

COUNTRY: SINGAPORE

SCORE: 80.21 | RANK: 6/24

Singapore has modern digital economy laws in most areas. For example, the Electronic Transactions Act 2010 implements the United Nations Convention on Electronic Contracting, which Singapore has ratified. Singapore also has up-to-date cybercrime laws and intellectual property laws.

Singapore privacy law provides a balanced approach between protecting personal information and facilitating innovation in cloud computing and the digital economy. However, there have been some recent trends suggesting Singapore may be looking to establish unique national standards for the IT sector. For example, Singapore adopted the Singapore-specific Multi-Tier Cloud Security (MTCS) Singapore Standard, which arbitrarily assigns levels to cloud computing services imposing distinct requirements on particular levels.

Singapore has some minor Internet censorship in place but generally promotes innovative business practices that are free from tariffs and government intervention. Singapore is generally committed to adopting international standards throughout the IT and security sectors.

Singapore has excellent information (IT) infrastructure and is developing a national network to bring high-speed fiber to the home.

There were very few changes in Singapore’s results from the previous Scorecard. The minor jump in the rankings — from seventh to sixth — is a result of the rebalancing of the Scorecard methodology.

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
DATA PRIVACY (SCORE: 8.3/12.5 RANK: 13/24)		
1. Is a data protection law or regulation in place?	✓	Singapore passed the Personal Data Protection Act in October 2012.
2. What is the scope and coverage of the data protection law or regulation?	Sectoral	The legislation covers the private sector. It does not cover government agencies.
3. Is a data protection authority in place?	✓	The law established the Personal Data Protection Commission (PDPC) < www.pdpc.gov.sg >.
4. What is the nature of the data protection authority?	Sole commissioner	The Personal Data Protection Commission (PDPC) < www.pdpc.gov.sg > is an independent authority, with oversight provided by an appeals tribunal.
5. Is the data protection authority enforcing the data protection law or regulation in an effective and transparent manner?	✓	Singapore has an active regulator, and although the legislation is relatively new, there have been a number of high profile cases, including large financial penalties < www.pdpc.gov.sg/commissions-decisions/data-protection-enforcement-cases >. Directions from the Personal Data Protection Commission (PDPC) < www.pdpc.gov.sg > may be registered with and enforced by a District Court in Singapore, and this is likely to be the main avenue for enforcement.
6. Is the data protection law or regulation compatible with globally recognized frameworks that facilitate international data transfers?	APEC framework & EU framework	The privacy law appears compatible with the EU Data Protection Directive. Singapore is a member of the Asia Pacific Economic Cooperation (APEC). The law is compatible with the APEC Privacy Framework. In July 2017 Singapore announced its intent to join the APEC Cross-border Privacy Rules (CBPRs) system.
7. Are data controllers free from registration requirements?	✓	There are no registration requirements in Singapore.
8. Are there cross-border data transfer requirements in place?	Detailed requirements	Organizations must ensure they have obtained the individual's consent to transfer personal information internationally, including additional consent if appropriate consent was not obtained at the time of the original collection. A large number of exemptions and additional mechanisms for transferring data internationally apply, including where an organization can ensure comparable protection in the target country (e.g., through the use of standard contractual clauses). The regulator has released additional guidance on compliance with these requirements < www.pdpc.gov.sg/Legislation-and-Guidelines/Guidelines/Main-Advisory-Guidelines >.

