong></td>
<td><strong>−1.9</strong></td>
</tr>
<tr>
<td></td>
<td>Mobile broadband (data card)</td>
<td>3,866</td>
<td>3,960</td>
<td>4,007</td>
<td>1.2</td>
</tr>
<tr>
<td>Optus</td>
<td>On-net broadband customers*†</td>
<td>979</td>
<td>933</td>
<td>877</td>
<td>−6.0</td>
</tr>
<tr>
<td></td>
<td>Off-net resale†</td>
<td>7</td>
<td>22</td>
<td>42</td>
<td>90.9</td>
</tr>
<tr>
<td></td>
<td>Off-net NBN†</td>
<td>54</td>
<td>113</td>
<td>228</td>
<td>101.8</td>
</tr>
<tr>
<td></td>
<td>Dial-up</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td><strong>Total fixed internet subscribers†</strong></td>
<td><strong>1,049</strong></td>
<td><strong>1,071</strong></td>
<td><strong>1,150</strong></td>
<td><strong>7.4</strong></td>
</tr>
<tr>
<td>iiNet (TPG Telecom)</td>
<td>On-net ADSL</td>
<td>587</td>
<td>539</td>
<td>453</td>
<td>−16.0</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>62</td>
<td>75</td>
<td>79</td>
<td>5.3</td>
</tr>
<tr>
<td></td>
<td>Off-net ADSL</td>
<td>258</td>
<td>212</td>
<td>148</td>
<td>−30.2</td>
</tr>
<tr>
<td></td>
<td>NBN</td>
<td>82</td>
<td>157</td>
<td>299</td>
<td>90.4</td>
</tr>
<tr>
<td></td>
<td><strong>Total fixed internet subscribers</strong></td>
<td><strong>989</strong></td>
<td><strong>983</strong></td>
<td><strong>979</strong></td>
<td><strong>−0.4</strong></td>
</tr>
<tr>
<td>TPG Telecom (excluding iiNet)</td>
<td>On-net ADSL bundle</td>
<td>542</td>
<td>582</td>
<td>520</td>
<td>−10.7</td>
</tr>
<tr>
<td></td>
<td>On-net ADSL</td>
<td>173</td>
<td>141</td>
<td>110</td>
<td>−22.0</td>
</tr>
<tr>
<td></td>
<td>FTTB</td>
<td>n/a</td>
<td>n/a</td>
<td>37</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Off-net ADSL</td>
<td>62</td>
<td>43</td>
<td>28</td>
<td>−34.9</td>
</tr>
<tr>
<td></td>
<td>NBN</td>
<td>44</td>
<td>119</td>
<td>262</td>
<td>120.2</td>
</tr>
<tr>
<td></td>
<td><strong>Total broadband subscribers</strong></td>
<td><strong>821</strong></td>
<td><strong>885</strong></td>
<td><strong>957</strong></td>
<td><strong>8.1</strong></td>
</tr>
<tr>
<td>Vocus Communications</td>
<td>Bundled†</td>
<td>365</td>
<td>409</td>
<td>324</td>
<td>−20.8</td>
</tr>
<tr>
<td></td>
<td>DSL</td>
<td>74</td>
<td>51</td>
<td>45</td>
<td>−11.8</td>
</tr>
<tr>
<td></td>
<td>NBN</td>
<td>26</td>
<td>68</td>
<td>178</td>
<td>161.8</td>
</tr>
<tr>
<td></td>
<td><strong>Total broadband subscribers</strong></td>
<td><strong>465</strong></td>
<td><strong>528</strong></td>
<td><strong>547</strong></td>
<td><strong>3.6</strong></td>
</tr>
</tbody>
</table>

*Optus on-net includes HFC, ULL and business-grade broadband customers.

†Revised from last year.

Note: Includes resale figures. Terminology used is consistent with that used in company annual reports. ‘On-net’ refers to services provided by the ISP over its own network. Off-net and off-net resale refer to services provided by an ISP over another ISP’s network. The number of subscribers is measured using the number of subscriber lines rather than number of users. Subscribers may have multiple accounts with more than one ISP. Numbers presented in the table may also include SIO of subsidiaries. Numbers may not add up due to rounding.

Source: Company annual reports and press releases.
Number of internet subscribers
There were 40.08 million internet subscribers in Australia at June 2017, an increase of 5.2 per cent since June 2016 (Table 1.3). The increase reflects continued growth in NBN-related services and mobile-internet services.

Table 1.3 Internet subscribers by technology type (millions)

<table>
<thead>
<tr>
<th></th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
<th>2016–17 change (%)†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total fixed internet subscribers</strong></td>
<td>6.21</td>
<td>6.53</td>
<td>6.76</td>
<td>7.26</td>
<td>7.64</td>
<td>5.3</td>
</tr>
<tr>
<td>ADSL</td>
<td>4.79</td>
<td>5.07</td>
<td>5.11</td>
<td>5.03</td>
<td>4.23</td>
<td>−15.9</td>
</tr>
<tr>
<td>Cable</td>
<td>0.93</td>
<td>0.95</td>
<td>1.00</td>
<td>1.03</td>
<td>1.01</td>
<td>−1.8</td>
</tr>
<tr>
<td>Dial-up*</td>
<td>0.23</td>
<td>0.18</td>
<td>0.10</td>
<td>0.09</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Satellite</td>
<td>0.09</td>
<td>0.08</td>
<td>0.07</td>
<td>0.06</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Fixed wireless**</td>
<td>0.05</td>
<td>0.05</td>
<td>n/a</td>
<td>0.08</td>
<td>0.14</td>
<td>66.3</td>
</tr>
<tr>
<td>Fibre</td>
<td>0.12</td>
<td>0.20</td>
<td>0.42</td>
<td>0.96</td>
<td>2.14</td>
<td>123.3</td>
</tr>
<tr>
<td>Other</td>
<td>0.003</td>
<td>0.002</td>
<td>n/a</td>
<td>0.001</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Total mobile internet subscribers</strong></td>
<td>25.80</td>
<td>26.52</td>
<td>29.66</td>
<td>30.86</td>
<td>32.44</td>
<td>5.1</td>
</tr>
<tr>
<td>Mobile handset#</td>
<td>19.65</td>
<td>20.57</td>
<td>23.65</td>
<td>24.82</td>
<td>26.33</td>
<td>6.1</td>
</tr>
<tr>
<td>Mobile wireless (dongle, data card, USB modem services)</td>
<td>6.15</td>
<td>5.95</td>
<td>6.00</td>
<td>6.04</td>
<td>6.11</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Total internet subscribers‡</strong></td>
<td>32.00</td>
<td>33.05</td>
<td>36.41</td>
<td>38.12</td>
<td>40.08</td>
<td>5.2</td>
</tr>
</tbody>
</table>

n/a=data not available but included in the totals where applicable.

*As of December 2016, dial-up is no longer an applicable response category for type of access connection—Australian Bureau of Statistics (ABS).

**Fixed wireless: for example, WiMAX uses an air interface to connect an internet service. An antenna installed at the customer’s premises receives signals from the service provider’s base station.

#ABS has revised the 2015 and 2016 figures for mobile handset subscribers and they are different from those previously published.

†Percentage changes are calculated on non-rounded data.

‡Including mobile phone handset, mobile wireless broadband, fixed-broadband, satellite, fixed-wireless, other broadband and dial-up subscribers.

Note: ABS subscriber statistics measure the number of ‘subscriber lines’ rather than the number of ‘users’. Counts of subscribers are not the same as counts of people/organisations with internet access as some subscribers may have accounts with more than one ISP or multiple accounts with a single ISP. Relates to ISPs with more than 1,000 subscribers.

Source: ABS, 8153.0 Internet activity, Australia, June 2017.
The latest data from the ABS shows that mobile handset subscribers increased six per cent in the 12 months to June 2017 to reach 26.33 million subscribers. Mobile wireless internet subscribers increased by one per cent to reach 6.11 million subscribers (Figure 1.6).

**Figure 1.6 Mobile-internet subscribers in Australia (millions)**

<table>
<thead>
<tr>
<th></th>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handset</td>
<td>19.65</td>
<td>20.57</td>
<td>23.65</td>
<td>24.62</td>
<td>26.33</td>
</tr>
<tr>
<td>Wireless</td>
<td>6.15</td>
<td>5.85</td>
<td>6.00</td>
<td>6.04</td>
<td>8.11</td>
</tr>
</tbody>
</table>

*Base: Number of subscribers.*

*Note: The ABS has revised mobile handset internet subscriber figures for June 2015 and 2016 and they are different to those previously published.*

*Source: ABS, 8153.0 Internet activity, Australia, June 2017.*

**Investments in voice and data infrastructure**

**Submarine cables**

Submarine cables carry the bulk of Australia’s international voice and data traffic, and contribute significantly to the Australian economy. Industry analysts forecast bandwidth demand to continue to double annually for the foreseeable future, consistent with growth levels seen in recent years. Much of this demand has been driven by the proliferation of data centres and cloud service providers, increasing the need for international infrastructure.35

At June 2017, there were 10 international submarine cables connecting Australia to the rest of the world across three protection zones—two located off the Sydney coast and one located off the Perth coast. There were also two international cables installed off the north-west coast to support oil and gas operations. During 2016–17, the ACMA granted one non-protection zone permit for the installation of an additional submarine cable, in connection with Telstra’s North West Optical Fibre Network, which serves oil and gas extraction and processing operations in Australian waters between Onslow and Devil Creek.

The ACMA approved six separate requests to extend the duration of permits for proposed international cables to be installed between Perth and Singapore. This included:

- APX-West, renamed Indigo West. In April 2017, AARNet, Google, Indosat Ooredoo, Singtel, SubPartners and Telstra announced they had entered into an agreement with Alcatel Submarine Networks (ASN) to build an international subsea cable system (Indigo West) to connect Singapore, Indonesia and Australia.36
- Vocus Group announced in April 2017 it has finalised a contract and final specifications with ASN to build the Australia Singapore Cable system, which will connect Perth to Jakarta and Singapore.37
- A third proposal for an undersea cable in the region is in the development phase.38

Two other permit extensions were also approved for a proposal by another cable provider for installation of an international cable in the Southern Sydney Protection Zone.

A request for a new protection zone off the Sunshine Coast of Queensland remained under consideration at the end of 2016–17.
National Broadband Network

The NBN is an Australian Government initiative intended to upgrade the existing fixed-line phone and internet network to deliver high-speed and reliable phone and internet services across Australia via a multi-technology mix including:

> fibre to the premises (FTTP)
> fibre to the building (FTTB)
> fibre to the node (FTTN)
> fibre to the distribution point (FTTdp)—also known as fibre to the curb (FTTC)
> hybrid fibre coaxial (HFC)
> fixed wireless
> satellite.

In 2016–17, the NBN, operated by NBN Co Limited (NBN Co), continued to expand, with an increasing number of premises activated and enabled for services over the NBN. The installation of the infrastructure to provide the NBN to premises is being rolled out area by area—at July 2017, NBN Co reported the rollout had passed the halfway mark, with more than 5.7 million Australian homes and businesses able to connect their phone and internet services to the NBN. At the end of October 2017, this had increased to 6.61 million. NBN Co generally declares an area to be ‘ready for service’ once at least 90 per cent of premises in its footprint in that area are passed by its fibre network.

Copper network switch-off

NBN Co is replacing and upgrading the existing fixed-line telephone and internet network infrastructure. From 23 May 2014, it began replacing most existing fixed-line telephone links, ADSL internet and Telstra cable internet services (HFC) in the first 15 Fibre Serving Area Modules (FSAMs).

At the time of publication, there was an 18-month window from the ready-for-service date until an area has its copper network services disconnected. All premises within the NBN fibre footprint in each area are required to switch over to the NBN before the designated switch-off date to continue receiving fixed-line telephone and internet services.

The coverage of the NBN, including areas that are active or under construction, is published on NBN Co’s website.

New NBN services

In September 2016, NBN Co announced it would be adding a new access technology—fibre to the distribution point (FTTdp), also known as fibre to the curb (FTTC)—to its multi-technology mix. The technology uses a distribution point unit for the fibre-to-copper connection to enable the fibre to run to the front of customers’ premises and is expected to deliver faster broadband internet speeds, estimated at one Gigabit, or 1000 Megabits, per second. A trial of the construction and installation of the FTTdp/FTTC network began in June 2017 in Coburg, Melbourne, with consumer products for the new technology expected to become available in mid-2018.

Two of NBN Co’s broadband satellites, Sky Muster 1 and Sky Muster 2, were launched in October 2015 and October 2016, respectively. In June 2017, NBN Co announced that from October 2017, data usage limits would be relaxed on its satellite service, raising the allowance of monthly quotas up to 300 GB. In addition to providing NBN internet services to communities in locations where it would not otherwise be feasible, the satellites are also used to provide Qantas customers with in-flight Wi-Fi.
**NBN premises serviceable and activated**

Table 1.4 provides an overview of premises serviceable or covered by the NBN and the number of premises with NBN services activated. For premises serviceable or covered by the NBN at June 2017, NBN Co reported that:

- 5.445 million premises were serviceable, an increase of 92 per cent since June 2016 (2.836 million)
- 2.443 million premises had activated an NBN service, an increase of 122 per cent since June 2016.

NBN Co expects to have built the infrastructure required to connect all Australian homes and businesses to the NBN by 2020, with plans to connect eight million Australians.50

**Table 1.4  NBN services—cumulative premises serviceable and premises activated (millions)**

<table>
<thead>
<tr>
<th></th>
<th>30 Jun 15</th>
<th>30 Jun 16</th>
<th>30 Jun 2017</th>
<th>2016–17 change (%)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Premises serviceable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed-line footprint*</td>
<td>0.836</td>
<td>2.005</td>
<td>4.510</td>
<td>125</td>
</tr>
<tr>
<td>Fixed wireless</td>
<td>0.268</td>
<td>0.421</td>
<td>0.518</td>
<td>23</td>
</tr>
<tr>
<td>Satellite</td>
<td>0.048</td>
<td>0.410</td>
<td>0.418</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1.153</td>
<td>2.836</td>
<td>5.445</td>
<td>92</td>
</tr>
<tr>
<td><strong>Premises activated</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed-line footprint*</td>
<td>0.400</td>
<td>0.942</td>
<td>2.183</td>
<td>132</td>
</tr>
<tr>
<td>Fixed wireless</td>
<td>0.047</td>
<td>0.118</td>
<td>0.185</td>
<td>57</td>
</tr>
<tr>
<td>Satellite</td>
<td>0.038</td>
<td>0.039</td>
<td>0.075</td>
<td>93</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0.486</td>
<td>1.099</td>
<td>2.443</td>
<td>122</td>
</tr>
</tbody>
</table>

*Fixed-line footprint refers to all non-fixed wireless or satellite connections.

¹Percentage change has been calculated on whole numbers.

Note 1: ‘Premises serviceable’ refers to brownfield (existing) premises in a rollout region that is ready for service, greenfield (new development) lots/premises passed (by the NBN) and/or premises covered by fixed wireless and satellite. It does not include Service Class Zero (SC0). SC0 are premises in the NBN fibre network footprint that cannot currently be provided with an NBN fibre service.

Note 2: ‘Premises activated’ refers to premises that have an active service installed. Premises are activated after receiving and provisioning a service order from a retail service provider to install a new service.


**Publicly accessible wireless internet**

During 2016–17, an increasing number of publicly available wireless internet access networks, such as Wi-Fi hotspots, became available in Australia. Wi-Fi hotspots are accessible, often for free, in a wide array of public places including bars, restaurants, parks, libraries and museums, with larger networks provided in some shopping centres and cities including Adelaide51, Canberra52, Melbourne53, Brisbane54 and Perth.55

A new free Wi-Fi offering, VicFreeWiFi56, was launched in September 2016 by the Victorian Government, offering free access across central Melbourne, Ballarat and Bendigo, with downloads capped at 250 MB per device per day.57

On 20 June 2017, Telstra launched its millionth Wi-Fi-enabled hotspot on its Telstra Air network in conjunction with the second World Wi-Fi Day58, offering free access to all consumers for the day.59

Free access to the Telstra Air network was available for Cairns locals and visitors through a partnership between Cairns Regional Council and Telstra. In June 2017, Telstra announced a further 100 Telstra Air Wi-Fi hotspots across Cairns would be switched on in the coming months.60
Transit authorities are offering free Wi-Fi connectivity on many forms of public transport across Australia, including Sydney’s buses and ferries and Adelaide’s trams (with plans to extend the service to buses and trains in December 2017). In January 2017, a trial of free Wi-Fi on 50 Sydney buses began, with plans to fit out up to 1,000 buses by the end of 2017 if the trial is successful. Wi-Fi trials undertaken on other public transport included five ACTION buses in Canberra as part of the ACT Government’s Digital Canberra program.

Wi-Fi services continued to be deployed in shopping centres and public areas around the country in the reporting period. In August 2016, Optus secured a contract to roll out high-speed public Wi-Fi services in 81 shopping centres across the country owned by Vicinity Centres.

Qantas undertook inflight Wi-Fi testing in early 2017, with ‘fast, free inflight Wi-Fi’ on its internet-capable Boeing 737-800 for Australian domestic flights. With testing expected to be completed in September 2017, the Wi-Fi roll-out across 80 aircraft in Qantas’s domestic fleet of Airbus 330s and Boeing 737s is scheduled for the end of 2018. Virgin Australia began a three-month test of inflight Wi-Fi on one of its Boeing 737-800 aircrafts on 20 April 2017. The service is available for free to guests flying on the Wi-Fi enabled aircraft during the testing period.

**Cloud computing**

During 2016–17, the communications market continued to embrace cloud-based solutions, enabling improved productivity, efficiencies and cost reductions.

Telstra’s revenue from cloud services rose by 50.2 per cent from $249 million at June 2016 to $374 million at June 2017. This growth was a result of increased consulting and professional services, growth in hardware sales, and acquisitions including Readify and Kloud. During the reporting period, Telstra also invested in Californian US cloud-based software-defined wide-area networking start-up VeloCloud Networks.

On 26 July 2016, Telstra added to its cloud portfolio by launching the Telstra Cloud Management Platform to help businesses manage private and public cloud platforms. It was made available to customers from August 2016.

Optus continued to expand its cloud offerings in 2016–17, launching a series of cloud, collaboration and infrastructure technologies with Cisco, in addition to one of Australia’s first All-Flash storage platforms available on-premise and in the cloud. In June 2017, Optus announced a partnership with Canberra Data Centres (CDC) to provide secure private cloud service to more than 40 government agencies.

According to the ABS, use of paid cloud computing services by Australian businesses has increased from 19 per cent in 2013–14 to 31 per cent in 2015–16. The most common such services are software (85 per cent) and storage capacity (60 per cent). Larger businesses are adopting paid cloud services in greater numbers—take-up of paid cloud services is at 60 per cent for businesses with 200+ employees, compared with 25 per cent of businesses with 0–4 employees.

This growth was also seen in the public sector, with Australian public cloud spending estimated to have reached $5.66 billion in 2016. Industry analysts project public cloud services to grow by 18 per cent globally in 2017 to reach US$246.8 billion. Most of this growth is expected to come from cloud system infrastructure services (or infrastructure as a service—IaaS). The Australian IaaS market is forecast to be worth $1.049 billion by 2020.
Domain name registrations

Australian businesses and organisations continued to show increasing participation online, with the number of '.au' domain names growing by two per cent to 3.11 million.82

The registration of '.au' domain names is administered by the not-for-profit organisation .au Domain Administration Ltd (auDA). The '.com.au' domain, designed for commercial entities, including companies and businesses, accounts for 88 per cent of the second level-domains (2LD), and remained unchanged from 2016.83

At June 2017, 4,726 '.gov.au' domain names were registered (including all tiers of government), up from 4,704 at June 2016.84

In October 2016, auDA closed down over 1,000 websites, after overseas criminals were discovered establishing a network of fraudulent websites. It is the largest known move by auDA to counter fraud of this kind.85

In August 2017, auDA initiated a formal Request for Tender (RFT) process in an effort to seek a new registry operator, noting the national security implications of running the Australian domain space. The registry service has been run by AusRegistry since 2002.86 87

1.5. New developments in communications

Until very recently, IoT was a novel concept still in its infancy. This is quickly changing, with the IoT making its mark in Australia and across the globe. Activity in 2016–17 included significant announcements, and new technological and service developments highlighting rapid proliferation of IoT-related technologies.

Internet of Things

The IoT is a network of devices and objects that combine internet connectivity, data analytics and automation to achieve improved efficiency and functionality. Telstra describes the IoT as ‘an evolution of Machine to Machine (M2M) technology, where connectivity merged with cloud computing and big data’.88 It is widely regarded as the next stage in digital communications convergence, presenting unprecedented opportunities for businesses, consumers and the community at large.

Adoption of the IoT in Australia is growing rapidly, with the technology being embraced across industries and locations, from smart bins in Bondi89 to monitoring water tanks on rural properties.90

Globally, the number of IoT platform vendors increased to 450 this year, up 25 per cent on last year. Most IoT platforms focused on industrial and manufacturing solutions (32 per cent), followed by Smart City (21 per cent) and Smart Home segments (21 per cent).91

Vodafone IoT Barometer 2016, a global study of business use of IoT, found that 28 per cent of organisations already use the IoT, and a further 35 per cent are less than a year away from launching their own IoT projects.92 It is forecast that 29 billion devices will be connected worldwide by 2022, of which 18 billion will relate to the IoT.93

Smart cities and communities

The Australian Government is committed to fostering smart city development and has launched the Smart Cities Plan, led by the Department of Prime Minister and Cabinet, to support productive and accessible cities that attract talent, encourage innovation and create growth. The plan is centered on three pillars of smart investment, smart policy and smart technology, and will apply to both metropolitan and regional cities.94

The City of Wollongong is investing in ‘smart city’ technology with the launch of a city-wide low-power, wide area network (LoRaWAN), provided by the University of Wollongong, together with Meshed Pty Ltd and The Things Network.95 This technology is highly suited to the IoT, given that it is low battery,
long range and low bandwidth, allowing for devices to connect to the internet without 3G or Wi-Fi. At February 2017, LoRaWAN technology was deployed in 11 of the top 20 cities in Australia. Industry organisations are also seeking to develop a framework for development of smart communities. For example, the Smart Cities Council Australia and New Zealand (SCCANZ) announced in July 2017 it was working on a code for smart communities, to serve as a reference guide for local government and the urban development industry. A draft of the code is to be launched in October 2017.

The Australian Smart Communities Association (ASCA) has also been established as the peak industry association in Australia for digital, sharing and interconnected communities. The association aims to facilitate, promote and advise on how communities can build livable and sustainable smart cities.

**Smart homes**
Smart homes offer varying degrees of automated assistance, comprising internet-connected devices that can be monitored and controlled from a remote location. Examples of smart-home products available on the market include smart switches, air purifiers, smoke detectors, smart security systems, smart TVs, fridges, dishwashers and voice-activated smart assistants.

The smart-home market is still emerging. Demand is expected to be driven by awareness and perceived benefits of smart-home technology, with trust and perceived security also important factors. The 2017 ACMA consumer survey found the smart TV was the most commonly reported smart device in the home; at June 2017, more than one-third of Australian adults (36 per cent) had a smart TV connected to the internet at home.

The next most common smart-home product category included security cameras and systems—four per cent of Australians had some type of smart security in the home. Other smart-home products, such as smart dishwashers, fridges, lighting, and heating and cooling systems, were used by no more than two per cent of Australians.

In July 2017, Telstra announced a partnership with Google to offer its customers smart-home technology using Google Home as a package with Telstra’s broadband services. Google Home is a voice-activated speaker that allows the users to manipulate lights and appliances, and request simple web-based information, and it doubles as an audio speaker. The launch of this service followed the introduction of Telstra’s smart-home starter kits in November 2016, which focused on security and home energy management.

**Smart cars**
On-demand GPS data and Wi-Fi connectivity are services already available to drivers. With the introduction of 5G next-generation network technology, these services are expected to advance to predictive vehicle maintenance, capturing real-time sensor data, and autonomous vehicle control, including cooperative collision avoidance.

In July 2017, Telstra conducted the first Australian trial of Vehicle-to-Pedestrian technology in partnership with Cohda Wireless and the South Australian Government. It aims to reduce the number of accidents by alerting road users to imminent danger using real-time communication over the mobile network.

**Mobile operators and IoT**
In February 2017, Telstra announced plans to build a national IoT network in partnership with Ericsson, with trials being held in Melbourne and Tasmania. Switched on in August 2017, Telstra’s IoT network had more than 2.1 million IoT devices connected within a month, amid claims the telco’s network was possibly the largest in the world. CAT-M1 technology is providing the platform for further expected growth in IoT.

In May 2017, Telstra launched the publicly accessible Open IoT Lab in Melbourne, where product developers can create, test and prototype IoT solutions under controlled radio conditions. The lab aims to foster a technology community focused on quality IoT product design, best-practice research and ideas-sharing, and will include engineers from startups through to global enterprises.
Vodafone completed a successful trial of Narrowband Internet of things (NB-IoT) technology with utilities and technology partners, and launched commercial services in Melbourne and North Sydney in October 2017. There are plans to expand the rollout into targeted regions across the country by 2018. NB-IoT is a new technology standard that optimises power consumption, and delivers increased connectivity and penetration that allows connection of devices in areas where it had not been possible previously (for example, car parks).

Optus completed its live NB-IoT technology trials in Melbourne and Sydney in February 2017. Teaming up with Cisco Jasper, Optus had yet to announce the official launch date of its NB-IoT network at the time of publication.

It is not just mobile operators that are active in the IoT space. Australia’s Clean Energy Finance Corporation (CEFC) has become a major investor in Sigfox operator Thinxtra, to use Sigfox technology to drastically improve energy efficiency in Australia. Sigfox is a leading IoT connectivity service that operates on Low Power Wide Area (LPWA) network, enabling low energy consumption and lower cost. Thinxtra, a Sydney-based start-up company established in 2015, is currently deploying Sigfox’s LPWA network technology in Australia, New Zealand and Hong Kong.

**Privacy and security in the world of IoT**

There are some unique privacy and security implications emerging around IoT, associated with issues such as the scale and nature of IoT deployments, and their related trust models and network architectures.

In February 2017, the Internet of Things Alliance Australia (IoTAA), the Australian peak body for IoT, launched the *Internet of Things Security Guideline* to counter threats to privacy and increase network resilience. The guideline aims to provide comprehensive, top-level guidance to promote a ‘security by design’ approach to IoT and assist industry with practical application of security and privacy for IoT device use. The IoTAA intends to publish a second version of the guideline in the future.

**5G mobile network developments**

5G is the next-generation mobile technology that aims to deliver much higher data limits and dramatically faster data speeds, enabling an enhanced media experience on mobile devices. Having ultra-low latency—a shorter time interval between sending and receiving data—5G aims to provide more network capacity, which is needed to support immense increases in connections for the successful deployment of the IoT.

On 20 July 2017, the ACMA announced that formal standards for the first phase of 5G are expected to be in place by mid to late 2018.

In 2016–17, Australia’s mobile network operators continued to work towards the launch of 5G, laying foundations for the next-generation network, and continued to develop and enhance their existing 4G networks on the upgrade pathway to 5G:

- In 2016, Telstra conducted 5G radio testing in Melbourne, delivering peak download speeds of greater than 20 Gbps. Early in 2017, Telstra introduced the Netgear Nighthawk M1, Australia’s fastest mobile hotspot, developed in partnership with Netgear, Qualcomm and Ericsson. In 2018, Telstra plans to conduct its first live 5G trial on the Gold Coast.
- Optus continued to work towards 5G by switching on 4.5G network services across the suburb of Macquarie Park in New South Wales in March 2017, achieving speeds of up to 1.03 Gbps during testing. The launch followed a number of successful trials of the 4.5G technology in 2016 in partnership with Huawei. Optus is also collaborating on 5G with Nokia, after signing a memorandum of understanding in 2016. In February 2017, Optus announced plans to roll out 4.5G in selected capital cities over the following 12 months, and it expects to reach over 70 per cent of the Optus network in Sydney, Melbourne, Brisbane, Perth and Adelaide.
- Vodafone continued preparations for the future launch of 5G, and conducted two successful 5G demonstrations, including Australia’s first live public trial with two of its technology partners. The company also conducted internal 5G explorations, testing and trials.
A global survey by Gartner noted that 75 per cent of end-user organisations would be willing to pay more for 5G mobile capabilities than 4G, with those in the telecommunications industry more likely to be prepared to pay more than those in other industries.

**Other emerging mobile technologies**

Mobile carriers continued to invest in new-age 4G technologies, including voice over LTE (VoLTE), video over LTE (ViLTE), voice over Wi-Fi (VoWiFi) and LTE-broadcast (LTE-B) technology.

**VoLTE and ViLTE**

> VoLTE was introduced by mobile operators in 2015–16, allowing consumers with compatible mobile devices to make voice calls over 4G mobile networks, using the internet. Previously limited to only carrying data, VoLTE offers higher call quality and quicker connection.

> Telstra has further capitalised on this technology by launching a ViLTE service on their mobile network in October 2016. It allows those with the Samsung Galaxy S7 to make video calls to other Telstra ViLTE customers using the operator’s 4G and 4GX coverage. The technology offers better video quality, and Telstra has announced plans to further extend the capability of ViLTE to videoconferencing calls in the future.

**VoWiFi**

> VoWiFi, also known as Wi-Fi calling, provides high-quality, clearer voice calls. It is a native service built into specific handsets, and allows customers to switch away from the 4G LTE mobile network automatically.

> Telstra has progressively introduced Wi-Fi calling to its mobile customers with a compatible device, which includes newer model Apple iPhones and Samsung Galaxy phones. This service is available to postpaid Telstra customers with a fixed home broadband connection, while gradually being made available to prepaid customers.

> Optus launched its new VoWiFi service in January 2017, allowing customers with Samsung Galaxy S7 and S7 Edge to make calls and send messages seamlessly when there is no mobile coverage. This is in addition to the WiFi Talk service launched by Optus in August 2015 through Android and iPhone apps.

> Vodafone plans to introduce Wi-Fi calling technology in late 2017, enabling its customers to make voice calls when connected to a Wi-Fi network.

**LTE-B**

> LTE-B technology enables wireless signals to travel more efficiently, delivering data streams to multiple mobile users, as opposed to sending an individual stream to each user. This allows for increased network capacity and meets the ever-increasing demand for data and video in situations where network capacity may be limited, such as major sporting events and concerts.

