Asia Cloud Computing Association's

Cloud Readiness Index 2014

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I. Executive Summary

ASIA'S RISING CLOUD HORIZON

The 2014 edition of the Cloud Readiness Index (CRI) confirms a trend seen in our earlier CRI reports – the overall cloud awareness and readiness of Asia Pacific countries has improved across the region. Asia Pacific is one of the most dynamic geographies in the world today – data speeds have increased across the board, data centre connectivity options are growing as the Asia Pacific Gateway cable is completed, and regional broadband charges are among the lowest in the world.

The number of changes in 2013 that impact the cloud ecosystem illustrate Asia's dynamism. Updates were made to **Internet and data centre management legislation** in Indonesia, India and Vietnam, while regulation surrounding **personal data protection, user rights and cybercrime** were enacted or tabled for discussion in Australia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Vietnam. Japan revealed a new national defence **cyber security strategy**, and Hong Kong and New Zealand are setting up **new ministries** to oversee the confluence in technology, innovation and business. China continues plugging its citizens in with their Broadband China project, to add 60 million broadband users and 100 million 3G users to their country's tech footprint.

CLOUD READINESS INDEX 2014: THE READY, THE DEDI(CATED), THE STEADY

Asia's responsiveness to the needs of this brave new data-dependent world can be seen from its overall improvement in cloud readiness. On a country-by-country basis, this year's Cloud Readiness Index (CRI 2014) shows the region breaking down into three groups of countries: **ever-ready leaders** such as Japan, New Zealand, Australia, Singapore, Hong Kong and South Korea; the **dedicated improvers** such as Taiwan, Malaysia, Thailand and the Philippines, and the **steady developing** countries including China, Indonesia, India and Vietnam.

The **top improvers** in Asia Pacific were New Zealand, Australia and Thailand who all moved up four places; the Philippines also improved two places to finish at 10th place. A **drop in rankings** was most acutely felt by South Korea and India, who both fell by four places; they are followed by Hong Kong and Taiwan who fell by two places, and China, Indonesia and Vietnam who dropped by one rung each. The **non-movers** included the CRI 2014 league's leader, Japan, who retains the honour of being the most cloud-ready country in Asia Pacific. Singapore and Malaysia also keep their relative positions at 4th and 8th places respectively.

CONVERGED COMPUTING CALLS FOR "CLOUD FIRST" STRATEGIES

There is no specific parameter which leads a country towards better cloud readiness, as those countries that are ranked highly trend towards high scores across the board – in infrastructure development, forward-looking government policies, robust legal framework and a pro-business environment. While the converse is true – that the lower-ranked countries tend to also rank lower in each parameter, it is often not due to the lack of trying or lack of responsiveness to the changing environment. Rather, it is often a gauge of country capacity to keep up with the challenges of technical and regulatory convergence which cloud computing brings with it.

Leading countries all share the ability to arrive at a coherent "cloud first" strategy in both government and business development, to manage the new dimensional demands of data and cloud. Having a cohesive all-of-government approach towards gCloud and other public sector cloud initiatives, supporting computerisation efforts of small and medium businesses, ensuring the political will behind broadband rollout continues unabated – these are some examples of how an integrated approach towards cloud computing issues can raise local capacities for the future.

ASIA'S EVOLUTION IN THIS DATA REVOLUTION

We are but only beginning to scratch the surface of what can be done with cloud computing. More connected devices, remote monitoring, universal access, and greater computing power at lower costs – the region's cloud ecosystem is changing fast.

Yet there are unresolved issues around privacy, surveillance, and security. IPv6 adoption rates are accelerating, but have yet to hit critical mass. The Internet of Things, and Big Data analytics continue to both excite and stymie information professionals, who revel at the amount of data that can be crunched quickly on the cloud, but despair at the information overload that results.

The dedicated improver countries and steady developing economies have an **opportunity to catch up with their peers** in the region, by learning and leapfrogging from the regulatory experience of the cloud-ready leader countries. Opportunities to develop a country's niche industrial sectors, such as business process outsourcing, analytics and data visualisation, and financial services – all which have a natural affinity with cloud computing – should also be explored.

