

BSA GLOBAL CLOUD COMPUTING SCORECARD

A Blueprint for Economic Opportunity



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EXECUTIVE SUMMARY

In small and large enterprises as well as government offices around the world, one thing has become perfectly clear: Cloud computing marks the next contribution that software and computing technologies will make toward greater productivity and expanded economic growth.

The BSA Global Cloud Computing Scorecard provides a roadmap for the initiatives and policies that countries can — and should — take to ensure that they reap the full economic and growth benefits. It is well established that each of the individual elements of the scorecard

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is critical to economic growth and job creation. They are especially critical in the context of cloud computing because the cloud provides a positive multiplier opportunity. Executing on these policies will promote innovation; cloud computing will ensure that innovation is fully harnessed and realized.

The Scorecard finds a sharp divide between advanced economies and the developing world when it comes to cloud readiness. Japan, the United States and the European Union member states, for example, have each

established a solid legal and regulatory base to support the growth of cloud computing. This is significant because the full benefits of a global cloud computing environment require a broad network of effective laws and regulations. Only in that way will the potential

efficiencies and economies of scale enabled by the cloud truly take hold.

The cloud-ready legal and regulatory environments of these countries provide models for those in the bottom half of the Scorecard — including India, China and Brazil. And these models take on additional importance when you factor in the expected growth in the markets that finished toward the bottom of the Scorecard rankings. As millions of new consumers and small businesses around the world gain access to an Internet-enabled environment, the global economy will gain — and grow — most when they have the full power of the cloud at their fingertips. Such access, though, will require significant legal and regulatory reforms.

Cloud computing is not any one thing. It is a mix of software-enabled resources and services that can be delivered to the user on an “as needed” basis. As the National Institute of Standards and Technology puts it: “Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

What is more important — and more understandable — are the economic and social benefits inherent in cloud computing. For small and large businesses, governments and consumers, it equalizes access to

technology. It allows individuals to enjoy the benefits that large users have long enjoyed, opening the door to vastly greater enhancements in efficiency, productivity and competitiveness for businesses in the global marketplace. For governments, cloud computing presents a two-fold opportunity: the chance to improve productivity and citizen engagement through IT procurements as well as the benefit of encouraging

economic growth, sustainable job creation and higher wages and standards of living by encouraging the IT economy.

Cloud computing is a technological paradigm that is certain to be a new engine of the global economy. Attaining those benefits will require governments around the world to establish the proper legal and regulatory framework to support cloud computing.

BSA CLOUD POLICY BLUEPRINT

The economic growth predicted to flow from cloud computing — and the resulting transformation of both businesses and national economies — is predicated on the proper policies being in place in each of the seven areas used in the BSA index:

- **Ensuring privacy:** The success of cloud computing depends on users' faith that their information will not be used or disclosed in unexpected ways. At the same time, to maximize the benefit of the cloud, providers must be free to move data through the cloud in the most efficient way.
- **Promoting security:** Users must be assured that cloud computing providers understand and properly manage the risks inherent in storing and running applications in the cloud. Cloud providers must be able to implement cutting-edge cybersecurity solutions without being required to use specific technologies.
- **Battling cybercrime:** In cyberspace, as in the real world, laws must provide meaningful deterrence and clear causes of action. Legal systems should provide an effective mechanism for law enforcement, and for cloud providers themselves, to combat unauthorized access to data stored in the cloud.
- **Protecting intellectual property:** In order to promote continued innovation and technological advancement, intellectual property laws should provide for clear protection and vigorous enforcement against misappropriation and infringement of the developments that underlie the cloud.
- **Ensuring data portability and the harmonization of international rules:** The smooth flow of data around the world — as with between different cloud providers — requires efforts to promote openness and interoperability. Governments should work with industry to develop standards, while also working to minimize conflicting legal obligations on cloud providers.
- **Promoting free trade:** By their very nature, cloud technologies operate across national boundaries. The cloud's ability to promote economic growth depends on a global market that transcends barriers to free trade, including preferences for particular products or providers.
- **Establishing the necessary IT infrastructure:** Cloud computing requires robust, ubiquitous and affordable broadband access. This can be achieved through policies that provide incentives for private sector investment in broadband infrastructure and laws that promote universal access to broadband.

The move to the cloud and capitalization on its benefits across the board is hardly inevitable, and an urgent task lies ahead for governments. In order to obtain the benefits of the cloud, policymakers must provide a legal and regulatory framework that will promote innovation, provide incentives to build the infrastructure to support it, and promote confidence that using the cloud will bring the anticipated benefits without sacrificing expectations of privacy, security and safety.

KEY FINDINGS

The first-of-its-kind BSA Global Cloud Computing Scorecard ranks 24 countries accounting for 80 percent of the global ICT market based on seven policy categories that measure the countries' preparedness to support the growth of cloud computing. This unprecedented insight into the laws and regulations of markets around the world provides a window into which countries are best poised to capitalize on the technological and economic benefits of cloud computing.

Among other findings: The Scorecard reveals that while developed nations are more "cloud ready" than developing economies, troubling obstacles emerge when you examine the lack of alignment in the legal

All countries, regardless of their level of economic development, could benefit from coordinated policy responses for the government and the public to fully benefit from cloud computing.

and regulatory environments in many of those advanced countries. A healthy national market for cloud computing does not necessarily translate into a market that is "in harmony" with the laws of other countries in a way that will allow for the smooth flow of data across borders. It is this kind of harmony that is needed to advance the growth of cloud computing at the level that will allow it to truly take advantage of its global efficiencies.

As in broader measures, the Scorecard finds two worlds exist when it comes to cloud preparedness: Advanced economies like Japan — the Scorecard's top finisher — have laws and regulations that promise to support

the development of cloud computing. Less-developed economies, such as last-place finisher Brazil, face several challenges when it comes to fully capitalizing on the economic benefits of the cloud.

Further, countries on both sides must be vigilant not to take steps that would hurt their chances of growing the cloud market. Already many countries plan new laws that will help them advance in the digital economy. Some — such as Mexico's new privacy law — have the potential to advance a country's score. Others — such as the proposed Data Protection Regulation in the European Union, which has the potential to undermine its benefits with new, overly prescriptive rules — threaten to undermine the economic advances that a truly global cloud can provide.

Those interested in advancing cloud computing can find a model in Japan. The country is a leader in cloud readiness and easily topped the Scorecard rankings. Japan has a comprehensive suite of modern laws that support and facilitate the digital economy and cloud computing — from comprehensive privacy legislation that avoids burdens on data transfers and data controllers to a full range of criminal and IP law protections. Further, Japan is a leader in the

development of international standards related to cloud computing, and the country is working to provide all households with high-speed fiber broadband connections in the next three years.

Perhaps fittingly, the countries with the most room for improvement are those countries where ICT sector growth will be most dramatic in the coming years.

Countries must take care not to adopt new policies that inhibit the development of the global cloud economy. Already, some countries are placing geographic restrictions on data and considering other limits on outsourcing of work or offshoring of data.