> In February 2017, Telstra announced it will switch on LTE-B across Australia in 2018. It will also launch a 24/7 live-streaming TV channel using LTE-B, with the stream initially only available on Samsung’s high-end devices.

1.6. Infrastructure regulation

When installing large telecommunications facilities such as mobile phone towers, carriers generally need to obtain local council planning permission, and comply with relevant state and territory planning laws. Schedule 3 to the Telecommunications Act allows licensed carriers to install a limited range of facilities referred to as ‘low-impact facilities’ without seeking state, territory or local government approval. Low-impact facilities are defined in the Telecommunications (Low-impact Facilities) Determination 1997.

While low-impact facilities are exempt from local government planning laws, carriers must still comply with Schedule 3 and the Telecommunications Code of Practice 1997, which includes notifying landowners and occupiers of their activities, ensuring minimal detriment and damage is caused by the activity, and restoring the land to a condition similar to its condition before the activity began.
Mobile phone base stations
Optus, Telstra and Vodafone and, more recently, TPG Telecom\textsuperscript{131} are the four carriers that operate mobile phone networks in Australia. When installing mobile phone base stations, these carriers are required to comply with the C564:2011 \textit{Mobile Phone Base Station Deployment Code}. The code supplements the requirements already imposed on carriers under the existing legislative scheme by requiring carriers to consult with local communities and adopt a precautionary approach in planning, installing and operating mobile phone base stations.

The mobile communications industry has developed a national database of mobile phone base stations—the National Site Archive—to improve access to information about the deployment of mobile phone infrastructure across Australia. The archive contains information about most mobile phone towers deployed by carriers and includes electromagnetic energy reports about communications facilities. This information is available at \url{www.rfnsa.com.au}.

Objections and enquiries to the ACMA
Complaints about carriers’ compliance with the industry code are directed to the carriers in the first instance. The \textit{Mobile phone base station code} specifies mandatory processes for complaints-handling by carriers. If a complainant is dissatisfied with a carrier’s response to their complaint, they are able to lodge an objection to the ACMA. The ACMA will assess the objection against the code and decide whether to formally investigate the matter under Part 26 of the \textit{Telecommunications Act}. If the ACMA decides to investigate the matter, and a breach of the code is found, compliance or enforcement action may be taken against the carrier.

In 2016–17, the ACMA received 12 objections and 35 enquiries about the \textit{Mobile phone base station code} (Figure 1.7).\textsuperscript{132} Carriers undertook a total of 3,920 consultations during the reporting period.

The ACMA received 63 enquiries and three complaints from local councils, carriers, solicitors, landowners and members of the public about matters covered by Schedule 3 to the \textit{Telecommunications Act} and the \textit{Telecommunications Code of Practice 1997}.

The ACMA also closed one Part 26 investigation into an alleged contravention of Schedule 3 to the \textit{Telecommunications Act}, with no breach being found.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure1.png}
\caption{Number of industry code enquiries and objections received by the ACMA}
\end{figure}

\textit{Source: ACMA.}
Complaints to the TIO about facility installations

The TIO can consider objections to land access, and the installation and maintenance of low-impact facilities. The majority of land access complaints to the TIO relate to damage to property by carriers. During the reporting period, the TIO received a total of 624 new complaints (not including enquiries)—a 15 per cent increase from the 2015–16 reporting period (Figure 1.8)—and completed one investigation.

Of the new complaints received by the TIO during 2016–17:
> 107 were from owners/occupiers of land about carriers billing them for damage to cables allegedly caused by the owner/occupier
> 366 were from owners/occupiers of land about alleged damage to property by the provider
> 65 were about failure to give notice to the owner/occupier of land about the installation or maintenance of a low-impact facility
> 25 related to the standard of service from providers when installing subscriber connections
> 16 were formal objections to the low-impact facility activity by the land-owner/occupier
> 23 were premature objections
> 23 related to the standard of service from providers when installing subscriber connections.

The TIO made directions to carriers in four cases. Three cases were withdrawn and seven have yet to be finalised. In two cases, the land access activity could not proceed because of a non-compliant notice, or failure to comply with the requirements under the Telecommunications Act or the Telecommunications Code of Practice 1997, or because the TIO determined the objection was about a facility that was not low-impact.

Figure 1.8 Number of facility installation complaints/land access complaints received by the TIO

![Figure 1.8](image)

Source: TIO.

Interference

Under the Radiocommunications Act 1992, the ACMA investigates complaints about interference to licensed radiocommunications. The ACMA classifies interference as either domestic systems or radiocommunications interference according to the service being affected.

Domestic systems interference

Domestic systems interference (DSI) refers to interference to the reception of FTA terrestrial radio or television broadcasting, usually in domestic premises. Household equipment is the major contributing source of DSI.

During 2016–17, there were 340 DSI complaints made to the ACMA, comparable with complaint levels in 2015–16 (Figure 1.9). The majority of DSI complaints (86 per cent) were about television interference, with household electrical items and lighting devices, including LED downlights, the most significant contributors to DSI interference.

Eleven per cent of DSI complaints in 2016–17 resulted in compliance action by the ACMA.
Radiocommunications interference
Radiocommunications interference (RCI) is interference affecting a radiocommunications receiver used for non-broadcasting purposes, such as public safety, mobile telephone service, commercial and recreational services.

During 2016–17, mobile telephone services continued to be more affected by interference than any other type of service. Compared to 2015–16, complaints of interference to 3G services reduced moderately, while complaints about interference to 4G services increased.

Overall, there were fewer radiocommunications interference complaints, decreasing from 621 in 2015–16 to 486 in 2016–17. (Figure 1.9). Complaints from mobile carriers accounted for 77 per cent of RCI complaints made to the ACMA. There were eight complaints about interference to public safety radiocommunications services in 2016–17. While radiocommunications transmitters continue to be the most significant source of interference, mobile phone repeaters and TV masthead amplifiers were also identified as significant sources. Fifty per cent of RCI complaints resulted in compliance actions such as the issue of advice warning notices and directions to licensees. These compliance actions were generally effective and required no further action.134

Figure 1.9 Number of DSI and RCI complaints and compliance actions

Base: Number of complaints and compliance actions.
Source: Domestic system interference and radiocommunications interference complaints to the ACMA.
### 1.7. Carrier licensing and CSPs

At 30 June 2017, there were 276 licensed carriers in Australia (a rise of 10.4 per cent), with the ACMA granting 33 carrier licences in 2016–17 (Figure 1.10). In the same period, four carriers surrendered their licences, with three carrier licence-holders being deregistered by the Australian Securities and Investments Commission (ASIC).

**Figure 1.10  Number of carrier licences**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total in operation</th>
<th>Total granted</th>
<th>Total surrendered/cancelled</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016–17</td>
<td></td>
<td>33</td>
<td>7</td>
</tr>
<tr>
<td>2015–16</td>
<td></td>
<td>31</td>
<td>10</td>
</tr>
<tr>
<td>2014–15</td>
<td></td>
<td>27</td>
<td>4</td>
</tr>
<tr>
<td>2013–14</td>
<td></td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>2012–13</td>
<td></td>
<td>21</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: ACMA.

At 30 June 2017, there were 90 nominated carrier declarations (NCDs) in force. In 2016–17, the ACMA granted eight NCDs and revoked two, and also issued six trial certificates, compared with four in 2015–16 (Figure 1.11).
Figure 1.11 Number of nominated carrier declarations

<table>
<thead>
<tr>
<th></th>
<th>Total in operation</th>
<th>Total granted</th>
<th>Total revoked</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016–17</td>
<td>90</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>2015–16</td>
<td>84</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>2014–15</td>
<td>79</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>2013–14</td>
<td>74</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>2012–13</td>
<td>71</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: ACMA.

At June 2017, the total number of CSPs identified as members of the TIO scheme fell to 1,518 (a 5.1 per cent decrease). While CSPs do not need to be licensed or registered, TIO scheme membership is mandatory for all eligible CSPs that provide or resell telecommunications services to consumers and small businesses.

1.8. Allocation of numbers

Smartnumbers
The Numbering System sells the rights of use to smartnumbers (numbers starting with 13, 1300 and 1800 where the number may have a valuable pattern or spell a word). In 2016–17, the rights of use to 4,931 smartnumbers were sold, raising approximately $1.83 million in revenue. This quantity of numbers was two per cent down on 2015–16 when 5,051 smartnumbers were sold, raising approximately $1.75 million.

Geographic numbers
In 2016–17, CSPs were allocated 7,020,800 geographic numbers, compared to 3,083,200 in 2015–16 (Figure 1.12). CSPs also surrendered 1,996,400 geographic numbers and transferred 132,000 geographic numbers. No geographic numbers were surrendered or transferred in 2015–16.
Mobile numbers
During 2016–17, CSPs were allocated 1.34 million mobile numbers, 100,000 more than in 2015–16. At 30 June 2017, 70.9 per cent of available mobile numbers had been allocated.

Other numbers
During 2016–17, four interconnection and routing codes, seven mobile network codes and one international signalling point code were allocated to network operators.

1.9. Communications mergers and acquisitions
While there was a significant consolidation of the Australian telecommunications sector in 2015–16, in 2016–17 there were few large-scale mergers or acquisitions (Table 1.5).

Table 1.5 Key communications mergers and acquisitions

<table>
<thead>
<tr>
<th>Purchaser</th>
<th>Target</th>
<th>Date</th>
<th>Value</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telstra</td>
<td>Readify</td>
<td>July 2016</td>
<td>Undisclosed</td>
<td>Readify is a leading application and software developer, including big data and IoT solutions.</td>
</tr>
<tr>
<td>Amaysim</td>
<td>Australian Broadband Services</td>
<td>July 2016</td>
<td>$4 million</td>
<td>The acquisition will provide Amaysim with the means to launch a fixed-line broadband service.</td>
</tr>
<tr>
<td>Vodafone</td>
<td>Lebara Mobile</td>
<td>September 2016</td>
<td>Undisclosed</td>
<td>The acquisition of Lebara provides Vodafone with greater market share, including 130,000 new customers.</td>
</tr>
<tr>
<td>Telstra</td>
<td>Cognevo (NZ)</td>
<td>November 2016</td>
<td>Undisclosed</td>
<td>Cognevo provides security and threat analytics to detect anomalies and potential threats in the behaviour of users across the network. The acquisition will enhance Telstra’s ability to quickly identify and prevent cyber threats inside its network.</td>
</tr>
<tr>
<td>Telstra</td>
<td>Company85</td>
<td>June 2017</td>
<td>Undisclosed</td>
<td>Company85 is a UK-based technology consulting business specialising in cloud storage, security and network services.</td>
</tr>
</tbody>
</table>

Source: Company annual reports, press releases and media coverage.
1.10. Broadcasting services

Broadcasters by segment (radio/television/commercial)

The number of commercial broadcasting licences in operation for television and radio saw minimal changes from 2015–16. At June 2017, the number of active licences in Australia were (Figure 1.13):

- 343 commercial broadcasting (radio and television) licences—unchanged from last year
- 2,835 subscription television licences—unchanged from last year
- 506 community radio and television licences (including temporary licences)—down by one from last year.

Figure 1.13 Number of broadcasting licences in operation in Australia

Note: Commercial radio and television licence numbers for 2015–16 have been amended due to a reporting error.
Source: ACMA.

Commercial broadcasting services

Commercial broadcasting services comprise FTA radio and television services that are made available to the general public. These services are licensed to operate within specified geographic areas. Previous media and diversity rules that sought to limit concentration of broadcasting ownership and control were repealed in October 2017.\textsuperscript{137}

Ownership and control of commercial television services

During 2016–17, there were a number of ownership and control changes in the media. Some involved the transfer of licences to different media networks or groups, while others were a result of financial or company restructures.
The Seven, Nine and Ten networks operate commercial television broadcasting licences predominantly in metropolitan markets. Their programming is also made available in regional markets through affiliation agreements with the regional television licences controlled by Prime Media Group Limited, Southern Cross Media Group Limited (Southern Cross), WIN Corporation Pty Ltd (WIN) and Imparja Television Pty Ltd.138

Table 1.6 summarises ownership and control of these services in Australia.

Several key changes occurred during 2016–17, including:

- From 1 July 2016, changes to affiliation arrangements meant that WIN began providing Ten Network programming instead of Nine programming in several regional Australian licences areas, while Southern Cross began providing Nine Network programming instead of Ten programming.
- On 31 May 2017, the NRN commercial television broadcasting licence in Northern New South Wales was transferred from Southern Cross to WIN.
- On 14 June 2017, Ten Network Holdings Limited (TNH) and its subsidiary companies went into voluntary administration, meaning that the appointed administrators came into control of TNH and the commercial television broadcasting licenses held by the TNH subsidiary licensees.139

Table 1.6 Ownership and control of commercial television services in Australia

<table>
<thead>
<tr>
<th>Network</th>
<th>Licence type</th>
<th>Number</th>
<th>Ownership and control—licence areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seven Group Holdings Ltd</td>
<td>Metropolitan</td>
<td>5</td>
<td>Sydney, Melbourne, Brisbane, Adelaide and Perth</td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>1</td>
<td>Regional Queensland</td>
</tr>
<tr>
<td>Nine Entertainment Co. Holdings Ltd</td>
<td>Metropolitan</td>
<td>5</td>
<td>Sydney, Melbourne, Brisbane, Adelaide and Perth</td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>3</td>
<td>Darwin (one sole operation and one joint venture with Southern Cross Media Group Ltd) and Northern New South Wales</td>
</tr>
<tr>
<td>Ten Network Holdings Ltd*</td>
<td>Metropolitan</td>
<td>5</td>
<td>Sydney, Melbourne, Brisbane, Adelaide and Perth</td>
</tr>
<tr>
<td>WIN Corporation Pty Ltd</td>
<td>Regional</td>
<td>22</td>
<td>Across regional Australia, including joint ventures in:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; Mildura, Geraldton, Kalgoorlie, Western Zone, South West and Great Southern television licence areas with Prime Media Group Ltd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Also includes three licences in each of Griffith, Riverland and Mount Gambier South-East licence areas, and one licence in Northern New South Wales</td>
</tr>
<tr>
<td>Southern Cross Media Group Ltd</td>
<td>Regional</td>
<td>18</td>
<td>Across regional Australia, including joint ventures in:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; Tasmania with WIN Corporation Pty Ltd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; Mt Isa and Remote Central and Eastern Australia TV2 licence areas with Imparja Television Pty Ltd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Also includes three licences in each of the Broken Hill and Spencer Gulf licence areas</td>
</tr>
<tr>
<td>Prime Media Group Ltd</td>
<td>Regional</td>
<td>13</td>
<td>Across regional Australia, including joint ventures in:</td>
</tr>
</tbody>
</table>

*On 23 October 2017, the ASX announced the Deed of Company Arrangement was entered into by Ten Network Holdings Ltd (Ten) and CBS International Television Australia Pty Ltd (CBS), and provides for the transfer of the shares in Ten to CBS or its nominee.

Note: Does not include licences for services provided by satellite allocated under section 38C and other licences allocated under subsection 40(1) of the Broadcasting Services Act 1992. The number of licences does not add up to the total number of commercial television broadcasting licences (69) due to double-counting of joint ventures.

Source: ACMA, Register of Controlled Media Groups and the Media Control Database.
Ownership and control of commercial radio services

Table 1.7 shows the ownership and control of commercial radio services in 2016–17:

- Southern Cross, Australian Radio Network Pty Ltd, Nova Entertainment Pty Ltd and Macquarie Media Limited own the majority of capital city commercial radio broadcasting licences.
- Southern Cross, Broadcast Operations Pty Ltd (Super Radio Network) and Grant Broadcasters Pty Ltd remain the three largest networks of regional commercial radio broadcasting licences.
- Nine different networks each control more than six commercial radio broadcasting licences, which is unchanged from the previous year.
- These nine networks together control 228 licences out of a total of 262 commercial radio licences that are subject to the media diversity and control rules under Part 5 of the Broadcasting Services Act 1992 (BSA). This does not include commercial radio broadcasting licences allocated under subsection 40(1) of the BSA. The remaining 37 licences are held by 18 networks/owners, each with five or fewer licences.

A key change in 2016–17 was the acquisition by EON 2CH Pty Ltd of Radio 2CH Pty Ltd (2CH) (in the Sydney RA1 licence area) from Macquarie Media Limited (MML) (formerly Macquarie Radio Network Limited) on 19 January 2017. The divestiture of 2CH by MML remedied breaches of the ‘two-to-a-market’ statutory control rule for commercial radio licences that had arisen in the Sydney licence area when MML merged with the radio business of Fairfax Media Limited (Fairfax) on 31 March 2015.

The ACMA had granted MML and Fairfax prior approval of the transaction for a period that was extended until 30 September 2016. The ACMA had also accepted an enforceable undertaking from MML to divest 2CH by this date. Although the divestiture of 2CH was not completed within this time frame, the breaches were subsequently resolved via an asset sale conducted by a third-party divestiture agent appointed in accordance with the enforceable undertaking, and the ACMA took no further action.

A discussion of broadcasters’ compliance with notification of change-in-control requirements is in Chapter 3 of this report.
Table 1.7 Ownership and control of commercial radio services

<table>
<thead>
<tr>
<th>Network group company</th>
<th>Total licences controlled</th>
<th>Ownership and control—licences and operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE Radio Broadcasters Pty Ltd</td>
<td>13</td>
<td>Licences in regional Victoria and one licence in the regional New South Wales licence area of Albury, which includes parts of regional Victoria</td>
</tr>
<tr>
<td>Australian Radio Network Pty Ltd (HT&amp;E Limited)</td>
<td>13</td>
<td>Metropolitan licences in Adelaide (2), Brisbane (1), Melbourne (2), Perth (1), Sydney (1) and Western Suburbs, Sydney (1) One regional radio licence in Katoomba, NSW Two joint-venture licences with Nova Entertainment Pty Ltd, one in each of Brisbane and Perth, and two joint-venture licences with Southern Cross Media Group Ltd in Canberra</td>
</tr>
<tr>
<td>Nova Entertainment Pty Ltd</td>
<td>10</td>
<td>Metropolitan licences in Adelaide (2), Brisbane (1), Melbourne (2) and Sydney (2) as well as one regional radio licence in Gosford, NSW Two joint-venture licences with Australian Radio Network Pty Ltd, one in each of Brisbane and Perth</td>
</tr>
<tr>
<td>Grant Broadcasters Pty Ltd</td>
<td>52</td>
<td>A metropolitan licence in Perth Licences in regional areas in New South Wales, Northern Territory, Queensland, Victoria, South Australia and Tasmania, including five joint-venture licences with Kevin Blyton that are part of the Capital Radio Network</td>
</tr>
<tr>
<td>Macquarie Media Limited (formerly Macquarie Radio Network Ltd)</td>
<td>7</td>
<td>Metropolitan licences in Brisbane (2), Melbourne (2), Perth (1) and Sydney (2)</td>
</tr>
<tr>
<td>Redwave Media Ltd/ Seven Group Holdings Ltd</td>
<td>9</td>
<td>Licences in regional and remote areas in Western Australia</td>
</tr>
<tr>
<td>Southern Cross</td>
<td>78</td>
<td>Two metropolitan licences in each of Adelaide, Brisbane, Melbourne, Perth and Sydney Licences in regional areas in New South Wales, Queensland, Tasmania, Victoria, South Australia and Western Australia Two joint-venture licences with Australian Radio Network Pty Ltd in Canberra</td>
</tr>
<tr>
<td>Broadcast Operations Pty Ltd (Super Radio Network)</td>
<td>36</td>
<td>Licences in regional areas of New South Wales and Queensland. One metropolitan licence in Sydney</td>
</tr>
<tr>
<td>Resonate Broadcasters Pty Ltd and Resonate Regional Radio Pty Limited</td>
<td>10</td>
<td>Ten licences in regional areas in Queensland, including six held by Resonate Regional Radio Pty Limited—Charleville (2), Emerald (1), Kingaroy (1), Mt Isa (1), and Roma (1)—and four held by Resonate Broadcasters Pty Ltd—Longreach (2) and Charters Towers (2)</td>
</tr>
</tbody>
</table>

Note: Table includes networks with more than six licences.

Source: ACMA, Register of controlled media groups and Media control database.
Cross-media ownership
A small number of entities control two types of media assets in the same market:

- Southern Cross controls a combination of radio and television broadcasting licences in 21 radio licence areas
- Fairfax Media Limited controls two radio licences and a newspaper in Melbourne, and two radio licences and a newspaper in Sydney
- Seven Group Holdings Limited controls a television licence and a newspaper in Perth
- WIN controls a radio and television licence in Wollongong
- Lachlan Murdoch, through his position as Co-Chairman of News Corporation and interests in Nova Entertainment Pty Ltd, controls two radio licences and an associated newspaper in each of the Sydney, Brisbane, Adelaide and Melbourne metropolitan licence areas.

Community radio broadcasting licences
At 30 June 2017, there were 360 long-term community radio broadcasting licences, representing a range of community interests (Table 1.8). Forty-nine per cent of community radio broadcasting services represent the general community interest in the licence areas where they broadcast.

During 2016–17, the ACMA renewed 58 community radio broadcasting licences.

Table 1.8  Number of community radio broadcasting licences by community interest, June 2017

<table>
<thead>
<tr>
<th>Community interest</th>
<th>Number of licences</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General geographic area</td>
<td>179</td>
<td>49</td>
</tr>
<tr>
<td>Indigenous and Torres Strait Islander</td>
<td>96</td>
<td>27</td>
</tr>
<tr>
<td>Religious</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Educational/special interest</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Ethnic</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Music</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Senior citizen</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Youth</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>360</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: The ACMA.

Temporary community radio broadcasting licences
The temporary community radio broadcasting licence scheme allows the ACMA to allocate non-renewable community radio licences to eligible aspirant broadcasters. There were 97 temporary licences at 30 June 2017.

Community television services
There were 49 long-term community television broadcasting licensees at 30 June 2017. One was in the metropolitan area of Melbourne. The remaining 48 were remote Indigenous broadcasting services.
Community television transition
In accordance with current policy, the government has made funding available to assist community television broadcasting licensees to transition their services to an online platform. Accordingly, these broadcasting services have been migrating to the internet.

During 2016–17, there were two remaining metropolitan community television broadcasting services, in Brisbane and Melbourne. The Brisbane service ceased broadcasting in March 2017. The Melbourne community television service currently has access to broadcast spectrum until 31 December 2017. A further extension to community television licences to 30 June 2018 was included as part of the government’s Broadcasting and Content Reform Package. See Chapter 3 for further information.

Community television trials
During 2016–17, the ACMA made two six-month extensions to community television trials in Adelaide and Perth, to align with the extensions to the long-term community television licences.

Subscription television in Australia
The ACMA did not allocate any new subscription television broadcasting licences in 2016–17. There are 2,835 subscription television broadcasting licences on issue.

1.11. Advertising expenditure in main media
Share of advertising expenditure
Commercial Economic Advisory Service of Australia (CEASA) data for the year ended 31 December 2016 shows that combined advertising expenditure across the main media categories—print, television, radio, online, outdoor and cinema—increased by 7.8 per cent in 2016 to $15.3 billion.

The breakdown of advertising expenditure across the main media categories has changed considerably over the past few years, with the largest shifts in television, online and print media advertising (Figure 1.4).

In 2012, online advertising made up 25 per cent of the total advertising expenditure. By 2016, it had increased to 48 per cent. By contrast, the share of television and print media advertising has declined, particularly print media, down from 33 per cent in 2012 to 13 per cent in 2016. Television’s share decreased from 29 per cent in 2012 to 25 per cent in 2016.

Figure 1.14 Share of advertising expenditure by main media category (percentage), 2012 and 2016

Source: CEASA.
Growth in advertising expenditure

As shown in Figure 1.15, expenditure on online advertising continued to show strong growth, increasing by 23 per cent in 2016 to reach $7.4 billion. There were also increases in outdoor advertising of 16 per cent, cinema advertising of five per cent and radio advertising expenditure of three per cent.

Advertising expenditure on print media decreased by 14 per cent to total $2 billion during the 2016 calendar year, while television advertising declined slightly, by three per cent, with a reported expenditure of $3.8 billion.

Despite the decline in print and television advertising, consumers are combining digital and more traditional ways of accessing and consuming content. For more on video content viewing, see Chapter 3.

Figure 1.15 Advertising expenditure by main media category ($ million)

Note: 2015 figure for outdoor advertising revised from previously reported.
Source: CEASA.
Online advertising expenditure

The 2016 calendar year continued to see significant growth across all online advertising categories, with the online general category exhibiting the greatest year-on-year proportional increase (up 27 per cent). Revenue in the search and directories online category increased by 24 per cent and in the classifieds online category by 15 per cent (Figure 1.16).

Figure 1.16 Online advertising expenditure ($ million)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total online spend</td>
<td>7,397</td>
<td>6,015</td>
<td>4,798</td>
<td>3,987</td>
<td>3,343</td>
</tr>
<tr>
<td>Search and directories</td>
<td>3,410</td>
<td>2,760</td>
<td>2,416</td>
<td>2,118</td>
<td>1,794</td>
</tr>
<tr>
<td>Classifieds</td>
<td>1,300</td>
<td>1,135</td>
<td>929</td>
<td>744</td>
<td>673</td>
</tr>
<tr>
<td>Online general</td>
<td>2,687</td>
<td>2,120</td>
<td>1,453</td>
<td>1,125</td>
<td>876</td>
</tr>
</tbody>
</table>

Source: CEASA.
Endnotes

2 ibid.
7 ibid.
20 ibid.
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126 M. Wright, "Leading the way to provide brilliant voice and video calling experiences", Telstra Exchange, 9 December 2016.
129 Hutchison Telecoms, "Hutchison Telecommunications (Australia) Limited ASX Half Year Information 30 June 2017", 1 August 2017.
130 C. Simpson, "Telstra will switch on LTE-Broadcast in Australia next year", Gizmodo Australia, 28 February 2017.
131 TPG announced it is to build its own mobile network following its purchase of 4G spectrum in April 2017.
132 Enquiries to the ACMA may include requests for information about a site or carrier obligations under the industry code.
Objections contain allegation(s) of an industry code breach and, as a result of an objection, the ACMA may undertake a Preliminary Assessment to determine whether a formal investigation under Part 26 of the *Telecommunications Act 1997* is required.
133 One objection was referred in 2015–16 and finalised in 2016–17.
134 See *Radiocommunications Regulations 1993*.
135 A nominated carrier declaration permits the owner(s) of one or more network units to nominate a carrier to supply carriage services over those units to the public, subject to the carrier satisfying the ACMA that it would be in a position to comply with carrier-related obligations for those network units.
136 A trial certificate permits the owner of one or more network units to trial new network units and services without the need for a carrier licence. A trial certificate may be issued for a period up to six months.
138 Imparja Television Pty Ltd and Southern Cross jointly control digital-only television licences, one in each of the remote central and eastern Australian television licence areas and the Mt Isa television licence area.
139 On 23 October 2017, the ASX announced the Deed of Company Arrangement was entered into by Ten Network Holdings Ltd (Ten) and CBS International Television Australia Pty Ltd (CBS), and provides for the transfer of the shares in Ten to CBS or its nominee.
2. Consumer engagement with communications and media

This chapter reports on the efficiency, adequacy and quality of CSPs’ services. It examines how Australians use communications and media services, and focuses on online activities, our take-up and use of devices that connect to the internet and other communications services, and our behaviours in an online environment. It also considers consumer benefits and engagement, including satisfaction with communications services. This chapter addresses the statutory requirements under paragraphs 105(3)(a) and (b) of the Telecommunications Act.

Key points for 2016–17

> Most Australian adults used five or more separate communications services for personal purposes—the mobile phone remains the favoured device, with mobile phone calls, text messages and apps the most common services used.

> Many Australian adults are embracing OTT communication services—using apps such as Facebook, WhatsApp, Skype, Snapchat and FaceTime to send messages, or make voice or video calls to stay in touch with family and friends.

> The majority of Australian adults were online at least once in the six months to June 2017, with every person aged 18–34 having gone online. Almost 13.5 million Australians accessed the internet three or more times a day.

> Use of the internet via a mobile continued to grow—access via a home internet connection (almost all on broadband) remained steady but was still the most common source.

> Volume of data downloaded continued its decade-long exponential increase, reaching 3.17 million terabytes over both fixed and mobile networks (up 43 per cent in the last year).

> High levels of consumer satisfaction continued with fixed telephone, mobile and internet communications services. The highest levels of dissatisfaction were with internet services—due mostly to issues with data speeds and time to repair faults.

2.1. How we communicate

Australians use a diverse range of communications services for personal purposes. At June 2017, 95 per cent of Australian adults had used a mobile phone to make a phone call in the last six months, while 86 per cent had sent an SMS from their mobile handset (Figure 2.1).

Age continues to be a strong predictor of technology use. While the majority (98 per cent) of Australians aged under 65 had used a mobile phone to make a phone call in the last six months, this dropped to 82 per cent for those aged 65 and over. Similarly, while 93 per cent of Australians under 65 used SMS text messages for personal purposes, only 58 per cent of those aged 65 and over had sent an SMS from their mobile handset.¹

Australians are using multiple services and devices for personal purposes. At June 2017, seven in 10 adults had used five or more separate communications services in the last six months. Three of the top six involved the use of a mobile phone (mobile phone calls, text messages over mobile and communications apps).²
Figure 2.1  How Australians communicate, by service (percentage)

*Data not available prior to June 2017.

Base: Australians aged 18 and over.

Note: The changes in methodology in 2016 and 2017 mean that some differences between these years may be explained by the methodology rather than any significant difference. Roy Morgan Research changed methodology for this question in 2013—fixed-line telephone figures refer to those who own a fixed-line service.

Source: ACMA-commissioned surveys, May 2013, 2014, 2015, and June 2016 and 2017 (Mobile phone call, Email, Text from mobile phone, Social networking and Instant messaging), in the six months to June of each year, and Roy Morgan Single Source (Fixed-line telephone), in the 12 months to June of each year.
2.2. Internet access

Connectivity—take-up of the internet

Internet access is available to Australians via a range of networks, devices and locations (see Chapter 1). At June 2017, 89 per cent of Australian adults had accessed the internet in the last six months—almost universal access among those aged 18–64 (97 per cent) decreased to 62 per cent for those aged 65 and over.3

Internet connectivity trends show growing stability in how Australians are accessing the internet at home (Figure 2.2). In 2016–17:

- approximately 16 million adult Australians (86 per cent) had an internet connection in the home, similar to 2015–16 (85 per cent)
- 85 per cent (16 million) had a home broadband connection—this figure has remained constant since 2015–16, and reflects that almost all home internet connections are now broadband
- 75 per cent (14 million) accessed the internet via a mobile phone.