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
9. Are cross-border data transfers free from arbitrary, unjustifiable, or disproportionate restrictions, such as national or sector-specific data or server localization requirements?	✓	The cross-border data transfer requirements in Singapore are transparent, flexible, and closely aligned with international best practice.
10. Is there a personal data breach notification law or regulation?	✗	There are no data breach notification requirements in Singapore and the privacy law in Singapore is silent on the issue of data breach notification requirements. However, in May 2015, the Personal Data Protection Commission (PDPC) <www.pdpc.gov.sg> published the Guide to Managing Data Breaches, available from <www.pdpc.gov.sg/Legislation-and-Guidelines/Guidelines/Other-Guides>. The guide is a useful representation of voluntary best practice.
11. Are personal data breach notification requirements transparent, risk-based, and not overly prescriptive?	Not applicable	There are no data breach notification requirements in Singapore, but a voluntary guideline is available. In May 2015, the Personal Data Protection Commission (PDPC) <www.pdpc.gov.sg> published the Guide to Managing Data Breaches, available from <www.pdpc.gov.sg/Legislation-and-Guidelines/Guidelines/Other-Guides>. The guide is a useful representation of voluntary best practice.
12. Is an independent private right of action available for breaches of data privacy?	✗	No private right of action is available for privacy breaches in Singapore.
SECURITY (SCORE: 9.8/12.5 RANK: 7/24)		
1. Is there a national cybersecurity strategy in place?	✓	Singapore's Cybersecurity Strategy was released in October 2016 <www.csa.gov.sg/news/publications/singapore-cybersecurity-strategy>.
2. Is the national cybersecurity strategy current, comprehensive, and inclusive?	✓	The Cybersecurity Strategy is comprehensive, including expenditure targets and implementation plans. It is based on "four pillars": (1) Strengthen the resilience of Critical Information Infrastructures. (2) Mobilize businesses and the community to make cyberspace safer, by countering cyberthreats, combating cybercrime, and protecting personal data. (3) Develop a vibrant cybersecurity ecosystem comprising a skilled workforce, technologically advanced companies and strong research collaborations. (4) Step up efforts to forge strong international partnerships, given that cyber threats do not respect sovereign boundaries.
3. Are there laws or appropriate guidance containing general security requirements for cloud service providers?	✓	The privacy legislation contains broad security requirements and some sector-specific rules are also in place (for example in the financial services sector). The security requirements in the privacy legislation are the subject of regular enforcement actions. Additional guidance on compliance has been published by the Personal Data Protection Commission (PDPC) <www.pdpc.gov.sg>, including the Guide to Securing Personal Data in Electronic Medium (January 2017), available from <www.pdpc.gov.sg/Legislation-and-Guidelines/Guidelines/Other-Guides>.
4. Are laws or guidance on security requirements transparent, risk-based, and not overly prescriptive?	✓	Cybersecurity measures are promoted as a guide to good practice in Singapore, and compliance is not mandatory. The recommendations are written in general terms and are not prescriptive. In practice the regulator has been active in enforcing compliance with the broad security principle contained in the privacy legislation, including issuing large fines to organizations for non-compliance.
5. Are there laws or appropriate guidance containing specific security audit requirements for cloud service providers that take account of international practice?	ⓘ	Guidance on security audits has been published by the Personal Data Protection Commission (PDPC) <www.pdpc.gov.sg> in the Guide to Securing Personal Data in Electronic Medium (January 2017), available from <www.pdpc.gov.sg/Legislation-and-Guidelines/Guidelines/Other-Guides>. The Guide recommends that organizations "conduct regular ICT security audits, scans and tests to detect vulnerabilities and non-compliance with organisational standards." Compliance is not mandatory. In addition, where the retention of electronic records comes under the jurisdiction and supervision of a government agency or statutory organization, it may impose additional requirements to ensure that it can continue to exercise proper supervision over the relevant activities and information that these records capture. The government also requires cloud service providers participating in government bulk procurement exercises for cloud services to comply with the security requirement in the Singapore-specific Multi-Tier Cloud Security (MTCS) Singapore Standard (SS) 584 <www.imda.gov.sg/industry-development/infrastructure/ict-standards-and-frameworks/mtcs-certification-scheme/multi-tier-cloud-security-certified-cloud-services>.

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
6. Are international security standards, certification, and testing recognized as meeting local requirements?	❌	<p>In 2016, Singapore re-joined the Common Criteria Recognition Agreement (CCRA) as a Certificate Consuming Member <www.commoncriteriaportal.org>.</p> <p>In practice certification is not required for most government procurement opportunities in Singapore, although it has been included in some national infrastructure projects.</p> <p>The government also requires cloud service providers participating in government bulk procurement exercises for cloud services to comply with the security requirement in the Singapore-specific Multi-Tier Cloud Security (MTCS) Singapore Standard (SS) 584 <www.imda.gov.sg/industry-development/infrastructure/ict-standards-and-frameworks/mtcs-certification-scheme/multi-tier-cloud-security-certified-cloud-services>.</p>
CYBERCRIME (SCORE: 11.5/12.5 RANK: 5/24)		
1. Are cybercrime laws or regulations in place?	✅	<p>The Computer Misuse and Cybersecurity Act 1993 (Cap. 50A) includes provisions on cybercrime. Singapore has been gradually amending the Act to cover a wider range of cybercrime and cybersecurity issues, including attacks on national infrastructure and cyberbullying. Major amendments were passed in 2007, 2012, and 2017.</p> <p>The Act includes provisions to protect computers, computer programs, and data stored in computers from unauthorized access, modification, interception, and interference. The law intentionally defines “computer” very widely and is not technology-specific. It applies to any person, irrespective of physical location, who does any act that relates to any computer, program, or data located within Singapore at the material time. The Act also applies to criminal acts committed overseas, against a computer located overseas, should the act “cause or create a significant risk of serious harm in Singapore.”</p> <p>Section 3 of the Act states that any person who knowingly causes a computer to perform any function for the purpose of securing access without authority to any program or data held in any computer shall be guilty of an offense.</p>
2. Are cybercrime laws or regulations consistent with the Budapest Convention on Cybercrime?	✅	<p>The offenses contained in the Computer Misuse and Cybersecurity Act are not as specific as the offenses listed in the Convention on Cybercrime, but they do cover most of online criminal activity.</p>
3. Do local laws and policies on law enforcement access to data avoid technology-specific mandates or other barriers to the supply of security products and services?	❌	<p>Access by law enforcement authorities to encrypted data is covered in the Criminal Procedure Code Act 2010:</p> <p>Section 40 (Power to access decryption information)</p> <p>“(1) For the purposes of investigating an arrestable offense, the Public Prosecutor may by order authorize a police officer or an authorized person to exercise ... all or any of the powers under this section.</p> <p>(2) The police officer or authorized person referred to in subsection (1) shall be entitled to —</p> <p>(a) access any information, code or technology which has the capability of retransforming or unscrambling encrypted data into readable and comprehensible format or text for the purposes of investigating the arrestable offense;</p> <p>(b) require —</p> <p>(i) any person whom he reasonably suspects of using a computer in connection with an arrestable offense or of having used it in this way; or</p> <p>(ii) any person having charge of, or otherwise concerned with the operation of, such computer,</p> <p>to provide him with such reasonable technical and other assistance as he may require for the purposes of paragraph (a); and</p> <p>(c) require any person whom he reasonably suspects to be in possession of any decryption information to grant him access to such decryption information as may be necessary to decrypt any data required for the purposes of investigating the arrestable offense.”</p>
4. Are arrangements in place for the cross-border exchange of data for law enforcement purposes that are transparent and fair?	✅	<p>Singapore is party to numerous Mutual Legal Assistance Treaties (MLATS) and other international agreements for sharing data for law enforcement cooperation, both directly and via regional agreements (such as the ASEAN Treaty on Mutual Legal Assistance in Criminal Matters, 2004). These agreements are up-to-date and follow international best practice <www.agc.gov.sg/our-roles/international-law-advisor/mutual-Legal-assistance>.</p>