Consider China, for example. According to the research firm IDC, the size of China's ICT sector is expected to nearly double between 2010 and 2015, going from \$221 billion to \$389 billion. International companies, however, confront several obstacles to growth in China, however, including extensive regulation of Internet content and the continued promotion of policies that discriminate against foreign technology companies.

The scorecard is a snapshot of the current legal and regulatory regimes in the countries examined. Already, countries around the world are moving to adapt their laws

and regulations to help boost cloud computing. Some of these are captured here including, for example, new laws on privacy in India, Korea, and Mexico, while other reforms are expected in the coming months and years.

Finally, countries must take care not to adopt new policies that inhibit the development of the global cloud economy. Already, some countries are placing geographic restrictions on data and considering other limits on outsourcing of work or offshoring of data.

Germany, for example, is a country that scores well in the initial Scorecard, but it threatens to undermine that advantage with overly restrictive legal interpretations to keep some data within national borders.

It is also clear in most categories that numerous issues remain to be addressed and that all countries, regardless of their level of economic development, could benefit from coordinated policy responses for the government and the public to fully benefit from cloud computing.

MEASURING CLOUD COMPUTING READINESS

The Scorecard examines major laws and regulations relevant to cloud computing in seven policy categories as well as each country's ICT-related infrastructure and broadband deployment. These policy categories align with the BSA's Cloud Computing Guiding Principles, which underpin the Scorecard's analytical framework and its suggestions for providing a workable framework to allow for the growth of cloud computing.

Data Privacy

This section of the Scorecard examines data privacy regulation and the presence and structure of privacy regulators in each jurisdiction. The section also examines registration requirements for data controllers and data breach notification requirements.

The Scorecard reveals that most countries have data protection laws in place and have established independent privacy commissioners. Many of these laws are based on a mix of the OECD Guidelines, the EU Directive or the APEC Privacy Principles. Unfortunately, registration requirements for data controllers or data transfers may act as barriers to the take-up of cloud services. Such requirements are common in some countries, including requirements for registering cross-border transfers in some EU countries.

Korea, which replaced its patchwork of privacy protections with modern and comprehensive legislation in 2011, scored 9.3 out of 10 available points to top the Scorecard's rankings in the privacy section. At the other end of the spectrum, South Africa finished with just 2.8 points.

The Scorecard also reveals substantial pending data protection law reform, with major reviews and proposals in China, the European Union, India, Singapore, South Africa and the United States. This is an area of rapid legal development. Unfortunately, some key jurisdictions, including China, India, Indonesia and Singapore do not yet have any substantial data protection laws in place.

Such developments are important because cloud users will fully accept and adopt cloud computing only if they are confident that private information stored in the cloud, wherever in the world, will not be used or disclosed by the cloud provider in unexpected ways. National privacy regimes should be predictable, transparent and avoid unnecessarily burdensome restrictions on cloud service providers such as registration requirements for data controllers and cross-border data transfers. Cloud providers should be encouraged to establish privacy policies that are appropriate for the particular cloud service they provide and the business model they use.

Security

Consumers of cloud computing and other digital services (including both private-sector and government users) need assurance that cloud service providers understand and appropriately manage the security risks associated with storing their data and running their applications on cloud systems. This section of the Scorecard examines whether security criteria and the ongoing testing of security measures are the subject of regulation in each jurisdiction. The Security section also examines electronic signature laws and Internet censorship or filtering requirements. Japan tops the Scorecard's security section with 8.4 of the 10 available points; Thailand's regime, on the other end of the scale, nets just 1.6 points.

The Scorecard reveals that most countries do have clear, technology neutral electronic signature laws. In addition, security requirements are in place in most jurisdictions, and security audit requirements were generally absent.

A number of countries — ranging from advanced markets like Korea (6.0 points on security) to developing countries like India (4.4) — have implemented Internet filtering or censorship regimes that may act as a barrier

to the expansion of the digital economy and cloud computing. Some such regimes regulate criminal conduct, including distribution of illegal material, particularly child pornography. However, a number of the filtering or censorship schemes appear to include a strong political element, in that they regularly block sites that expressed political dissent. China, for example, restricts access to online content under a large and complex legal and technical regime that invokes the protection of national security and social order. This factor played a significant factor in China scoring just 2.0 points in the security section.

Cybercrime

As cloud computing involves the aggregation of massive amounts of data in large data centers, it creates new and highly tempting targets. As criminals turn their attention to these vaults of information, it will become increasingly challenging to protect such data centers from both physical and cyber attacks. Governments should ensure that domestic laws provide an effective mechanism for law enforcement, and for cloud providers themselves, to combat unauthorized access to data stored in the cloud. This section examines these issues as well as rules relating to investigation and enforcement, including access to encrypted data and extraterritorial offences.

The Scorecard finds that most countries have either computer crime legislation or cybercrime legislation, and many laws are broadly compliant with the Convention on Cybercrime. Many countries in the study (the EU members, Japan and the United States) have signed the Convention, and several other countries are considering

As cloud computing involves the aggregation of massive amounts of data in large data centers, it creates new and highly tempting targets.

signing (Australia and Mexico are close). Unfortunately, a few key jurisdictions still have gaps and inconsistencies in their cybercrime laws. Canada, for example, signed the Council of Europe Cybercrime Convention in 2001, but it has failed to ratify the Convention for more than a decade. And while the country has a comprehensive computer crime law in place, it lacks essential online investigation and enforcement tools. Thus, while Japan, German and France scored a perfect 10.0 points in the cybercrime section, Canada trailed 6.2 points.

Cloud services operate across national boundaries, and their success depends on access to regional and global markets. Restrictive policies that create actual or potential trade barriers will slow the evolution of cloud computing.

Thus, to encourage investments in cloud R&D and infrastructure, IP laws must provide strong incentives for these investments and clear protection and vigorous enforcement against misappropriation and infringement. Online intermediaries should have incentives to behave responsibly, and they should enjoy safe harbors from liability when they do so.

This section also examines rules on investigation and enforcement, including access to encrypted data and extraterritorial offences. There is a greater divergence in results in these fields.

Intellectual Property Rights

Providers of cloud computing and digital economy technologies and services, as with other highly innovative products, rely on a combination of patents, copyrights, trade secrets and other forms of intellectual property protection.

The Scorecard reveals that countries are moving toward a consistent approach on many key rights and protections. Gaps exist, however, in the IP laws of key jurisdictions, including Canada, India and Thailand. Russia, which finished in the 16th in the overall Scorecard rankings and far back in the IP section with just 8.4 out of 20 available points, serves as a prime example. The country was slow to make any progress on its bid to join the Agreement on Trade Related Aspects of Intellectual Property Rights, or TRIPS Agreement over several years. This and other holes in the country's IP regime could expose cloud computing services to risks.

This section also examines investigatory and enforcement approaches, where there is a wide diversity of approaches and significant inconsistency. Concerns also exist about the enforcement culture and resources available in some jurisdictions. Even countries with up-to-date IP laws sometimes fail to enforce these laws, and piracy rates remain high in many jurisdictions.