**Figure 2.2 How Australians access the internet (percentage)**

*Includes ADSL, cable, fibre, satellite, fixed wireless, mobile wireless internet services—using dongles, datacards or USB modems. It excludes mobile handset internet.*

†Relates to use of the internet via a mobile phone handset in the six months to June.

Base: Australians aged 18 and over.

Note 1: The changes in methodology in 2016 and 2017 mean that some differences between these years may be explained by the methodology rather than any significant difference.

Note 2: June 2014, 2015, 2016 and 2017 broadband definitions include ADSL, cable, NBN, USB modem, portable Wi-Fi modem, SIM card for tablet, internet key. June 2014, 2015, 2016 and 2017 internet definitions include ADSL, cable, NBN, USB modem, portable Wi-Fi modem, SIM card for tablet, internet key and dial-up.

Source: Roy Morgan Single Source Australians aged 18+ with an internet connection at home in the 12 months to June of each year, and ACMA-commissioned survey (used the internet via a mobile phone) in the six months to June of each year.
Frequency of internet use

The majority of Australian adults are frequent internet users, accessing the internet several times a day. At June 2017, 13.4 million (71 per cent) went online three or more times a day, an increase of three percentage points from June 2016. Frequency of use was directly proportional to age—91 per cent of Australians aged 18 to 24 used the internet three or more times a day, while only 38 per cent of those aged 65 and over went online three or more times a day.

Offline Australians

In the six months to June 2017, 89 per cent of Australian adults accessed the internet. This means an estimated 11 per cent had not been online during that period, a figure that has remained stable since June 2016. Propensity to not access the internet was directly proportional to age—all Australians aged 18–34 had accessed the internet, while two per cent (58,371) of those aged 35–44 had not accessed the internet, with the proportion increasing to 38 per cent (1.51 million) of those aged 65 and over.

Using multiple devices to go online

At June 2017, Australian internet users had a multitude of internet access devices from which to choose (Figure 2.3). The mobile phone was the most popular device used to go online (84 per cent of adult internet users), followed by laptop computers (69 per cent), desktop computers (54 per cent) and tablet computers (50 per cent). Australians increasingly used televisions and smart televisions to access the internet—35 per cent of online Australians used their television to go online in the six months to June 2017.

Figure 2.3  How Australian internet users go online, by device (percentage)

<table>
<thead>
<tr>
<th>Device</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile phone</td>
<td>84</td>
</tr>
<tr>
<td>Laptop computer</td>
<td>69</td>
</tr>
<tr>
<td>Desktop computer</td>
<td>54</td>
</tr>
<tr>
<td>Tablet computer</td>
<td>50</td>
</tr>
<tr>
<td>TV/Smart TV</td>
<td>35</td>
</tr>
<tr>
<td>Other games console</td>
<td>16</td>
</tr>
<tr>
<td>e-reader</td>
<td>13</td>
</tr>
<tr>
<td>Portable games console</td>
<td>6</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 and over who accessed the internet in the last six months.

Source: ACMA-commissioned survey, June 2017.

In addition to being the most popular device, the mobile phone was also the most frequently used device to access the internet (Figure 2.4). At June 2017, over three-quarters (79 per cent) of online Australians used their mobile phone multiple times a day to access the internet and 90 per cent used it to go online at least once a day. Online Australians aged 18–64 (82 per cent) were significantly more likely to use a mobile phone to access the internet multiple times a day than those aged 65 and over (46 per cent).
Although the laptop was the second-most popular device to access the internet, it was used less often than both tablet and desktop computers. After the mobile phone, tablet computers were the next most frequently used device to access the internet—67 per cent of Australian adults used a tablet computer at least once a day to go online compared to 62 per cent who used their laptop.

Figure 2.4 Most popular devices Australian adults use to go online (percentage)

<table>
<thead>
<tr>
<th>Device</th>
<th>Multiple times a day</th>
<th>Once a day</th>
<th>Weekly</th>
<th>Monthly or less</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile phone</td>
<td>79</td>
<td>11</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Tablet computer</td>
<td>45</td>
<td>22</td>
<td>22</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Desktop computer</td>
<td>43</td>
<td>19</td>
<td>23</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Laptop computer</td>
<td>41</td>
<td>21</td>
<td>25</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>TV/Smart TV</td>
<td>30</td>
<td>25</td>
<td>26</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>e-reader</td>
<td>27</td>
<td>19</td>
<td>27</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>Other games console</td>
<td>22</td>
<td>18</td>
<td>31</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>Personal video recorder</td>
<td>22</td>
<td>22</td>
<td>25</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>mp3 player</td>
<td>16</td>
<td>9</td>
<td>36</td>
<td>30</td>
<td>9</td>
</tr>
<tr>
<td>Portable games console</td>
<td>12</td>
<td>8</td>
<td>29</td>
<td>48</td>
<td>3</td>
</tr>
</tbody>
</table>

*Base: Australians aged 18 and over who accessed the internet.*

*Note: ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis. Numbers may not add up due to rounding.*

*Source: ACMA-commissioned survey, June 2017.*

At June 2017, almost a quarter of online Australians (23 per cent) had accessed the internet in the last six months via five or more devices, up from 19 per cent at June 2016. Only 15 per cent used one device only to go online (Figure 2.5), indicating an increasing preference for a combination of devices.
The five most popular combinations of devices for Australian adult internet users to go online in the six months to June 2017 were:

- mobile phone and laptop computer (nine per cent)
- mobile phone, laptop computer and tablet computer (seven per cent)
- mobile phone, laptop computer, tablet computer and desktop computer (seven per cent)
- mobile phone, laptop computer, tablet computer, desktop computer and smart TV (seven per cent)
- mobile phone, laptop computer and desktop computer (six per cent).

**Volume of data downloaded**

The amount of data Australians consume continues to increase, particularly over mobile handsets. The total volume of data downloaded in Australia during the June quarter of 2017 was 3.171 million terabytes—43 per cent higher than the volume downloaded during the June quarter of 2016 (Figure 2.6).

There was a sizeable increase in data downloaded by fixed-line broadband users—contributing to 91 per cent of total growth during the June quarter of 2017—with fixed connections generally offering fast download speeds and large data plans. During the June quarter of 2017, the volume of data downloaded increased over:

- fixed-line broadband by 42 per cent
- wireless broadband by 72 per cent
- mobile handsets by 45 per cent.
### Figure 2.6 Volume of data Australian internet users downloaded in the quarter to June 2017 (terabytes)

<table>
<thead>
<tr>
<th>Total volume of data downloaded</th>
<th>Jun 17</th>
<th>3,171,048</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jun 16</td>
<td>2,218,801</td>
</tr>
<tr>
<td></td>
<td>Jun 15</td>
<td>1,460,220</td>
</tr>
<tr>
<td></td>
<td>Jun 14</td>
<td>1,034,894</td>
</tr>
<tr>
<td></td>
<td>Jun 13</td>
<td>676,832</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed-line broadband</th>
<th>Jun 17</th>
<th>2,913,245</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jun 16</td>
<td>2,049,553</td>
</tr>
<tr>
<td></td>
<td>Jun 15</td>
<td>1,349,975</td>
</tr>
<tr>
<td></td>
<td>Jun 14</td>
<td>963,429</td>
</tr>
<tr>
<td></td>
<td>Jun 13</td>
<td>629,964</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mobile handset</th>
<th>Jun 17</th>
<th>175,076</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jun 16</td>
<td>121,147</td>
</tr>
<tr>
<td></td>
<td>Jun 15</td>
<td>71,572</td>
</tr>
<tr>
<td></td>
<td>Jun 14</td>
<td>38,734</td>
</tr>
<tr>
<td></td>
<td>Jun 13</td>
<td>19,636</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wireless* broadband</th>
<th>Jun 17</th>
<th>82,727</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jun 16</td>
<td>48,100</td>
</tr>
<tr>
<td></td>
<td>Jun 15</td>
<td>38,673</td>
</tr>
<tr>
<td></td>
<td>Jun 14</td>
<td>32,731</td>
</tr>
<tr>
<td></td>
<td>Jun 13</td>
<td>27,232</td>
</tr>
</tbody>
</table>

*Excludes downloads via mobile phone handsets. Includes mobile wireless services using dongle, USB modems and datacards, satellite and fixed wireless.

Note: Total volume of data downloaded is based on ABS published numbers and components may not add up due to rounding. The ABS reports that “… download data presented should only be considered an indicative measure of internet activity during the reference period.”

Source: ABS, 8153.0—Internet Activity, Australia, June 2017.

During the June quarter of 2017, the average amount of data downloaded by a subscriber increased over:

- fixed-line broadband by 35 per cent to 394.4 gigabytes
- wireless broadband by 67 per cent to 13.0 gigabytes
- mobile handset internet by 36 per cent to 6.6 gigabytes.
Mobile data allowance

Ninety-five per cent of Australian adults used mobile phones to either send text messages or make voice or video calls, and 88 per cent had data included in their plans. The largest group of mobile phone users with a data plan (43 per cent) had a monthly data allowance of four gigabytes or under, while 15 per cent had an allowance of more than 10 gigabytes (Figure 2.7).

Figure 2.7 Mobile phone users’ monthly data allowance (percentage)

Base: Australians aged 18 and over who used a mobile phone in the last six months (n=1,859).
Note: ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis.
Source: ACMA-commissioned survey, June 2017.

Most Australian mobile phone users rarely exceed their monthly mobile data allowance. At June 2017, nearly two-thirds (65 per cent) had done so once a year or less, 30 per cent once every two to six months and six per cent every month. We regularly monitor our mobile phone usage or spend, with almost half of us (48 per cent) checking usage at least once a month or more.

Users can also minimise their mobile data use by connecting to mobile internet via a Wi-Fi network. This was popular among Australian mobile phone users in the six months to June 2017, with 67 per cent using a Wi-Fi network to go online at least once a day or more. A further seven per cent used a Wi-Fi network to go online weekly.
2.3. Internet activities

Performing activities online

Australian adults participate in a diverse range of online activities, with sending and receiving email (94 per cent), researching or gathering information and general internet browsing (both at 93 per cent) the most popular at June 2017 (Figure 2.8). These online activities have generally high levels of engagement across all age groups. At June 2017, 86 per cent of internet users aged 65 and over communicated using email and 85 per cent used the internet to research or gather information.

![Figure 2.8 Activities performed online by Australian internet users, June 2017 (percentage)](image)

*Base: Australians aged 18 and over who accessed the internet.*

*Note: 'Don’t know' and ‘Prefer not to say’ responses are excluded from analysis.*

*Source: ACMA-commissioned survey, June 2017.*

Accessing online video and audio content

More Australian adults are accessing video and audio content online. In the six months to June 2017, eight in 10 Australian internet users viewed video content online, while 60 per cent of online Australians accessed audio content such as internet radio or podcasts (Figure 2.9).

Engagement with these activities was directly proportional to age—almost all users aged 18–24 accessed online video content (98 per cent), with similar high levels of engagement among those aged 24–34 (96 per cent) and 35–44 (91 per cent). In comparison, 84 per cent of users aged 18–24 accessed audio content in the six months to June 2017, dropping to 72 per cent for those aged 35–44.

In the same period, 43 per cent of Australian internet users aged 65 and over viewed online video content, while only 21 per cent accessed audio content.

Further information on screen and viewing behaviour can be found in Chapter 3.
Social media activities

At June 2017, 72 per cent of online Australian adults had been active on social media sites like Facebook in the last six months (Figure 2.10). Social media use, including posting photos or comments on social media sites, was highest for users aged 18–24 (97 per cent) and lowest for users aged 65 years and over (36 per cent). Women (77 per cent) were significantly more likely than men (66 per cent) to actively use social media in the six months to June 2017.\textsuperscript{10}

Figure 2.10 Social media use, by age, June 2017 (percentage)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Social Media Use (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>72</td>
</tr>
<tr>
<td>18–25 years</td>
<td>97</td>
</tr>
<tr>
<td>25–34 years</td>
<td>90</td>
</tr>
<tr>
<td>35–44 years</td>
<td>80</td>
</tr>
<tr>
<td>45–54 years</td>
<td>67</td>
</tr>
<tr>
<td>55–64 years</td>
<td>56</td>
</tr>
<tr>
<td>65+ years</td>
<td>36</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 and over who accessed the internet.
Note: ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis.
Source: ACMA-commissioned survey, June 2017.
2.4. Communications apps

At June 2017, 88 per cent of Australian internet users had used an app to communicate via messages or voice or video calls in the last six months—using apps to send messages was the most popular (85 per cent). Just over four in 10 (42 per cent) did all three.

**Figure 2.11 Use of communications apps, by activity, June 2017 (percentage)**

<table>
<thead>
<tr>
<th>Total activities</th>
<th>Send messages</th>
<th>Make voice calls</th>
<th>Make video calls</th>
<th>Used all three</th>
</tr>
</thead>
<tbody>
<tr>
<td>88</td>
<td>85</td>
<td>55</td>
<td>53</td>
<td>42</td>
</tr>
</tbody>
</table>

*Base: Australians aged 18 and over who accessed the internet.*  
*Note: ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis.*  
*Source: ACMA-commissioned survey, June 2017.*

Younger Australians were the most active users of communications apps, with 98 per cent of those aged 18–24 using an app to send messages (Figure 2.12). There was also high use among those aged 25–34 (95 per cent) and 35–44 year olds (88 per cent), dropping to 61 per cent for those aged 65 and over.

**Figure 2.12 Use of communications apps, by activity and age, June 2017 (percentage)**

<table>
<thead>
<tr>
<th>Total</th>
<th>Send messages</th>
<th>Make voice calls</th>
<th>Make video calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>96</td>
<td>74</td>
<td>69</td>
</tr>
<tr>
<td>85</td>
<td>95</td>
<td>67</td>
<td>61</td>
</tr>
<tr>
<td>85</td>
<td>88</td>
<td>56</td>
<td>61</td>
</tr>
<tr>
<td>85</td>
<td>79</td>
<td>45</td>
<td>56</td>
</tr>
<tr>
<td>85</td>
<td>72</td>
<td>41</td>
<td>47</td>
</tr>
<tr>
<td>85</td>
<td>61</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>85</td>
<td>61</td>
<td>33</td>
<td>28</td>
</tr>
</tbody>
</table>

*Base: Australians aged 18 and over who accessed the internet.*  
*Note: ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis.*  
*Source: ACMA-commissioned survey, June 2017.*
Communications apps in use
At June 2017, Facebook Messenger was the most preferred communications app, with 62 per cent of online Australian adults using it to either send messages, or make voice or video calls (Figure 2.13).

Figure 2.13 Top five communications apps used, June 2017 (percentage)

<table>
<thead>
<tr>
<th>App</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook Messenger</td>
<td>62</td>
</tr>
<tr>
<td>FaceTime</td>
<td>28</td>
</tr>
<tr>
<td>Skype</td>
<td>27</td>
</tr>
<tr>
<td>WhatsApp</td>
<td>26</td>
</tr>
<tr>
<td>Apple iMessage</td>
<td>25</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 and over who accessed the internet.

While the use of apps is on the rise, they are not always the preferred method of communication. The majority of Australian adults who sent messages and made voice calls in the six months to June 2017 preferred to do so using their mobile phone credit rather than an app (Figure 2.14). For video calls, however, most preferred to use an app (73 per cent) over their mobile phone credit (27 per cent).

Figure 2.14 Preferred communications service, by activity, June 2017 (percentage)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mobile phone credit</th>
<th>App</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send messages</td>
<td>71</td>
<td>29</td>
</tr>
<tr>
<td>Make voice calls</td>
<td>76</td>
<td>22</td>
</tr>
<tr>
<td>Make video calls</td>
<td>27</td>
<td>73</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 and over who undertook the following activity: send messages (n=1,368), make voice calls (n=885), make video calls (n=819).
Note: ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis.
Source: ACMA-commissioned survey, June 2017.
Australian adults mostly prefer an app over mobile phone credit to send messages or make voice or video calls because they are used by family and friends (67 per cent). Other popular reasons were saving mobile credit (51 per cent), as well as making international calls at lower costs and having a better experience (both at 50 per cent) (Figure 2.15).

Figure 2.15 Reasons for preferring apps over mobile phone credit, June 2017 (percentage)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used by family and friends</td>
<td>67</td>
</tr>
<tr>
<td>Saves mobile credit</td>
<td>51</td>
</tr>
<tr>
<td>Lower cost for international calls</td>
<td>50</td>
</tr>
<tr>
<td>Better experience</td>
<td>50</td>
</tr>
<tr>
<td>Know when recipients read my messages</td>
<td>35</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 and over who preferred using an app over mobile phone credit to send messages or make voice or video calls (n=715).
Source: ACMA-commissioned survey, June 2017.

Australian adults are not using apps in isolation—rather, apps seem to complement existing communication services. In the six months to June 2017, six out of 10 text messages from Australian adults were sent using mobile phone credit and four using an app (Figure 2.16). A similar pattern was seen with voice calls—more voice calls were made using mobile phone credit than with an app, but one call out of 10 was made using a fixed-line telephone. Apps were popular for video calls—eight out of 10 were made using an app at June 2017.

Figure 2.16 Communications services, average number of times used out of 10

<table>
<thead>
<tr>
<th>Service</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text messages on app</td>
<td>2</td>
</tr>
<tr>
<td>Text messages on credit</td>
<td>4</td>
</tr>
<tr>
<td>Voice calls on app</td>
<td>6</td>
</tr>
<tr>
<td>Voice calls on credit</td>
<td>6</td>
</tr>
<tr>
<td>Video calls on app</td>
<td>8</td>
</tr>
<tr>
<td>Video calls on credit</td>
<td>1</td>
</tr>
<tr>
<td>Fixed-line telephone</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 and over who undertook the following activity: send messages (n=1,386), make voice calls (n=885), make video calls (n=819).
Note: Numbers may not add up to 10 due to rounding.
Source: ACMA-commissioned survey, June 2017.

2.5. e-Commerce and online business activities

Online buying and selling

Many Australians are active participants in the online economy. At June 2017, eight million Australian adults (43 per cent) had bought or sold something online in a four-week period—stable when compared to 2015–16 (Figure 2.17).

There was little change from 2015–16 in the likelihood of each age group to engage in online buying and selling in 2016–17. Those living in capital cities, however, were more likely to buy online (45 per cent) than people in country areas (38 per cent).
### Figure 2.17 Online buying and selling, by age (percentage)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>43</td>
<td>43</td>
<td>41</td>
<td>39</td>
</tr>
<tr>
<td>18–24 years</td>
<td>38</td>
<td>38</td>
<td>35</td>
<td>37</td>
</tr>
<tr>
<td>25–34 years</td>
<td>52</td>
<td>51</td>
<td>47</td>
<td>49</td>
</tr>
<tr>
<td>35–44 years</td>
<td>54</td>
<td>53</td>
<td>51</td>
<td>53</td>
</tr>
<tr>
<td>45–54 years</td>
<td>49</td>
<td>49</td>
<td>48</td>
<td>43</td>
</tr>
<tr>
<td>55–64 years</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>65+ years</td>
<td>26</td>
<td>26</td>
<td>24</td>
<td>20</td>
</tr>
</tbody>
</table>

**Base:** Australians aged 18 and over who did one or more transactional buying, selling or shopping internet activities in the last four weeks over the 12 months to June for each year.

**Note:** Transactional buying, selling or shopping internet activities include participation in online auctions, purchased groceries or other products/services online, sold products/services online, used online payment system, or paid online for purchases using a credit card in the last four weeks (over the 12 months to June of each year).

**Source:** Roy Morgan Single Source, July 2013 to June 2017.

### e-Commerce activity

As at June 2017, 89 per cent of online Australians went online to conduct banking, pay bills, or buy and/or sell goods and services.\(^{11}\)

ABS data shows that Australian businesses generated an estimated $321.4 billion in revenue from online sales of goods and services during 2015–16 (the latest figures available). This was an almost $36 billion increase on revenue received in 2014–15.\(^{12}\)
Australian businesses online

The latest available data from the ABS shows that Australian businesses continued to invest in their online presence during 2015–16. Most had internet access (95 per cent) and almost half had a web presence (50 per cent)—both of which are stable compared to 2014–15.13

The number of Australian businesses on social media increased during 2015–16. Thirty-eight per cent of businesses reported having a social media presence, a seven per cent increase on 2013–14.14 The two most frequently reported uses of social media were to develop company image or market products (79 per cent), and to communicate with customers (70 per cent).15 Three in 10 Australian businesses (31 per cent) had both a social media presence and web presence.16

2.6. Consumer satisfaction with communications services

The majority of Australian adults are generally satisfied with their communications services (Figure 2.18). The highest levels of satisfaction—satisfied or very satisfied—are with mobile phone services (89 per cent). The highest levels of dissatisfaction are with internet services—26 per cent either dissatisfied or very dissatisfied.

Figure 2.18 Satisfaction with fixed-line telephone, mobile phone and internet services, June 2017 (percentage)

<table>
<thead>
<tr>
<th>Service</th>
<th>Very satisfied</th>
<th>Satisfied</th>
<th>Dissatisfied</th>
<th>Very dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed-line telephone</td>
<td>70</td>
<td>16</td>
<td>72</td>
<td>4</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>72</td>
<td>20</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Internet</td>
<td>64</td>
<td>10</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 years and over using a fixed-line telephone (n=1,398), mobile phone (n=1,859), internet (n=2,186).
Notes: Numbers may not add up due to rounding. ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis.
Source: ACMA-commissioned survey, June 2017.

Satisfaction with different aspects of communications services is outlined in Figure 2.19. The highest levels of satisfaction (very satisfied and satisfied) and dissatisfaction (very dissatisfied and dissatisfied) within each service were as follows:

> **Fixed-line telephone**—the highest levels of satisfaction were for billing information, with 84 per cent satisfied or very satisfied. Line-rental cost recorded the highest levels of dissatisfaction (42 per cent dissatisfied or very dissatisfied).

> **Mobile phone**—quality of voice calls continued to record the highest levels of satisfaction (89 per cent), while internet access and data speeds (both at 20 per cent) recorded the highest levels of dissatisfaction.
Internet—the highest levels of satisfaction were recorded for billing information (85 per cent), while data speeds (42 per cent) recorded the highest levels of dissatisfaction.

**Figure 2.19 Consumer satisfaction with aspects of their communications services (percentage)**

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Very dissatisfied</th>
<th>Dissatisfied</th>
<th>Satisfied</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer service</td>
<td>10</td>
<td>13</td>
<td>68</td>
<td>85</td>
</tr>
<tr>
<td>Service reliability</td>
<td>19</td>
<td>18</td>
<td>65</td>
<td>61</td>
</tr>
<tr>
<td>Call/service costs</td>
<td>11</td>
<td>16</td>
<td>66</td>
<td>64</td>
</tr>
<tr>
<td>Billing information</td>
<td>13</td>
<td>16</td>
<td>71</td>
<td>70</td>
</tr>
<tr>
<td>Line rental cost</td>
<td>8</td>
<td>50</td>
<td>34</td>
<td>8</td>
</tr>
<tr>
<td>Internet access</td>
<td>17</td>
<td>63</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Data speeds</td>
<td>17</td>
<td>63</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>Call quality</td>
<td>9</td>
<td>67</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Technical support</td>
<td>9</td>
<td>59</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>Speed of repairing faults</td>
<td>8</td>
<td>55</td>
<td>26</td>
<td>11</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 years and over using a fixed-line telephone (n=1,398), mobile phone (n=1,859), internet (n=2,186).
Notes: Numbers may not add up due to rounding. ‘Don’t know’ and ‘Prefer not to say’ responses are excluded from analysis.
Source: ACMA-commissioned survey, June 2017.
2.7. International trends

International data that is currently available allows a broad-level comparison of internet adoption levels and device usage across Australia, the United States (US) and the United Kingdom (UK).

Access to the internet

Table 2.1 shows that Australia has similar or higher levels of general and mobile phone internet users than the US and UK.

Table 2.1 International trends in access to the internet (percentage)

<table>
<thead>
<tr>
<th></th>
<th>Home broadband connection</th>
<th>Use mobile phone to access the internet</th>
<th>Use the internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>85</td>
<td>85</td>
<td>70</td>
</tr>
<tr>
<td>US</td>
<td>73</td>
<td>n/a</td>
<td>70</td>
</tr>
<tr>
<td>UK</td>
<td>81</td>
<td>83</td>
<td>66</td>
</tr>
</tbody>
</table>

n/a = not available

Note 1: Data for the UK broadband connection relates to households. UK data collected in January/February. Australian data for 'Use the internet' and 'Use mobile phone to access the internet' relates to six months to June; 'Home broadband connection' includes fixed broadband and mobile broadband connections relates to 12 months to June.

Note 2: Australian and US data refers to total population aged 18 and over. UK data refers to people aged 16 and over.

Sources: Data relating to Australia—Roy Morgan Single Source July 2015 to June 2017 (Home broadband connection), and ACMA-commissioned survey June 2016 and 2017 ('Use the internet' and 'Used mobile phone to access the internet'); UK—Ofcom; US—Pew Research Centre ('Home broadband connection [2016]' and 'Use the internet [2016]'; Statista ('Use mobile phone to access the internet [2016 and 2017]' )

Internet access devices

Increased reliance on mobile devices to access the internet is also evident in other countries:

> 77 per cent of adult Americans owned a smartphone in November 2016, an increase of eight percentage points from the previous year.\(^{18}\)

> in 2016, 12 per cent of the American adult population were smartphone-only internet users (a smartphone but no broadband internet connection at home)—an increase of four per cent since 2013.\(^{19}\)

> smartphone ownership in the UK rose to 72 per cent at October 2016, an increase of two percentage points from 2015.\(^{20}\)

> 58 per cent of homes in the UK had a tablet in early 2017, stable from the previous year.\(^{21}\)
Activities performed online
Greater access to the internet, and fast and reliable broadband services in Australia have facilitated a strong engagement with online activities. Similar online behaviours are evident internationally, as reflected in the range of activities undertaken online (Table 2.2). For example, popular online activities in the UK not only included sending email (85 per cent) and internet browsing (87 per cent), but also buying goods or services (69 per cent).22

Table 2.2 International comparisons—activities performed online (Australia and UK)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Australia—online aged 18 and over (%)</th>
<th>UK23—online aged 16 and over (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>94</td>
<td>85</td>
</tr>
<tr>
<td>Browsing and surfing</td>
<td>93</td>
<td>87</td>
</tr>
<tr>
<td>Buying goods or services</td>
<td>76</td>
<td>69</td>
</tr>
<tr>
<td>Accessing news online</td>
<td>75</td>
<td>49</td>
</tr>
<tr>
<td>Social networking</td>
<td>72</td>
<td>58</td>
</tr>
<tr>
<td>Playing games</td>
<td>45</td>
<td>24</td>
</tr>
</tbody>
</table>

Base: Australia: internet users aged 18 and over; UK: internet users aged 16 and over.
Note 1: Australian data relates to performing activities online in the six months to June 2017.
Note 2: UK (Ofcom) data was collected January to February 2017 and covers all adults aged 16 and over who go online at home or elsewhere.
Source: Australian data: ACMA-commissioned survey, June 2017. UK data: Ofcom, Adults’ media use and attitudes, Report 2017.

Endnotes
1 ACMA-commissioned survey, June 2017.
2 ibid.
3 ibid.
5 Wireless broadband subscribers include an estimated 116,000 satellite internet subscribers, based on ABS figures.
6 ACMA-commissioned survey, June 2017.
7 ibid.
8 ibid.
9 ibid.
10 ibid.
11 ACMA-commissioned survey, June 2017.
12 ABS, Business Use of Information Technology, 15 June 2017.
13 ibid.
14 ibid.
16 ibid.
19 Pew Research Center, 10 facts about smartphones as the iPhone turns 10, 28 June 2017.
20 Ofcom, Adults’ media use and attitudes, Report 2017, June 2017.
22 Ofcom, Adults’ media use and attitudes, Report 2017, June 2017.
23 ibid.
3. Television, radio and online content developments

This chapter explores developments in audio and video content in Australia, as part of reporting on the efficiency, adequacy and quality of broadcasting and OTT content services. It examines industry developments and changes in the technology used to supply audio and video content and services. It also focuses on viewing behaviours, including access to new and traditional services and devices, and engagement with traditional media, subscription services, online viewing and online news services. This chapter addresses the statutory requirements under paragraphs 105(3)(a) and (b) of the Telecommunications Act.

Key points for 2016–17

> Content and communications providers are investing in the local market and advancing user experience on their platforms, with Netflix commissioning its first Australian production, Seven West Media developing a new online catch-up app and Optus launching Yes TV by Fetch Multiroom.

> Traditional TV is still the most used source for entertainment and news; however, the gradual decline in FTA TV viewing over the last six years continues. Time spent viewing FTA TV live has increased proportional to age—older Australians aged 65 and over are spending most of their total viewing time watching FTA TV.

> Online streaming continues to increase, with an estimated 3.7 million (paid and non-paid) SVOD subscriptions at June 2017, compared to 2.7 million at June 2016. Netflix holds a 55 per cent share of the SVOD market and remains the most used online video platform. Consumer survey data shows that 62 per cent of Australians have at least one TV or video subscription or pay-as-you-go service in their household. A Netflix subscription is the most common (41 per cent).

> There are clear generational differences in engagement with online video content. Time spent viewing online content (catch-up TV, subscription and free video content) decreased proportional to age—younger Australians aged 18–24 are spending most of their total viewing time watching online content.

> Listening to the radio remains popular among Australian adults—more time is spent listening to traditional radio (AM and FM); however, use of digital radio is becoming more prevalent.

3.1. Audio content access and engagement

Industry developments in radio and audio content

Australians have access to a growing array of audio entertainment options, from radio to online music streamiing and podcasting.

Digital audio is increasing in importance. Revenue from music streaming in Australia increased by more than 90 per cent in 2016, with streaming revenue now accounting for 38.5 per cent of Australia’s overall music market—exceeding revenues for both physical music purchases and downloads for the first time.\(^1\) Streaming service sales accounted for approximately 70 per cent of the total digital market in 2016.\(^2\) Services in Australia include Spotify, Soundcloud, Apple Music and Pandora, which all offer free and paid premium services—although, despite Pandora’s prominence in the Australian market, it ceased operating in Australia on 31 July 2017. It was reported that of its 1.5 million listeners across Australia and New Zealand, 97 per cent used the ads-supported free version.\(^3\)

In March 2017, the ACMA registered a new Commercial Radio Industry Code of Practice.\(^4\) The new code incorporates commitments by radio licensees about accuracy and impartiality in news, privacy, the treatment of participants in live-hosted programs, and the broadcast of Australian music.\(^5\)
Reach of radio remains stable

Listening to the radio remains popular, with 88 per cent of Australian adults listening to some radio in an average seven-day period in the 12 months to June 2017. This figure is consistent with the previous four years (Figure 3.1).