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
INTELLECTUAL PROPERTY RIGHTS (SCORE: 11.5/12.5 RANK: 1/24)		
1. Are copyright laws or regulations in place that are consistent with international standards to protect cloud service providers?	✓	Singapore's Copyright Act 1987 has been regularly updated and is consistent with international best practice. Copyright "safe harbor" protection for intermediaries such as cloud service providers is contained in Section 193A of the Copyright Act. The law states that the safe harbor mechanisms are to apply to "network service providers," which includes both intermediaries providing services and connections for data transmission or routing, as well as intermediaries who provide or operate facilities for online services or network access.
2. Are copyright laws or regulations effectively enforced and implemented?	✓	Singapore has an active and well-resourced copyright enforcement system in place. An effective intellectual property "safe harbor" has been implemented for cloud service providers.
3. Is there clear legal protection against misappropriation of trade secrets?	✓	Trade secrets are protected by the common law principle of confidential information in Singapore, rather than by statute. The courts have determined that information will qualify as a trade secret where: (1) The information is unique to the business; (2) The information has commercial value; (3) The information has value because it is kept secret; and, (4) The information has been protected by reasonable security measures.
4. Is the law or regulation on trade secrets effectively enforced?	🔵	Civil cases may be initiated for breach of contracts or employment agreements (or non-disclosure agreements) involving trade secrets. However, it is usually very difficult to establish theft of trade secrets and cases in Singapore are rare. The law also has limitations as it does not prevent the use of misappropriated trade secrets, or attempts to obtain trade secrets.
5. Is there clear legal protection against the circumvention of Technological Protection Measures?	✓	Singapore has comprehensive prohibitions on circumvention devices. Under the Copyright Act 1987, owners can take action against a person who: <ul style="list-style-type: none"> • knowingly circumvents a technological protection measure; or • manufactures, imports, distributes, offers to the public, provides or otherwise traffics in any device, product or component that is promoted, advertised, or marketed for the purpose of circumventing the technological protection measure. <p>Also, under section 193A of the Copyright Act (following amendments in 2014) copyright holders can now submit an application to the High Court to order an ISP to block "flagrantly infringing online locations." One of the key tests for this action is whether the site or service provides instructions to circumvent measures to restrict access to the content.</p>
6. Are laws or regulations on the circumvention of Technological Protection Measures effectively enforced?	✓	Singapore has an active and well-resourced copyright enforcement system in place, and this extends to measures to combat the development and distribution of circumvention devices.
7. Are there clear legal protections in place for software-implemented inventions?	✓	The Singapore Patents Act generally excludes "a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer" from patentability. However, where a computer program implements an invention by creating a technical effect through its interaction with computer hardware, the invention may be patented.
8. Are laws or regulations on the protection of software-implemented inventions effectively implemented?	🔵	In April 2017 the Intellectual Property Office of Singapore (IPOS) <www.ipos.gov.sg> issued a revised version of the Examination Guidelines for Patent Applications at IPOS. These guidelines explain the (limited) circumstances in which some computer-related inventions may be patented. It is difficult to obtain a patent in Singapore for software-implemented inventions. The invention must show a strong link with a specific technical effect.
STANDARDS AND INTERNATIONAL HARMONIZATION (SCORE: 9/12.5 RANK: 16/24)		
1. Is there a regulatory body responsible for standards development for the country?	✓	The Standards, Productivity and Innovation Board (SPRING) <www.spring.gov.sg> establishes and publishes Singapore standards, by notification in the Government Gazette. It is commonly known as SPRING Singapore and also acts as the enterprise development agency responsible for helping Singapore enterprises grow. SPRING is a statutory board under the Ministry of Trade and Industry.