Support for Industry-Led Standards & International Harmonization of Rules

Data portability and seamless use of interoperable applications are key considerations for cloud computing and digital economy applications. Consumers are demanding interoperability in the cloud computing space, and industry is working hard through standards development organizations and other international avenues to meet this demand. Government support of these efforts is important.

This section of the Scorecard examines whether or not governments encourage standards to be developed through voluntary, industry-led standards processes. This section also examines international harmonization of e-commerce rules, tariffs and relevant trade rules.

The Scorecard reveals that governments take an inconsistent approach to standards development and that many ad hoc decisions are made in the absence of national frameworks and policies. Many countries have well-established frameworks for standard-setting, and the United States' National Institute for Standards and Technology is carefully eyeing cloud computing. The United States finished toward the top of this

section, scoring 9.4 out of 10 points. At the other end of the scale, countries like Argentina (4.6) and Brazil (3.4) lack even a relevant framework for ICT standards. Government agencies should work with industry to accelerate standards development, where appropriate, and share user requirements with open standard setting organizations.

As it relates to e-commerce rules, tariffs and relevant trade rules, the Scorecard finds a great deal of consistency in e-commerce laws, with most countries implementing laws based on the UNCITRAL Model Law on E-Commerce and / or the UN Convention on Electronic Contracting. Several countries, including Singapore, Russia and Malaysia, have signed / ratified the Convention, leading to even greater harmonization. Tariffs and trade barriers for online software and applications are rare, although a few jurisdictions still maintain tariffs on new technology products that are used to access cloud services.

Promoting Free Trade

Cloud services operate across national boundaries, and their success depends on access to regional and global markets. Restrictive policies that create actual or potential trade barriers will slow the evolution of cloud computing.

This section of the Scorecard examines and compares government procurement regimes and efforts to remove barriers to free trade, including countries' requirements and preferences for particular products.

The Scorecard finds that a number of jurisdictions that still provide preferential treatment for domestic suppliers in government procurements, including Brazil (2.2 of 10 points), China (4.8), and Malaysia (3.8). In a positive development, Japan (9.2 points) and a growing number of other countries have become members of the WTO Agreement on Government Procurement, which liberalizes such policies.

ICT Readiness, Broadband Deployment

Cloud computing can achieve its full potential only if there is robust, ubiquitous and affordable broadband access. This can be achieved through policies that provide incentives for private sector investment in broadband infrastructure and laws that promote universal access to broadband.

This section of the Scorecard examines and compares the infrastructure that is available in each economy to support the digital economy and cloud computing. This section benefits from the inclusion of statistics on the number of subscribers for various products, reflecting the importance (and growth) of mobile broadband subscriptions.

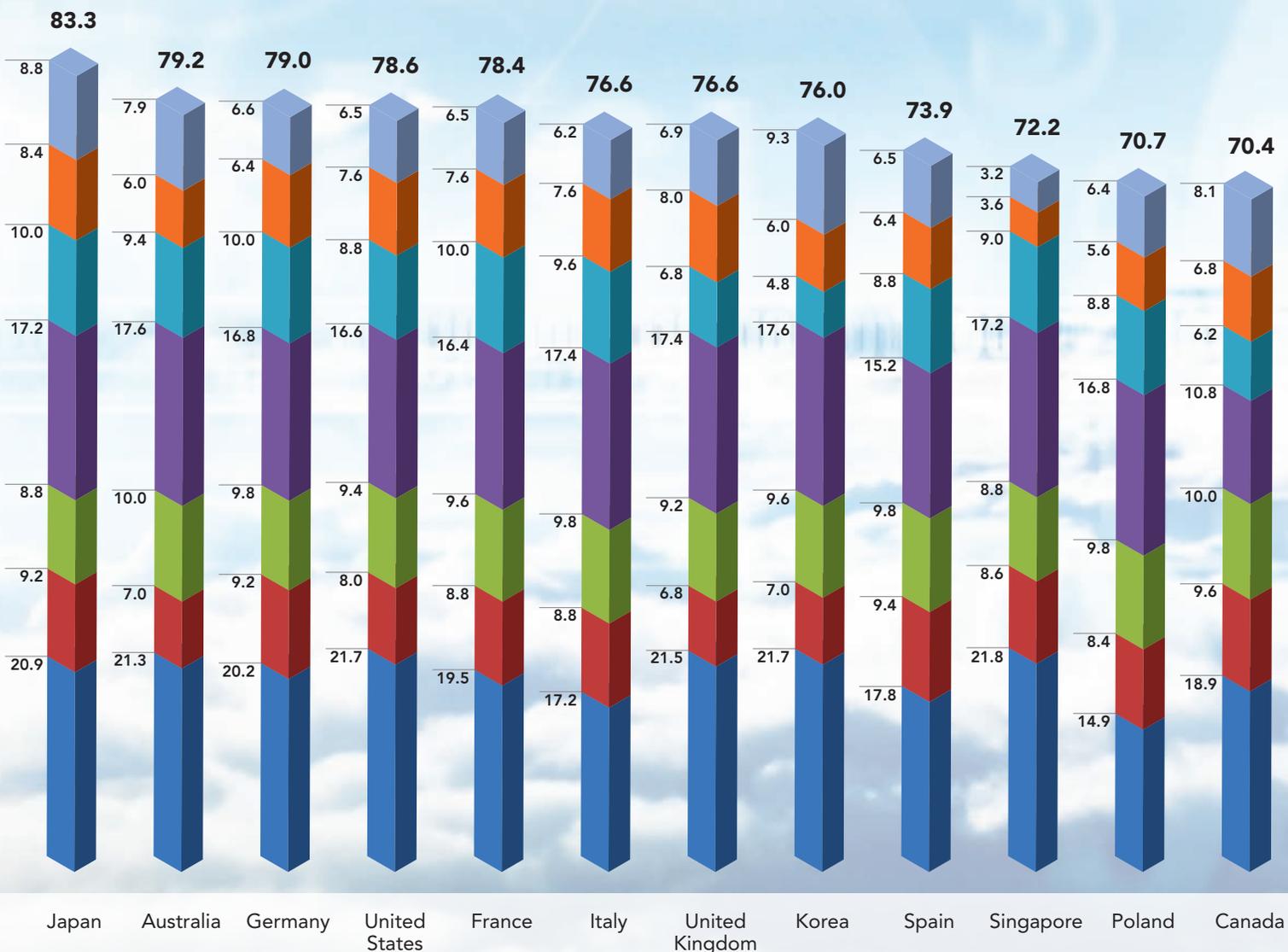
Several countries have implemented impressive national broadband networks, including Japan (20.9 out of 30 points), Singapore (21.8) and Korea (21.7).