Figure 3.1 Listening to radio, last seven days (percentage)

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016–17</td>
<td>88</td>
</tr>
<tr>
<td>2015–16</td>
<td>88</td>
</tr>
<tr>
<td>2014–15</td>
<td>86</td>
</tr>
<tr>
<td>2013–14</td>
<td>87</td>
</tr>
<tr>
<td>2012–13</td>
<td>86</td>
</tr>
</tbody>
</table>

Base: Australians aged 18+ who listened to the radio in the previous seven days (over the 12 months to June for each year).

Note: Changes to Roy Morgan weighting methodology in 2014 may have resulted in some differences to 2014–15 data reported in previous Communications reports.

Source: Roy Morgan Single Source.

ACMA research found that 70 per cent of Australian adults had a radio at home and 90 per cent had one in their car at June 2017. People living in regional areas were more likely to have a radio in their car (94 per cent) than those living in metro areas (87 per cent). Those with no home internet access were more likely to have a radio (80 per cent) than those with internet access (69 per cent).

Australians who work full-time were most likely to make a daily habit of listening to the radio (41 per cent), ahead of retirees (40 per cent), part-time workers (35 per cent) and people on home duties or those who do not work (29 per cent).

Time spent listening to radio

At June 2017, Australian adults had spent 12.3 hours, on average, listening to the radio in the past seven days (Figure 3.2).

Eighty per cent had listened to FM radio, 38 per cent to AM radio, 14 per cent to digital radio (DAB+) and 13 per cent to radio online. More time was also spent listening to traditional radio (AM and FM)—on average, 7.1 hours to FM radio (in the car or at home) and 3.2 hours to AM radio (in the car or at home). Less time was spent listening to digital radio (0.9 hours) and online radio (0.8 hours).

Radio listening increases with age, with Australians aged 65 and over listening to the radio the most, for an average of 17.1 hours a week. The type of radio listening activity undertaken differed across age groups. Listening to radio online was most popular among younger Australians aged 18–34, who spent 1.5 hours listening online. Listening to AM radio was by far the most popular among Australians aged 65 and over (8.0 hours), while FM listening was equally embraced across the age groups (between 6.7 and 7.4 hours).
Digital and online radio

The use of digital radio has become more prevalent, with 30 per cent of people having a DAB+ radio at home and 28 per cent in their car. Those aged 35 and over were more likely to have digital radio at home.6

Commercial Radio Australia (CRA) reported that more than 40 per cent of all new vehicles sold in Australia in the 12 months to 30 June 2017 were fitted with a DAB+ digital radio. Over 1.4 million new vehicles have been sold in Australia with DAB+ digital radio since its adoption in vehicles in 2011.7

Listening to radio online was more prevalent for Australians under 45, with 18 per cent aged 18–45 listening in the last seven days compared with only eight per cent of those aged 45 and over.8
Music streaming services
At June 2017, 37 per cent of Australian adults had used a streaming music service such as Spotify, Apple Music or Pandora radio in the last seven days (Figure 3.3). Spotify was by far the most used music streaming service (54 per cent), with Apple Music second (18 per cent).

Figure 3.3 Music streaming services used in the last seven days (percentage)

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spotify</td>
<td>54</td>
</tr>
<tr>
<td>Apple Music</td>
<td>18</td>
</tr>
<tr>
<td>Pandora</td>
<td>17</td>
</tr>
<tr>
<td>Google Play</td>
<td>9</td>
</tr>
<tr>
<td>iTunes</td>
<td>7</td>
</tr>
<tr>
<td>iHeart Radio</td>
<td>6</td>
</tr>
<tr>
<td>Deezer</td>
<td>1</td>
</tr>
<tr>
<td>Groove</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 and over who used streaming services in the last seven days (n=727).
Note: No one recorded listening to Tidal music in the last seven days.
Source: ACMA-commissioned survey, June 2017.

Australians spent an average of 10.7 hours a week streaming online music services, with those aged 18–24 spending the most time at 19.7 hours, compared to 4.3 hours for those aged 45–54 years (Figure 3.4).

Figure 3.4 Time spent listening to music streaming services in the last seven days (hours)

Base: Australians aged 18 and over who used streaming services in the last seven days (n=727).
Source: ACMA-commissioned survey, June 2017.
Podcasts
In the first quarter of 2017, 72 per cent of Australians aged 12 and over were familiar with podcasting, while only 10 per cent had listened to a podcast in an average week. Those who listened to podcasts weekly listened to an average of six per week.9

Listening to podcasts was most frequently done at home (75 per cent of those who listened to podcasts weekly). A portable device like a smartphone or tablet was the most used device to listen to podcasts (62 per cent, compared to 36 per cent on a computer).10

Concern with traditional and online radio content
Thirty-five per cent of Australians did not have any concerns about content they heard on the radio. Among those who did, the amount of advertising was the most common source of disquiet (32 per cent) followed by gambling advertising; perceived bias in the news; and incorrect, false or misleading information (all 23 per cent) (Figure 3.5).

Figure 3.5 Types of radio content (traditional, analog, digital and online radio) causing concern (percentage)

Base: Australians aged 18 and over (n=2,277).
Source: ACMA-commissioned survey, June 2017.
3.2. Video content access

Australians are watching more TV-like content, with average viewing hours increasing in the year to June 2017. However, content is being consumed in a variety of different ways, which may include watching traditional linear TV or catch-up TV, as well as streaming or watching content on a SVOD service.11

Industry developments

The changing viewing habits of consumers has led traditional broadcasters, communications providers, online content providers and technology companies to deliver more content via multiple services and devices. Viewers are now able to access more video content than ever before through a range of web-based services, apps and devices.

Changes to media laws

The Broadcasting Legislation Amendment (Broadcasting Reform) Act 2017 (Broadcasting Reform Act) was enacted on 16 October 2017.12 Together with the Commercial Broadcasting (Tax) Act 2017, the Broadcasting Reform Act implemented a number of measures forming part of the government’s Broadcasting and Content Reform Package announced as part of the 2017–18 Budget.13 The measures included:

- abolition of the ‘75 per cent audience reach rule’, which prohibits a person, either in their own right or as a director of one or more companies, from being in a position to exercise control of commercial television broadcasting licences whose combined licence area populations exceed 75 per cent of the population of Australia
- abolition of the ‘2 out of 3 rule’, which prohibits control of more than two out of three radio, television and newspaper platforms in any commercial radio licence area
- new local programming requirements for regional commercial television broadcasting licensees
- abolition of licence fees and datacasting charges, and an introduction of a fee for the use of broadcasting spectrum
- changes to the anti-siphoning scheme and list.

The package also included new restrictions on gambling advertising and a review of Australian and children’s screen content.14 The review is being conducted by DoCA in conjunction with the ACMA and Screen Australia, and includes a first-principles examination of support measures, regulations and incentives currently in place to support the production and distribution of Australian and children’s screen content. The review process includes extensive consultation with individuals and organisations in the sector.

FTA TV broadcasters

Traditional broadcasters are continuing to offer new services and platforms to access their content. In December 2016, Nine launched Go! Kids, a children’s entertainment space that includes a dedicated app and daily children’s viewing between 11 am and 2 pm, with children’s programming continuing from 6 am to 11 am and 2 pm to 6 pm.15

In June 2017, Seven West Media announced the decision to launch a new catch-up TV service to replace the current Plus7 service, which is jointly operated with Yahoo7. The new service is scheduled to be released by the end of 2017, with the current Plus7 service to continue as a news and video portal, generating revenue through digital advertising.16

The shift to online advertising has seen an increase in internet advertising expenditure and a decline in the amount spent on traditional TV.17 Network Ten, which has a 25 per cent share of the advertising market, posted a $232.2 million loss in the first half of 2017, and in June entered into voluntary administration after failing to secure a guarantee for a new $250 million loan in order to continue its operations.18 19 On 19 September, Ten Network Holdings Limited announced a proposed deed of company arrangement with CBS International Television Australia Pty Limited.20
Changes in regional television
The Nine Network, in partnership with Southern Cross Austereo, launched 15 local news services in Queensland, Southern New South Wales and Victorian regional markets, which were progressively rolled out from February to September 2017. The news services cover the following regional television markets:

- Southern New South Wales—Canberra, Wollongong, the Central West (Orange, Bathurst, Dubbo), Wagga Wagga
- Regional Victoria—Ballarat, Bendigo, Albury/Shepparton, Gippsland
- Regional Queensland—Cairns, Townsville, Mackay, Rockhampton, Wide Bay, Toowoomba, Sunshine Coast.

The Nine Network closed its Darwin newsroom in July 2017. While local news is being produced for the Darwin region, it is sourced from Nine’s Queensland newsroom and combines Territory news with national and international news.

Developments in audience measurement
Both OzTAM and RegionalTAM increased their audience ratings panels by 50 per cent in 2017. In April, OzTAM completed the increase of the metropolitan panel from 3,500 homes to 5,250, and the national subscription television (STV) panel from 1,413 home to 2,120. RegionalTAM’s panel increased from 2,135 homes to 3,198 homes in June.

Developments in SVOD and streaming devices
In December 2016, the government announced a self-regulation tool that allowed Netflix to process classifications of titles for Australian viewers. The 12-month pilot program seeks to speed up the classification process, in response to Netflix’s concern that gaining Australian classification for its content was a significant obstacle and the reason the airing of some titles was delayed in Australia.

New SVOD services launched in 2016–17 into an increasingly crowded space. In April 2017, nature and wildlife documentary service Love Nature launched with a subscription cost of $4.99 a month, with a percentage of each subscription fee donated to conservation projects. Amazon Prime launched in Australia in the first quarter of 2017, with subscriptions starting at $8.

Foxtel launched Foxtel Now in June 2017, amid increasing competition in the SVOD space. The service offers low-priced and more flexible bundles, giving subscribers greater freedom to access Foxtel’s content. Entry packages start from $10 a month with optional movie and sports packages available at an additional charge.

Optus launched Fetch Multiroom, allowing households to watch Fetch, Stan and Netflix content on up to three televisions concurrently by attaching multiple Fetch set-top boxes to a single account. Additionally, Fetch TV added 10 extra channels to its service and updated its pricing structure, offering four packages for $6 each or all four packages (with access to 49 channels) for $20 a month.

Developments from content providers
In addition to developing and updating product offerings, content providers are now commissioning original programs to create a competitive advantage in an increasingly saturated space.

In Australia, Foxtel has invested heavily in locally produced content, offering a range of reality programs, dramas and documentaries. In November 2016, Foxtel had 22 non-scripted shows in production and 10 dramas in development. Many of these programs are on-sold to FTA channels for broadcast at a later date, providing additional income for the service provider.

In May 2017, Netflix announced it had commissioned its first Australian original series Tidelands. Produced in Queensland by Hoodlum Entertainment, the 10-episode series will air in 2018.
Internationally, 2017 saw several major developments in the streaming industry. In mid-2017, Apple and Facebook were reported to be investing $1 billion in producing original content to compete against Netflix and Amazon, companies that have been producing original content for years. In August 2017, established content producer Disney announced it would launch a streaming service in 2019, adding another competitor to the streaming service market.

YouTube Red announced in February 2017 it had commissioned a suite of original US TV shows. Released from April 2017 and aimed at children aged 12 years and under, the programs are available through the mobile app YouTube Kids.

**Traditional broadcast TV**

Time spent watching live FTA broadcast television (viewed on the day of broadcast) is declining and so is the number of Australian adults watching traditional broadcast television every year.

Australians spent 28 per cent of their time across the day (in a 28-day period) using their TV set for something other than watching live or recorded broadcast TV. The time spent watching broadcast TV declined by almost six hours a month in the first quarter of 2017—we are spending 79 hours and 30 minutes a month watching live TV, compared to 85 hours and 20 minutes during the comparable period in 2016.

There has been a gradual decline in audience reach of FTA television over the last six years, with 82 per cent of Australian adults in the five major cities watching at least five minutes of FTA television in an average week in 2016–17, compared to 89 per cent in 2010–11. Regional markets have also seen a decline in audience viewing, decreasing from 87 per cent to 79 per cent (see Figure 3.6).

Nevertheless, while there has been a slight decline in FTA viewing, FTA broadcast programs remain the most watched of any type of content (Figure 3.11).

**Figure 3.6** FTA television viewing—average weekly cumulative reach (five minutes consecutive), five-city metro and consolidated regional markets (percentage)

Base: People aged 18 and over in the five mainland metropolitan markets (Sydney, Melbourne, Brisbane, Adelaide and Perth) for OzTAM, and for the combined regional markets (RegionalTAM).

Note: Definition of reach—the cumulative percentage or total (usually expressed in thousands) of a population that has been counted as viewers at least once during a specified interval. From 27 December 2015, figures are consolidated to 28 days.

Source: ©OzTAM Pty Limited and Regional TAM Pty Limited 2017. Apart from any use permitted under the Copyright Act 1968, the data may not be reproduced, published or communicated (electronically or in hard copy) without the prior written consent of OzTAM and/or RegionalTAM.
Subscription TV
The number of SVOD subscribers has grown rapidly since the first service launched in Australia in 2015. Netflix entered the Australian market in March 2015 and quickly became the largest of the SVOD services available.

Industry research estimated there were 3.7 million SVOD subscriptions (paid and non-paid) at June 2017. Netflix was estimated to have 2.02 million subscribers and a 55 per cent share of the market. Stan had the second largest share, with 24 per cent and 867,000 subscribers, while other services such as Foxtel Play/Now, Optus and YouTube Red made up the remaining 21 per cent and 769,000 subscriptions.38

Almost half of Australian households reportedly subscribed to either pay TV or SVOD services, reaching more than 3.7 million at the end of June 2017—an increase from 38 per cent in 2015. Only 11 per cent of households had both pay TV and SVOD.39 Forty-six per cent of SVOD subscribers claimed to ‘rarely’ watch FTA TV—the average subscriber watched nearly 26 hours of video content a week across FTA TV, STV, SVOD, on-demand services such as catch-up and live streaming, and other video sources. This compared to approximately 21 hours of video content viewing across all services for the average Australian.40

Consumer survey data shows that 62 per cent of Australians have at least one TV subscription, video subscription or pay-as-you-go service in their household. A Netflix subscription is the most common (41 per cent of households), followed by Foxtel (Figure 3.7).

Figure 3.7 Subscriptions or pay-as-you-go services (percentage)

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netflix</td>
<td>41</td>
</tr>
<tr>
<td>Foxtel/Foxtel Play</td>
<td>28</td>
</tr>
<tr>
<td>iTunes</td>
<td>10</td>
</tr>
<tr>
<td>Stan</td>
<td>8</td>
</tr>
<tr>
<td>Telstra</td>
<td>5</td>
</tr>
<tr>
<td>Fetch TV</td>
<td>4</td>
</tr>
<tr>
<td>Google Play</td>
<td>3</td>
</tr>
<tr>
<td>BigPond Movies</td>
<td>3</td>
</tr>
<tr>
<td>Optus</td>
<td>3</td>
</tr>
<tr>
<td>YouTube Red</td>
<td>2</td>
</tr>
<tr>
<td>Amazon Prime Video</td>
<td>1</td>
</tr>
<tr>
<td>Something else</td>
<td>2</td>
</tr>
<tr>
<td>Don't know</td>
<td>1</td>
</tr>
<tr>
<td>None of these</td>
<td>36</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 who have a television set in the home (n=2,193).
Source: ACMA-commissioned survey, June 2017.

Foxtel’s subscriber numbers decreased from 2.83 million in 2015–16 to 2.77 million in 2016–17, a fall of 1.8 per cent.41
Online streaming
In the four months to August 2017, there was a 25 per cent increase in streaming television as more Australians use online catch-up and live viewing services to watch broadcast TV. Over this period, 6.9 million Australians watched 1.5 billion minutes of catch-up and live streaming, and 5.8 million Australians watched free video on demand (FVOD), compared to 4.3 million watching SVOD.42

Younger Australians aged 18–24 are the most engaged with video content online, spending more than 22 hours per month watching video via desktop or laptop, and more than nine hours a month watching video via a smartphone.43

Online video traffic
Australia’s internet protocol (IP) traffic reached 1.0 exabytes per month, up from 697 petabytes in 2015, with video traffic accounting for 72 per cent of all IP traffic in 2016, up from 68 per cent in 2015. In 2016, 11 billion minutes of video content crossed the internet each month and this is forecast to rise to 12 billion minutes by 2021.44

Globally, IP traffic grew 29 per cent in 2016, reaching 96.1 exabytes per month, an increase from 74.3 exabytes per month in 2015. It is predicted to reach 378.1 exabytes per month in 2021.45

Devices and services used to access video content
The growth in online video content and access to SVOD services has seen a rise in the number of devices used to access the internet. However, despite the wide range of devices able to display broadcast and online content, the television set remains the most popular way of watching video content.

In the first quarter of 2017, 19.9 million Australians (84 per cent of the population in people-metered markets) watched some broadcast TV (FTA and subscription channels) on in-home TV sets each week. More than two-thirds of homes had internet-capable TVs, half had at least one tablet and eight in 10 had one or more smartphones.46

Fifty-six per cent of Australians who have a TV set in the home used a device or service to stream video content to their TV. While smart TVs are the most commonly used device for this purpose, 39 per cent of Australians aged 18 and over do not have a device or service available to stream video to their television set (Figure 3.8).
Figure 3.9 shows that a TV set remains the main way to watch video content—even online content—although free video content (such as YouTube) is more likely to be watched on computers or mobile devices.
Barriers to accessing online video content
Twenty-five per cent of Australians reported having no barrier to accessing online content, while the main obstacle reported (33 per cent) was an unwillingness to pay extra for an online content subscription (Figure 3.10).
3.3. Video content engagement

Despite the decline in time spent viewing broadcast content, watching FTA television live still represents the largest share (50 per cent) of the weekly average time spent watching television or video content (excluding pre-recorded DVDs) among Australian adults.

Watching professionally produced online content (catch-up television, other free online video content, video content via a subscription service or pay-per-view content) accounted for 25 per cent of time spent viewing content (Figure 3.11).
Engagement with online content
ACMA research shows that 59 per cent of Australian adults (11.35 million) had watched some online TV or professionally produced online video content in the six months to June 2017, with 47 per cent watching in the last seven days. Almost a third (32 per cent) watched video content via an online subscription service such as Netflix or Stan, and 19 per cent watched catch-up TV for FTA programs in the last seven days (Figure 3.12).
Netflix is the most popular online source for viewing professional video content. For the 68 per cent of adults who had accessed Netflix in the six months to June 2017, almost all of them (66 per cent) had accessed the service in the last seven days. YouTube is the second most used service to view professionally produced content, with 20 per cent having watched professional content in the last six months and 14 per cent in the last seven days (Figure 3.13).

**Figure 3.13 Online video services used in the last six months and seven days (percentage)**

<table>
<thead>
<tr>
<th>Service</th>
<th>Last six months</th>
<th>Last seven days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netflix in Australia</td>
<td>68</td>
<td>66</td>
</tr>
<tr>
<td>YouTube (excluding user-generated content)</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Foxtel (including Foxtel Play or Foxtel Go)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Stan</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>iTunes</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Fetch TV</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>BigPond movies or BigPond TV</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Google Play</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Some other video service</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>None</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

**Base:** Australians aged 18 and over who had watched online video, excluding catch-up, in the last six months (n=1,122) and in the last seven days (n=947).

**Source:** ACMA-commissioned survey, June 2017.

In June 2017, ABC’s iView was the most watched catch-up service for FTA programs, followed by SBS On Demand (67 per cent) (Figure 3.14).

Over 80 per cent of catch-up viewers aged 65 and over had watched ABC’s iView in the last seven days, while only 15 per cent had watched 9Now. Plus7 was the most watched service for younger Australians aged 18–34.

**Figure 3.14 Catch-up TV services used in the last seven days (percentage)**

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>iView</td>
<td>67</td>
</tr>
<tr>
<td>SBS On Demand</td>
<td>39</td>
</tr>
<tr>
<td>Plus7</td>
<td>37</td>
</tr>
<tr>
<td>TenPlay</td>
<td>28</td>
</tr>
<tr>
<td>9Now</td>
<td>24</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
</tbody>
</table>

**Base:** Australians aged 18 and over who watched catch-up TV for FTA programs in the last seven days (n=464).

**Source:** ACMA-commissioned survey, June 2017.
**Online viewer profile**

Australian adults watched a total of 18.9 hours of TV and online content in the last seven days (at June 2017). The total viewing hours across platforms increased with age, ranging from 14.9 hours for younger adults (18–34) to 18.7 hours for those aged 35–64 and 24.9 hours for older Australians over 65 (Figure 3.15).

Viewing habits, including choice of content platform, are linked to age. Traditional TV viewing, including FTA TV and Foxtel, increases with age, while online content viewing (catch-up TV, subscription, pay-per-view or free video content) diminishes with age.

Younger adults aged 18–34 spent most of their viewing time watching online content (9.2 hours per week). This decreased to 0.9 hours for those aged 65 and over.

Those aged 35–64 had a more even spread of viewing time across the content platforms, spending 9.4 hours watching FTA TV and 3.8 hours watching online content.

For older Australians over 65, FTA TV occupied most of their viewing time—17.4 hours on average per week.

Figure 3.15 Time spent watching TV (live or recorded) and online video content in the last seven days (average hours)

Base: Australians aged 18 who watched any FTA TV or online video content in the last seven days \(N=1,978\); 18–34 \(n=568\); 35–64 \(n=1,006\); 65+ \(n=404\).

Note: Numbers may not add up to category totals due to rounding. Online (catch-up TV, subscription, pay-per-view and free video content) excludes user-generated content.

Source: ACMA-commissioned survey, June 2017.
Concerns about content viewed online and via TV

Of those who watched TV in the six months to June 2017, 21 per cent had seen content that caused concern, compared to 15 per cent who had viewed concerning content online. Nevertheless, Australian adults are more concerned about content they view online (38 per cent) than on TV (14 per cent).

For adults who had watched online content, incorrect, false or misleading information was of greater concern (33 per cent) than among those who had seen concerning content on TV (31 per cent). For adults who watched TV, violence was of greatest concern, with two-thirds witnessing a level of violence that had caused concern (Figure 3.16).

Figure 3.16 Types of content viewed online or on TV that caused concern (percentage)

<table>
<thead>
<tr>
<th>Category</th>
<th>Concern about online content</th>
<th>Concern about TV content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violence</td>
<td>57</td>
<td>64</td>
</tr>
<tr>
<td>Amount of advertising</td>
<td>36</td>
<td>43</td>
</tr>
<tr>
<td>Gambling advertising</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>Incorrect/false/misleading information</td>
<td>33</td>
<td>31</td>
</tr>
<tr>
<td>Discrimination/racism/sexism</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>Drug use/drug references</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>Sexual content</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>Animal cruelty</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>Advertising content</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>Content related to children (e.g., bullying, abuse)</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>Coarse language</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>Adult themes (e.g., suicide, euthanasia)</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>Nudity</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Lack of classifications</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Politics/world events</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Poor quality of TV shows</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>News</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Base: Australians aged 18 who were concerned about content viewed recently, online (n=367) and on television (n=477).
Source: ACMA-commissioned survey, June 2017.
**Technical experience**

Eighty-seven per cent of Australians aged 18 and over were satisfied with the technical quality of online video, including picture quality and pauses caused by buffering, in the last seven days. Twenty-six per cent were very satisfied, compared to 12 per cent who were dissatisfied. Only three per cent were very dissatisfied (Table 3.1).

<table>
<thead>
<tr>
<th>Technical quality satisfaction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
</tr>
<tr>
<td>Satisfied</td>
</tr>
<tr>
<td><strong>Total satisfied</strong></td>
</tr>
<tr>
<td>Dissatisfied</td>
</tr>
<tr>
<td>Very dissatisfied</td>
</tr>
<tr>
<td><strong>Total dissatisfied</strong></td>
</tr>
<tr>
<td>Don’t know/not applicable</td>
</tr>
</tbody>
</table>

*Base: Australians aged 18 and over who watched online content in the last seven days (n=987).

*Note: Data may not add up to category totals due to rounding.*

*Source: ACMA-commissioned survey, June 2017.*

### 3.4. Online news services

More Australians are accessing their news online. In the six months to June 2017, 12.73 million Australians accessed an online news site.47 Younger Australians are using social media as their main source of news and more free online sources means competition between news sources has intensified.

Research undertaken by the News and Media Research Centre indicates that a growing number of Australians are choosing to consume their news via digital platforms. In 2017, a survey conducted by News and Media Research Centre found that 53 per cent of Australians accessed news sources more than once a day, with those aged 18–24 the lightest users. TV was the most common source of news, watched by 63 per cent of adults in the seven days prior to the survey, while social media-based news sites remained popular, despite a decline from 55 per cent in 2016 to 48 per cent in 2017.48

For Australian adults, the preferred source of news in June 2017 was terrestrial TV (38 per cent), with websites at 27 per cent and social media at 17 per cent. Of all the age cohorts surveyed, only those aged 18–24 used social media as their main news source (38 per cent), although this declined from 41 per cent in 2016. The TV set was the main news source for Australians aged 35 and over.49

Australians are still largely reluctant to pay for news, with the wide availability of free online sources cited as the main deterrent in paying for news.50 Industry research indicates that in 2016, only 13 per cent of people paid for news, an increase from 10 per cent in 2015. Those who used social media as their main source of news had the lowest likelihood of paying for news (five per cent), while 83 per cent of those who had not paid for news would not be willing to pay for it in the next 12 months.51

The diversity of online referrals52 of news and entertainment has decreased in recent years. In 2016, Facebook and Google accounted for three-quarters (75 per cent) of all referrals to major news and entertainment sites, with Facebook (40 per cent) superseding Google (35 per cent) for the first time.53 Four years ago, Google accounted for 40 per cent and Facebook 12 per cent of referrals. With Facebook and Google accounting for such a larger percentage, fewer than one-quarter come directly to a site or app.54
With the advances of digital and online news, traditional newspapers have transformed in recent years into multi-platform news providers. While print newspaper circulation has continued to decline, digital newspaper circulation has increased. In 2016, the combined readership of print and digital newspapers was nearly 17 million Australians, compared to 16.4 million in 2015. Sixty per cent used both print and digital, while 19 per cent used digital only and 21 per cent used traditional print for their news.\(^\text{55}\)

The research showed the most accessed online news platforms were news.com.au, with 24 per cent accessing the site in the last seven days, ABC News Online and nine.com.au (Table 3.2).

<table>
<thead>
<tr>
<th>Brand</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>news.com.au</td>
<td>23.9</td>
</tr>
<tr>
<td>ABC News Online</td>
<td>22.3</td>
</tr>
<tr>
<td>nine.com.au</td>
<td>21.1</td>
</tr>
<tr>
<td>Yahoo!7</td>
<td>17.4</td>
</tr>
<tr>
<td><em>The Sydney Morning Herald</em> (smh.com.au)</td>
<td>14.0</td>
</tr>
<tr>
<td>BBC news online</td>
<td>11.2</td>
</tr>
<tr>
<td>HuffPost Australia</td>
<td>10.7</td>
</tr>
<tr>
<td><em>The Age</em> (age.com.au)</td>
<td>10.7</td>
</tr>
<tr>
<td><em>Herald Sun</em> (heraldsun.com.au)</td>
<td>9.7</td>
</tr>
<tr>
<td>Other regional or local newspaper website</td>
<td>9.5</td>
</tr>
<tr>
<td><em>Daily Telegraph</em> (dailytelegraph.com.au)</td>
<td>9.0</td>
</tr>
<tr>
<td><em>The Australian</em> (theaustralian.com.au)</td>
<td>8.8</td>
</tr>
<tr>
<td>CNN.com</td>
<td>7.9</td>
</tr>
<tr>
<td>Guardian online</td>
<td>7.6</td>
</tr>
<tr>
<td>Buzzfeed News</td>
<td>7.5</td>
</tr>
<tr>
<td>Skynews.com.au</td>
<td>7.2</td>
</tr>
<tr>
<td>Channel TEN news online</td>
<td>6.4</td>
</tr>
<tr>
<td><em>The Courier Mail</em> (couriermail.com.au)</td>
<td>6.2</td>
</tr>
<tr>
<td><em>The New York Times</em> online</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Note: Survey response based on online usage in the last seven days prior to the survey.

Trust in news

Australia’s trust in media has declined since 2010. The largest decline in trust has been reported for newspapers—in 2011, 62 per cent had ‘a lot’ or ‘some’ trust, compared to only 42 per cent in 2017. Local newspapers have declined from 56 per cent in 2012 to 45 per cent in 2017. ABC TV remains the most trusted news source despite a decline from 70 per cent in 2010 to 59 per cent in 2017.\(^\text{56}\)

The rise in ‘fake’ news in 2016 was a cause for concern for some Australians. According to Deloitte’s Media Consumer Survey, 65 per cent of survey respondents who had accessed news through online sources were concerned about being exposed to fake news online, while 77 per cent believed they had been exposed.\(^\text{57}\) More than half (58 per cent) of the respondents changed the way they accessed news material online to avoid fake news. This shift in consumer behaviour may be a cause of the slight decline in the proportion of people using social media as their main source of news.
Industry reporting indicates that Australians who listen to the radio believe it provides the most trusted and authentic news compared to other forms of media—42 per cent of listeners believe radio is trustworthy, compared to TV (24 per cent), online (18 per cent), newspapers/magazines (15 per cent) and outdoor58 (three per cent).59

3.5. Broadcasting in Australia

Australian TV broadcasters are subject to certain content requirements imposed by the BSA. These include meeting minimum amounts of Australian content and children’s program content for commercial FTA broadcasters, captioning for all TV broadcasters, local content for regional commercial TV and radio broadcasters, and Australian content expenditure for subscription TV broadcasters.

Australian content

The BSA and the Broadcasting Services (Australian Content) Standard 2016 (Australian Content Standard) stipulate Australian content quotas for commercial TV. Under the BSA, commercial TV broadcasters must provide:

> 55 per cent Australian content, between 6 am and midnight across the year, on their primary channel
> 1,460 hours of Australian programming on channels other than their primary channel (multi-channels).

The Australian Content Standard requires commercial TV broadcasters to:

> broadcast minimum amounts of first-release Australian drama and documentary programs
> broadcast minimum amounts of Australian-made children’s programs
> ensure that all preschool programs are Australian programs.