The opportunities for leader countries are the **rewards of innovation**. A first-mover advantage in developing efficiencies in data management, improve power grid stability and the greening of data centres will ensure their continued lead in the Asian league table, and also continue the trend of continual advancement and modernisation in Asia.

CONCLUSION

This is the third year which the Cloud Readiness Index has been produced, and the ACCA has seen a steady increase in interest by government policymakers and regulators. We are anticipating a seismic data revolution once information access in Asia becomes universally cheap, powerful, and available. And we believe the knowledge economy and cloud computing is the next great "leveller" for the region, poised to help accelerate the momentum around trade and economic integration in Asia.

Drawing up a coherent "cloud first" strategy that sets clear priorities for cloud readiness and technology development would require the combined effort of multiple parties – the "3P sectors" of the public, private, and people sectors. The CRI is the ACCA's sustained effort to track relative developments in the factors which contribute to cloud computing – such as data privacy, infrastructural developments, freedom of information, and the sustainability and stability of the power grid. It is offered as a starting point by which more in-depth discussions can be structured around. Should this resonate with you, we look forward to having such a conversation with you.

II. ACCA's Cloud Readiness Index 2014

Country & ccTLD	1. Privacy	2. International Connectivity	3. Data Sovereignty	4. Broadband Quality	5. Government Regulatory Env and Usage	6. Power Grid and Green Policy	7. IP Protection	8. Business Sophistication	9. Data Centre Risk	10. Freedom of Information	CRI 2014 SCORE	RANK	CHANGE
Japan JP	9.5	5.5	8.0	9.1	5.0	7.1	8.1	8.2	6.6	9.7	76.8	1	-
New Zealand NZ	8.8	4.6	7.9	7.6	5.6	9.2	8.6	6.8	7.8	9.5	76.3	2	+4
Australia AU	8.8	4.4	7.6	8.0	5.3	7.8	7.6	6.7	9.4	9.6	75.1	3	+4
Singapore SG	6.0	8.2	7.8	8.8	6.1	5.9	8.7	7.3	7.4	8.6	74.8	4	-
Hong Kong HK	6.8	7.7	7.6	9.3	5.1	5.6	8.1	7.5	7.4	9.6	74.7	5	-2
South Korea KR	9.7	5.5	7.2	9.4	5.1	6.6	5.7	6.9	8.6	8.6	73.3	6	-4
Taiwan TW	4.6	6.3	6.8	8.5	5.0	6.7	7.4	7.4	6.9	8.6	68.2	7	-2
Malaysia MY	5.8	5.8	6.7	7.1	5.2	4.9	6.9	7.2	8.5	8.2	66.2	8	-
Thailand TH	4.0	5.0	6.2	8.0	3.7	6.3	4.4	6.3	7.6	7.8	59.3	9	+4
Philippines PH	5.8	5.4	5.9	4.1	3.7	5.5	5.1	6.1	5.5	9.0	56.1	10	+2
China CN	5.9	3.0	4.8	5.9	4.3	4.3	5.6	6.2	6.5	7.0	53.3	11	-1
Indonesia ID	4.4	2.9	6.2	3.1	3.9	5.7	5.6	6.3	6.4	7.9	52.4	12	-1
India IN	4.6	2.3	6.5	3.6	4.1	5.0	5.3	6.3	3.4	7.8	48.8	13	-4
Vietnam VN	3.6	3.2	5.6	4.2	3.8	4.7	4.1	5.3	6.4	7.0	47.8	14	-1

III. Index Parameters and Methodology

There is no single quality which accurately depicts the state of cloud readiness – the multifaceted applications of cloud technology demands that a holistic approach be taken. The ACCA's Cloud Readiness Index uses ten parameters which contribute to an understanding of being willing, able, and enabling cloud usage in Asia's various countries and economies.

Our principle is to use publicly-available, credible data sources for our metrics. These indexes have thus been derived from existing public data sources, and a methodology brief has been included for each. Parameter Rank refers to where the country stands in relation with its peers; equal ranks have been given to countries who have achieved the same score.