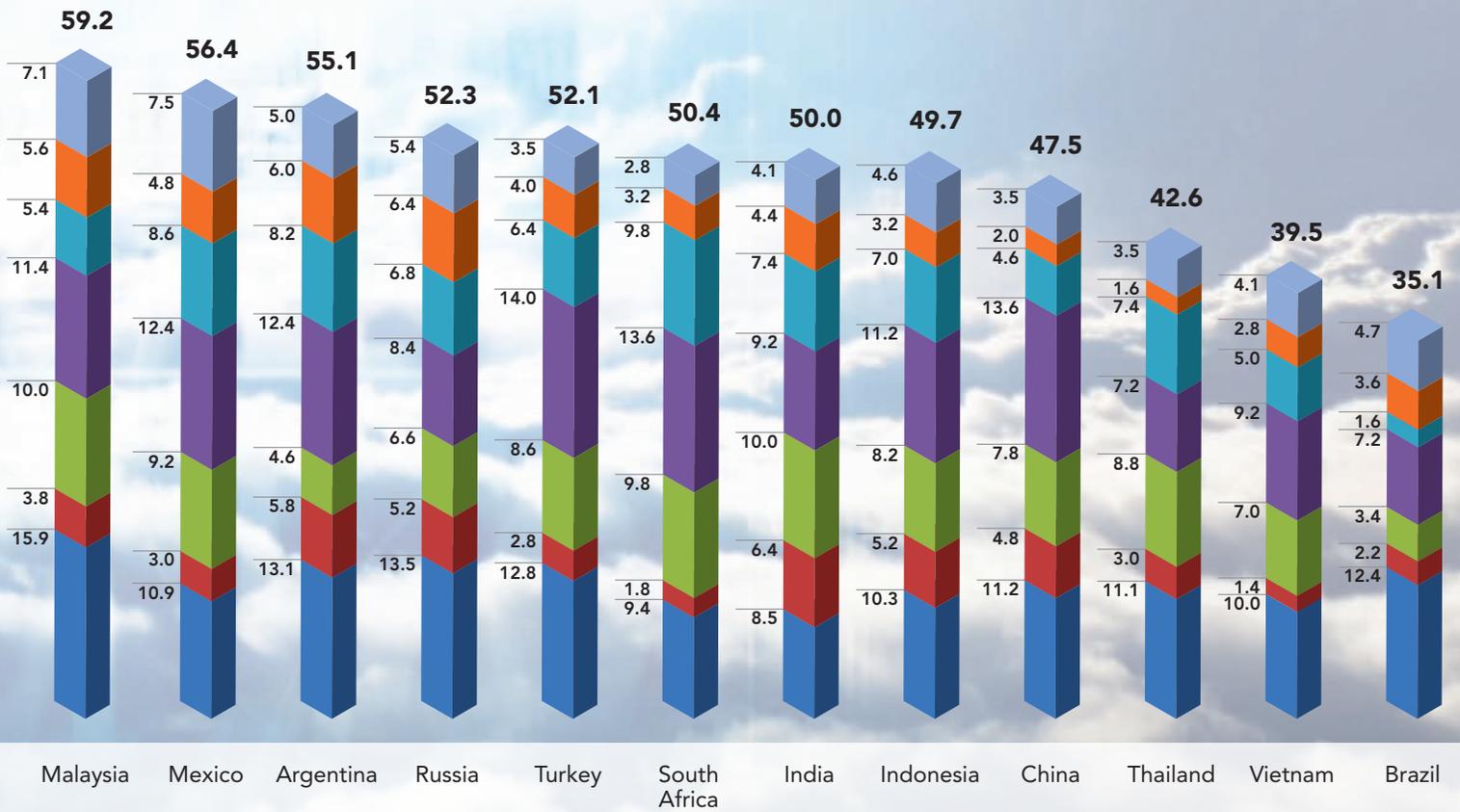
Major infrastructure improvements are under way in Australia (21.3) and a range of EU countries. Broadband penetration remains very inconsistent, however, and there is a risk that some countries do not yet have the infrastructure in place to take full advantage of the digital economy and cloud computing. Progress lags, however, in countries like India (8.5) and South Africa (9.4).

Cloud computing can achieve its full potential only if there is robust, ubiquitous and affordable broadband access.

BSA Global Cloud Computing Scorecard

The first-of-its-kind BSA Global Cloud Computing Scorecard ranks 24 countries based on seven policy categories that measure the countries' preparedness to support the growth of cloud computing. Together, these countries account for 80 percent of the global ICT market.





SCORECARD METHODOLOGY

The BSA Global Cloud Computing Scorecard examines the legal and regulatory framework of 24 countries around the world, identifying 66 questions that are relevant to determining readiness for cloud computing. The questions are categorized under the aforementioned policy categories, and are generally framed so as to be answerable by “yes” or “no.” The answers are also color coded:

-  Indicates a positive assessment, which is generally considered to be an encouraging step towards the establishment of a favorable legal and regulatory environment for cloud computing.
-  Indicates a negative assessment and the presence of a potential barrier to the establishment of a favorable legal and regulatory.
-  Indicates that the assessment is positive in part, although some gaps or inconsistencies may exist which require further remedial work.
-  Indicates a fact-finding question on relevant issues.

The Scorecard aims to provide a platform for discussion between policymakers and providers of cloud offerings, with a view toward developing an internationally harmonized regime of laws and regulations relevant to cloud computing. It is a tool that can help policymakers conduct a constructive self-evaluation, and determine the next steps that need to be taken to help advance the growth of global cloud computing.

Responses for the infrastructure portion of the Scorecard are color coded based on the scale below. That is, the “highest” answer to a particular question (e.g., the largest population or highest number of internet users) is indicated in bright green, and the color for other responses graduates down to the lowest response in red.

ICT Readiness (Country Ranking Out of 24)



USING THE SCORECARD

The Scorecard is derived from the Country Reports — a weighted score has been allocated to a selection of key questions. A number of basic fact-finding questions are excluded from the scoring system. Each group of questions is weighted to reflect its importance to cloud computing. Each individual question is also weighted to reflect its importance within each group. The weights are shown in the following table:

#	THEME / QUESTIONS	Weight	Value (out of 100)
DATA PRIVACY		10%	10
1.	Are there laws or regulations governing the collection, use or other processing of personal information?	30%	3
6.	Is there an effective agency (or regulator) tasked with the enforcement of privacy laws?	25%	2.5
8.	Are data controllers free from registration requirements?	20%	2
9.	Are cross border transfers free from registration requirements?	15%	1.5
10.	Is there a breach notification law?	10%	1
SECURITY		10%	10
1.	Is there a law or regulation that gives electronic signatures clear legal weight?	20%	2
2.	Are ISPs and content service providers free from mandatory filtering or censoring?	20%	2
3.	Are there laws or enforceable codes containing general security requirements for digital data hosting and cloud service providers?	20%	2
4.	Are there laws or enforceable codes containing specific security audit requirements for digital data hosting and cloud service providers?	20%	2
5.	Are there security laws and regulations requiring specific certifications for technology products?	20%	2