Assessment of compliance with the quota requirements is calendar-year based. The metropolitan FTA commercial network licensees all met the Australian content transmission quotas for overall content, drama and documentaries for the 2016 calendar year (Table 3.3).

Table 3.3 Metropolitan FTA commercial network licensee compliance with the Australian Content Standard for the 2016 calendar year

<table>
<thead>
<tr>
<th>Minimum quota*</th>
<th>Licensee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seven Network</td>
</tr>
<tr>
<td>Overall Australian content on primary channel</td>
<td>55%</td>
</tr>
<tr>
<td>Overall Australian content on non-primary channel</td>
<td>1,460 average hours</td>
</tr>
<tr>
<td>First-release Australian drama</td>
<td>250 points</td>
</tr>
<tr>
<td>First-release Australian documentaries</td>
<td>20 average hours</td>
</tr>
</tbody>
</table>

*Minimum transmission quota required as per section 121G of the BSA.

Note 1: Overall Australian content relates to first-release and repeat programs that must be broadcast between 6.00 am and midnight. Licensee requirements for each network are calculated by averaging across the following locations: Seven Network—five mainland state capital cities, Nine Network—Brisbane, Melbourne and Sydney, Network Ten—five mainland capital cities.

Note 2: Australian drama and Australian documentaries relate to first-release programs only.

Source: ACMA.
Children’s programs on commercial television

In conjunction with the Australian Content Standard, the Children’s Television Standards 2009 (CTS) are designed to give children under 14 years of age access to quality television programs that are specifically made for them and reflect their cultural experience.

The CTS requires licensees to provide at least 390 hours annually of children’s programs comprising:

- 260 hours of children’s (C) programs
- 130 hours of preschool (P) programs.

For C and P programs to qualify, they must be classified in accordance with criteria in the CTS. In 2016–17, the ACMA assessed 34 applications for C and P classification. All but one were approved.

The Australian Content Standard sets out additional annual and triennial first-release and C-drama requirements within C and P quotas. For the 2016 calendar year, all metropolitan FTA commercial television broadcasting licensees met all annual quotas (Table 3.4).

Table 3.4 Metropolitan FTA commercial network licensees’ compliance with C and P program quotas, 2016 calendar year

<table>
<thead>
<tr>
<th></th>
<th>Minimum annual requirement—hours</th>
<th>Licensee—total annual hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Seven Network</td>
</tr>
<tr>
<td>Australian children’s C drama</td>
<td>First-release</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Repeat</td>
<td>8</td>
</tr>
<tr>
<td>Australian children’s C programs</td>
<td>First-release including C drama</td>
<td>130</td>
</tr>
<tr>
<td>Children’s C programs</td>
<td>All</td>
<td>260</td>
</tr>
<tr>
<td>Australian preschool P programs</td>
<td>All</td>
<td>130</td>
</tr>
</tbody>
</table>

Note: Licensee requirements for each network are calculated by averaging across the following locations: Seven Network—five mainland state capital cities, Nine Network—Brisbane, Melbourne and Sydney, Network Ten—five mainland capital cities.

Source: ACMA.

Subscription and FTA TV drama expenditure

The new eligible drama expenditure scheme requires subscription TV broadcasting licensees and channel providers that provide drama services to spend at least 10 per cent of their annual total program expenditure on eligible drama programs during a financial year. If the 10 per cent expenditure requirement is not met in the relevant financial year, the shortfall amount must be made up in the following year.

To be eligible, a drama program must be an Australian or a New Zealand production or co-production, and must not have been televised in Australia or New Zealand on a broadcasting service at any time before the expenditure on the program was incurred.

The BSA defines a subscription television drama service as a service devoted predominantly to drama programs; that is, more than 50 per cent of the programming consists of drama programs.

For the 2015–16 compliance period, six licensees, five channel providers and two pass-through providers supplied 28 eligible drama channels. All participants met their expenditure obligations for 2015–16, reporting an expenditure of $51.2 million (aggregated) on new eligible Australian drama programs. Of that expenditure, $15.4 million was nominated to acquit the expenditure shortfall for 2014–15. For 2016–17, licensees and channel providers must spend a minimum of $2.4 million (in total)
on new eligible drama programs to acquit the 2015–16 shortfall. Annual licensee and channel provider returns for 2016–17 fall due on 29 August 2017 and results were not available at the time of publication.

FTA TV broadcasters were the largest investors in Australian drama production in 2016–17. According to the most recent Drama Report by Screen Australia, commercial FTA broadcasters invested $107 million into local drama production in 2016–17, with almost 80 per cent of their programming expenditure spent on local content.62

Captioning
During 2015–16, broadcasters reported a high level of compliance with annual captioning target requirements set out in the BSA:

> Ninety-two out of 95 commercial and national television broadcasting services achieved between 99.86 per cent and 99.99 per cent captioning between 6 am and midnight on their primary channels. The shortfalls against the 100 per cent captioning target were small, averaging 1.6 hours per service across the whole year.
> The remaining three services each exceeded their reduced captioning target of 90 per cent for the year. They had target reduction orders in place for 2015–16 on grounds of unjustifiable hardship.
> A total of 594,439 hours of television programs was broadcast with a captioning service on the primary channels of commercial and national television broadcasting services (6 am to midnight). This was an increase of 5,585 hours of captioning compared to the same period in 2014–15.
> Approximately 99.4 per cent of subscription television licensees (651 out of 655) met their annual captioning target requirements, while 65.3 per cent exceeded their captioning target.
> A total of 2,619,798 hours of captioned content was broadcast on subscription television services in 2015–16. This was an increase of 89,794 hours compared to 2014–15.

Each of the television service providers who did not meet captioning targets have taken appropriate steps to prevent similar issues recurring, including resolving technical issues, enhancing procedures and undertaking staff training. The ACMA did not need to take any additional enforcement action on these matters.

Table 3.5 summarises the self-reported breaches, excluding disregarded breaches. Breaches solely resulting from unforeseen technical difficulties were disregarded, as per the captioning legislation.

Table 3.5 Breaches of captioning target requirements reported by television services, 2015–16, excluding disregarded breaches

<table>
<thead>
<tr>
<th>Sector</th>
<th>Captioning target</th>
<th>Number of services in breach</th>
<th>Causes of breaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial and national</td>
<td>100% captioning from 6 am to midnight each day on</td>
<td>70 services</td>
<td>Largely caused by unforeseen technical difficulties, with some minor instances of</td>
</tr>
<tr>
<td>television</td>
<td>primary channels, with exceptions*</td>
<td></td>
<td>human or procedural errors</td>
</tr>
<tr>
<td>Subscription television</td>
<td>10–80% captioning across the year depending on</td>
<td>4 services</td>
<td>Administrative or procedural issues</td>
</tr>
<tr>
<td></td>
<td>service category, with exceptions*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Captioning obligations do not apply to exempt programs, which include foreign programs (not wholly in English) and music programs that do not contain any human vocal content. In 2015–16, three commercial television broadcasters had a reduced captioning target of 90 per cent because of target reduction orders (unjustifiable hardship). Some subscription television services were exempt from the annual captioning target because of exemption orders (unjustifiable hardship) and nominations under section 130ZX of the BSA—a transitional measure that allows exemption of certain services if the licensee has met the annual captioning target for the threshold number of services.

Source: ACMA.
**Exemption orders and target reduction orders**

In 2016–17, the ACMA approved 67 applications for exemption orders (for 67 separate subscription television services) and four applications for target reduction orders (for four separate subscription television services) (Table 3.6).

**Table 3.6 Captioning exemption orders and target reduction orders**

<table>
<thead>
<tr>
<th>Application type*</th>
<th>Approved</th>
<th>Refused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemption order</td>
<td>67</td>
<td>0</td>
</tr>
<tr>
<td>Target reduction order</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

*The ACMA has the power under section 130ZY of the BSA to make an exemption order or a target reduction order for a specified commercial, national or subscription television service if it is satisfied that refusing to do so would cause unjustifiable hardship to the broadcaster or licensee.

Source: ACMA.

**Review of captioning legislation**

The ACMA was required, before 31 December 2016, to conduct a review of the captioning rules in the BSA. We released a consultation paper on 8 June 2016 seeking stakeholder submissions about the operation of the rules. Our report on the outcomes of the review, dated April 2017, was tabled in the Senate and House of Representatives on 19 and 20 June 2017, respectively.

**Consumer use of captioning**

ACMA research found that one in three Australians is regularly using captioning, with 52 per cent using it at least once a month. Thirty-five per cent cited the reason for using captioning was ‘to watch TV in a noisy environment’, while 29 per cent use it ‘to watch TV in a quiet environment’. Fifteen per cent of respondents who use captions did so due to a hearing impairment.63

**Notification of changes in control**

Commercial television licensees, commercial radio licensees and publishers of associated newspapers must notify the ACMA of any changes in control within 10 business days of becoming aware of those changes (section 63 of the BSA). Persons who come into a position to exercise control of such licences and associated newspapers are also required to notify the ACMA within 10 business days of becoming aware of the change in control (section 64 of the BSA).

During 2016–17, no formal warnings or infringement notices were given for late notifications of changes of control, while there were eight events affecting the control of media operations.

**Local information on regional television**

The following regional commercial television broadcasting licensees in Queensland, New South Wales, Victoria and Tasmania must broadcast minimum amounts of material of local significance (local content) because of an additional licence condition:

> Seven Qld, Southern Cross and WIN TV in regional Queensland
> NBN Ltd, Prime Television and WIN TV in northern New South Wales
> Prime Television, Southern Cross and WIN TV in southern New South Wales
> Prime Television, Southern Cross and WIN TV in regional Victoria
> Southern Cross, WIN TV and Southern Cross/WIN joint venture in Tasmania.

For the period 1 July 2016 to 30 June 2017, the ACMA did not receive any complaints about compliance under the local content additional licence condition.
Local content, information and presence on regional commercial radio

Regional commercial radio licensees are required to broadcast prescribed amounts of material of local significance (local content) each year. For the period 1 July 2016 to 30 June 2017, the ACMA did not receive any complaints about compliance with local content obligations.

Regional commercial radio licensees are also required to comply with additional obligations where there has been a change in ownership or control known as a ‘trigger event’. The licensee for a trigger event-affected licence must:

1. meet minimum service standards requiring the broadcasting of specified amounts of local news and information
2. maintain existing levels of ‘local presence’ (that is, local staff and facilities) for 24 months from the date of the trigger event (the local presence obligation).

The ACMA did not receive any complaints about compliance with minimum service standards or local presence obligations.

Reporting on minimum service standards

As part of the requirement to meet minimum service standards, licensees for trigger event-affected licences are required to submit local content plans to the ACMA for approval within 90 days of the trigger event and must submit annual compliance reports on these plans by 30 September each year.

During the period 1 July 2016 to 30 June 2017, there was one trigger event affecting two regional commercial radio licences. All required local content plans were provided within the 90-day time frame.

Annual reports for the period 1 July 2015 to 30 June 2016, were received by all 132 trigger event-affected licensees with local content plans in force. In each case, licensees were found to have complied with the requirement to take all reasonable steps to ensure compliance with a local content plan.

The ACMA conducted two investigations into the requirement for a licensee to take all reasonable steps to ensure compliance with a local content plan. The investigations related to two licences held by the same licensee. The investigations found that in both cases the licensee was not in breach of this requirement and no further action was taken.

Reporting on the local presence obligation

As part of the requirement to maintain existing levels of local presence, licensees for trigger event-affected licences are required to report on the existing levels of local presence within 90 days of a trigger event, and to report again on their compliance with the requirement within three months of the end of the 24-month local presence obligation period.

During the period 1 July 2016 to 30 June 2017, there was one trigger event affecting two regional commercial radio licences. The required existing level of local presence reports were provided in the required time frame.

The 24-month local presence obligation also ceased for three regional commercial radio licences. The required end-of-period local presence compliance reports were provided in the required time frame.

Anti-siphoning provisions

The anti-siphoning scheme in the BSA restricts subscription television broadcasting licensees from acquiring anti-siphoning events in certain instances. The scheme also restricts the broadcast of anti-siphoning events by FTA broadcasters on their digital multi-channels.

During the reporting period, the ACMA did not commence any investigations into compliance by any commercial television licensee with the licence condition restricting the broadcast of anti-siphoning events.
**Digital television**
The ACMA seeks to ensure that all members of the community are benefitting from digital television. While issues of external interference (such as ducting, receiver overload or power-line interference) may serve to trigger community complaints about reception, the ACMA's experience over many years is that most poor TV reception across Australia is caused or exacerbated either by inadequate receive antenna systems (such as poorly maintained, broken or incorrectly installed antennas) or by viewers not taking advantage of the most appropriate transmission service for their area.

We have focused our strategies to inform and help affected viewers and, when required, to support broadcasters. We have also been working with industry to develop planning solutions to improve the reliability of television coverage into Springsure, Queensland. The upgrade to the Apollo Bay, Victoria, transmission site has been completed and issues with reception have been resolved.

**Digital radio**
Digital radio services, using DAB+ technology in VHF Band III spectrum, have been running on a permanent basis in Adelaide, Brisbane, Melbourne, Perth and Sydney since July 2009.

Trials of DAB+ are being conducted in Canberra and Darwin by the peak commercial radio body, CRA. The trial licences were to expire on 30 June 2017 but have been extended to 30 June 2018. The ACMA is now working with industry to facilitate the permanent licensing of these trial services.

Following on from the recommendations of the 2015 report prepared by the Department of Communications on digital radio services in Australia, the ACMA established a joint government–industry Digital Radio Planning Committee. The committee provides a forum for the ACMA to work closely with the radio industry to facilitate the rollout of digital radio into regional areas of Australia. The work of the committee has enabled the ACMA to adopt a set of planning principles to be applied in developments to establish regional digital radio services. Guided by these principles, we have now made formal digital radio channel plans for Canberra and Darwin.

**AM to FM conversions in selected regional areas**
The ACMA is coordinating the necessary planning and approvals to facilitate the conversion of the transmission of commercial radio services from the AM to the FM band in single licensee (solus) regional licence areas.

CRA has requested that AM to FM conversions be allowed in solus regional licence areas. The Minister for Communications and the Arts agreed in principle, subject to certain caveats. The minister subsequently requested the ACMA give priority to these AM to FM conversions, subject to our statutory broadcast planning considerations under Part 3 of the BSA.

The ACMA, with assistance from the commercial radio industry, has begun the planning required to facilitate AM–FM conversion in eligible areas of regional Australia. To date, we have approved AM–FM conversions in Karratha, Port Hedland, Exmouth, Paraburdoo and Tom Price in Western Australia. The AM to FM conversion in these regional areas has the potential to deliver a range of benefits, including improved audio quality, reduced signal interference and lower costs for regional broadcasters.

**Broadcasting complaints and investigations**
The ACMA is responsible for a range of compliance, investigation and enforcement activities for content-related standards, codes and legislative obligations under the BSA. As part of this role, we received 1,028 written complaints and enquiries in 2016–17 about television and radio content broadcast on community, commercial, subscription and national broadcasting and narrowcasting services. This was a 17 per cent decrease on the number of complaints and enquiries we received in the previous year.

The ACMA has a discretion to investigate complaints about broadcasting matters. This discretion allows us to consider the public interest in the matters it investigates and to focus our resources on complaints of a more serious or systemic nature. In 2016–17, we exercised our discretion to investigate 120 matters and declined to investigate 78 matters. In 2015–16, we investigated 149 matters and declined to investigate 65 matters.
A total of 120 investigations were completed in the period, including six investigations withdrawn prior to decision. Breaches were found in 64 cases. Given the number of services and amount of annual scheduled programming (over 6.5 million hours), the number of breaches suggests the broadcasting industry is both compliant with and responsive to its regulatory obligations (Table 3.7). In 2016–17:

> the average time taken to complete investigations was 1.3 months, an improvement on an average of 1.6 months in 2015–16 and 2.6 months in 2014–15

> 100 per cent of broadcasting investigations were completed within six months, an improvement from 97.5 per cent in 2015–16 and 92.5 per cent in 2014–15.

The improvement in the completion time frames for broadcasting investigations has been facilitated by broadcaster cooperation and industry willingness to accept a number of continuous improvement and process changes. This also represents a positive outcome for complainants and the broader community.

Industry participation in training provided by the ACMA has led to an increased understanding of several compliance issues under the BSA. Throughout 2016–17, the broadcasting industry engaged directly with the ACMA in an open and positive way in a series of workshops and consultations on the ACMA privacy guidelines and the BSA requirements for broadcasting political matter and election advertisements. This engagement resulted in over 60 industry participants attending these workshops, and early indications are of improved industry awareness of, and compliance with, both areas of regulation.

In addition to industry consultation and outreach, our Investigations concepts series was updated in the reporting period. Along with regular publication of broadcasting investigation reports, this series supports industry compliance by providing openness and transparency when explaining decisions and approaches.

Table 3.7 ACMA broadcasting complaints and investigations, by financial year

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Written complaints and enquiries received</td>
<td>2,273</td>
<td>2,178†</td>
<td>1,593</td>
<td>1,012</td>
<td>1,232</td>
<td>1,028</td>
</tr>
<tr>
<td>Investigations completed</td>
<td>231</td>
<td>212</td>
<td>180</td>
<td>145</td>
<td>156†</td>
<td>120††</td>
</tr>
<tr>
<td>Investigations resulting in a breach finding*</td>
<td>71</td>
<td>67</td>
<td>45</td>
<td>35</td>
<td>35</td>
<td>64</td>
</tr>
<tr>
<td>Investigations resulting in a non-breach finding*</td>
<td>155</td>
<td>135</td>
<td>132</td>
<td>100</td>
<td>109</td>
<td>50</td>
</tr>
</tbody>
</table>

*Investigations against a code of practice, licence condition, standard and/or provision of the BSA.
†Includes investigations with no finding and investigations that have been concluded (withdrawn prior to decisions).
††A total of 120 investigations were finalised between 1 July 2016 and 30 June 2017, including six investigations that were concluded.

Note: Sum of categories does not equal total number of investigations completed due to exclusion of completed investigations with no finding; for example, where the complaint is withdrawn.

Source: Broadcasting complaints to the ACMA.
3.6. Online content investigations—interactive gambling

The *Interactive Gambling Act 2001* (IGA) prohibits certain internet gambling content, as well as the advertising of such content. IGA complaints received and actioned by the ACMA in the reporting period are outlined in Table 3.8. Under the IGA, the ACMA must not investigate Australian-hosted content but must refer complaints to an Australian police force, if it is warranted to do so. We received a total of 283 complaints and enquiries during 2016–17.

**Table 3.8 Interactive gambling complaints and enquiries per financial year**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Complaints and general enquiries</td>
<td>178</td>
<td>198</td>
<td>283</td>
</tr>
<tr>
<td>Investigations of overseas-hosted gambling content</td>
<td>12</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Prohibited internet gambling content found to be in breach of the IGA, notified to accredited filter providers and the AFP</td>
<td>9</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Assessments of Australian-hosted gambling content</td>
<td>14</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Potential prohibited content referred to the AFP</td>
<td>5</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Investigations into the broadcast of interactive gambling advertisements*</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Under the IGA, the ACMA only investigates interactive gambling advertisements broadcast on television or radio. DoCA takes responsibility for all other advertising, such as online or in print.

Source: Interactive gambling complaints to the ACMA.
Endnotes

2. ibid.
5. ibid.
8. ACMA-commissioned survey, June 2017.
12. ACMA, Changes to media control and diversity rules, 18 October 2017.
18. S. Lennin, ‘Ten Network may yet be saved from receivership, with administrator confident of recapitalisation’, abc.net.au, 26 June 2017.
25. Regional TAM ‘Regional TAM 50% panel expansion complete’, media release, 19 June 2017.
39. ibid.
40. ibid.
45. ibid.
47. ACMA-commissioned survey, June 2017.
49. ibid.
50. ibid.
51. ibid.
52. An internet referral is similar to a recommendation from one website to another, typically as the result of a search, endorsement or sharing on social media.
54. ibid.
“Outdoor” refers to advertising that is seen outdoors, such as billboards, etc.


The scheme imposes a spending obligation on subscription television broadcasting licensees and channel providers on Australian and New Zealand programs, but there is no requirement to broadcast such programs.

This is the most recent available data at time of publication.

Free TV Australia, *Commercial TV is again the home of local drama*, media release, 31 October 2017.

ACMA-commissioned survey, June 2016.

The following services are exempt from local content obligation—regional commercial radio broadcasting services licensed under section 40 of the BSA, regional racing services and remote licences.

Subject to certain exceptions, a ‘trigger event’ is defined as: (a) a change in control of a regional commercial radio licence, (b) the formation of a new registrable media group where a regional commercial radio broadcasting licence is in the group or (c) a change in controller of a registrable media group where a regional commercial radio broadcasting licence is in the group.

The following services are exempt from minimum service standards and local presence obligations—regional commercial radio broadcasting services licensed under section 40 of the BSA, regional racing services and remote licences.


Areas with less than 30 per cent overlap with another licence area.
4. National interest issues

This chapter reports on the performance of the emergency call service, national interest issues, cooperation with law enforcement agencies and cost of compliance with the requirements of Part 14 of the Telecommunications Act and Part 5-1A of the Telecommunications (Interception and Access) Act 1979 (TIA Act). It includes information about the communications industry’s support for law enforcement and national security agencies through the maintenance of communications interception capabilities and the authorised disclosure of information. This chapter addresses the statutory requirements under paragraph 105(5A) of the Telecommunications Act.

Key points for 2016–17

> The number of emergency service calls (Triple Zero and 112) increased to just over 8.5 million compared to 2015–16. Most emergency service calls are made from mobile phones.
> Telstra’s performance exceeded the benchmarks for the time taken to answer emergency service calls, although performance times were slightly lower than in previous years.
> The number of carriage services reported as suspended by CSPs decreased from 28 in 2015–16 to eight in 2016–17.
> The cost to industry of providing interception capabilities decreased from $22.6 million in 2015–16 to $22 million.
> The number of disclosures made by CSPs and carriers reported under section 308 of the Telecommunications Act was 638,371—a decrease of 4.4 per cent compared to 2015–16.
> In April 2017, the ACMA revised the regulatory arrangements for prepaid mobile services to, among other things, make it simpler for mobile providers to supply prepaid mobile services for people in emergency situations where they are unable to return home due to natural disasters, or because of family violence.

4.1. Emergency call service

Under the Telecommunications (Emergency Call Service) Determination 2009 (Emergency Call Service Determination), CSPs are required to provide free access to the emergency call service from standard telephone and mobile services. The emergency call service is an operator-assisted service that connects callers to an emergency service organisation (ESO)—police, fire or ambulance—in life-threatening or time-critical situations.

The emergency call service is provided by the emergency call persons (ECPs), who are:
> Telstra—for calls made to the primary emergency service number (Triple Zero) and to the international emergency number 112 from mobile phones
> Australian Communication Exchange (ACE)—for calls made to the 106 text service for people who are deaf or have a hearing or speech impairment.

This section outlines the volume and type of calls to the emergency call service, along with the performance of the ECPs in answering emergency calls.

Emergency call service—Triple Zero and 112

When dialling Triple Zero, a recorded voice announcement (RVA) gives callers who have inadvertently dialled Triple Zero the opportunity to hang up before the call is connected to the ECP. In 2016–17, 3.7 per cent of calls to Triple Zero were from callers who hung up after hearing the RVA, leaving 96.3 per cent of calls to be connected to the ECP.

ECP data shows the number of calls to the Triple Zero and 112 emergency service numbers increased by 229,374 (2.7 per cent) to 8,580,119 calls in 2016–17 (Table 4.1).
In 2016–17, 69.7 per cent of emergency calls (5,977,477) were made from mobile phones (Table 4.1). Calls from fixed-line telephones represented 29.5 per cent of emergency calls, while 2.3 per cent were made from public payphones.\(^1\)

**Telstra’s performance in answering emergency calls**

Section 32 of the Emergency Call Service Determination sets out performance criteria for the ECPs’ answering of calls to Triple Zero and 112, as follows:

> 85 per cent of emergency calls answered within five seconds
> 95 per cent of emergency calls answered within 10 seconds.

As in previous years, Telstra performed well above the regulatory requirement in the reporting period (Table 4.1).

**Calls connected to ESOs**

The ECP for Triple Zero and 112 transfers emergency calls to the relevant state or territory emergency service answering point that is responsible for arranging the dispatch of an emergency response. In 2016–17, 6,335,601 calls were transferred to an ESO, an increase of 2.5 per cent from 2015–16 (Table 4.1).

Calls identified by the ECP as being non-emergency calls are not connected to an ESO. Non-emergency calls include misdials, automatically generated calls from incorrectly programmed fax machines or modems, callers reporting matters that are not emergencies, and hoax and malicious calls.

The proportion of ECP-answered calls transferred to an ESO was similar in 2016–17 (77.1 per cent) to 2015–16 (77.2 per cent). In 2016–17, the proportion of calls requiring transfer to an ESO increased by 2.5 per cent from 2015–16 (Table 4.1). This change is a positive one, reflecting the efforts of the ECP in managing the number of non-emergency calls made to the Triple Zero service.

The ACMA is continuing to monitor the results of an escalated warning process that was introduced in July 2009, and is managed by Telstra (as the ECP for Triple Zero and 112) and the three mobile network carriers. This process can lead to a mobile handset being blocked from making most calls if it is used to make repeated non-emergency calls to Triple Zero. Experience is showing that the risk of account suspension and police referral is acting as a significant deterrent. On average, 99 per cent of callers making repeated non-emergency calls are deterred from further misuse after receiving a warning from the ECP.
Table 4.1  Call volumes to emergency service numbers Triple Zero and 112, and call answering times (percentage)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Calls offered from mobile phones (%)</td>
<td>66.9</td>
<td>66.5</td>
<td>66.9</td>
<td>68.7</td>
<td>69.7</td>
</tr>
<tr>
<td>Calls offered from public payphones (%)</td>
<td>2.5</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Calls answered (%)</td>
<td>96.0</td>
<td>96.0</td>
<td>96.0</td>
<td>96.0</td>
<td>96.0</td>
</tr>
<tr>
<td>Of calls answered, those that wait five seconds or fewer (%)</td>
<td>95.8</td>
<td>95.4</td>
<td>97.3</td>
<td>94.9</td>
<td>93.2</td>
</tr>
<tr>
<td>Of calls answered, those that wait 10 seconds or fewer (%)</td>
<td>99.1</td>
<td>99.3</td>
<td>98.7</td>
<td>98.4</td>
<td>97.9</td>
</tr>
<tr>
<td><strong>Total number of calls offered</strong></td>
<td>8,854,728</td>
<td>8,481,470</td>
<td>8,377,394</td>
<td>8,350,745</td>
<td>8,580,119</td>
</tr>
<tr>
<td>Answered calls transferred to an ESO (%)</td>
<td>67.5</td>
<td>70.6</td>
<td>73.2</td>
<td>77.2</td>
<td>77.1</td>
</tr>
<tr>
<td><strong>Calls transferred to an ESO</strong></td>
<td>5,727,411</td>
<td>5,738,061</td>
<td>5,888,050</td>
<td>6,178,484</td>
<td>6,335,601</td>
</tr>
</tbody>
</table>

Note 1: The term ‘calls offered’ refers to the number of calls received by the ECP after the RVA.
Note 2: The RVA gives people who have inadvertently or otherwise dialled Triple Zero the opportunity to hang up before being connected to the ECP. Calls answered refers to the percentage of these calls that were answered.
Source: ECP (Telstra).

Enquiries and complaints about the Triple Zero service

The ACMA received three complaints and several enquiries about the Triple Zero service in 2016–17. All the complaints related to the handling of calls by the ESOs (and not to Telstra as the ECP for Triple Zero and 112) and were referred to the relevant organisation for a response. The ACMA did not undertake any formal investigations.

Emergency call service—National Relay Service

The relay service provider for the National Relay Service (NRS) is specified as an ECP in the Emergency Call Persons Determination. ACE is currently contracted by the Commonwealth as the NRS relay service provider and operates a text emergency service on the 106 number in this capacity. The 106 text emergency service is available for users with a teletypewriter (TTY). There were 75 genuine calls to ESOs via the 106 text emergency service in 2016–17, compared to 100 in 2015–16.

As shown in Figure 4.1, a significant number of genuine calls were also relayed by the NRS to ESOs via the Triple Zero emergency services number. In these circumstances, TTY users contacted the NRS via normal access numbers and requested the call be relayed to Triple Zero, rather than dialling the 106 text emergency service number from their TTY. Calls to Triple Zero can also be relayed through the NRS for its internet relay and Speak and Listen (speech-to-speech relay) callers, as these users are unable to access the 106 number through these services.

A total of 758 calls were made to Triple Zero using SMS relay (web browser), video relay and captioned relay in 2016–17, compared to 605 calls using these three services in 2015–16. This represents a 25 per cent increase in the use of this technology, with the use of the captioned relay alone increasing by 67 per cent in the year to June 2017.

The NRS mobile app allows internet relay and Speak and Listen users to make calls via the app rather than using an internet browser. The app also allows the caller to insert the location into the call using the GPS function of the device. There were 182 calls made via the app in 2016–17, compared to 145 calls in 2015–16.

A total of 1,302 genuine emergency calls were made via the NRS across all modes (SMS relay, internet relay, captioned relay, video relay, Speak and Listen, and TTY), compared with 1,113 calls in 2015–16.
Figure 4.1 Number of genuine emergency calls via the NRS

<table>
<thead>
<tr>
<th>Service Type</th>
<th>2016–17</th>
<th>2015–16</th>
<th>2014–15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captioned relay</td>
<td>311</td>
<td>282</td>
<td>265</td>
</tr>
<tr>
<td>SMS relay</td>
<td>233</td>
<td>112</td>
<td>56</td>
</tr>
<tr>
<td>Internet relay</td>
<td>226</td>
<td>145</td>
<td>56</td>
</tr>
<tr>
<td>TTY—106</td>
<td>75</td>
<td>100</td>
<td>123</td>
</tr>
<tr>
<td>TTY—000</td>
<td>49</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Speak and Listen</td>
<td>12</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Video relay</td>
<td>7</td>
<td>12</td>
<td>9</td>
</tr>
</tbody>
</table>

Base: Number of calls.
Source: NRS Service provider (ACE).