1. Data Privacy

Rank	=3	7	5	=10	12	2	1	=8	=3	=8	6	=10	13	14
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	8.8	5.9	6.8	4.6	4.4	9.5	9.7	5.8	8.8	5.8	6.0	4.6	4.0	3.6

Average score: 5.9

Methodology: For this attribute we have used data from the Business Software Alliance's Cloud Computing Scorecard 2013 for a snapshot of the status of privacy laws and regulations, and cross-referenced it with APEC data on those signatories to the Cross-Border Privacy Enforcement Arrangement (CPEA). We have added two new attributes from the Baker & McKenzie Global Privacy Handbook, 2012 Edition on registration and extra territoriality of data protection laws.

THE CLOUD IS ALREADY INFLUENCING PRIVACY RULES

The cloud relies on a confident and secure flow of data across providers, networks and borders.

Even though restrictions on data transfer might be deemed necessary for public policy reasons (e.g. national security), extensive protectionist policies will impede the tremendous potential of cloud computing and have detrimental effects on global economic integration and international trade.

Thus clear and effective data privacy rules and policies are essential. In the last 18 months, Asia has seen major developments in the area of formal privacy and data protection laws. In many cases, the cloud has driven the acceleration of these new laws and regulations and we are seeing more harmonisation between existing data protection regimes.

While this progress is to be encouraged, we are also witnessing the emergence of restrictions on certain data classes, the extra-territorial regulatory reach of laws and new registration requirements on cloud providers.

This year's Index looks at data privacy beyond the mere existence of data privacy laws and their consistency with regional frameworks such as the APEC Cross-border Privacy Enforcement Arrangement (CPEA). To gain a more holistic picture of the regulatory environment, we have also included two new measures: first, the requirements for the local registration of data controllers, and second, the extra territoriality of national data protection laws.

2. International Connectivity

Rank	10	12	2	14	13	14	=5	=5	4	9	7	1	3	8	11
	AU	CN	HK	IN	ID	IN	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	4.4	3.0	7.7	2.3	2.9	2.3	5.5	5.5	5.8	4.6	5.4	8.2	6.3	5.0	3.2

Average score: 5.2

Methodology: International bandwidth is one of the prime physical inputs for the regional cloud computing market. Submarine optical fibre cable systems carry around 98% of all international Internet traffic and hence this metric, drawn from the ITU/UNESCO State of Broadband 2013: Universalising Broadband, measures the raw capacity of offshore fibre connectivity of each market. Two scores have been combined: one for submarine cables that are operating only within Asia (intra-Asia) and those that are operating outside (e.g. Asia-USA, Asia-Europe, Asia-Africa-Europe). Because of the ACCA's Asian focus, a two-thirds weighting has been given to the capacity of intra-Asia cables and a one-third weighting to the rest. The combined scores were then divided by the population of each country, and normalised.

MEETING FAST-GROWING DEMAND

The rapid spread of data-heavy devices, bandwidth-intensive applications, offshore enterprise data exchanges, cloud services and the booming growth of intra-Asia digital content has meant that demand for international broadband in the Asia-Pacific has increased sharply.

To cater for this growth, a larger proportion of cable-laying activities have been shifted towards Asia to connect multiple markets in the region, most of which are either live, under construction or close to near-term deployment.

In the meantime, as well as planning and building new subsea systems, some existing ocean-spanning networks have implemented upgrade strategies employing the latest high-quality and low-latency 40Gbps and 100Gbps coherent optical technologies as a means of scaling up to multi-terabit capacity instead of deploying new cables.

In developing the Index for this parameter, we have focused on each country's international submarine fibre systems and measured the impact of public sector efforts and private investments to streamline international connectivity by both landing of new cable systems and capacity upgrade activities for both operators and end-users.

The Index score assesses the capacity of existing or completed international submarine cable systems rather than those cables still under construction.

Rank	=4	14	=4	9	=10	1	6	8	2	12	3	7	=10	13
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	7.6	4.8	7.6	6.5	6.2	8.0	7.2	6.7	7.9	5.9	7.8	6.8	6.2	5.6

Average score: 6.8

Methodology: This year's data is drawn from an extensive study ACCA has undertaken into the laws and government policies related to data sovereignty that may affect the adoption of cloud computing. Data sovereignty has been identified as one of the key concerns for stakeholders, and the ACCA is continuing research and analysis in this area with further publications scheduled. Our survey takes a qualitative approach, ranking each of the countries by five key criteria: 1) (regulations that support) Cloud Access; 2) Data Safety (regulations); 3) Data Host (regulations); 4) Cross Border Movement; 5) Regulatory Stability and Enforcement. For more information on the ACCA's Data Sovereignty Report, please visit http://asiacloudcomputing.org
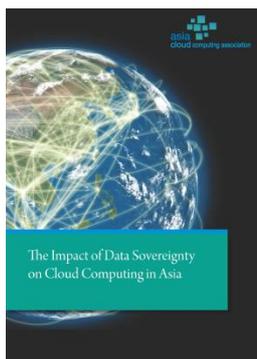
WHOSE RULES RULE IN THE CLOUD?