#	THEME / QUESTIONS	Weight	Value (out of 100)
CYBERCRIME		10%	10
1.	Are there cybercrime laws in place?	50%	5
2.	Are cybercrime laws consistent with the Budapest Convention on Cybercrime?	30%	3
3.	What access do law enforcement authorities have to encrypted data held or transmitted by data hosting providers, carriers or other service providers?	10%	1
4.	How does the law deal with extraterritorial offenses?	10%	1
INTELLECTUAL PROPERTY		20%	20
1.	Is the country a member of the TRIPS Agreement?	10%	2
2.	Have IP laws been enacted to implement TRIPS?	10%	2
3.	Is the country party to the WIPO Copyright Treaty?	10%	2
4.	Have laws implementing the WIPO Copyright Treaty been enacted?	10%	2
5.	Are civil sanctions available for unauthorized making available (posting) of copyright holders' works on the Internet?	10%	2
6.	Are criminal sanctions available for unauthorized making available (posting) of copyright holders' works on the Internet?	10%	2
7.	Are there laws governing ISP liability for content that infringes copyright?	5%	1
8.	Is there a basis for ISPs to be held liable for content that infringes copyright found on their sites or systems?	5%	1
10.	Must ISPs takedown content that infringes copyright, upon notification by the right holder?	5%	1
11.	Are ISPs required to inform subscribers upon receiving a notification that the subscriber is using the ISP's service to distribute content that infringes copyright?	5%	1
12.	Is there clear legal protection against misappropriation of cloud computing services?, including effective enforcement?	20%	4
SUPPORT FOR INDUSTRY-LED STANDARDS & INTERNATIONAL HARMONIZATION OF RULES		10%	10
1.	Are there laws, regulations or policies that establish a standards setting framework for interoperability and portability of data?	30%	3
2.	Is there a regulatory body responsible for standards development for the country?	10%	1
3.	Are e-commerce laws in place?	30%	3
4.	Is the downloading of applications or digital data from foreign cloud service providers free from tariff or other trade barriers?	10%	1
5.	Are international standards favored over domestic standards?	10%	1
6.	Does the government participate in international standards setting process?	10%	1
PROMOTING FREE TRADE		10%	10
1.	Are there any laws or policies in place that implement technology neutrality in government?	20%	2
2.	Are cloud computing services able to operate free from laws or policies that mandate the use of certain products (including, but not limited to types of software), services, standards or technologies?	20%	2
3.	Are cloud computing services able to operate free from laws or policies that establish preferences for certain products (including, but not limited to types of software), services, standards, or technologies?	10%	1
4.	Are cloud computing services able to operate free from laws that discriminate based on the nationality of the vendor, developer or service provider?	50%	5
ICT READINESS, BROADBAND DEPLOYMENT		30%	30
1.	Is there a National Broadband Plan?	13%	3.75
3.7.	Personal Computers (% of households) (2010)	3%	0.75
4.1.	ITU ICT Development Index (IDI) (2010) (Score is out of 10 and includes 152 countries)	20%	6
4.2.	World Economic Forum Networked Readiness Index (2010–2011) (Score is out of 7 and includes 138 countries)	20%	6
4.3.	International Connectivity Score (2011) (Score is out of 10 and includes 50 countries)	15%	4.5
4.4.	IT Industry Competitiveness Index (2011) (Score is out of 100 and includes 66 countries)	10%	3
5.2.	Internet Users as Percentage of Population (2010)	5%	1.5
5.3.	International Internet Bandwidth (bits per second per internet user) (2010)	3%	0.75
5.4.	International Internet Bandwidth (2010) (total gigabits per second (Gbps) per country)	3%	0.75
6.4.	Fixed Broadband Subscriptions as % of Internet users (2010)	5%	1.5
7.2.	Active mobile-broadband subscriptions per 100 inhabitants (2010)	5%	1.5

BSA Global Cloud Computing Country Checklist

✓ Yes ✗ No ⦿ Partial

# QUESTION	Argentina	Australia	Brazil
DATA PRIVACY			
1. Are there laws or regulations governing the collection, use or other processing of personal information?	✓	✓	⦿
2. What is scope & coverage of privacy law?	Comprehensive	Comprehensive	Not applicable
3. Is the privacy law compatible with the Privacy Principles in the EU Data Protection Directive?	✓	⦿	✗
4. Is the privacy law compatible with the Privacy Principles in the APEC Privacy Framework?	✓	✓	✗
5. Is an independent private right of action available for breaches of data privacy?	Available	Not available	Available
6. Is there an effective agency (or regulator) tasked with the enforcement of privacy laws?	National regulator	National regulator	None
7. What is the nature of the privacy regulator?	Sole commissioner	Sole commissioner	Not applicable
8. Are data controllers free from registration requirements?	✗	✓	✓
9. Are cross-border transfers free from registration requirements?	⦿	✓	✓
10. Is there a breach notification law?	✗	✗	✗
SECURITY			
1. Is there a law or regulation that gives electronic signatures clear legal weight?	✓	✓	✓
2. Are ISPs and content service providers free from mandatory filtering or censoring?	✓	✓	✓
3. Are there laws or enforceable codes containing general security requirements for digital data hosting and cloud service providers?	Limited coverage in legislation	Limited coverage in legislation	None
4. Are there laws or enforceable codes containing specific security audit requirements for digital data hosting and cloud service providers?	Limited coverage in legislation	None	None
5. Are there security laws and regulations requiring specific certifications for technology products?	No requirements	Limited requirements	No requirements
CYBERCRIME			
1. Are cybercrime laws in place?	✓	✓	✗
2. Are cybercrime laws consistent with the Budapest Convention on Cybercrime?	✓	✓	✗
3. What access do law enforcement authorities have to encrypted data held or transmitted by data hosting providers, carriers or other service providers?	Access with a warrant	Access with a warrant	Access with a warrant
4. How does the law deal with extraterritorial offenses?	Limited coverage	Comprehensive coverage	Comprehensive coverage
INTELLECTUAL PROPERTY RIGHTS			
1. Is the country a member of the TRIPS Agreement?	✓	✓	✓
2. Have IP laws been enacted to implement TRIPS?	✓	✓	✓
3. Is the country party to the WIPO Copyright Treaty?	✓	✓	✗
4. Have laws implementing the WIPO Copyright Treaty been enacted?	⦿	✓	⦿
5. Are civil sanctions available for unauthorized making available (posting) of copyright holders' works on the Internet?	⦿	✓	⦿
6. Are criminal sanctions available for unauthorized making available (posting) of copyright holders' works on the Internet?	⦿	✓	⦿
7. Are there laws governing ISP liability for content that infringes copyright?	✗	Undecided	✗
8. Is there a basis for ISPs to be held liable for content that infringes copyright found on their sites or systems?	✗	✓	✗
9. What sanctions are available for ISP liability for copyright infringing content found on their site or system?	Not applicable	Civil and criminal	Not applicable
10. Must ISPs take down content that infringes copyright, upon notification by the right holder?	⦿	✓	✗
11. Are ISPs required to inform subscribers upon receiving a notification that the subscriber is using the ISP's service to distribute content that infringes copyright?	✗	✓	✗
12. Is there clear legal protection against misappropriation of cloud computing services, including effective enforcement?	Limited protection (criminal activity only)	Comprehensive protection	No protection
SUPPORT FOR INDUSTRY-LED STANDARDS & INTERNATIONAL HARMONIZATION OF RULES			
1. Are there laws, regulations or policies that establish a standards setting framework for interoperability and portability of data?	✗	✓	✗
2. Is there a regulatory body responsible for standards development for the country?	✓	✓	✓
3. Are e-commerce laws in place?	⦿	✓	✗
4. What international instruments are the e-commerce laws based on?	Not applicable	UNCITRAL Model Law on E-Commerce	Not applicable
5. Is the downloading of applications or digital data from foreign cloud service providers free from tariff or other trade barriers?	✓	✓	✗
6. Are international standards favored over domestic standards?	⦿	✓	✓
7. Does the government participate in international standards setting process?	✓	✓	✓