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
2. Are international standards favored over domestic standards?	📌	<p>Singapore is generally committed to adopting international standards throughout the IT and security sectors. This is documented in the Intelligent Nation 2015 (iN2015) Steering Committee Report on Innovation, Integration and Internationalisation, 2014 <www.imda.gov.sg/~media/imda/files/about/resources/01_in2015_main_report.pdf>.</p> <p>However, there have been some recent trends suggesting Singapore may be looking to establish unique national standards for the IT sector. For example, as mentioned above, Singapore adopted the Singapore-specific Multi-Tier Cloud Security (MTCS) Singapore Standard (SS) 584 <www.imda.gov.sg/industry-development/infrastructure/ict-standards-and-frameworks/mtcs-certification-scheme/multi-tier-cloud-security-certified-cloud-services>, which arbitrarily divides up cloud computing services imposing distinct requirements on particular “levels” of cloud computing services. More recently, SPRING has announced its intention to adopt a Singapore-specific standard on Cloud Outage Incident Response, imposing cross-cutting reporting and response requirements, tied to the MTCSS “tiers” — all of which are typically addressed in contractual arrangements between cloud service providers and customers.</p>
3. Does the government participate in international standards setting process?	✅	<p>Singapore participates in relevant International Standards Organization (ISO) and International Electrotechnical Commission (IEC) standard-setting processes and is a full member of the ISO. Singapore is a participant in the top-level ICT standards committee (JTC-1) <www.iso.org/isoiec-jtc-1.html>.</p>
4. Are e-commerce laws or regulations in place?	✅	<p>Singapore has a comprehensive Electronic Transactions Act 2010 in place.</p>
5. What international instruments are the e-commerce laws or regulations based on?	UN Convention on E-Contracting	<p>Singapore has repealed the earlier Electronic Transactions Act 1998 and replaced it with the Electronic Transactions Act 2010 to more closely match provisions of the UN Convention on Electronic Contracting — a convention that Singapore has both signed and ratified. The convention came into force in March 2013.</p>
6. Is there a law or regulation that gives electronic signatures clear legal weight?	✅	<p>The Electronic Transactions Act 2010 replaces the Electronic Transactions Act 1998. It provides for the recognition of electronic signatures and digital signatures in Singapore. Section 8 provides that where a rule of law requires a signature, an electronic signature satisfies that rule of law, subject to some simple requirements.</p>
7. Are cloud service providers free from mandatory filtering or censoring?	❌	<p>Singapore’s Infocomm Media Development Authority (IMDA) <www.imda.gov.sg> maintains license and registration requirements that subject Internet content and service providers to penalties for non-compliance with restrictions on prohibited material. The IMDA is charged with ensuring that “nothing is included in the content of any media service which is against public interest or order, or national harmony, or which offends good taste or decency.” The core of this framework is a class license scheme stipulated under the Broadcasting Act and by industry policies and regulations issued by the IMDA.</p> <p>Under the class license scheme, all Internet service providers (ISPs) and those Internet content providers (ICPs) determined to be political parties or persons “engaged in the propagation, promotion or discussion of political or religious issues relating to Singapore” must register with the IMDA. As licensees, ISPs and ICPs are also bound by the IMDA’s Internet Code of Practice <www.imda.gov.sg/regulations-licensing-and-consultations/content-standards-and-classification/standards-and-classification/Internet>. The code defines “prohibited material” broadly, specifying only a few standards for sexual, violent, and intolerant content. Where filtering is not mandated at the ISP level, the code requires that ICPs deny access to material if so directed by the IMDA. Licensees that fail to comply with the code may face sanctions, including fines, license suspensions, or terminations.</p>
PROMOTING FREE TRADE (SCORE: 9.5/12.5 RANK: 6/24)		
1. Is a national strategy or platform in place to promote the development of cloud services and products?	📌	<p>The approach to the promotion of digital services, including cloud computing, in Singapore is undergoing a major restructure, with oversight responsibility going to the Smart Nation and Digital Government Office (SNDGO), and implementation responsibility going to GovTech <www.tech.gov.sg>.</p> <p>As of June 2017 there is no formal, written policy on cloud computing in Singapore, although the agencies responsible for this issue are in the process of being established, and further guidance is expected.</p>
2. Are there any laws or policies in place that implement technology neutrality in government?	📌	<p>Singapore has traditionally supported technology neutrality. The approach to the implementation of digital technology in Singapore is undergoing a major restructure, with oversight responsibility going to the Smart Nation and Digital Government Office (SNDGO), and implementation responsibility going to GovTech <www.tech.gov.sg>.</p> <p>As of June 2017, there is no formal, written policy on technology neutrality in Singapore, although the agencies responsible for this issue are in the process of being established, and further guidance is expected.</p>