The laws that govern the security, privacy and disclosure of data do not cross borders as smoothly as data itself.

Cloud providers and their customers are asking which governments have access to their data, and whose laws prevail, when it is hosted offshore. This lack of legal clarity is impeding the growth of the regional and global cloud markets.

Customers are also asking questions such as: do foreign governments have access to data stored in another country? If my data is stored offshore, does the offshore government have access to the data? At the same time, onerous data sovereignty regulations can stifle the adoption of cloud computing by mandating specific locations for data. These regulations may necessitate the need for organisations to leverage a local data centre versus using the best solutions available – either in-house, outsourced, or cloud.

Historically, IT industry problems first arise in North America and Europe, and Asian countries have followed suit. However, this is a problem that has emerged in Asia and the West at the same time. Asian governments and the cloud sector face the opportunity and challenge of helping to create a robust regulatory environment for cloud data.

The solutions are not simple. This is a diverse region with almost every possible kind of political and legal structure.

However, many Asian governments are willing to take hold of the issue - a sign that they are not only concerned about data and privacy, but also clearly recognise that this is a major economic growth opportunity.

Rank	=6	10	2	13	14	3	1	9	8	12	4	5	=6	11
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	8.0	5.9	9.3	3.6	3.1	9.1	9.4	7.1	7.6	4.1	8.8	8.5	8.0	4.2

Average score: 7.8

Methodology: Scores were derived by combining the Average Peak broadband speed with the percentage of connections over 4 Mbps, from Akamai's State of Internet Q3 2013. Using the published data, we multiplied the average peak broadband speed by the percentage of connections over 4 Mbps. We normalised the scores by taking 2.5 times the logarithm base 10 of the product. Having used the same method last year we were able to measure the improvement over the last 12 months.

Comment from the ACCA: The average gain in the score is 30% with Indonesia and Malaysia showing the biggest gain at 91% and 82% respectively. At the other end of the scale, it is no surprise that the countries with the highest scores showed the least gain: Korea and Japan were at 0% and 18% respectively.

All country scores for this parameter have moved up in a positive direction – the average scores moved up by 30%. As expected the countries with the low scores moved up the most: Indonesia, Malaysia, Philippines and Vietnam increased by more than 50%. South Korea the country with the highest score in our previous index increased by less than 1%. All other countries were somewhat in between.

NEXTGEN BROADBAND NETWORKS (NBN): EVERYONE IS DOING IT

One of the positive discoveries in the broadband segment is that every one of the 14 markets in the Index has a strategy to provide high-speed broadband access to most of their population over the next 12 years.

This includes a combination of fixed broadband (GPON technology) of at least 100Mbps for urban residents and mobile broadband (4G). The justification for often spending public money to achieve these access goals is twofold: human rights (i.e. the right to access basic services like water and education) and economic growth.

Strategies vary. At one end of the spectrum are countries such as Hong Kong, Japan and Korea, who are implementing fibre-to-the-home (FTTH) rollouts with potential 1Gbps bandwidth that would support interactive 3D video streaming and other cloud-based services.

At the other end are countries planning to provide 5Mbps to most of their citizens by 2015. India, Indonesia, Malaysia, Philippines, and Vietnam are executing on such plans. Somewhere in the middle are China, New Zealand, and Thailand.

Adoption will often depend on perceived necessity and the relative price of the new service. For example, in some countries mobile broadband via 3G/4G is often perceived to be a better choice. In addition, the cost (installation and extra monthly charge) of the move to high-speed broadband vs. traditional ADSL/cable broadband is sometimes seen as prohibitive.