4.2. Supporting law enforcement and national security agencies

Carriers and CSPs, including ISPs, are obliged to provide reasonably necessary assistance to law enforcement and national security agencies under section 313 of the Telecommunications Act. This assistance can take many forms, but most commonly involves providing information about consumers of telecommunications services and their communications for the purposes of:

- enforcing the criminal law
- enforcing laws that impose a pecuniary penalty
- assisting the enforcement of the criminal laws in force in a foreign country
- protecting the public revenue
- safeguarding national security.

During the reporting period, the Attorney-General’s Department (AGD) did not refer any carriers or CSPs to the ACMA for enforcement action for refusing to provide an agency with such assistance.
Disclosure of customer information

Customer information provided to telecommunications carriers, CSPs and telecommunications contractors is protected under Part 13 of the Telecommunications Act. Carriers, CSPs and telecommunications contractors are prohibited from disclosing information to other parties except in certain limited and restricted circumstances. Those circumstances include but are not limited to:

> where it is required or authorised by a warrant or under law
> disclosure to the ACMA, Australian Competition and Consumer Commission (ACCC), TIO or the Office of the eSafety Commissioner, where the disclosure may assist those agencies to carry out their functions or powers or, in the case of the TIO, assist in the consideration of a complaint
> an imminent threat to a person’s life or health
> satisfying the business needs of other carriers and CSPs, where the customer is or was a customer of a carrier or CSP.

Carriers and CSPs are required to report to the ACMA on any disclosures that are authorised under either Part 13 of the Telecommunications Act or Chapter 4 of the TIA Act.

During 2016–17, the number of disclosures, as reported to the ACMA under section 308 of the Telecommunications Act, was 638,371, a decrease of 29,421 (4.4 per cent) from 2015–16. Of these, 79 per cent were covered by an authorisation in force to access existing information or documents for the enforcement of the criminal law under section 178 of the TIA Act.

Carrier and CSP data also indicates that approximately nine per cent of all disclosures were made with the knowledge or consent of the person concerned under section 289 of the Telecommunications Act. The number and reason for disclosures made during 2016–17, as reported to the ACMA under section 308 of the Telecommunications Act, are in Table 4.2.
<table>
<thead>
<tr>
<th>Reason for disclosure</th>
<th>(Sub)section</th>
<th>Number of disclosures</th>
<th>2015–16</th>
<th>2016–17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Under Part 13 of the Telecommunications Act 1997</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorised by or under law</td>
<td>280</td>
<td>13,334</td>
<td>10,327</td>
<td></td>
</tr>
<tr>
<td>Made as a witness under summons</td>
<td>281</td>
<td>276</td>
<td>669</td>
<td></td>
</tr>
<tr>
<td>To assist the ACMA</td>
<td>284(1)</td>
<td>366</td>
<td>479</td>
<td></td>
</tr>
<tr>
<td>To assist the Office of the eSafety Commissioner</td>
<td>284(1A)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>To assist the ACCC</td>
<td>284(2)</td>
<td>14</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>To assist the TIO</td>
<td>284(3)</td>
<td>7,774</td>
<td>8,262</td>
<td></td>
</tr>
<tr>
<td>Calls to emergency service number</td>
<td>286</td>
<td>8,062</td>
<td>18,540</td>
<td></td>
</tr>
<tr>
<td>To avert a threat to a person’s life or health</td>
<td>287</td>
<td>11,381</td>
<td>13,839</td>
<td></td>
</tr>
<tr>
<td>Communications for maritime purposes</td>
<td>288</td>
<td>0</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>With the knowledge or consent of the person concerned</td>
<td>289</td>
<td>66,629</td>
<td>58,701</td>
<td></td>
</tr>
<tr>
<td>In circumstances prescribed in the Telecommunications Regulations 2001</td>
<td>292</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Connected with an exempt disclosure</td>
<td>293</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>107,842</strong></td>
<td><strong>110,825</strong></td>
</tr>
<tr>
<td><strong>Under the Telecommunications (Interception and Access) Act 1979</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voluntary disclosures</td>
<td>177</td>
<td>43</td>
<td>367</td>
<td></td>
</tr>
<tr>
<td>Authorisations for access to existing information or documents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforcement of the criminal law</td>
<td>178</td>
<td>541,318</td>
<td>504,944</td>
<td></td>
</tr>
<tr>
<td>Locating missing persons</td>
<td>178A</td>
<td>4,229</td>
<td>3,073</td>
<td></td>
</tr>
<tr>
<td>Enforcement of a law imposing pecuniary penalty or protection of the public revenue</td>
<td>179</td>
<td>2,929</td>
<td>3,191</td>
<td></td>
</tr>
<tr>
<td>Authorisations for access to prospective information or documents</td>
<td>180</td>
<td>11,427</td>
<td>15,950</td>
<td></td>
</tr>
<tr>
<td>Enforcement of the criminal law of a foreign country</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing information</td>
<td>180A</td>
<td>4</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Prospective information</td>
<td>180B</td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>559,950</strong></td>
<td><strong>527,546</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>667,792</strong></td>
<td><strong>638,371</strong></td>
</tr>
</tbody>
</table>

Source: Carriers.

Information about enforcement agency use of powers under the TIA Act to obtain information from carriers and CSPs is contained in annual reports prepared by the AGD under subsection 186(2) of the TIA Act.

For disclosures made under sections 177, 178, 178A, 179, 180, 180A and 180B of the TIA Act, law enforcement agencies (civil and criminal) must be satisfied that the information they request is reasonably necessary to perform their law enforcement functions. An authorised officer must also consider whether any interference with the privacy of any person or persons that may result from the disclosure is justifiable, having regard to the likely relevance and usefulness of the information or documents, and the reason why the disclosure concerned was authorised.
Emergency suspension of carriage services

Under section 315 of the Telecommunications Act, a senior police officer of a police force or service who holds a rank not lower than Assistant Commissioner can request the suspension of a carriage service, if he or she has reasonable grounds to believe there is an imminent threat to someone’s life or health or to cause serious damage to property, and the suspension of the carriage service is reasonably necessary to prevent or reduce the likelihood of that outcome. CSPs reported the suspension of eight carriage services in 2016–17, down from 28 carriage services in 2015–16.

4.3. Interception

The content of communications between users of telecommunications services is protected in Australia as a crucial area of telecommunications privacy protection. Interception may only be authorised by law enforcement and national security agencies in accordance with a warrant under the TIA Act. Interception for other purposes is prohibited, with criminal penalties applicable for breaches of the TIA Act.

Providing assistance

Section 314 of the Telecommunications Act applies if a carrier or CSP is required to provide help to an officer or authority of the Commonwealth, a state or a territory, and sets out the terms and conditions under which help is to be given. Such persons must comply with a requirement on the basis that the person neither profits from, nor bears the costs of, giving that help.

Interception capability

Chapter 5 of the TIA Act obliges carriers and CSPs to ensure their networks, facilities and carriage services can enable communications to be intercepted on presentation of an interception warrant. This obligation includes a requirement to develop, install and maintain an interception capability. Under section 207 of the TIA Act, carriers and CSPs are responsible for the costs associated with providing interception capability in their networks.

In 2016–17, the cost to industry of providing interception capability was reported to the ACMA as $22 million (Figure 4.2), a reduction of 2.7 per cent from 2015–16.

Figure 4.2 Cost of providing interception capabilities ($ million)

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016–17</td>
<td>22.0</td>
</tr>
<tr>
<td>2015–16</td>
<td>22.6</td>
</tr>
<tr>
<td>2014–15</td>
<td>22.9</td>
</tr>
<tr>
<td>2013–14</td>
<td>19.3</td>
</tr>
<tr>
<td>2012–13</td>
<td>18.4</td>
</tr>
</tbody>
</table>

Source: ACMA annual industry data request.

Interception capability plan compliance

Under sections 196 and 197 of the TIA Act, carriers and nominated CSPs must lodge an interception capability plan by 1 July each year with the Communications Access Co-ordinator (CAC) in the AGD. The ACMA’s role is to enforce this obligation.

During the reporting period, the AGD referred 10 carriers to the ACMA for non-compliance with these provisions. Of these referrals:

- nine carriers submitted interception capability plans to the CAC following the ACMA’s request that they comply with their legislative obligations
- one carrier surrendered its carrier licence.
4.4. Data retention

Since 13 October 2015, carriers and service providers (including ISPs) have been subject to data retention obligations under Part 5-1A of the TIA Act. The data retention obligations are enforced by the ACMA under the applicable enforcement mechanisms set out in the Telecommunications Act.

Paragraph 105(5A)(b) of the Telecommunications Act requires the ACMA to report to the minister on the cost of compliance with the requirements of Part 5-1A of the TIA Act (about data retention).

In the Communications report 2015–16, the ACMA published the anticipated capital costs of complying with the data retention obligations, as advised by AGD. These costs corresponded to information submitted by carriers and service providers to AGD as part of their data retention industry grant applications as part of the Data Retention Industry Grants Programme.5

The actual cost of complying with the data retention obligations for the three financial years commencing July 2014 and ending June 2017 is set out in Table 4.3. This cost information corresponds to data obtained in 2017 by the ACMA from approximately 400 carriers and service providers.

In July 2017, the ACMA requested information from industry participants on their administrative6 and substantive7 compliance costs.

The ACMA also sought information regarding any costs recovered from criminal law enforcement agencies (CLEAs) for responding to requests for data.8 These recovered costs partially offset the administrative costs reported.

Total data retention compliance costs are further offset by funding via grants that was provided during 2016–17. The Data Retention Industry Grants Programme was administered by AusIndustry (a division of the Department of Industry, Innovation and Science) on behalf of the AGD and delivers on the government’s commitment to assist industry with the upfront costs of implementing the mandatory data retention regime. The programme consisted of a single funding round of grants to carriers and service providers. Most carriers and service providers received a grant of up to 80 per cent of their implementation costs. Table 4.4 shows the funding (GST-inclusive) provided to carriers and service providers during 2016–17. The effectiveness of the data retention obligations will be considered by a Parliamentary Joint Committee on Intelligence and Security in 2019.

Table 4.3  Reported cost of complying with the data retention obligations and costs recovered from CLEAs

<table>
<thead>
<tr>
<th>Financial year</th>
<th>Data retention compliance cost (exclusive of data retention industry grants)</th>
<th>Costs recovered from CLEAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014–15</td>
<td>$11,972,288.15</td>
<td>$7,316,341.41</td>
</tr>
<tr>
<td>2015–16</td>
<td>$44,426,132.06</td>
<td>$9,412,132.06</td>
</tr>
<tr>
<td>2016–17</td>
<td>$119,793,739.83</td>
<td>$9,829,783.17</td>
</tr>
<tr>
<td>Total</td>
<td>$176,192,834.17</td>
<td>$26,558,256.64</td>
</tr>
</tbody>
</table>

Note 1: The data represents the administrative and substantive compliance costs reported to the ACMA by approximately 400 carriers and service providers.

Note 2: The data retention obligations came into effect in October 2015. However, the ACMA is reporting from October 2014 to June 2017 as the Data Retention Industry Grants Programme Guidelines allowed carriers and service providers to submit direct (establishment) costs associated with meeting their obligations that they had incurred (or would incur) from 30 October 2014 onwards.

Source: Carriers and service providers.
Table 4.4  Funding provided under the Data Retention Industry Grants Programme

<table>
<thead>
<tr>
<th>Funding round</th>
<th>Number of recipients</th>
<th>Total grants funded</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016–17</td>
<td>174</td>
<td>$131,593,265,57</td>
</tr>
</tbody>
</table>

Note: Most carriers/service providers received a grant of up to 80 per cent of their implementation costs.
Source: AGD provided reports from AusIndustry on the funding of grants.

Compliance and enforcement

In 2016–17, the AGD referred three service providers to the ACMA for failing to submit an amended data retention implementation plan to the AGD. Following contact from the ACMA, the three service providers provided the amended plans as required.

4.5. Identity-checking requirements for prepaid mobile carriage services

In April 2017, the ACMA made the Telecommunications (Service Provider – Identity Checks for Prepaid Mobile Carriage Services) Determination 2017 (ID check Determination) to enable mobile providers to more efficiently meet the identity-checking requirements for prepaid mobile services. The determination includes new rules that:

- make it simpler for mobile providers to supply prepaid mobile services for people in emergency situations where they are unable to return home due to natural disasters or family violence
- increase the range of credit cards that can be used for identity verification.
- protect the privacy of individuals by requiring that mobile providers only obtain the minimum amount of information reasonably necessary to verify identity.

The new ID check Determination follows an ACMA review of the regulatory arrangements and implements recommendations of the working group we established to assist with its review, which included government and industry representatives.

In 2016–17, the ACMA raised compliance issues with four CSPs. This included requesting information on the systems and processes they have in place for checking identity at the time of sale. All four CSPs have implemented or are implementing some modifications to their processes following contact by the ACMA. One investigation under Part 26 of the Act will continue in 2017–18.

4.6. Role of the Integrated Public Number Database

The Integrated Public Number Database (IPND) is a telecommunications industry-wide database of all listed and unlisted public numbers and their associated customer data. Law enforcement agencies and emergency services regularly access customer data from the IPND and it is critical that the data is accurate for these purposes. The IPND is managed by Telstra.

Telstra reported that the IPND contained 69.9 million connected services at 30 June 2017, an increase of just over three per cent on the 67.7 million records held in 2015–16.

CSP compliance with IPND requirements

The ACMA’s compliance program seeks to improve CSP compliance with their IPND-related regulatory obligations to improve the quality, accuracy and completeness of data contained in the IPND.

In 2016–17, the ACMA pursued potential compliance issues with 20 CSPs. Of these, 16 subsequently took steps to improve the quality of the customer data they provide to the IPND Manager. At the end of the reporting period, we were seeking further information from the remaining four CSPs. We also monitored the enforceable undertakings in place with three CSPs to address non-compliance with IPND
obligations under the Telecommunications Act. One of the enforceable undertakings ended in May 2017, with all undertakings acquitted by the CSP.

**IPND Scheme**
The Telecommunications Integrated Public Number Database Scheme 2017 (IPND Scheme) allows the ACMA to authorise access to strictly limited IPND data for the purposes of conducting permitted research and publishing public number directories.

During the reporting period, we granted an authorisation to Notable Imprint Pty Ltd to publish and maintain public number directories. No authorisations to access IPND data for conducting research were granted during the reporting period.

At 30 June 2017, seven authorisations under the IPND Scheme were in operation. We granted the authorisations for the purpose of publishing and maintaining public number directories (Table 4.4).

In March 2017, we remade the IPND Scheme and introduced new rules to allow researchers more efficient access to limited IPND information. Under the new rules, we can now also authorise a recognised research industry body to manage access to limited IPND information on behalf of its members, in controlled circumstances. Access to limited IPND information is only permissible for research on public health, electoral matters or public policy topics. No access is allowed for research with a primarily commercial purpose.

These initiatives were implemented following consultation with relevant sectors that use the IPND Scheme.

**Table 4.4 Authorisations under the IPND Scheme**

<table>
<thead>
<tr>
<th>Person/entity</th>
<th>Authorisation granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Local Phone Book Company Pty Ltd</td>
<td>November 2008</td>
</tr>
<tr>
<td>Local Directories Pty Ltd</td>
<td>August 2009</td>
</tr>
<tr>
<td>Geoffrey Mark Harris</td>
<td>September 2009</td>
</tr>
<tr>
<td>Veda Advantage Limited*</td>
<td>February 2010</td>
</tr>
<tr>
<td>Perceptive Communications Pty Ltd</td>
<td>August 2010</td>
</tr>
<tr>
<td>Acceleon Pty Ltd</td>
<td>April 2011</td>
</tr>
<tr>
<td>Notable Imprint Pty Ltd</td>
<td>October 2016</td>
</tr>
</tbody>
</table>

*Veda Advantage was purchased by Equifax Pty Ltd in 2016.
Source: IPND Manager.

4.7. Handling of life-threatening and unwelcome communications

On 23 February 2017, the ACMA registered a new C525: 2017 *Handling of Life Threatening and Unwelcome Communications Code*. The code sets out obligations on carriers, CSPs and the NRS provider in responding to requests from customers and police to resolve life-threatening situations and unwelcome communications. The new code identified a need for specific rules for phone companies to follow when dealing with unwelcome calls made to helplines. Under new rules, CSPs will be able to suspend services supplied to people who repeatedly make unwelcome calls—whether offensive, harassing or simply a nuisance—to helplines such as Lifeline.

The TIO confirmed it had found no breaches under this code. New complaint issues increased by 2.2 per cent from 413 in 2015–16 to 422 in 2016–17.
Endnotes

1 The total of emergency call percentages does not equate to 100 per cent. Public payphones are a subset of fixed calls.

2 In July 2017, DoCA published Guidelines for the use of section 313(3) of the Telecommunications Act 1997 by government agencies for the lawful disruption of access to online services.

3 The definition of a carrier under section 5 of the TIA Act includes CSPs for these provisions.

4 Nominated CSPs are CSPs covered by a declaration in force under subsection 197(4) of the TIA Act.

5 The costs advised by AGD were exclusive of GST.

6 Administrative costs are incurred by regulated entities primarily to demonstrate compliance with regulation. Some examples of administrative costs include the costs of making, keeping and providing records.

7 Some examples of substantive compliance costs are the costs of providing training to employees to meet regulatory requirements, purchasing and maintaining plant and equipment, and professional services incurred to meet the data retention requirements.

8 When providing necessary assistance to CLEAs, carriers and service providers do so on the basis that the carrier or service provider neither benefits from, nor absorbs the costs of, giving that assistance and can therefore recover costs in accordance with agreed terms and conditions.
5. Telecommunications consumer safeguards and quality of service

This chapter reports on the efficiency of the supply of telecommunications services, the adequacy and quality of these services, and carrier and CSP obligations for codes and standards. It also presents analysis and information about the telecommunications industry’s performance in meeting key regulatory obligations, including the Customer Service Guarantee Standard (CSG Standard), the Network Reliability Framework (NRF), provision of priority assistance to customers, number portability, telemarketing and spam investigations, industry compliance with telecommunications codes and trends in TIO complaints. This chapter addresses the statutory requirements under paragraphs 105(3)(a), (b), (c), (d), (e) and (ea), and subsection 105(4) of the Telecommunications Act.

Key points for 2016–17

> The CSG Standard covered 6.22 million services and all qualifying CSPs met the CSG performance benchmarks based on the reporting provided.

> There was an increase in the amount of compensation paid to customers as a result of CSPs failing to meet CSG Standard time frames—up 29 per cent to $20.82 million. This increase is, in part, a reflection of retailers of NBN services claiming fewer exemptions from the CSG service standards.

> The total number of payphones decreased by 5.5 per cent to 23,226.

> There was an increase in the amount of numbers ported—to 1.3 million local numbers and 1.87 million mobile phone numbers.

> There were 146 partners in the Australian Internet Security Initiative (AISI), with these partners estimated to cover more than 95 per cent of allocated Australian IP address ranges.

> The average number of AISI malware reports per day increased significantly in December 2016 to 41,281, up from an average 8,557 in 2015–16. A total of 38.5 million daily observations of malware infections were reported to AISI partners in 2016–17, averaging 3.2 million infections per month.

> The total numbers registered on the Do Not Call Register (DNCR) reached 11.02 million.

> The number of complaints the ACMA received about telemarketing increased by 22.5 per cent from 23,014 to 28,197.

> The number of complaints to the TIO increased, with 158,016 new complaints (up by 41.1 per cent compared to 2015–16).

> NBN-specific complaints to the TIO rose by 159 per cent in the year to 2016–17, with the majority about service faults.

5.1. Telecommunications Industry Levy and public policy outcomes

The Telecommunications Industry Levy (TIL) funds the residual costs (after government funding) of paying contractors and grant recipients, and eligible administrative costs, to ensure continuity of key telecommunications safeguards. This levy provides funding for:

> reasonably accessible standard telephone services and payphone services to all Australians on an equitable basis, wherever they reside or carry on business—the universal service obligation (USO)

> a national telephone service to enable people who are deaf or have a hearing and/or speech impairment to make and receive telephone calls wherever they reside or carry on business—the NRS

> end users of standard telephone services in Australia to have access, free of charge, to an emergency call service

> delivery of other public policy telecommunications outcomes; for example, untimed local calls.
The ACMA is responsible for the billing and collection of the TIL, and DoCA manages contractual arrangements and service provider payments.

Industry levies and payments
The TIL amount for a licensed telecommunications carrier is the amount that carrier must contribute to the cost of funding the activities described above. Carriers with eligible revenue of $25 million (‘participating persons’) or more are required to pay the TIL. Contributions are, in general, proportionate to the participating person’s share of the industry’s total eligible revenue for the relevant period.

Final TIL assessment
Following advice from DOCA, the Acting Secretary of the department determined on 13 October 2016 that the amount of TIL to be collected for the 2015–16 Eligible Levy Period (ELP) was $217,744,000 (Table 5.1). There were 235 licensed telecommunications carriers in the 2014–15 Eligible Revenue Period (ERP), with 44 determined as participating persons for the 2015–16 ELP. The ACMA subsequently issued invoices and the full amount was collected during 2016–17.

<table>
<thead>
<tr>
<th>Eligible Revenue Period</th>
<th>Eligible Levy Period</th>
<th>Levy payment period</th>
<th>Number of carriers</th>
<th>Eligible revenue submissions received late (after 31 October)</th>
<th>TIL payment amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012–13</td>
<td>2013–14</td>
<td>2014–15</td>
<td>208</td>
<td>11</td>
<td>$221,000,000</td>
</tr>
</tbody>
</table>

*2016–17 ELP assessments have been made. However, carriers have not yet been invoiced for the 2016–17 TIL, which is due to occur in November 2017. Payments will be due in December 2017.

Source: ACMA.

5.2. Public payphones
Payphone services in Australia are provided on either a commercial basis or as part of the USO. Telstra, as the current primary universal service provider (PUSP) for payphones, must comply with payphone performance standards and benchmarks made by the minister under the Telecommunications (Consumer Protection and Service Standards) Act 1999 (TCPSS Act).

The ACMA monitors Telstra’s payphone performance and receives information annually about the number of payphones supplied or operated on a commercial basis by other providers.

Number of payphones and payphone sites
In 2016–17, the total number of payphones (both Telstra-operated and privately operated) in Australia fell by 5.5 per cent from 24,573 (2015–16) to 23,226. This comprised a net decrease of:
> three per cent in the number of Telstra-operated payphones, from 17,093 (2015–16) to 16,593 (2016–17)
> 11.3 per cent in the number of privately operated payphones, from 7,480 (2015–16) to 6,633 (2016–17).

In 2016–17, there was also a decrease of 2.5 per cent in the number of Telstra-operated payphone sites, from 15,568 (2015–16) to 15,176 (noting some sites have more than one payphone). At 30 June 2017, 71.4 per cent of payphones were operated by Telstra. The remaining payphones were provided by other companies, such as hotels, clubs and convenience stores.
Figure 5.1 shows the total number of Telstra-operated and non-Telstra-operated payphones has decreased over the past five reporting periods. The net annual reduction in Telstra-operated payphones was 500 in 2016–17, compared to 418 in 2015–16.

**Figure 5.1  Number of payphones in operation at 30 June 2017**

![Graph showing the number of payphones in operation at 30 June 2017.]

*Includes TriTel payphones until June 2014 and payphones provided via Telstra access lines. June 2015–17 data includes Telstra access lines only as the number of TriTel payphones was not available.

Source: Telstra and TriTel.

Table 5.2 provides the geographic distribution of Telstra payphones and payphones provided via Telstra access lines as at 30 June 2017.

**Table 5.2  Distribution of Telstra payphones by geographical category at 30 June 2017**

<table>
<thead>
<tr>
<th></th>
<th>Urban</th>
<th>Rural</th>
<th>Remote*</th>
<th>RIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telstra-operated</td>
<td>11,710</td>
<td>4,032</td>
<td>851</td>
<td>581</td>
</tr>
<tr>
<td>% of total</td>
<td>70.6</td>
<td>24.3</td>
<td>5.1</td>
<td>3.5</td>
</tr>
<tr>
<td>Other payphones</td>
<td>5,225</td>
<td>1,077</td>
<td>331</td>
<td>286</td>
</tr>
</tbody>
</table>

*Including remote Indigenous communities (RIC).

Source: Telstra.

**Payphone fault repair performance**

Timely repair of payphone faults is an important component of the equitable provision of payphone services under the USO.

Regulatory benchmarks are in place to measure Telstra’s performance in remediating faults under the Telecommunications Universal Service Obligation (Payphone Performance Benchmarks) Instrument (No. 1) 2011 (Payphone Performance Benchmarks). The time frames vary according to the location of the service—one working day for urban locations, two for rural and three for remote locations (including remote Indigenous communities). Failure to meet a benchmark may result in the ACMA taking compliance action.
Table 5.3 shows Telstra met the national Payphone Performance Benchmarks in urban, rural and remote areas in 2016–17.

Table 5.3  Telstra payphone fault repair performance, 2016–17

<table>
<thead>
<tr>
<th></th>
<th>Urban (%)</th>
<th>Rural (%)</th>
<th>Remote (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payphone fault repair benchmark</td>
<td>90</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>Fault repair performance</td>
<td>94.2</td>
<td>91.6</td>
<td>89.0</td>
</tr>
</tbody>
</table>

*Including remote Indigenous communities.
Source: Telstra.

Payphones for people with disabilities
At 30 June 2017, Telstra had 151 teletypewriter payphones in operation in metropolitan and regional areas, compared with 154 at 30 June 2016.

5.3. CSG Standard
The Telecommunications (Customer Service Guarantee) Standard 2011 (CSG Standard) sets minimum service standards for CSPs to install, repair and attend appointments for standard telephone services for residential and small-business customers. The CSG Standard allows for exemptions from meeting service standards under certain circumstances. If a CSP fails to meet the minimum performance standards, compensation may be payable to the customer.

At 30 June 2017, there were 6.22 million services subject to the CSG Standard, compared to 6.11 million at 30 June 2016—an increase of 1.8 per cent (Table 5.4).

Table 5.4  Services subject to the CSG Standard, by provider, at 30 June (thousands)

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>iiNet</td>
<td>493</td>
<td>418</td>
<td>443</td>
<td>473</td>
<td>427*</td>
<td>391</td>
</tr>
<tr>
<td>Optus</td>
<td>913</td>
<td>850</td>
<td>799</td>
<td>808</td>
<td>977</td>
<td>1,079</td>
</tr>
<tr>
<td>iPrimus</td>
<td>103</td>
<td>101</td>
<td>95</td>
<td>49</td>
<td>57</td>
<td>42</td>
</tr>
<tr>
<td>Telstra</td>
<td>5,608</td>
<td>5,314</td>
<td>5,038</td>
<td>4,757</td>
<td>4,361</td>
<td>4,489</td>
</tr>
<tr>
<td>Dodo</td>
<td>n/a</td>
<td>n/a</td>
<td>159</td>
<td>249</td>
<td>283</td>
<td>223</td>
</tr>
<tr>
<td>Total</td>
<td>7,117</td>
<td>6,683</td>
<td>6,534</td>
<td>6,336</td>
<td>6,105</td>
<td>6,224</td>
</tr>
</tbody>
</table>

n/a=not applicable.
*TPG acquired iiNet in September 2015.
Note: Numbers may not add up due to rounding.
Source: CSP data.

CSG performance benchmarks are established by the Telecommunications (Customer Service Guarantee—Retail Performance Benchmarks) Instrument (No. 1) 2011 and apply to ‘qualifying carriage service providers’ (QCSPs). QCSPs are those that have 100,000 CSG services or more, as at the last day of the preceding financial year. For 2016–17, the QCSPs were Telstra, Optus, iiNet and Dodo.
The national CSG performance benchmarks set minimum compliance levels with the CSG Standard time frames, which are set out in Table 5.5 and relate to the following activities:

- installing new connections in urban, major rural, minor rural and remote areas
- installing in-place connections in all areas
- fault rectifications in urban, rural and remote areas
- appointment-keeping in all areas.

The CSG Standard time frames vary according to the location of the customer and, in the case of connections, whether infrastructure is readily available and whether there is an existing in-place connection. There are nine annual benchmarks in total for connections, fault repair and appointment-keeping where QCSPs must meet a minimum 90 per cent benchmark.

If a QCSP fails to meet any of the annual CSG performance benchmarks, the ACMA may take compliance action, which includes the option to issue the QCSP with an infringement notice. For 2016–17, all QCSPs reported that they met the CSG performance benchmarks.

At 30 June 2017, there were 1,445,945 occasions nationally where customers of the major CSPs waived their rights under the CSG Standard, compared to 1,023,599 at 30 June 2016—an increase of 41.3 per cent. TPG accounted for 56 per cent of waivers and iiNet for 30 per cent.

Table 5.5 CSG Standard time frames for in-place and new service connections and fault repairs (working days)

<table>
<thead>
<tr>
<th>In-place connection</th>
<th>New service connection</th>
<th>Fault repair</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Close to infrastructure</td>
<td>Not close to infrastructure</td>
</tr>
<tr>
<td>Urban</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Major rural</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Minor rural</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Remote</td>
<td>2</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: ‘Urban’ is defined as communities with 10,000 or more people, ‘major rural’ is defined as communities with between 2,500 and 10,000 people, ‘minor rural’ is defined as communities with a population greater than 2,500 but less than 10,000 people, ‘remote’ is defined as communities with a population greater than 200 but not more than 2,500 people. These are defined in the Telecommunications (Customer Service Guarantee – retail Performance Benchmarks) Instrument (No. 1) 2011.

Source: CSG Standard.

New service and in-place connections

Table 5.6 shows CSP performance in 2016–17 in meeting CSG Standard time frames for new service connections and in-place service connections.

A ‘new service connection’ is the connection of a standard telephone service to premises where there is the need for additional work to be completed (for example, cabling) before a service can be connected. This excludes in-place service connections where there has been a previous working CSG service that is available for reconnection or reactivation by the CSP.
### Table 5.6  Percentage and number of new service and in-place connections provided within CSG Standard time frames, 2016–17

<table>
<thead>
<tr>
<th></th>
<th>New service*</th>
<th>In-place service*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban areas</td>
<td>Major rural areas</td>
</tr>
<tr>
<td>iNet</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>95.6</td>
<td>98.7</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>37,109</td>
<td>3,517</td>
</tr>
<tr>
<td>Optus</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>98.0</td>
<td>99.4</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>304,374</td>
<td>3,160</td>
</tr>
<tr>
<td>Dodo</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18,090</td>
<td>1,359</td>
</tr>
<tr>
<td>Telstra</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>94.4</td>
<td>95.0</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>223,538</td>
<td>23,062</td>
</tr>
</tbody>
</table>

NQCSP=Not a qualifying CSP (QCSP); n/a=not applicable; *Service connections.