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
3. Are cloud computing services able to operate free from laws or policies that either mandate or give preference to the use of certain products, services, standards, or technologies?	✓	There are no mandatory product requirements or preferences in Singapore that would affect cloud computing.
4. Are cloud computing services able to operate free from laws, procurement policies, or licensing rules that discriminate based on the nationality of the vendor, developer, or service provider?	ⓘ	In practice, many government procurement opportunities require a joint venture with a local firm or the establishment of a local agency arrangement. Singapore provides additional market access concessions to its trading partners under its bilateral free trade agreements.
5. Has the country signed and implemented international agreements that ensure the procurement of cloud services is free from discrimination?	ⓘ	Singapore is a full member of the World Trade Organization (WTO) plurilateral Agreement on Government Procurement < www.wto.org/english/tratop_e/gproc_e/gp_gpa_e.htm >.
6. Are services delivered by cloud providers free from tariffs and other trade barriers?	✓	There are currently no government tariffs or other trade barriers imposed on the foreign sources whose software or applications are downloaded in Singapore.
7. Are cloud computing services able to operate free from laws or policies that impose data localization requirements?	✓	There are no data localization requirements in Singapore that have an effect on cloud services and products.

IT READINESS, BROADBAND DEPLOYMENT (SCORE: 20.7/25 | RANK: 1/24)

1. Is there a National Broadband Plan?	<ul style="list-style-type: none"> • Singapore's successive broadband plans have delivered comprehensive fiber (FtTH) deployment and the goal is nationwide ultra-high-speed broadband access of 1 Gbps to all physical addresses • By 2019–2021, Heterogenous Network (HetNet) for convergence of Mobile and WiFi • After 2021, convergence of fixed and mobile broadband 	<p>Singapore has continued to expand upon the Next Gen National Infocomm Infrastructure (Next Gen NII) <www.imda.gov.sg/industry-development/infrastructure/next-gen-national-infocomm-infrastructure> established in earlier plans (Intelligent Nation 2015). Some of the infrastructure targets include:</p> <ul style="list-style-type: none"> • Next Generation National Broadband Network (Next Gen NBN) — eventual goal of a nationwide ultra-high-speed broadband access of 1 Gbps to all physical addresses (including homes, schools, government buildings, businesses, hospitals, and nonbuilding access points) • Fibre Ready Scheme (FRS) — subsidizes infrastructure to provide open access to ultra-high-speed fibre broadband to 100% of tenants in a non-residential building (available until January 2018) • Wireless@SG provides free wireless broadband access in public areas with speeds of up to 5 Mbps. <p>In August 2016, Singapore launched Infocomm Media 2025 <www.mci.gov.sg/portfolios/infocomm-media/infocomm-media-2025>. It sets out to “create a globally competitive infocomm media ecosystem that 1) enables and complements Singapore’s Smart Nation vision 2) effects economic and social transformation, and 3) creates enriching and compelling content.” It includes a recommendation for a Heterogeneous Network (HetNet) <www.imda.gov.sg/industry-development/infrastructure/next-gen-national-infocomm-infrastructure/heterogeneous-network-hetnet> to develop the next phase of Singapore’s communications infrastructure to enable seamless switching between different networks, such as cellular and Wi-Fi networks. The InfoComm Media 2015 roadmap sets a date of 2019–2021 for HetNet and then fixed/mobile convergence from 2021.</p>
--	---	--