North Africa	Spain	Thailand	Turkey	United Kingdom	United States	Vietnam
✗	✓	✗	✗	✓	🕒	🕒
Not applicable	Comprehensive	Not applicable	Not applicable	Comprehensive	Sectoral	Not applicable
✗	✓	✗	✗	✓	✗	✗
✗	✓	✗	✗	✓	🕒	✗
Not available	Available	Available	Available	Available	Available	Undecided
None	National regulator	None	None	National regulator	Sectoral regulator	None
Not applicable	Sole commissioner	Not applicable	Not applicable	Sole commissioner	Other government official	Not applicable
✓	✗	✓	✓	✗	✓	✓
✓	✗	✓	✓	✓	🕒	✓
✗	🕒	✗	✗	🕒	✓	✗
✓	✓	✓	✓	✓	✓	✓
🕒	✓	✗	✗	✓	✓	✗
None	Limited coverage in legislation	None	None	Limited coverage in legislation	Limited coverage in legislation	Limited coverage in legislation
None	None	None	None	Limited coverage in legislation	Limited coverage in legislation	None
Requirements	Comprehensive requirements (including common criteria)	No requirements	Comprehensive requirements (including common criteria)	Comprehensive requirements (including common criteria)	Comprehensive requirements (including common criteria)	No requirements
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	🕒	🕒	✓	✗
With a warrant	No access	Unlimited access	Not stated	Unlimited access	Not stated	Unlimited access
Comprehensive coverage	Comprehensive coverage	Comprehensive coverage	Limited coverage	Comprehensive coverage	Limited coverage	Limited coverage
✓	✓	✓	✓	✓	✓	✓
✓	✓	🕒	✓	✓	✓	🕒
✗	✓	✗	✓	✓	✓	✗
🕒	✓	✗	✓	✓	✓	🕒
✓	🕒	✓	✓	✓	Undecided	✓
✓	🕒	✓	Undecided	✓	Undecided	✓
✓	✓	✗	✓	✓	✓	✗
✓	✓	✗	✓	✓	✓	✗
Civil	Civil	Not applicable	Civil and criminal	Civil and criminal	Civil and criminal	Not applicable
✓	✓	✗	✓	✗	✓	✗
✗	✗	✗	✗	🕒	🕒	✗
Comprehensive protection	Comprehensive protection	No protection	Comprehensive protection	Comprehensive protection	Comprehensive protection	No protection
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
UNCITRAL Model Law on E-Commerce	UNCITRAL Model Law on E-Commerce	UNCITRAL Model Law on E-Commerce	Other	Other	Other	UNCITRAL Model Law on E-Commerce
✓	✓	✓	✓	✓	✓	✗
✓	✓	✓	✓	✓	✓	🕒
✓	✓	✓	✓	✓	✓	✓

# QUESTION	Argentina	Australia	Brazil
PROMOTING FREE TRADE			
1. Are any laws or policies in place that implement technology neutrality in government?	✗	✓	✗
2. Are cloud computing services able to operate free from laws or policies that mandate the use of certain products (including, but not limited to types of software), services, standards or technologies?	✓	✓	✓
3. Are cloud computing services able to operate free from laws or policies that establish preferences for certain products (including, but not limited to types of software), services, standards, or technologies?	✓	✓	🕒
4. Are cloud computing services able to operate free from laws that discriminate based on the nationality of the vendor, developer or service provider?	🕒	🕒	✗
ICT READINESS, BROADBAND DEPLOYMENT			
1. Is there a National Broadband Plan?	<ul style="list-style-type: none"> By 2015, more than 10 million homes with broadband access 	<ul style="list-style-type: none"> By 2021, the National Broadband Network (NBN) will cover 100% of premises, 93% of homes, schools and businesses at up to 100 Mbps over fiber, with the remainder at up to 12 Mbps over next-generation wireless and satellite 	<ul style="list-style-type: none"> By 2014, 30 fixed broadband connections minimum speed 1Mbps), including homes, businesses and co-operatives plus 100,000 telecenters
2. Are there laws or policies that regulate the establishment of different service levels for data transmission based on the nature of data transmitted?	Limited regulation and limited public debate	No regulation and extensive public debate	Regulation under consideration by government and extensive public debate
3. Base Indicators			
3.1. Population (2010)	40,412,376	22,268,384	194,946,000
3.2. Urban Population (%) (2010)	92%	89%	87%
3.3. Number of Households (2009)	10,960,000	8,408,000	57,650,000
3.4. Population Density (people per square km) (2010)	15	3	23
3.5. Per Capita GDP (USD 2010)	\$9,138	\$55,590	\$10,810
3.6. ICT Expenditure as % of GDP (2008)	5%	5%	5%
3.7. Personal Computers (% of households) (2010)	40%	81%	35%
4. ICT and Network Readiness Indicators			
4.1. ITU ICT Development Index (IDI) (2010) (Score is out of 10 and includes 152 countries)	4.6	7.4	4.2
4.2. World Economic Forum Networked Readiness Index (2010–2011) (Score is out of 7 and includes 138 countries)	3.5	5.1	3.9
4.3. International Connectivity Score (2011) (Score is out of 10 and includes 50 countries)	5.5	6.9	5.1
4.4. IT Industry Competitiveness Index (2011) (Score is out of 100 and includes 66 countries)	36.2	67.5	39.5
5. Internet Users and International Bandwidth			
5.1. Internet Users (2010)	14,548,455	16,923,972	79,343,200
5.2. Internet Users as % of Population (2010)	36%	76%	41%
5.3. International Internet Bandwidth (bits per second per Internet user) (2010)	27,494	41,361	12,610
5.4. International Internet Bandwidth (2010) (total gigabits per second (Gbps) per country)	400	700	1,000
6. Fixed Broadband			
6.1. Fixed Broadband Subscriptions (2010)	3,862,354	5,165,000	14,086,700
6.2. Fixed Broadband Subscriptions as % of households (2010)	35%	61%	24%
6.3. Fixed Broadband Subscriptions as % of population (2010)	10%	23%	7%
6.4. Fixed Broadband Subscriptions as % of Internet users (2010)	27%	31%	18%
7. Mobile Broadband			
7.1. Mobile Cellular Subscriptions (2010)	57,300,000	22,500,000	202,944,000
7.2. Active Mobile-broadband Subscriptions per 100 inhabitants (2010)	13%	83%	11%
7.3. Number of Active Mobile-broadband Subscriptions per 100 inhabitants (2010)	7,334,400	18,607,500	21,512,000