**Note 1:** Commencing in 2012–13, QCSPs were required to record the number of requests that were not complied with within the applicable performance time frames and to identify if the CSP’s failure to do so was wholly or partly attributable to one or more acts or omissions by another CSP.

**Note 2:** Location-specific thresholds are met if a QCSP supplied 10,000 or more CSG services in urban areas, 1,000 or more CSG services in major rural areas, 1,000 or more CSG services in minor rural areas, 500 or more CSG services in remote areas.

**Source:** CSP data.

### Table 5.7 Percentage and number of faults repaired within CSG Standard time frames and appointment-keeping performance, 2016–17

<table>
<thead>
<tr>
<th></th>
<th>Fault repairs</th>
<th>Appointments*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban areas</td>
<td>Rural areas</td>
</tr>
<tr>
<td>iNet</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>98.3</td>
<td>97.8</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>48,953</td>
<td>8,918</td>
</tr>
<tr>
<td>Optus</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>96.2</td>
<td>95.8</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>151,391</td>
<td>1,169</td>
</tr>
<tr>
<td>Dodo</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46,986</td>
<td>11,667</td>
</tr>
<tr>
<td>Telstra</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>93.3</td>
<td>92.1</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>385,547</td>
<td>128,627</td>
</tr>
</tbody>
</table>

NQCSP=Not a qualifying CSP (QCSP); *New service connections and fault repairs.

**Note 1:** Commencing in 2012–13, QCSPs were required to record the number of requests that were not complied with within the applicable performance time frames and to identify if the CSP’s failure to do so was wholly or partly attributable to one or more acts or omissions by another CSP.

**Note 2:** Location-specific thresholds are met if a QCSP supplied 10,000 or more CSG services in urban areas, 1,000 or more CSG services in rural areas, 500 or more CSG services in remote areas.

**Source:** CSP data.
Table 5.8 shows the number of new service and in-place connections, fault repairs and appointments for iiNet, Optus, iPrimus, Telstra and Dodo over the previous two financial years (2015–16 and 2016–17). Most notably, the number of in-place connections by iiNet more than halved (57 per cent) in the year to June 2017. iiNet advised this decline reflects a technology shift away from in-place connections to full utilisation of Enhanced Vacant Unbundled Local Loop (eVULL).

Prior to November 2015, iiNet was not fully utilising the eVULL process and, as such, all naked connections before the said date were connected as in-place connections and then transferred to ULL. Currently, all naked connections are being connected directly via the eVULL process. This shift has driven the declining trend of in-place connection requests evident in the data.

Table 5.8  New service connections, in-place connections and fault repairs requested, and appointments made at the national level

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New service connections</strong></td>
<td>66,181</td>
<td>44,119</td>
<td>271,436</td>
<td>315,318</td>
<td>27,444</td>
<td>20,460</td>
<td>347,657</td>
<td>274,013</td>
</tr>
<tr>
<td><strong>In-place connections</strong></td>
<td>40,325</td>
<td>17,465</td>
<td>n/a</td>
<td>n/a</td>
<td>87,778</td>
<td>58,309</td>
<td>267,258</td>
<td>206,904</td>
</tr>
<tr>
<td><strong>Fault repairs</strong></td>
<td>66,644</td>
<td>58,976</td>
<td>168,403</td>
<td>158,562</td>
<td>83,642</td>
<td>58,692</td>
<td>602,492</td>
<td>555,429</td>
</tr>
<tr>
<td><strong>Appointments</strong></td>
<td>45,240</td>
<td>36,545</td>
<td>225,249</td>
<td>203,613</td>
<td>106,186</td>
<td>137,461</td>
<td>476,419</td>
<td>507,329</td>
</tr>
</tbody>
</table>

n/a = not applicable.

† New service connections and fault repair.
Source: CSP data.

CSG Standard payments
As a result of failing to meet CSG Standard time frames during 2016–17, CSPs made compensation payments to customers, as shown in Table 5.9.

Table 5.9  Volume and value of compensation payments CSPs made to customers

<table>
<thead>
<tr>
<th></th>
<th>2015–16</th>
<th></th>
<th>2016–17</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume</td>
<td>$ (million)</td>
<td>Volume</td>
<td>$ (million)</td>
</tr>
<tr>
<td>iiNet</td>
<td>18,434</td>
<td>1.22</td>
<td>11,964</td>
<td>1.11</td>
</tr>
<tr>
<td>Optus</td>
<td>32,093</td>
<td>4.88</td>
<td>27,625</td>
<td>4.10</td>
</tr>
<tr>
<td>iPrimus</td>
<td>1,678</td>
<td>0.09</td>
<td>2,692</td>
<td>0.12</td>
</tr>
<tr>
<td>Telstra</td>
<td>153,310</td>
<td>9.29</td>
<td>198,514</td>
<td>14.58</td>
</tr>
<tr>
<td>Dodo</td>
<td>16,038</td>
<td>0.69</td>
<td>13,934</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>221,553</td>
<td>16.17</td>
<td>254,729</td>
<td>20.82</td>
</tr>
</tbody>
</table>

Note: Numbers may not add up due to rounding.
Source: CSP data.

Compensation payments totalled $20.80 million for 2016–17, compared to $16.17 million during 2015–16—an increase of 29 per cent.

This increase is, in part, a reflection of the transition to NBN services. As a wholesale-only provider of services, NBN Co is not required to comply with the CSG Standard time frames. This means it does not need to claim exemptions from compliance with the standard where service provision may be affected for circumstances beyond its control (for example, extreme weather conditions and natural disasters). As CSPs often rely on exemptions declared by wholesale providers, this has resulted in CSPs applying for
fewer exemptions, resulting in more compensation being paid. In addition, exemptions from compliance with the CSG Standard fell to 58, a one per cent decrease over 2016–17, following a 28 per cent decrease over 2015–16.

Exemptions from the CSG Standard

During periods when circumstances beyond a CSP's control affect its ability to comply with the CSG Standard, it may claim an exemption. Similarly, a CSP may also claim an exemption if there is a need to move staff or equipment to an area affected by circumstances beyond its control. Many exemptions are the result of extreme weather events or natural disasters.

In 2016–17, the major CSPs claimed a total of 226 exemptions (Table 5.10), a one per cent decrease on 2015–16 (228 exemptions). The median duration for which CSG exemptions applied increased from 31 to 33 days over the past year.

Table 5.10  CSG exemptions for the major CSPs, 2016–17

<table>
<thead>
<tr>
<th>Reason for exemption</th>
<th>iiNet</th>
<th>Optus</th>
<th>Telstra</th>
<th>Vocus Communications*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme weather conditions</td>
<td>46</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Natural disasters</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>59</td>
<td>59</td>
<td>58</td>
</tr>
</tbody>
</table>

*Formerly M2 Group. Exemption notifications for iPrimus, Dodo, Eftel, Commander, aaNet and engin have been included in Vocus Communications notifications.

Source: CSP data.

5.4. Network Reliability Framework

The ACMA monitors the reliability of Telstra's fixed-line telephone service network under the Network Reliability Framework (NRF). The NRF applies only to services that Telstra provides to its CSG Standard-eligible customers. Telstra is required to report to us on the performance of its network and to fix poorly performing cable runs and individual services.

The NRF requires monitoring and/or remediying network reliability performance at three levels:

> Level 1—national and geographical area level, based on Telstra’s 44 field service areas (FSAs)
> Level 2—local-level cable runs in disaggregated parts of the network
> Level 3—individual service level that includes all Telstra services covered by the CSG Standard.

Level 1 is designed to inform the public about overall network reliability performance. Under levels 2 and 3, Telstra is required to remediate poorly performing parts of its network as a priority.

Level 1—national and field service area performance

Telstra's national performance data is presented in Figure 5.2. Level 1a shows the percentage of CSG Standard services that did not experience a fault during the month reported. Level 1b shows the percentage of time in a month that CSG Standard services, on average, are available.
Under Level 1a, FSAs in urban areas experienced a lower percentage of faults than those in non-urban areas. On average, 1.46 per cent of services experienced a fault in any given month in urban areas, compared to 1.70 per cent in non-urban areas. Figure 5.3 shows the seasonal nature of NRF Level 1a performance. Small changes in this figure represent relatively large changes in the number of faults occurring on the network.

Level 1b measures the percentage of time in a month that services (on average) are available; that is, not awaiting repair. In 2016–17, services were available, on a monthly average, 99.79 per cent of the time (nationally). In 2015–16, services were available 99.84 per cent of the time.

The ACMA also uses data provided under Level 1 of the NRF to calculate the average time (in hours) for fault-affected CSG Standard services to be repaired for the month (Level 1c—Figure 5.3). Level 1c measures the average number of hours Telstra took to restore fault-affected services in the month. While Level 1b takes into account all services, Level 1c only considers services that experienced a fault.

In terms of elapsed time, it took an average of 97 hours to restore services that had a fault in 2016–17, compared to an average of 76 hours in 2016–17. It also took an average of 81 hours to restore fault-affected services in urban areas (66 hours in 2015–16) and 119 hours in non-urban areas (90 hours in 2015–16).
Figure 5.3 Level 1c—average time for Telstra to restore fault-affected services (hours)

Base: Number in each category.
Source: Telstra.

Level 2—local cable run remediation
Level 2 of the NRF requires Telstra to report on and undertake remediation work on the 40 poorest performing cable runs—a set of 10 or 100 copper wire pairs within a physical cable sheath—each month.

During 2016–17, Telstra completed remediation and monitoring of 497 cable runs, some of which were identified for remediation in previous reporting periods. For the year, Telstra identified the required 480 cable runs to be remediated. Telstra also remediated an additional 397 cable runs associated with the reported cable runs (385 in 2015–16). Telstra estimated that remediation work undertaken as part of Level 2 of the NRF in 2016–17 improved the reliability of 21,690 services (24,743 in 2015–16).

Level 3—individual service performance
Telstra is required to take action to prevent an individual CSG Standard-eligible service from experiencing more than either three faults in a rolling 60-day period (NRF Level 3a) or four faults in a rolling 365-day period (NRF Level 3b).

Telstra reports to the ACMA on any services that breach these thresholds, investigates the performance of the service and then undertakes necessary remediation.

Figure 5.4 shows that the number of services experiencing four or more faults in a rolling 60-day period (Level 3a) or five or more faults in a rolling 365-day period (Level 3b).
Telstra reported a slight increase in the number of services experiencing breaches of the 60-day threshold, with 27 breaches per month (on average) and a total of 320 for 2016–17. In 2015–16, there was an average of 22 breaches per month and a total of 258 for the year.

Telstra reported a slight decrease in the number of services experiencing breaches of the 365-day threshold, with 167 breaches per month (on average) and a total of 2,007 for 2015–16. In 2015–16, there was an average of 187 breaches per month and a total of 2,248 for the year.

Telstra is required to remediate any service that breaches the fault thresholds and monitor that service for an eight-month period. If a service experiences another fault (known as a monitoring-period fault) during the monitoring period, Telstra must report this to the ACMA, together with an assessment of whether the fault is related or unrelated to the original fault(s) that caused the contravention. In 2016–17, Telstra reported 836 monitoring-period faults (across 643 individual services) and assessed 11 faults as related to the original contravention. This compares to 937 monitoring-period faults (across 767 individual services) reported and 24 faults assessed as related to the original contravention in 2015–16.

Additionally, Telstra is required to report to the ACMA quarterly any services where remediation has not been completed within the expected time frames. In 2016–17, Telstra reported 186 delays to remediation, with an average reported delay of 118 days. This compares to 190 delays to remediation, with an average reported delay of 119 days, in 2015–16. Some services were reported as experiencing more than one delay.

In 2016–17, the ACMA agreed to grant Telstra regulatory forbearance in circumstances where Telstra is unable to meet its level 2 and 3 obligations because its assets have been transferred to NBN Co. This is contingent on Telstra meeting certain conditions and will be reviewed at the beginning of 2017–18. In 2016–17, Telstra did not seek regulatory forbearance for any of its Level 2 obligations. However, it was granted regulatory forbearance for 23 Level 3 monitoring and 72 Level 3 remediation obligations.
5.5. Priority assistance

Priority assistance is a priority telephone connection and repair service for people with a diagnosed life-threatening medical condition who are at risk of suffering a rapid deterioration in their condition. Telstra is required to provide the service under its carrier licence condition. Other CSPs may offer priority assistance services but are not obliged by regulation to do so. In 2016–17, iPrimus was the only CSP to voluntarily offer priority assistance services in line with industry code ACIF: C609:2007 Priority Assistance for Life Threatening Medical Conditions. However, it does not offer priority assistance for new customers or those who do not already have priority assistance active on their fixed-line service.

During 2016–17, the number of priority assistance customers increased by 12.1 per cent (Table 5.11). Telstra implemented its new priority assistance policy in 2015–16.

Table 5.11 Number of priority assistance customers, at 30 June 2017

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisional</td>
<td>144,435</td>
<td>49,679</td>
<td>63,505</td>
<td>94,290</td>
<td>116,178</td>
</tr>
<tr>
<td>Validated</td>
<td>112,114</td>
<td>154,940</td>
<td>123,240</td>
<td>116,969</td>
<td>124,164</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>256,549</strong></td>
<td><strong>204,619</strong></td>
<td><strong>186,745</strong></td>
<td><strong>211,259</strong></td>
<td><strong>240,342</strong></td>
</tr>
</tbody>
</table>

Source: Telstra, iPrimus.

Priority assistance customers are given faster connections and fault repairs for their fixed-line telephone service than the time frames mandated in the CSG Standard. A service must be connected or a fault repaired within 24 hours in urban and rural areas, or within 48 hours in remote areas. However, Telstra is not required to meet these time frames in circumstances where the service is supplied over a local access network, such as the NBN, over which it is not in a position to exercise control.

Tables 5.12 and 5.13 provide information about the performance of Telstra and iPrimus in meeting priority assistance time frames for connections and fault repairs since 2012–13.

Table 5.12 Priority assistance—percentage and volume of connection requests completed on time, by financial year

<table>
<thead>
<tr>
<th></th>
<th>National</th>
<th>Urban</th>
<th>Rural</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Telstra</td>
<td>2012–13</td>
<td>92.9</td>
<td>92.9</td>
<td>92.9</td>
</tr>
<tr>
<td></td>
<td>2013–14</td>
<td>93.2</td>
<td>93.3</td>
<td>92.6</td>
</tr>
<tr>
<td></td>
<td>2014–15</td>
<td>92.4</td>
<td>92.3</td>
<td>90.2</td>
</tr>
<tr>
<td></td>
<td>2015–16</td>
<td>90.8</td>
<td>90.2</td>
<td>92.8</td>
</tr>
<tr>
<td></td>
<td>2016–17</td>
<td>91.2</td>
<td>91.2</td>
<td>91.3</td>
</tr>
<tr>
<td>iPrimus</td>
<td>2012–13</td>
<td>n/r</td>
<td>n/r</td>
<td>n/r</td>
</tr>
<tr>
<td></td>
<td>2013–14</td>
<td>n/r</td>
<td>n/r</td>
<td>n/r</td>
</tr>
<tr>
<td></td>
<td>2014–15</td>
<td>100</td>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>2015–16</td>
<td>100</td>
<td>1</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>2016–17</td>
<td>n/a</td>
<td>0</td>
<td>n/a</td>
</tr>
</tbody>
</table>

n/a=not applicable; n/r=not requested.

Note: ‘Urban’ is defined as communities with 10,000 or more people, ‘rural’ as communities with between 200 and 10,000 people, ‘remote’ as communities with up to 200 people.

Source: Telstra, iPrimus.
Table 5.13 Priority assistance—percentage and volume of fault restoration requests completed on time, by financial year

<table>
<thead>
<tr>
<th></th>
<th>National</th>
<th>Urban</th>
<th>Rural</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012–13</td>
<td>95.5</td>
<td>96.6</td>
<td>92.3</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>155,378</td>
<td>114,800</td>
<td>40,045</td>
<td>502</td>
</tr>
<tr>
<td>2013–14</td>
<td>95.1</td>
<td>96.1</td>
<td>92.1</td>
<td>90.9</td>
</tr>
<tr>
<td></td>
<td>116,552</td>
<td>89,205</td>
<td>26,988</td>
<td>390</td>
</tr>
<tr>
<td>2014–15</td>
<td>94.6</td>
<td>95.7</td>
<td>91.1</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>133,563</td>
<td>102,803</td>
<td>30,348</td>
<td>425</td>
</tr>
<tr>
<td>2015–16</td>
<td>94.6</td>
<td>95.3</td>
<td>90.8</td>
<td>90.1</td>
</tr>
<tr>
<td></td>
<td>127,618</td>
<td>96,977</td>
<td>29,692</td>
<td>399</td>
</tr>
<tr>
<td>2016–17</td>
<td>93.9</td>
<td>94.6</td>
<td>91.8</td>
<td>91.8</td>
</tr>
<tr>
<td></td>
<td>102,466</td>
<td>75,005</td>
<td>27,108</td>
<td>353</td>
</tr>
</tbody>
</table>

iPrimus

| 2012–13 | 84       | 90    | 72.2  | n/a |
|         | 58       | 40    | 18    | 0   |
| 2013–14 | n/r      | n/r   | n/r   | n/r |
|         | n/r      | n/r   | n/r   | n/r |
| 2014–15 | 100      | 100   | 5     | 0   |
|         | 7        | 6     | n/a   | 100 |
| 2015–16 | 100      | 100   | 5     | n/a |
|         | 5        | 6     | 0     | 0   |
| 2016–17 | 100      | 100   | 5     | n/a |
|         | 24       | 22    | 2     | 0   |

n/a = not applicable; n/r = not requested.

Note: ‘Urban’ is defined as communities with 10,000 or more people, ‘rural’ as communities with between 200 and 10,000 people, ‘remote’ as communities with up to 200 people.

Source: Telstra, iPrimus.

5.6. Number portability

Number portability allows customers to retain their existing telephone number when changing from one service provider to another. Number portability is available for:

- local numbers (beginning with the area codes 02, 03, 07 and 08)
- mobile numbers
- freephone (1800 numbers) and local rate numbers (13 and 1300 numbers).

Local number portability

During 2016–17, 1,320,313 local numbers were ported, a 33 per cent rise on the 991,011 local numbers ported in 2015–16—a significant increase. The C540:2013 Local Number Portability Code sets out carrier/CSP operational procedures for porting local numbers.

Mobile number portability

During 2016–17, there were 1.87 million mobile numbers ported, an increase of eight per cent on the 1.73 million mobile numbers ported in 2015–16. Most mobile ports are completed within a few hours; with 99 per cent of ports completed within two days. The portability of mobile numbers is regulated by the C570:2009 Mobile Number Portability Code.

Freephone and local rate number portability

The portability of freephone and local rate numbers (FLRNs) is referred to as Inbound Number Portability (INP). Industry Number Management Services facilitates FLRN portability on behalf of industry. There were 10,710 FLRNs ported during 2016–17, an 11 per cent decrease on the 11,991 FLRNs ported during 2015–16 (Table 5.14). The C657:2015 Inbound Number Portability Code sets out operational requirements for porting inbound numbers.
Table 5.14 Number portability—local, freephone and local rate and mobile numbers ported, by financial year

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>763,422</td>
<td>865,522*</td>
<td>1,223,599</td>
<td>991,011</td>
<td>1,320,313</td>
</tr>
<tr>
<td>Freephone and local rate</td>
<td>13,096</td>
<td>11,088</td>
<td>12,495</td>
<td>11,991</td>
<td>10,710</td>
</tr>
<tr>
<td>Mobile</td>
<td>1,743,485</td>
<td>1,668,163</td>
<td>1,721,284</td>
<td>1,733,834</td>
<td>1,871,233</td>
</tr>
</tbody>
</table>

*Figure revised due to one CSP submitting updated data.
Source: ACMA and INMS.

5.7. Telecommunications codes—development and review

Under Part 6 of Telecommunications Act, the ACMA may register codes developed by industry bodies. During 2016–17, four codes were developed or revised by Communications Alliance (CA) and registered by the ACMA:

> C647:2017 NBN Access Transfer Industry Code—registered on 16 March 2017. It defines responsibilities of parties and establishes minimum operational requirements during the transfer of active NBN services between retail service providers.

> C617:2017 Connect Outstanding Industry Code—updated code registered on 16 March 2017. CA extended the code to encompass situations where the previous occupant of premises failed to cancel their broadband service. The expansion of the code to cover fixed broadband connections means consumers are able to have timely connection of both phone and broadband services.

> C525:2017 Handling of Life Threatening and Unwelcome Communications Industry Code—updated code registered on 23 February 2017. This code was updated to address a recognised need for improved management of life-threatening and unwelcome communications, and for rules and procedures in dealing with unwelcome calls to helplines. Two industry guides were developed to supplement the code.

> C540:2013 Local Number Portability Code—revised code registered on 28 October 2016. The revisions to the code (incorporating Variation No.1/2016) are intended to reduce mismatched service account and telephone numbers, and improve customer experience when customers port a number when changing CSPs.

5.8. Industry compliance with telecommunications codes

Compliance with the Telecommunications Consumer Protections Code

The Telecommunications Consumer Protections (TCP) Code provides consumer safeguards in the areas of advertising and point-of-sale, billing, payment methods, complaints-handling and when customers change their service provider. Telecommunications companies have demonstrated varying levels of compliance with the TCP Code across a range of enquiries, audits and investigations.

During 2016–17, the ACMA undertook 122 preliminary inquiries to assess provider compliance with the TCP Code and concluded 33 investigations into non-compliance with various code requirements:

> Advertising—the ACMA reviewed 27 advertisements from 23 different providers, with two-thirds compliant with the advertising requirements of the TCP Code. Preliminary inquiries of nine providers to ensure compliance with the TCP Code will continue in 2017–18.

> Critical Information Summary (CIS)—clause 4.1 of the TCP Code requires a supplier to provide a CIS for each of its offers to allow consumer comparison. In assessing 111 offers from 79 providers, we found compliance with CIS requirements decreased from 75 per cent in 2015–16 to 61 per cent in 2016–17.

The incidence of offers being made without a CIS increased from two per cent in 2015–16 to four per cent in 2016–17. Engagement from the ACMA saw 43 providers subsequently amend their CISs to ensure compliance.
> **Compliance and monitoring**—chapter 9 of the TCP Code requires all providers to register with CA by May 2016 or one month after the provider first acquires customers. In 2016–17, the ACMA issued a formal warning to one provider for failing to register with CA. Another six providers were issued with a direction to comply.

Providers are also required to lodge annual compliance attestation documents to Communications Compliance Ltd (CommCom). In 2016–17, the ACMA issued six directions and 14 formal warnings to providers who failed to lodge compliance attestations with CommCom by the due date.

> **Formal warnings and directions**—in 2016–17, the ACMA issued 15 formal warnings and nine directions to telecommunications companies requiring compliance with the TCP Code (Table 5.15).

Table 5.15 **ACMA TCP Code compliance activity**

<table>
<thead>
<tr>
<th>TCP Code obligation</th>
<th>TCP Code provision</th>
<th>Outcome</th>
<th>Telecommunications company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing and keeping records of complaints</td>
<td>Chapter 8 Clause 6.9</td>
<td>Direction</td>
<td>Novatel Telecommunications Pty Ltd (t/a NetCube)</td>
</tr>
<tr>
<td>Credit management for disputed amounts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information about offers—must be clear, accurate and free from material omissions</td>
<td>Clauses 3.2 and 4.1</td>
<td>Direction</td>
<td>Total Group Pty Ltd</td>
</tr>
<tr>
<td>Information about offers—must be clear, accurate and free from material omissions</td>
<td>Clauses 3.2 and 4.1</td>
<td>Direction</td>
<td>Direct Connect Pty Ltd</td>
</tr>
<tr>
<td>Credit and debt management (financial hardship)</td>
<td>Clause 6.11 Clause 9.1 Clause 9.4</td>
<td>Direction</td>
<td>Australian Power Control Systems Pty Ltd</td>
</tr>
<tr>
<td>Registration with Communications Alliance Lodge compliance statements—CommCom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary about offer</td>
<td>Clause 4.1.1 Clause 6.11 Clause 9.1 Clause 9.4</td>
<td>Direction</td>
<td>Beyontel Pty Ltd</td>
</tr>
<tr>
<td>Credit and debt management (financial hardship)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration with Communications Alliance Lodge compliance statements—CommCom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodge compliance statements—CommCom</td>
<td>Clause 9.4</td>
<td>Direction</td>
<td>Bytecard Pty Ltd</td>
</tr>
<tr>
<td>Summary about offer</td>
<td>Clause 4.1.1 Clause 6.11 Clause 9.1 Clause 9.4</td>
<td>Direction</td>
<td>Rojan Australia Pty Ltd</td>
</tr>
<tr>
<td>Credit and debt management (financial hardship)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration with Communications Alliance Lodge compliance statements—CommCom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit and debt management (financial hardship)</td>
<td>Clause 6.11 Clause 9.1 Clause 9.4</td>
<td>Direction</td>
<td>Teleforce Pty Ltd</td>
</tr>
<tr>
<td>Registration with Communications Alliance Lodge compliance statements—CommCom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary about offer</td>
<td>Clause 4.1 Clause 6.11 Clause 9.1 Clause 9.4</td>
<td>Direction</td>
<td>V Telecom Pty Ltd</td>
</tr>
<tr>
<td>Credit and debt management (financial hardship)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration with Communications Alliance Lodge compliance statements—CommCom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration with Communications Alliance</td>
<td>Clause 9.1</td>
<td>Formal warning</td>
<td>Crunch Networks Pty Ltd</td>
</tr>
</tbody>
</table>
5.9. Cabling regulation

Registered cablers

Every person who works on customer cabling connected to the telecommunications network, or intended for use on the customer side of the network boundary, must either be registered with an ACMA-accredited registrar as a cabling provider or supervised by a person who is registered. The ACMA’s regulatory requirements for customer cabling work are set out in the Telecommunications Cabling Provider Rules 2014 (Cabling Provider Rules). The Cabling Provider Rules require customer cabling work to comply with the technical requirements in AS/CA S009 *Installation Requirements for Customer Cabling* (Wiring Rules).

In 2016–17, there were five ACMA-accredited registrars providing registration and other associated services to cablers. The total number of registered cablers in the industry has increased each year since 30 June 2010.

Table 5.16 Licensed/registered cablers at 30 June

<table>
<thead>
<tr>
<th>Jun 13</th>
<th>Jun 14</th>
<th>Jun 15</th>
<th>Jun 16</th>
<th>Jun 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cablers</td>
<td>69,155</td>
<td>71,057</td>
<td>71,288</td>
<td>72,302</td>
</tr>
</tbody>
</table>

Source: ACMA.
Cabling compliance
The ACMA investigates complaints about non-compliant cabling work or work performed by unregistered cablers. Where appropriate, we conduct investigations arising from these complaints. During 2016–17, we received 47 complaints, and issued 39 warning notices and 17 advice notices. No telecommunications infringement notices were issued.

We also carried out 178 cabling inspections in 2016–17 as part of our customer cabling priority compliance area (PCA). We inspected a cross-section of domestic and commercial customer cabling environments including residential low-rise, high-rise, and commercial and multi-dwelling sites. The majority of sites inspected complied with the Cabling Provider Rules. Of the actual wiring rule breaches, the majority were from incorrect physical separation between customer cabling and other services. However, none represented an immediate safety risk.

5.10. Do Not Call Register
The DNCR is a secure database that allows people to list their numbers to opt out of receiving most unsolicited telemarketing calls and marketing faxes. A number is eligible to be registered if it is:
- used or maintained primarily for private or domestic purposes
- used for transmitting and/or receiving faxes
- used exclusively by a government body
- an emergency service number.

In 2016–17, the quantity of numbers listed on the DNCR increased by 374,994 (3.5 per cent), taking the total amount of numbers registered to 11.02 million.

To avoid breaching the Do Not Call Register Act 2006 (DNCR Act), telemarketers and fax marketers are able to submit their contact lists to the DNCR operator for checking, or ‘washing’, against the DNCR. During 2016–17, 1,106 telemarketers and fax marketers submitted nearly 840 million numbers for washing (Figure 5.5).

Figure 5.5 Numbers submitted for washing against the DNCR (billions)

Under section 125A of the Telecommunications Act, the ACMA is required to determine a standard that applies to participants in the telemarketing industry and deals with matters relevant to the conduct of telemarketing calls, including research calls.

In 2016–17, we made the Telecommunications (Telemarketing and Research Calls) Industry Standard 2017. This replaced the Telemarketing and Research Industry Standard 2007, which was due to sunset on 1 April 2017. The standard provides enhanced protections to help consumers deal with the number of unwanted telemarketing calls they receive.
5.11. Unsolicited communications—spam and telemarketing

The ACMA is responsible for the unsolicited communications safeguards provided under the DNCR Act, Telecommunications (Telemarketing and Research Calls) Industry Standard 2017, Fax Marketing Industry Standard 2011 and Spam Act 2003. These safeguards place obligations on businesses and other entities that use telemarketing, e-marketing and fax marketing activities for commercial purposes.

In 2016–17, we received 28,197 complaints about telemarketing—an increase of 22.5 per cent on the 23,014 from 2015–16. This increase is at a consistent level with the trend in complaints each year since 2013–14. The overall number of complaints about fax marketing remained very low, a reflection of the decline in use of fax machines.

We also received 849,928 complaints and reports about commercial e-marketing (email and SMS)—an increase of 59.2 per cent on the 533,947 from 2015–16.

To manage this increased number of complaints and reports, we will undertake a range of new activities in 2017–18, including adopting PCAs for regulatory focus, and new education and awareness-raising initiatives.

The ACMA adopts a graduated and strategic risk-based approach to unsolicited communications compliance and enforcement. We sent 5,049 compliance warnings about potential breaches of the telemarketing and spam safeguards during 2016–17, an increase of 23.1 per cent. These warnings are generally the first step to fostering industry compliance.

The majority of businesses address compliance issues after one contact. Systemic non-compliance issues or matters that involve serious public harms may lead to more formal interventions including, but not limited to, preliminary inquiries or investigation. Where non-compliance is found, the ACMA has a range of enforcement actions available, including formal warnings, infringement notices or Federal Court proceedings.