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
2. Is the National Broadband Plan being effectively implemented?	✓	<p>Under the Next Generation National Broadband Network (Next Gen NBN) the Singapore government has established an industry structure with three layers (network, operations/wholesale, and retail) with structural separation requirements on the Next-Gen NBN Network Company (NetCo) and operational separation requirements on the Next-Gen NBN Operating Company (OpCo).</p> <p>Heterogeneous Network (HetNet) trials were launched throughout 2016.</p> <p>Singapore has required the provision of FttH, with customers able to select from a range of suppliers and speeds of access. Singapore, partly due to its compact size and high urbanization, is one of the few countries that has mandated a very high-speed broadband connection to every home. From 2013 a “Universal Service Obligation” exists for fiber connectivity.</p> <p>The Infocomm Media Development Authority (IMDA) deploys a National Internet Measurement Infrastructure that “provides independent measurements of key service indicators such as the throughput and latency performance for both local and the international (US-Singapore) Internet connectivity” <www.imda.gov.sg/industry-development/infrastructure/next-gen-national-infocomm-infrastructure/national-internet-measurement-infrastructure>. The measurement and transparency of pricing and performance of broadband plans represents international best practice.</p> <p>Singapore successful implementation of its earlier national broadband plans (Intelligent Nation 2015 Masterplan) have been effectively implemented and the InfoComm Media 2025 planning approach claims to distinguish itself from earlier plans by:</p> <ol style="list-style-type: none"> (1) Taking a more holistic approach across multiple agencies; (2) Private sector led and extensive and diverse consultations in developing recommendations; and (3) Infocomm Media plan is set as a “living” reference that sets broad directions and also needs to accommodate disruptive and unpredictable technologies that merge over a 10-year period.
3. Are there laws or policies that regulate “net neutrality”?	Limited regulation	<p>There are no net neutrality regulations in place and ISPs are able to apply differential charging and/or block different types of traffic over their networks.</p> <p>However, Singapore’s Infocomm Media Development Authority (IDA) decision Net Neutrality, June 2011, forbids the blocking of “legitimate” content and ensures that ISP services meet the minimum broadband Quality of Service standards <www.imda.gov.sg/~media/imda/files/inner/pcdg/consultations/20101111_netneutrality/netneutralityexplanatorymemo.pdf>.</p>
4. Base Indicators		
4.1. Population (millions) (2015) • Total for all countries in this scorecard: 4,700 million	6	<p>In 2015, the population of Singapore increased by 1.8%.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p>
4.2. Urban Population (%) (2015) • Average for all countries in this scorecard: 73%	100%	<p>In 2015, the urban population of Singapore remained stable.</p> <p>[World Bank, Data Catalog, Indicators, Urban Population (Jan. 2017) <data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>]</p>
4.3. Number of Households (millions) (2015) • Total for all countries in this scorecard: 1,249 million	1	<p>In 2015, the number of households in Singapore increased by 1.8%.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p>
4.4. Population Density (people per square km) (2015) • Average for all countries in this scorecard: 471	7,829	<p>In 2015, the population density of Singapore increased by 1.2%.</p> <p>[World Bank, Data Catalog, Indicators, Population Density (Jan. 2017) <data.worldbank.org/indicator/EN.POP.DNST>]</p>
4.5. Per Capita GDP (US\$ 2015) • Average for all countries in this scorecard: US\$ 22,649	\$52,889	<p>In 2015, the per capita GDP for Singapore increased by 2% to US\$ 52,889. This was below the five-year compound annual growth rate (CAGR) from 2010–2015 of 2.6%.</p> <p>This ranks Singapore 3rd for value of per capita GDP and 8th for growth (CAGR) for this indicator in this scorecard.</p> <p>[World Bank, Data Catalog, Indicators: GDP Per Capita, Current US\$ (Jan. 2017) <data.worldbank.org/indicator/NY.GDP.PCAP.CD> and GDP Growth, Annual % (Jan. 2017) <data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>]</p>

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
<p>4.6. ICT Service Exports (billions of US\$) (2015)</p> <ul style="list-style-type: none"> Total for all countries in this scorecard: US\$ 978 billion 	\$39	<p>In 2015, the value of ICT service exports for Singapore decreased by 6.5% to US\$ 38.64 billion. This was below the five-year compound annual growth rate (CAGR) from 2010–2015 of 10.8%.</p> <p>This ranks Singapore 7th for value of ICT service exports and 8th for growth (CAGR) for this indicator in this scorecard.</p> <p>[World Bank, Data Catalog, Indicators: ICT Service Exports US\$ (Jan. 2017) <data.worldbank.org/indicator/BX.GSR.CCIS.CD>]</p>
<p>4.7. Personal Computers (% of households) (2015)</p> <ul style="list-style-type: none"> Average for all countries in this scorecard: 63% 	87%	<p>In 2015, 87% of households in Singapore had personal computers. This is an increase of 1.5% since 2014 and ranks Singapore 19th out of 236 countries surveyed. The growth from 2014 is above the five-year compound annual growth rate (CAGR) from 2010 to 2015 of 0.7%.</p> <p>This ranks Singapore 3rd for the number of personal computers (as a % of households) and 20th for growth (CAGR) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p>
5. IT and Network Readiness Indicators		
<p>5.1. ITU ICT Development Index (IDI) (2016)</p> <p>(score is out of 10 and covers 175 countries)</p> <ul style="list-style-type: none"> Average for all countries in this scorecard: 6.58 	7.95	<p>Singapore's ITU ICT Development Index (IDI) for 2016 is 7.95 (out of 10), resulting in a rank of 20th (out of 175 economies). The 2016 IDI for Singapore increased by 0.9%, and the IDI ranking declined by 1 from a rank of 19th since 2015.</p> <p>This ranks Singapore 8th in the ITU ICT Development Index and 17th for growth (CAGR) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), Measuring the Information Society (Dec. 2016) <www.itu.int/net4/ITU-D/idi/2016>]</p>
<p>5.2. World Economic Forum Networked Readiness Index (NRI) (2016)</p> <p>(score is out of 7 and covers 139 countries)</p> <ul style="list-style-type: none"> Average for all countries in this scorecard: 4.77 	6.04	<p>Singapore has a Networked Readiness Index (NRI) score of 6.04 (out of 7), resulting in a rank of 1st (out of 139 economies) and a rank of 1st (out of 20) in the High income: non-OECD grouping of economies. The 2016 NRI for Singapore increased by 0.2% and the ranking has remained the same since 2015.</p> <p>This ranks Singapore 1st in the ITU ICT Development Index and 24th for growth (CAGR) for this indicator in this scorecard.</p> <p>[World Economic Forum, Global Information Technology Report (2016) <reports.weforum.org/global-information-technology-report-2016>]</p>
6. Internet Users and International Bandwidth		
<p>6.1. Internet Users (millions) (2015)</p> <ul style="list-style-type: none"> Total for all countries in this scorecard: 2,330 million 	5	<p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p>
<p>6.2. Internet Users (% of population) (2015)</p> <ul style="list-style-type: none"> Average for all countries in this scorecard: 67% 	82%	<p>In 2015, 82% of the population in Singapore used the Internet, resulting in a ranking of 31st out of 236 countries surveyed by the ITU. This is an increase of 3.9% since 2014 and is above the five-year compound annual growth rate (CAGR) from 2010–2015 of 2.9%.</p> <p>This ranks Singapore 8th in the proportion of the population using the Internet and 16th for growth (CAGR) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p> <p>Note: There may be some variations as to how countries calculate this. Some countries base this upon all or part of the population — such as between 16 and 72 years of age.</p>
<p>6.3. International Internet Bandwidth (total gigabits per second (Gbps) per country) (2015)</p> <ul style="list-style-type: none"> Total for all countries in this scorecard: 117,736 Gbps 	3,400	<p>Singapore has increased its international Internet bandwidth by 15% since 2014 to 3,400 Gbps and is ranked 15 out of 236 countries surveyed by the ITU. The growth from 2014 is below the five-year compound annual growth rate (CAGR) from 2009–2014 of 40.5%.</p> <p>This ranks Singapore 11th for total international Internet bandwidth and 6th for growth (CAGR) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p>