One requirement for a successful national broadband program is a change management programme that highlights concrete benefits of making the switch to the new service. Rather than attempt to assign a numerical value to a government policy, we evaluated broadband quality based on published data for bandwidth from end-point to services.

5. Government Regulatory Environment and Usage

Rank	3	9	=5	10	11	=7	=5	4	2	=13	1	=7	=13	12
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	5.3	4.3	5.1	4.1	3.9	5.0	5.1	5.2	5.6	3.7	6.1	5.0	3.7	3.8

Average score: 5.0

Methodology: We used two data points from the Network Readiness Index in the World Economic Forum's Global Information Technology Report 2013. The first was the political and regulatory environment pillar (one of two in the environment sub-index), which assesses the extent to which the national legal framework facilitates ICT penetration and the safe development of business activities. The second was the government usage pillar (the third of three pillars making up the usage subindex), which evaluates governments' implementation of ICT policies to enhance competitiveness and the well-being of citizens, the efforts they make to implement their visions for ICT development, and the number of government services they provide online. We averaged these two scores and normalised them for a scale of ten.

GOVERNMENTS PLAY A CRITICAL ROLE

The use of the cloud by governments for their own needs and the incentives they offer to accelerate demand are important elements in cloud readiness.

The US government is a clear pioneer. Four years after implementing a "cloud-first" strategy, more than 200 federal agencies are now using the cloud. Moves are underway to adopt a cloud broker model as an intermediary process to help departments identify the best cloud approach for a particular workload.

Governments have been active in Asia as well. Singapore's G-cloud, for example, is available to government agencies as a private community cloud, while the government is also offering incentives to SMEs for using local cloud services. The Hong Kong government CIO last year announced the awarding of the contract to build GovCloud, which is meant to provide a complete suite of cloud services to most government agencies for the next five years.

The Australian government has published a comprehensive guide and a series of recommendations to government agencies on the use of cloud. In Japan the government has been working at the government IT level and through the Ministry of Economy, Trade and Industry to drive the pervasive use of cloud, based on a 2009 plan to build a large government cloud infrastructure.

We believe that if implemented effectively, these initiatives will accelerate the adoption of cloud in that country, thereby increasing the desirability of building a cloud supply. In developing the CRI, our intention has been to devise a quantitative methodology to measure the impact of these initiatives on the local cloud industry. Our principle is to use publicly-available, credible data sources for our parameter metrics.

In order to uphold this governing principle we decided to use a proxy of these cloud efforts by using measures of ICT regulatory environment and government ICT use as published in the latest WEF Global Information Technology Report.

6. Power Grid and Green Policy

Rank	2	14	9	11	8	3	5	12	1	10	7	4	6	13
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	7.8	4.3	5.6	5.0	5.7	7.1	6.6	4.9	9.2	5.5	5.9	6.7	6.3	4.7

Average score: 5.8

Methodology: This parameter measures how power supplies can be sustained in the long run, what countries are doing to ensure renewable energy usage, whether multiple power sources are tapped and whether the grid has redundancy built-in. Scores were derived from the World Economic Forum's Global Energy Architecture Performance Index Report 2014. For Hong Kong and Taiwan, relative scores were derived by an independent assessment by the ACCA of the Energy Architecture Performance Index's (EAPI)'s energy triangle, involving (1) Economic growth and development, (2) Environmental Sustainability, and (3) Energy Access and Security.

GREENING DATA CENTRES

Power and cooling, the most critical needs for data centres, are prodigious users of electricity, making data centres among the world's fastest-growing energy consumers.

The industry's dependence on the existing power grid that relies predominantly on fossil fuel resources makes it vulnerable to future price shocks. This can threaten energy security and the ability to provide an uninterrupted supply of electricity.

Renewable energy resources - solar, hydro, geothermal, biomass, wind, marine power and tidal - appear as possible alternatives. However, renewables are not always a viable option as the generation capability can be intermittent and cyclical and with high implementation and land acquisition costs.

Nonetheless, renewables can be worth considering if data centre operators are to choose from among energy suppliers that demonstrate a good mix of renewables in their portfolio to overcome intermittency problems. In addition, owning an on-site energy generation capability based on wind or solar as a secondary source, and relying upon the commercial grid as the main energy source, can also help reduce demand for fossil fuel-based electricity.