Table 5.17 summarises the number of complaints, reports and enquiries we received, and the levels of compliance and enforcement activity.
Table 5.17 Telemarketing, fax marketing and spam—summary of complaints, reports, enquiries, compliance activities and enforcement

<table>
<thead>
<tr>
<th></th>
<th>2015–16</th>
<th>2016–17</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Complaints and reports</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telemarketing complaints</td>
<td>23,014</td>
<td>28,197</td>
<td>22.5</td>
</tr>
<tr>
<td>Fax marketing complaints</td>
<td>45</td>
<td>62</td>
<td>37.8</td>
</tr>
<tr>
<td>Complaints (email)</td>
<td>1,275</td>
<td>1,820</td>
<td>42.8</td>
</tr>
<tr>
<td>Reports (email)</td>
<td>514,604</td>
<td>828,184</td>
<td>60.9</td>
</tr>
<tr>
<td>Complaints (SMS)</td>
<td>462</td>
<td>569</td>
<td>23.2</td>
</tr>
<tr>
<td>Reports (SMS)</td>
<td>17,606</td>
<td>19,355</td>
<td>9.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>557,006</td>
<td>878,187</td>
<td>57.7</td>
</tr>
<tr>
<td><strong>Enquiries†</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telemarketing and fax marketing</td>
<td>6,740</td>
<td>5,484</td>
<td>–18.6</td>
</tr>
<tr>
<td>Spam</td>
<td>1,251</td>
<td>1,458</td>
<td>16.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7,991</td>
<td>6,942</td>
<td>–13.1</td>
</tr>
<tr>
<td><strong>Compliance warnings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telemarketing and fax marketing</td>
<td>1,691</td>
<td>2,280</td>
<td>34.8</td>
</tr>
<tr>
<td>Spam</td>
<td>2,412</td>
<td>2,769</td>
<td>14.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4,103</td>
<td>5,049</td>
<td>23.1</td>
</tr>
<tr>
<td><strong>Investigations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telemarketing</td>
<td>8</td>
<td>2</td>
<td>–75.8</td>
</tr>
<tr>
<td>Fax marketing</td>
<td>0</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td>Spam</td>
<td>5</td>
<td>3</td>
<td>–40.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13²</td>
<td>5</td>
<td>–61.5</td>
</tr>
</tbody>
</table>

n/a=not available.

*Complaints are an expression of dissatisfaction made to the ACMA about unsolicited emails or SMS, while reports are an advice of spam activity directed to the ACMA’s anti-spam databases. Reports are not actioned individually but help the ACMA in its anti-spam activities.

†The ACMA and DNCR operator receive enquiries from the public and businesses on compliance with the DNCR Act and Spam Act, such as the legitimacy of calls or messages received, how to stop receiving calls or messages, how requirements of these Acts affect their business, and whether particular marketing approaches are compliant with these Acts.

Source: ACMA.

The ACMA receives reports of email and SMS spam from a number of different sources into our Spam Intelligence Database (SID), which we use to administer our compliance responsibilities under the Spam Act. This data is also used to identify scam ‘phishing’ activities. Phishing emails direct internet users to fraudulent web pages that represent themselves as belonging to legitimate businesses, such as banks. Their main function is to obtain financial and personal information from unsuspecting internet users for criminal purposes.

Recipients of the ACMA’s phishing reports include the Australian Tax Office, Facebook, Telstra and a number of major financial institutions. A total of 15,996 reports of suspected phishing URLs were provided to these organisations in 2016–17. To enable quick and early action, phishing reports are provided within minutes of being received by the ACMA.

In 2016–17, we used social media extensively to quickly alert citizens of phishing attacks, with widespread interest in these notifications. The most successful of these alerts—on a bogus supermarket customer survey—reached nearly 800,000 social media users.
5.12. Australian Internet Security Initiative

The AISI is a program to help voluntary AISI partners address computing devices on Australian IP address ranges that are compromised by malware (malicious software) or that have specific types of service vulnerabilities.

Malware can enable criminals or malicious parties to steal personal and sensitive information from devices or control them remotely for illegal or harmful purposes, without the user’s knowledge. These infections often enable activities causing harm to other internet users, including the mass distribution of spam, hosting of phishing sites, facilitation of identity theft, participation in dedicated denial-of-service (DDoS) attacks and dissemination of ransomware (malware that restricts access to files on a computer system until a sum of money is paid).

Service vulnerabilities expose a range of potential exploits and the degree of severity may vary significantly. Examples of vulnerabilities reported through the AISI include services that:

> are misconfigured, enabling them to be unwittingly used in a DDoS attack
> are exposed to interception due to the use of outdated encryption
> provide access to system credentials and operating systems, exposing sensitive information
> enable open access to database content.

The AISI provides daily reports to partners—Australian ISPs and educational institutions—about malware-infected computing devices or vulnerable services on their networks. When they receive a report of an infection, AISI partners deal directly with their customers, informing them that their computing devices are infected or vulnerable and providing information to help remedy the problem. Partners can also access AISI data through an online portal, which contains more comprehensive data than is in the daily email reports.

At 30 June 2017, there were 146 AISI partners estimated to cover more than 95 per cent of allocated Australian IP address ranges. A total of 38.5 million observations of infections were reported to AISI partners in 2016–17, averaging 3.2 million per month.

The average number of AISI malware reports per day increased significantly in December 2016 to 41,281 (up from the 2015–16 daily average of 8,557). This increase was due to the identification of a new malware variant—Mirai—on 29 November 2016. Mirai was a large-scale infection of IoT devices (such as routers, webcams, printers and digital video recorders) targeting weak or default passwords. The highest number of Mirai malware reports—80,000—was on 20 December 2016.

The ACMA’s reporting of vulnerable services expanded significantly in 2016–17, with 11 new vulnerability types added to the daily AISI reports. A total of 61.8 million daily observations of vulnerable IP addresses were reported to AISI partners in 2016–17.

Reporting vulnerable services helps home and business users by providing data to underpin alerts about the need to improve the security level of their internet-accessible services. The feedback from industry on the reporting of vulnerability data through the AISI program has been positive, with the data indicating significant issues exist for industry in maintaining security levels on these services.

On 30 June 2017, the AISI was transferred to the AGD, following recommendation two in the government’s Review of the ACMA, and as part of the whole-of-government cybersecurity strategy. The move will contribute to a coordinated Commonwealth outreach strategy and clear messaging on cybersecurity awareness.
5.13. Industry compliance with TIO scheme

Section 128 of the TCPSS Act requires carriers and eligible CSPs to join the TIO scheme, which provides alternative dispute resolution of unresolved complaints about carriers or CSPs made by residential and small-business customers about telephone and internet services. The ACMA is responsible for ensuring providers comply with the scheme.

Membership of the TIO scheme

In 2016–17, the TIO referred four companies to the ACMA for failing to join the TIO scheme. In response to our enquiries, three companies subsequently joined the TIO scheme. Our investigation into one company will continue in 2017–18.

Compliance with TIO membership rules

Section 132 of the TCPSS Act requires TIO members to comply with TIO decisions and directions. The TIO referred two providers to the ACMA for failing to comply. We issued a direction to one provider to comply, with an investigation into one other company to continue in 2017–18.

Exemptions from the TIO scheme

Section 129 of the TCPSS Act allows the ACMA to exempt a carrier or eligible CSP from the obligation to join the TIO scheme. We received three applications from suppliers requesting an exemption—two applications were granted in July 2016 and March 2017, respectively. The third application was not granted and the provider subsequently joined the TIO scheme.

Investigations into TIO scheme membership led to one direction to comply with section 132 of the TCPSS Act issued to Digital Technologies & Telecommunications Pty Ltd, which subsequently joined the TIO scheme.

5.14. Complaints to the TIO

There were 158,016 new complaints made to the TIO during 2016–17. This represents an increase of 41.1 per cent from 2015–16, with more than 40 per cent of complaints about internet services. Despite this increase, the number of complaints made to the TIO was significantly lower than in the peak year for complaints in 2011–12.

With over 1.34 million services activated during 2016–17, the migration of large numbers of consumers to the NBN was a factor in the increase in internet and landline complaints. The TIO reports that complaint numbers about services delivered over the NBN rose by 159 per cent in the year to June 2017 to 27,195 complaints. These comprised fault complaints (16,221) and connection delays (11,224).\(^3\)

Each new complaint to the TIO can involve multiple complaint issues:

> Landline services generated 41,824 complaints, representing 26.5 per cent of total complaints. Fixed-line services include voice services delivered over the NBN.
> Internet services generated 63,892 complaints, representing 40.4 per cent of total complaints. Internet services include services delivered over the NBN.
> Mobile services complaints remained consistently high with 52,300 complaints, representing 33 per cent of total complaints.
Table 5.18 shows the top TIO new complaint issues for 2016–17.

For the second year in a row, complaints about connections appeared in the top six most-complained-about issues. This may be a reflection of the large number of customers connecting to the NBN.

Table 5.18: Top six TIO new complaint issues, financial year

<table>
<thead>
<tr>
<th>Complaint issue category</th>
<th>Number of complaints 2016–17*</th>
<th>Percentage of all complaints†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billing and payments</td>
<td>66,142</td>
<td>41.9</td>
</tr>
<tr>
<td>Customer service</td>
<td>76,932</td>
<td>48.7</td>
</tr>
<tr>
<td>Faults</td>
<td>57,723</td>
<td>36.5</td>
</tr>
<tr>
<td>Complaint-handling</td>
<td>49,268</td>
<td>31.2</td>
</tr>
<tr>
<td>Contracts</td>
<td>30,731</td>
<td>19.4</td>
</tr>
<tr>
<td>Connections</td>
<td>25,604</td>
<td>16.2</td>
</tr>
</tbody>
</table>

*Number of complaints involving each issue.
†Percentage of all complaints involving the issue. The percentages in this column do not add up to 100 because some complaints involve multiple issues.


Endnotes

1 The TIL is imposed under the Telecommunications (Industry Levy) Act 2012.
2 This is a correction of the Communications report 2015–16, which reported total investigations concluded as 14.
Appendix—Research methodology

ACMA-commissioned survey
The 2017 ACMA-commissioned survey of consumers was conducted by the Social Research Centre. Data for the survey was collected using the probability-based Life in Australia (LinA) online panel. LinA includes people with and without internet access—those without internet access or who are not comfortable completing surveys over the internet are able to complete surveys by telephone instead.

The 2017 survey comprised a total of n=2,277 respondents (n=1,965 online interviews with Australian adults plus n=312 computer-aided telephone interviews (CATI) to reach the adult population who are not regularly online). The survey was representative of the Australian population aged 18 years and over.

Fieldwork was conducted from 15 May to 4 June 2017.

Weighting
To reflect Australia’s population distribution, the combined online results, together with landline results, were post-weighted and projected to the ABS population data on the highest level of schooling completed, sex by age and by area, plus mobile-only and internet usage in the past six months.

Roy Morgan Single Source
Roy Morgan Research data is taken from the Roy Morgan Single Source product unless otherwise specified. This data covers changes occurring from July 2016 to June 2017 unless otherwise specified.

The Roy Morgan Single Source research sample sizes for the past five years are provided in the table below.

Changes to Roy Morgan database weighting
Roy Morgan data for 2014 and 2015 will differ to data reported in previous communications reports by one or two percentage points. This is due to changes to either weighting or whether the data was sourced from the establishment survey or product poll. Previously, Roy Morgan had weighted the data to ABS population estimates on a monthly basis. In 2015, Roy Morgan changed the frequency of weighting calculations to quarterly and included additional weighting criteria.

Australian population
For the 2016 Roy Morgan Single Source data, the total population estimate for Australian adults aged 18 and over is 18,504,000, based on ABS data table 6202.0 Labour Force, Australia.

Research sample subsets for Roy Morgan Single Source

<table>
<thead>
<tr>
<th></th>
<th>Mobile-only phone</th>
<th>Australians aged 18 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 17</td>
<td>3,466*</td>
<td>13,884</td>
</tr>
<tr>
<td>Jun 16</td>
<td>3,247*</td>
<td>14,300</td>
</tr>
<tr>
<td>Jun 15</td>
<td>3,392*</td>
<td>15,241</td>
</tr>
<tr>
<td>Jun 14</td>
<td>3,619*</td>
<td>15,998</td>
</tr>
<tr>
<td>Jun 13</td>
<td>3,783</td>
<td>19,365</td>
</tr>
</tbody>
</table>

*Don’t know/can’t say’ responses are included from June 2014 onwards due to change of survey methodology.
Note: 12 months to June for each year.
Other sources
The endnotes list other information sources used in this publication.

Data analysis
Results from both data sets were analysed using descriptive analysis techniques, and by socioeconomic and demographic factors, to identify areas with significant patterns or differences.

Data presented in tables and figures may not add to 100 per cent (or the appropriate total) due to rounding. Percentage changes are calculated on non-rounded data.
Glossary

2G—second-generation mobile telecommunications
Mobile telecommunications services that use digital techniques, providing voice communications and a relatively low transmission rate for data. Denoted by the introduction of the digital encryption of telephone conversations and of mobile data services with SMS text messaging. 2G networks will cease to operate in Australia from 31 March 2018. See also GSM.

3G—third-generation mobile telecommunications
Broadband mobile telecommunications services with improved data rates over their 2G predecessors, providing for applications such as web-browsing, videoconferencing and location-based services.

4G—fourth-generation mobile telecommunications
Enhanced broadband mobile telecommunications services that are expected to provide increased bandwidth to support voice, video, data and high-quality streaming multimedia content over an all-IP network. See also LTE.

5G—fifth-generation mobile telecommunications
The next iteration of broadband mobile telecommunications services, 5G is expected to provide increased data rates and reduced latency to support greater connectivity and enable machine-to-machine services and the Internet of Things. While trials of the technology are currently underway, 5G is not anticipated to be commercially available until around 2020.

ABC—Australian Broadcasting Corporation
Free-to-air national broadcaster of ABC radio and television channels, as well as online services, funded by the Australian Government.

ABS—Australian Bureau of Statistics
Commonwealth body responsible for collecting, analysing and publishing Australian demographic data.

ACCC—Australian Competition and Consumer Commission

ACE—Australian Communication Exchange
National not-for-profit organisation that currently provides the relay component of the National Relay Service.

ACMA—Australian Communications and Media Authority
Commonwealth regulatory authority for broadcasting, radiocommunications, telecommunications and some online content, with responsibilities under the Broadcasting Services Act 1992, the Radiocommunications Act 1992, the Telecommunications Act 1997, the Telecommunications (Consumer Protection and Service Standards) Act 1999 and related Acts. Established on 1 July 2005 following a merger of the Australian Communications Authority and the Australian Broadcasting Authority.

ADSL—asymmetric digital subscriber line
Transmission technology that enables high-speed data services to be delivered over a twisted-pair copper line. ADSL2+ is an enhanced ADSL technology that adds new features and functionality that may provide higher data rates.

AFP—Australian Federal Police
Australia's national police force. The ACMA previously worked with the AFP on email spam and illegal internet content such as online child sexual abuse material that is hosted outside Australia. On 1 July 2015, these responsibilities transferred to the Office of the eSafety Commissioner.
**AGD**
Attorney-General’s Department.

**AISI—Australian Internet Security Initiative**
Collects data from various sources on compromised computers (sometimes referred to as ‘zombies’, ‘bots’ or ‘drones’). The ACMA analyses this data and provides free daily reports to participating Australian internet service providers (ISPs), identifying IP addresses operating on their networks that appear to be compromised. On 1 July 2017, responsibility for the AISI program shifted from the ACMA to the Attorney-General’s Department.

**auDA—.au Domain Administration Ltd**
Independent industry self-regulatory body responsible for the ‘.au’ domain name space.

**broadband**
A class of high-speed internet access technologies, such as ADSL, ADSL2+, HFC cable and Wi-Fi, offering a data rate significantly higher than dial-up internet services.

**cable—hybrid fibre coaxial (HFC) cable**
Transmission links consisting of optical fibre on main routes, supplemented by coaxial cable closer to the end user’s premises.

**carrier**
The holder of a telecommunications carrier licence in force under the *Telecommunications Act 1997*.

**catch-up TV**
Internet service typically provided on free-to-air and subscription broadcasters’ websites enabling users to watch a recent episode of a television program over the internet for a limited period of time.

**CEASA—Commercial Economic Advisory Service of Australia**
An information research company specialising in media, economic, marketing and advertising research, surveys and publications.

**cloud computing**
Internet-based computing where data and applications are hosted online, stored on remote servers and available to clients on demand through broadband internet-enabled devices.

**Communications Alliance (CA)**
Telecommunications industry organisation formed on 1 September 2006 from the merger of the Australian Communications Industry Forum (ACIF) and the Service Providers Association Network (SPAN).

**CSG—Customer Service Guarantee**
Standard providing for financial compensation to customers where requirements set out in the CSG Standard are not met.

**CSG Standard—Customer Service Guarantee Standard**
The CSG Standard establishes performance standards that telephone service providers must meet or exceed for appointments and the connection and repair of standard telephone services (and certain enhanced call-handling features).

**CSP—carriage service provider**
Person supplying or proposing to supply certain carriage services to a customer, including a commercial entity acquiring telecommunications capacity or services from a carrier for resale to a third party. Under the *Telecommunications Act 1997*, internet and subscription TV service providers fall within the definition of carriage service providers.
**CTS—Children’s Television Standard**
A standard designed to provide access for children (aged under 14 years) to quality television programs made specifically for them. The standard regulates timing and scheduling of children’s programs and content of adjacent programming.

**DAB—Digital Audio Broadcasting**
A digital radio broadcasting standard. Australia is using an upgraded version of this standard called DAB+ to broadcast digital radio in Adelaide, Brisbane, Melbourne, Perth and Sydney. DAB+ uses the same spectrum currently used to deliver both analog and digital television services.

**data traffic**
Volume of data transferred in both directions between a customer and their ISP. Data traffic is measured in bytes.

**dial-up internet service**
Service in which subscribers connect to the internet via a modem and dial-up software utilising the PSTN or an ISDN connection, with speeds limited to 56 Kbps. Dial-up internet services have largely been replaced by broadband services.

**digital radio**
Method for the digital transmission of radio signals for digital radio reception. Digital radio services have been operating in Sydney, Melbourne, Brisbane, Adelaide and Perth since July 2009.

**digital television**
The transmission of television (audio and video) via digital signals, serving as a replacement technology for analog services.

**DNCR—Do Not Call Register**
Register established by the ACMA that allows individuals to register their home and mobile numbers to opt out of receiving most unsolicited telemarketing calls and faxes, with limited exemptions for public-interest organisations.

**DoC—Department of Communications**
Former name of Commonwealth department responsible for, among other things, communications policy and programs. See DoCA.

**DoCA—Department of Communications and the Arts**
Since September 2015, Commonwealth department responsible for, among other things, communications policy and programs; formerly known as Department of Communications (DoC).

**DSI—domestic systems interference**
Interference to the reception of radio or television broadcasting, usually in domestic premises.

**ECP—emergency call person**
Nominated organisation responsible for handling emergency calls. For calls made to Triple Zero (the primary emergency call number) and 112 (the international emergency number for GSM and WCDMA mobile phones), the ECP is Telstra. For calls made to the 106 text service (for people who are deaf or have a hearing or speech impairment), the ECP is Australian Communication Exchange (ACE).

**ESO—emergency service organisation**
Organisation providing an emergency service—police, ambulance or fire service.

**eVULL—Enhanced Vacant Unconditioned Local Loop**
Provisioning of an Unconditioned Local Loop Service (ULLS) using a vacant and intact metallic path. See ULL.
exabyte
One quintillion (one billion billion) bytes

fixed-line telephone service
Covers the delivery of voice services over a copper pair-based PSTN access network or fixed-line broadband networks. Includes fixed VoIP services.

FLRN—freephone and local rate number
Telephone numbers commencing with the digits 1800 (freephone) or 13 (local rate).

Free TV Australia
Industry body that represents Australia’s commercial free-to-air television licensees, and is responsible for developing and reviewing the Commercial Television Industry Code of Practice.

FSA—field service area
One of 44 broad geographic regions in Telstra’s fixed telephone network.

FSAM—Fibre Serving Area Module
An area that is passed or intended to be passed by NBN fibre. From 23 May 2014, the NBN began replacing most existing fixed-line telephone links, ADSL internet and Telstra cable internet services (HFC) in the first 15 Fibre Serving Area Modules (SAMs).

FTA TV—free-to-air television
Broadcast television services where the signal is delivered without charge to the viewer.

FTT—fibre to the building
A type of broadband access network deployment where optical fibre is deployed to a communications cabinet in the basement of each building, which is typically a multi-dwelling unit. The final connection to each individual premise is made by alternative technologies, typically using the building’s existing copper cabling.

FTTDp—fibre to the distribution point
A type of broadband access network deployment where the optical fibre line typically runs to a distribution point located at the street lead-in pit of a small number of end-user premises (typically four). From this distribution point, the final connection to each of the individual premises is provided by existing copper lead-ins.

FTTN—fibre to the node
A type of broadband access network deployment where the optical fibre line runs to a node (cabinet) located in the street. From this street cabinet, individual premises are connected via existing copper cabling networks.

FTTP—fibre to the premises
A type of broadband access network deployment where the optical fibre line extends directly to individual premises. Compared to other fibre-optic connections types, this type of connection results in the fibre-optic line running closest to the end-user and subsequently results in the least reliance on existing copper cabling networks.

GB—gigabyte
One billion bytes. Each byte is eight bits.

Gbps—gigabits per second
Data transfer rate of a billion bits per second.

geographic numbers
Numbers used to provide access to local telephone services, and related voicemail and facsimile services. Also known as local numbers.
GSM—global system for mobile communications
The second-generation mobile digital technology originally developed for Europe, but now used globally. The GSM network will cease to operate in Australia from 31 March 2018.

interception
The interception of telecommunications services for the purpose of law enforcement and national security.

internet telephony
See VoIP.

IoT—Internet of things
The interconnection of many devices and objects utilising internet protocols.

IP—internet protocol
The main routing protocol used in the internet—it operates at the logical network layer and is a code used to label packets of data sent across the internet, identifying both the sending and receiving hosts. IP is also used to designate data, traffic, services and equipment supported by or used in the internet.

IPND—Integrated Public Number Database
Database of number, name and address information about customers of telecommunications services in Australia, for all carriers and CSPs.

IPTV—internet protocol television
High-end multimedia services such as television, video and graphics delivered over managed IP-based networks that provide an acceptable level of Quality of Service (QoS)/Quality of Experience (QoE), security, interactivity and reliability.

ISDN—integrated services digital network
A high-speed network for carrying voice and data services in digital format over the PSTN. Can be considered an evolutionary step between dial-up and today’s broadband internet services.

ISP—internet service provider
A carriage service provider offering internet access to the public or another service provider.

local numbers
See geographic numbers.

low-impact facilities
Communications facilities that are considered to have a low impact on their environment. They include underground cabling, small radiocommunications antennas and dishes, in-building subscriber connections and public payphones. The Telecommunications Act 1997 provides carriers with immunity from state and territory planning laws for the installation of ‘low-impact’ facilities.

LTE—Long Term Evolution
A suite of radio and core network specifications for the enhancement of mobile networks beyond 3G capabilities. Generally regarded as fourth generation mobile telecommunications (4G).

LTE-B—Long Term Evolution Broadcast
A technique of efficiently distributing the same content over the LTE network to multiple users. Rather than individual users downloading their own stream of data, the technique allows content to be provided to multiple users via a single stream of data, thus reducing data demands on networks.

M2M—machine-to-machine
M2M communications are used for automated data transmission and measurement between mechanical or electronic devices using wired and wireless networks. Much of the M2M information is delivered in the form of sparse data, which can come from sensors and other non-IT devices.
MB—megabyte(s)
One million bytes.

MHz—megahertz
One million hertz.

minister—Minister for Communications and Minister for the Arts
Minister responsible for the ACMA and its governing legislation, and the legislation that the ACMA administers.

MPS—mobile premium services
Content information and entertainment services delivered to a mobile phone that includes both premium SMS/MMS and mobile portal services.

MVNO—mobile virtual network operator
A mobile service operator that does not have its own licensed spectrum and does not own the wireless network infrastructure over which it provides services to its customers.

NBN Co—NBN Co Limited
The company established to design, build and operate the National Broadband Network.

NBN—National Broadband Network
The national wholesale-only open access data network in Australia offering high-speed broadband to all Australian premises using a multi-technology mix constructed by NBN Co Limited.

NB-IOT—Narrowband Internet of Things
A narrowband radio technology designed for the Internet of Things. NB-IOT technology is intended for applications that require a large number of devices that are low cost and have a long battery life.

NCD—nominated carrier declaration
Declaration made by the owner of a telecommunications network unit (facilities or infrastructure for delivery of telecommunications services) nominating a licensed carrier that will be responsible for the specified network unit.

NQCSP—Not a QCSP
See QCSP—qualifying carriage service provider.

NRF—Network Reliability Framework
Requirement on Telstra (since January 2003) to provide regular reports to the ACMA on the reliability of its fixed-line services, and to remediate the network in areas with particularly poor performance.

NRS—National Relay Service
Provides access to the standard telephone service for people with a hearing or speech impairment through the relay of voice, modem or TTY communications. Operates as a translation service between voice and non-voice users of the standard telephone service.

number portability
Arrangements allowing customers to transfer their telecommunications service from one service provider to another without changing their number. Number portability is available for local numbers, freephone and local rate numbers, and mobile numbers.

OTT—over-the-top services
A general term for services delivered over a network that are not offered by that network operator. These services ride on top of the infrastructure service and are provided independently of the network operator.

pay TV
See subscription television.
payphone
A public telephone where calls may be paid for with coins, phone cards, credit cards or reverse charge facilities.

petabyte
A unit of information equal to one thousand million million bytes.

portability
See number portability.

postpaid
A contract under which a user is charged on a periodic basis, depending on service usage during the previous billing period.

prepaid
A contract system by which users pay an amount upfront to buy a certain amount of usage or credit.

PSTN—public switched telecommunications network
Public telecommunications network to provide telephone services to subscribers.

PUSP—primary universal service provider
See USP—universal service provider.

QCSP—qualifying carriage service provider
CSPs that have 100,000 or more services covered by the CSG Standard as at the last day of the preceding financial year.

RVA—recorded voice announcement
A pre-recorded audio message played to listeners; for example, the message now played to all callers to the Triple Zero (000) emergency service.

SAM—serving area module
A geographical subset of premises to be served by the NBN, defined as part of its network architecture.

SBS—Special Broadcasting Service
Free-to-air national radio and television broadcasting service providing multilingual and multicultural programs that inform, educate and entertain all Australians and, in doing so, reflect Australia’s multicultural society. The SBS Online service also provides additional multilingual content through the internet.

SIO—services in operation
The number of services provided by a telephone company at a particular time. The term is used in the context of both fixed-line and mobile services.

smartnumbers
Specified freephone (1800) or local rate (13 or 1300) numbers that are considered desirable because they can be translated to a phoneword or they have a memorable pattern.

smartphone
A mobile phone built on a mobile operating system, with more advanced computing capability and connectivity.

SMS—short message service
A mobile telecommunications data transmission service that allows users to send short text messages to each other using a mobile handset.
**software-defined networking**
An umbrella term encompassing several kinds of network technology aimed at making the network more flexible and agile to support the virtualised server and storage infrastructure of the modern data centre.

**spam**
Unsolicited commercial electronic messages that are sent by email, SMS, MMS and/or instant messaging.

**standard telephone service**
The telecommunications service defined as a carriage service providing voice telephony or an equivalent service that meets the requirements of the *Telecommunications (Consumer Protection and Service Standards) Act 1999* and *Disability Discrimination Act 1992*.

**subscribers**
ABS subscriber statistics measure the number of ‘subscriber lines’ rather than the number of ‘users’. Counts of subscribers are not the same as counts of people/organisations with internet access. This is because some subscribers may have accounts with more than one ISP or multiple accounts with a single ISP.

**subscription television**
Service providing access, for a fee, to television channels transmitted using cable, satellite or terrestrial microwave.

**SVOD—subscription video on demand**
An internet service that gives users unlimited access to a range of online video content at any time, for a flat monthly fee. Users can start and stop the program they are watching when they choose.

**take-up**
Adoption of a service or product by users.

**TB—terabyte**
One thousand gigabytes.

**TIO scheme—Telecommunications Industry Ombudsman scheme**
Industry-funded independent dispute resolution service, established in December 1993, for consumers unable to resolve complaints with their telecommunications carrier or CSP (including ISPs).

**trigger event**
Relates to commercial regional radio licences. Includes a transfer of a licence, formation of a new registrable media group that includes a regional commercial radio broadcasting licence, or change of controller of a registrable media group that includes a regional commercial radio broadcasting licence.

**TTY—teletypewriter**
Telephone typewriter that allows communication to be typed after a call is connected, enabling people with a hearing or speech impairment to use voice telecommunications. Calls can be connected to another TTY user or relayed and translated to voice by the NRS.

**ULL—Unconditioned Local Loop**
The unconditioned communications wire between the boundary of a telecommunications network at an end-user’s premises and a point on a telecommunications network that is a potential Point of Interconnection (POI), located at or associated with a customer access module and located on the end-user’s side of the customer access module.

**URL—uniform resource locator**
A unique address for accessing information and services over the internet.
USO—universal service obligation
Obligation under the *Telecommunications (Consumer Protection and Service Standards) Act 1999* to ensure that standard telephone services, payphones and prescribed carriage services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business.

USP—universal service provider
A nominated provider who receives government subsidies to provide a necessary service. Telstra is the primary USP and is responsible for fulfilling the universal service obligation throughout Australia.

ViLTE—video over LTE
An extension of VoLTE, which enhances voice services with a high-quality video channel.

VoIP—voice over internet protocol
The transport of voice traffic inside data packets over an IP network—used to make telephone calls using a data network (such as the internet) instead of over a fixed-line PSTN service.

VoLTE—voice over LTE
A standard allowing voice calls to be placed over an LTE (Long Term Evolution) network. In the absence of VoLTE, LTE networks generally only support a data service, with 2G or 3G networks used to support voice and other services such as SMS. With VoLTE, voice calls (and SMS text messages) are integrated into the 4G LTE data stream rather than the previous arrangement of reverting back to 3G. VoLTE allows for multitasking, with simultaneous voice calls and 4G data connections. VoLTE also supports improved voice quality (HD Voice).

VoWiFi—voice over Wi-Fi
A technology that allows voice calls originating from, or terminating on, mobile handsets to be carried over Wi-Fi networks in environments where mobile network coverage is limited. VoWiFi is fully integrated with modern smartphones and does not require any additional apps to be installed on a device. End-users are typically unaware when a transition from the mobile network to the Wi-Fi network occurs.

Wi-Fi
A type of wireless local area network (WLAN) technology that uses radio waves to provide wireless high-speed internet and network connections using specifications in the IEEE 802.11 series of standards for WLAN.
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