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
6.4. International Internet Bandwidth (bits per second (bps) per Internet user) (2015) <ul style="list-style-type: none"> Average for all countries in this scorecard: 97,747 bps 	737,006	The international Internet bandwidth (per Internet user) of Singapore has increased by 9% since 2014. The growth from 2014 is below the five-year compound annual growth rate (CAGR) from 2010–2015 of 33.7%. This ranks Singapore 1st for international Internet bandwidth per user and 4th for growth (CAGR) for this indicator in this scorecard. [International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) < www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx >]
7. Fixed Broadband		
7.1. Fixed Broadband Subscriptions (millions) (2015) <ul style="list-style-type: none"> Total for all countries in this scorecard: 697 million 	1	Singapore has increased the number of fixed broadband subscribers by 1% since 2014 to 1.48 million, and is ranked 57th out of 236 countries surveyed by the ITU. The growth from 2014 is below the five-year compound annual growth rate (CAGR) from 2010–2015 of 2.1%. This ranks Singapore 23rd for the number of fixed broadband subscriptions and 24th for growth (CAGR) for this indicator in this scorecard. [International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) < www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx >]
7.2. Fixed Broadband Subscriptions (% of households) (2015) <ul style="list-style-type: none"> Average for all countries in this scorecard: 63% 	118%	[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) < www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx >] Note: This may be skewed by business usage in some countries.
7.3. Fixed Broadband Subscriptions (% of population) (2015) <ul style="list-style-type: none"> Average for all countries in this scorecard: 21% 	26%	Singapore has decreased its fixed broadband subscriptions (as a % of the population) by -1.2% since 2014, which is below the five-year compound annual growth rate (CAGR) from 2010–2015 of 0%. This ranks Singapore 48th out of 236 countries surveyed by the ITU. This ranks Singapore 10th for the number of fixed broadband subscriptions (as a % of the population) and 24th for growth (CAGR) for this indicator in this scorecard. [International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) < www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx >]
7.4. Fixed Broadband Subscriptions (% of Internet users) (2015) <ul style="list-style-type: none"> Average for all countries in this scorecard: 29% 	32%	[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) < www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx >]
7.5. Average Broadband Data Connection Speed (total megabits per second (Mbps) per country) (Q1 2017) <ul style="list-style-type: none"> Average for all countries in this scorecard: 12 Mbps Average peak for all countries in this scorecard: 70 Mbps 	20	In Singapore the Q1 2017 average broadband data connection speed was 20.35 Mbps and is ranked 7th out of 239 countries measured by Akamai. This ranks Singapore 2nd for average broadband data connection speed in this scorecard. Additional connection metrics for Q1 2017 in Singapore include: <ul style="list-style-type: none"> Average peak broadband connection speed: 184.52 Mbps (ranked 1st globally and 1st in this scorecard) Above 4 Mbps: 94% (ranked 20th globally and 3rd in this scorecard) Above 10 Mbps: 72% (ranked 5th globally and 3rd in this scorecard) Above 15 Mbps: 51% (ranked 7th globally and 3rd in this scorecard) Above 25 Mbps: 25% (ranked 7th globally and 2nd in this scorecard) [Akamai, The State of the Internet (1st Quarter, 2017) < www.akamai.com/us/en/about/our-thinking/state-of-the-internet-report/ >]
8. Fiber-to-the-home/building (FttX)		
8.1. Fiber-to-the-home/building (FttX) Internet Subscriptions (millions) (2015) <ul style="list-style-type: none"> Total for all countries in this scorecard: 258 million 	1.0	Singapore has increased the number of FttX subscribers by 31% since 2014 to 0.989 million, and is ranked 21st out of 236 countries surveyed by the ITU. This ranks Singapore 13th for the number of FttX subscriptions and 11th for growth (from 2014) for this indicator in this scorecard. [International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) < www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx >]