ICT Readiness (Country Ranking Out of 24)



	Canada	China	France	Germany	India	Indonesia	Italy
	✓	✗	🕒	✓	🕒	✗	🕒
	✓	🕒	✓	✓	🕒	✓	✓
	✓	🕒	🕒	🕒	✓	🕒	🕒
	✓	🕒	✓	✓	🕒	🕒	✓
million band (with a speed of including business services, 0	<ul style="list-style-type: none"> By 2016, all Canadians to have access to broadband speeds of at least 5 Mbps for downloads and 1 Mbps for uploads 	<ul style="list-style-type: none"> By 2014, to raise broadband accessibility to 45% of the population 	<ul style="list-style-type: none"> By 2012, 100% of the population to have access to broadband By 2025, 100% of homes to have access to very high-speed broadband 	<ul style="list-style-type: none"> By 2014, 75% of households to have download speeds of 50 Mbps 	<ul style="list-style-type: none"> By 2010, 20 million broadband connections By 2012, 75 million broadband connections (17 million DSL, 30 million cable and 28 million wireless broadband) By 2014, 160 million broadband connections (22 million DSL, 78 million cable and 60 million wireless broadband) 	<ul style="list-style-type: none"> By 2014, increase broadband connections to 8% of households and to 30% of the population 	<ul style="list-style-type: none"> By 2012, 100% of the population to have access to the Internet at between 2 and 20 Mbps By 2013, provide broadband to 5 million people excluded from high-speed Internet services By 2020, provide access to at least 50% of the population at speeds greater than 100 Mbps of fixed networks (FttH)
under con- govern- tentive debate	Multiple regulations and extensive public debate	No Regulation and limited public debate	Regulation under consideration by government and extensive public debate	Regulation under consideration by government and extensive public debate	No Regulation and limited public debate	No regulation and limited public debate	Regulation under consideration by government and extensive public debate
470	34,016,593	1,341,335,152	62,787,427	82,302,465	1,224,614,327	239,870,937	60,550,848
	81%	45%	78%	74%	30%	54%	68%
000	12,877,000	379,990,016	25,938,000	39,255,000	220,584,000	59,261,000	23,219,000
	4	143	118	234	394	132	206
6	\$46,215	\$4,382	\$41,019	\$40,631	\$1,265	\$3,015	\$34,059
	7%	6%	5%	5%	5%	3%	5%
	84%	35%	76%	86%	6%	11%	65%
	6.7	3.6	7.1	7.3	2.0	2.8	6.6
	5.2	4.4	4.9	5.1	4.0	3.9	4.0
	6.9	2.7	6.1	6.3	1.3	2.0	4.8
	67.6	39.8	59.3	64.1	41.6	24.8	50.7
213	27,757,540	460,077,957	50,292,729	67,405,719	91,846,075	21,828,255	32,515,805
	82%	34%	80%	82%	8%	9%	54%
9	54,039	2,389	69,596	74,223	5,825	3,207	61,535
	1,500	1,099	3,500	5,003	535	70	2,001
29	10,138,741	126,337,000	21,300,000	26,000,000	10,990,000	1,900,300	13,400,000
	79%	33%	82%	66%	5%	3%	58%
	30%	9%	34%	32%	1%	1%	22%
	37%	27%	42%	39%	12%	9%	41%
033	24,037,372	859,003,000	62,600,000	104,560,000	752,190,000	220,000,000	82,000,000
	15%	2%	36%	36%	1%	10%	59%
067	3,557,531	17,180,060	22,410,800	38,059,840	6,769,710	22,660,000	48,708,000

	Japan	Korea	Malaysia	Mexico	Poland	Russia	Singapore
	●	✘	●	✘	✓	●	✓
	✓	✓	✓	✓	✓	✘	✓
	✓	✓	●	✓	✓	✘	✓
	✓	✓	✘	✘	✓	✓	✓

of to the reen	<ul style="list-style-type: none"> By 2015, all households to have very high-speed fiber broadband (FtH) connections 	<ul style="list-style-type: none"> By 2010, to provide broadband multi-media services to 12 million households and 23 million wireless subscribers By 2012, wireless broadband services to be upgraded to 10 Mbps By 2012, high-speed Internet services to be upgraded from 100 Mbps to 1 Gbps 	<ul style="list-style-type: none"> By 2011, 50% of households to access high-speed broadband By 2015, 75% of households to access high-speed broadband 	<ul style="list-style-type: none"> By 2012, 22% broadband penetration 	<ul style="list-style-type: none"> By 2013, 23% of population to have access to broadband 	<ul style="list-style-type: none"> By 2015, 35% of the population to have broadband access By 2015, 75% of households to be connected to the Internet 	<ul style="list-style-type: none"> By 2015, the Next-Generation National Broadband Network (Next-Gen NBN) to deliver 1 Gbps downstream and 500 Mbps upstream broadband access to every home, office and school
e							
ernet							
e							
on							
con- servi- e	Limited regulation and extensive public debate	Limited regulation and extensive public debate	No regulation and extensive public debate	No regulation and limited public debate	Limited regulation and limited public debate	Regulation under consideration by government and limited public debate	Limited regulation and limited public debate

	126,535,920	48,183,584	28,401,017	113,423,047	38,276,660	142,958,164	5,086,418
	67%	82%	72%	78%	61%	73%	100%
	47,334,000	18,821,000	5,848,000	25,915,000	13,715,000	52,363,000	1,124,000
	350	504	86	58	126	9	7,252
	\$42,820	\$20,591	\$8,423	\$9,566	\$12,300	\$10,437	\$43,117
	7%	9%	10%	5%	6%	4%	7%
	89%	82%	41%	30%	69%	50%	84%

	7.4	8.4	4.5	3.8	6.0	5.4	7.1
	5.0	5.2	4.7	3.7	3.8	3.7	5.6
	5.9	5.8	6.6	4.9	4.3	5.7	6.4
	63.4	60.8	44.1	37.0	44.6	35.2	69.8

	101,228,736	40,329,660	15,705,762	35,161,145	23,846,359	61,472,011	3,560,493
	80%	84%	55%	31%	62%	43%	70%
	15,477	11,878	11,652	7,328	37,732	30,776	174,583
	1,567	479	183	258	900	1,892	622

	34,055,343	17,649,538	2,078,500	11,325,022	5,044,000	15,700,000	1,257,400
	72%	94%	36%	44%	37%	30%	112%
	27%	37%	7%	10%	13%	11%	25%
	34%	44%	13%	32%	21%	26%	35%

	120,708,670	50,767,241	34,456,000	91,362,753	46,000,000	237,689,224	7,307,300
	88%	91%	27%	8%	31%	17%	70%
	105,982,212	46,198,189	9,372,032	7,583,108	14,260,000	41,357,925	5,093,188