# SINGAPORE	RESPONSE	EXPLANATORY TEXT
8.2. Proportion of Fiber-to-the-home/building (FttX) Internet Subscriptions (% of households) (2015) <ul style="list-style-type: none"> Average for all countries in this scorecard: 18% 	78.7%	<p>Singapore has increased the proportion of FttX subscribers to households by 31% (since 2014) to 78.68%.</p> <p>This ranks Singapore 1st for the proportion of FttX subscriptions to households and 11th for growth (from 2014) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p> <p>Note: This may be skewed by business usage in some countries.</p>
8.3. Proportion of Fiber-to-the-home/building (FttX) Internet Subscriptions (% of fixed broadband subscriptions) (2015) <ul style="list-style-type: none"> Average for all countries in this scorecard: 23% 	66.7%	<p>Singapore has increased the proportion of FttX subscribers to fixed broadband subscribers by 31% (since 2014) to 66.7%.</p> <p>This ranks Singapore 4th for the proportion of FttX subscriptions to fixed broadband subscriptions and 11th for growth (from 2014) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p>
9. Mobile Broadband		
9.1. Mobile Cellular Subscriptions (millions) (2015) <ul style="list-style-type: none"> Total for all countries in this scorecard: 4,823 million 	8	<p>In 2015, Singapore increased the number of mobile cellular subscriptions by 1.6% since 2014, which is below the five-year compound annual growth rate (CAGR) from 2010–2015 of 2.2%. Singapore is ranked 97th out of 236 countries surveyed by the ITU. The number of subscriptions account for 147% of the population.</p> <p>This ranks Singapore 24th for the number of mobile cellular subscriptions and 17th for growth (CAGR) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p> <p>Note: This figure may be inflated due to multiple subscriptions per head of population, but excludes dedicated mobile broadband devices (such as 3G data cards, tablets, etc.).</p>
9.2. Number of Active Mobile Broadband Subscriptions (millions) (2015) <ul style="list-style-type: none"> Total for all countries in this scorecard: 2,506 million 	8	<p>In 2015, Singapore has increased the number of active mobile broadband subscriptions by 3%, which is below the five-year compound annual growth rate (CAGR) from 2010–2015 of 10%. Singapore is ranked 51st out of 236 countries surveyed by the ITU.</p> <p>This ranks Singapore 24th for the number of active mobile broadband subscriptions and 21st for growth (CAGR) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p>
9.3. Active Mobile Broadband Subscriptions (% of population) (2015) <ul style="list-style-type: none"> Average for all countries in this scorecard: 77% 	143%	<p>Singapore has increased the number of active mobile broadband subscriptions (as a % of the population) by 1% since 2014, which is below the five-year compound annual growth rate (CAGR) from 2010–2015 of 7.8%. Singapore is ranked 2nd out of 236 countries surveyed by the ITU.</p> <p>This ranks Singapore 1st for the number of active mobile broadband subscriptions (as a % of the population) and 22nd for growth (CAGR) for this indicator in this scorecard.</p> <p>[International Telecommunication Union (ITU), World Telecommunication/ ICT Indicators Database (Dec. 2016) <www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>]</p> <p>Note: This refers to the sum of standard mobile broadband and dedicated mobile broadband subscriptions to the public Internet. It covers actual subscribers, not potential subscribers, even though the latter may have broadband enabled-handsets.</p>
9.4. Average Mobile Data Connection Speed (total megabits per second (Mbps) per country) (Q1 2017) <ul style="list-style-type: none"> Average for all countries in this scorecard: 11 Mbps 	9	<p>In Singapore the Q1 2017 average mobile data connection speed was 8.6 Mbps and is ranked 45th out of 70 countries measured by Akamai.</p> <p>This ranks Singapore 16th for average mobile data connection speed in this scorecard.</p> <p>[Akamai, The State of the Internet (1st Quarter, 2017) <www.akamai.com/us/en/about/our-thinking/state-of-the-internet-report/>]</p>