South Africa	Spain	Thailand	Turkey	United Kingdom	United States	Vietnam
✗	✓	✗	✗	🕒	✓	✗
🕒	✓	✓	✓	✗	✓	✗
🕒	✓	✓	✓	✗	✓	✗
✗	✓	✗	✗	✓	🕒	✗

<ul style="list-style-type: none"> By 2014, to have 5% broadband penetration (minimum 256 Kbps) 	<ul style="list-style-type: none"> By 2011, minimum speed of 1 Mbps broadband access available to 100% of population By 2015, 100 Mbps broadband available to 50% of population 	<ul style="list-style-type: none"> By 2015, extend broadband coverage to 80% of population By 2015, extend broadband coverage to 95% of population By 2020, provide broadband Internet access of at least 100 Mbps in economically important provinces 	<ul style="list-style-type: none"> By 2013, the Broadband Subscriber Penetration Rate to increase to 20% By 2013, the proportion of Internet users to increase to 60% 	<ul style="list-style-type: none"> By 2015, to bring "superfast broadband" to all parts of the UK and to provide everyone with at least 2 Mbps and superfast broadband to be available to 90% of people 	<ul style="list-style-type: none"> By 2010, at least 100 million homes to have affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps By 2020, every household to have access to actual download speeds of 4 Mbps and actual upload speeds of 1 Mbps 	<ul style="list-style-type: none"> By 2015, 20–30% of households to have access to broadband By 2020, 50–60% of households have access to broadband, of which 20–30% access via fiber optic cable
No regulation and limited public debate	Regulation under consideration by government and extensive public debate	No regulation and limited public debate	No regulation and limited public debate	Regulation under consideration by government and extensive public debate	Regulation under consideration by government and extensive public debate	No regulation and limited public debate

50,132,817	46,076,989	69,122,234	72,752,325	62,035,570	310,383,948	87,848,445
62%	77%	34%	70%	90%	82%	29%
12,422,000	15,668,000	19,023,000	16,262,000	25,779,000	120,551,000	17,554,000
41	92	135	95	257	34	280
\$7,158	\$30,639	\$4,992	\$10,399	\$36,120	\$47,284	\$1,174
10%	5%	6%	4%	6%	7%	5%
18%	69%	23%	44%	83%	76%	14%

3.0	6.7	3.3	4.4	7.6	7.1	3.5
3.9	4.3	3.9	3.8	5.1	5.3	3.9
4.7	5.1	3.7	5.5	7.1	7.8	2.7
35.0	50.4	30.5	38.7	68.1	80.5	27.1

6,166,336	30,641,198	14,653,914	28,955,425	52,730,235	245,203,319	24,246,171
12%	67%	21%	40%	85%	79%	28%
1,714	55,456	10,829	19,087	132,749	36,704	5,552
11	1,699	159	553	7,000	9,000	135

743,000	10,579,147	2,672,573	7,095,850	19,468,000	81,744,000	3,631,396
6%	68%	14%	44%	76%	68%	21%
2%	23%	4%	10%	31%	26%	4%
12%	35%	18%	25%	37%	33%	15%

50,372,000	51,492,662	69,683,069	61,769,635	80,799,000	278,900,000	154,000,000
17%	56%	4%	18%	56%	54%	13%
8,361,752	28,681,413	2,647,957	10,994,995	45,247,440	150,606,000	19,712,000

ABOUT BSA

The Business Software Alliance (BSA) is the leading advocate for the global software industry before governments and in the international marketplace. It is an association of world-class companies that invest billions of dollars annually to create software solutions that spark the economy and improve modern life.

BSA serves as the world's premier anti-piracy organization and as a respected leader in shaping public policies that promote technology innovation and drive economic growth.

Through government relations, intellectual property enforcement and educational activities in markets around the world, BSA protects intellectual property and fosters innovation; works to open markets and ensure fair competition; and builds trust and confidence in information technology for consumers, businesses and governments alike.

PROTECTING INTELLECTUAL PROPERTY & FOSTERING INNOVATION

Intellectual property rights (IPR) — copyrights, patents and trademarks — provide the legal framework for creative enterprise, the bedrock of growing economies. They are also essential to commercial software development, which is the world's largest copyright industry.

By working with policymakers, leading enforcement actions and conducting public-education initiatives around the world, BSA ensures that respect for IPR pervades the global economy and society.

- ➔ **Championing Intellectual Property Rights:** BSA works with governments around the world to ensure intellectual property protections keep pace with new innovations in technology, such as cloud computing.
- ➔ **Curbing Software Theft:** BSA conducts vigorous enforcement programs in approximately 50 countries, helping its members guard against software theft by taking legal action against commercial, end-user license infringement, counterfeiting operations and Internet piracy.
- ➔ **Leading Industry Research:** BSA publishes the most authoritative global studies on piracy and its economic impact, illuminating the scope of the problem and helping shape national and international policy responses.
- ➔ **Educating the Public:** BSA educates consumers about harms associated with software piracy and offers a groundbreaking training program to help organizations more effectively manage their software assets.

BSA serves as the world's premier anti-piracy organization and as a respected leader in shaping public policies that promote technology innovation and drive economic growth.

OPENING MARKETS & ENSURING FAIR COMPETITION

Open markets are essential to economic growth and prosperity. BSA expands market opportunities for the software industry by working with governments to break down trade barriers and eliminate discriminatory procurement preferences that stifle innovation by skewing competition.

- ➔ **Breaking Down Barriers to Growth:** BSA provides policymakers with information, expert analysis and industry insights to promote an open-markets agenda. These efforts include a special focus on the so-called 'BRIC' economies of Brazil, Russia, India and China, which are the world's fastest-growing technology markets but also home to rampant piracy.
- ➔ **Promoting Technology Neutrality:** BSA encourages fair competition among technologies by promoting internationally recognized standards and unbiased IT-procurement policies for governments.
- ➔ **Supporting New Innovations:** BSA works with policymakers around the world to create conditions for new technologies, such as cloud computing, to flourish. In addition to collaborating on technology standards, this work involves elevating intellectual property protections, harmonizing international legal principles and addressing other challenges that are beyond the capability or jurisdiction of any one company or government.

BUILDING TRUST & CONFIDENCE IN TECHNOLOGY

Security and privacy undergird trust and confidence in information technology for consumers, businesses and governments. BSA promotes responsible data stewardship and facilitates acceptance and adoption of each new wave of innovation that transforms the technology marketplace and creates value for society.

- ➔ **Driving Public-Private Collaboration:** Drawing on the expertise of its members and productive working relationships with public officials, BSA serves as a knowledge center and catalyst to encourage cooperation and forge consensus among industry and governments.
- ➔ **Protecting Consumers:** As new technologies emerge, such as cloud computing, BSA and its members develop appropriate privacy and security standards and share their insights with policymakers and regulators.
- ➔ **Mapping Policy Solutions:** BSA has developed a global cybersecurity framework to guide governments in crafting policies that effectively deter and punish cyber crime, mitigate threats, inform and protect consumers, and respond to cyber incidents.



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