In developing this parameter, besides focusing on energy pricing, access and security, we have evaluated the public sector efforts, commitments and incentives towards promoting environmentally sound energy production and mass-adoption of efficient, cleaner and cost-competitive renewable energy sources. To this effect, we have adopted the latest World Economic Forum Global Energy Architecture Performance Index scores for this index supplemented by our own additional research.

7. Intellectual Property Protection

Rank	5	=9	=3	11	=9	=3	8	7	2	12	1	6	13	14
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	7.6	5.6	8.1	5.3	5.6	8.1	5.7	6.9	8.6	5.1	8.7	7.4	4.4	4.1

Average score: 6.3

Methodology: This score draws on the World Economic Forum's (WEF) Global Competitiveness Report 2013/4, using information from the Intellectual Property Rights factor from Pillar 1: Institutions.

PROTECTING THE EXCHANGE OF IDEAS AND DATA

As countries across Asia embrace a more knowledge-based economy, the free flow of ideas, information and innovation becomes an increasingly valuable asset class.

This data traffic needs to be both promoted and protected to ensure that value is realised and that creators can exercise their rights in a way that meets their expectations.

The cloud magnifies this exchange of intellectual property while also providing the means (and often the incentives) to circumvent these rights. Digital information – whether it is a personal photo or a trade secret – sent or stored in the cloud should be safeguarded from misuse and misappropriation.

Consumers want to ensure that the content stored and generated in the cloud is safeguarded from being copied, while cloud providers want to offer this level of security and peace of mind to their clients.

Regulation and legislation that offer a framework by which intellectual property is protected, and violations penalised, pave the way for a healthy, vibrant cloud ecosystem.

This metric measures a government's IP protection regulations and their enforcement, which is seen by many providers and consumers as a baseline for protection of their rights.

8. Business Sophistication

Rank	8	12	2	=9	=9	1	6	5	7	13	4	3	=9	14
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	6.7	6.2	7.5	6.3	6.3	8.2	6.9	7.2	6.8	6.1	7.3	7.4	6.3	5.3

Average score: 6.7

Methodology: This maps the quality of a country's overall business networks and the operations of individual firms. There is a strong correlation between the level of business sophistication and the adoption of cloud services. We have drawn on the WEF Global Competitiveness Report 2013/4 for a comparison of Asia Pacific markets.

THE BUSINESS OF EASY BUSINESS

The ability of companies to use cloud technologies innovatively is tied to the ability of its peers, because businesses and firms exist within an economic ecosystem. The network effects of having similar IT systems comes into play as a business accelerant, but only when business processes are well-integrated together, and where companies across industries match synergies horizontally and vertically.

Government development and support of industry clusters, and the deployment of physical infrastructure also come into play when discussing business sophistication for Asia. Countries which have well-developed distribution networks, or a core competency in a scarce, unique set of products – these are the countries observed to have scored higher in this set of metrics.

Business sectors in countries which have exhibited the ability and willingness to grow include India and Indonesia, where the small and medium enterprise sectors figure prominently in the country's GDP. To observe where the trends in cloud uptake may be tracking towards, we look to the Business Sophistication factor in the World Economic Forum's Global Competitiveness Report for a comparison of Asian markets.

9. Data Centre Risk

Rank	1	10	=6	14	=11	9	2	3	4	13	=6	8	5	=11
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	9.4	6.5	7.4	3.4	6.4	6.6	8.6	8.5	7.8	5.5	7.4	6.9	7.6	6.4

Average score: 7.2

Methodology: The primary source of data is the 2012 Data Centre Risk Index from Hurleypalmerflatt, Cushman & Wakefield and Source 8, which takes into account, attributes such as data centre-related costs, political stability, natural disasters, water availability and energy security, among others. They have been weighted accordingly in regards to importance, and the Index score divided by 10. In cases where the primary source of data does not cover a particular country in Asia, we have drawn on the Maplecroft 2012 Global Risk Index, as we have done in previous editions. These scores have been normalised to integrate with the primary source data.

MEASURING THE RISK PROFILE OF INFORMATION REPOSITORIES

The risk profile of a data centre is critical to the success and stability of a cloud service, but it is not easily measured. The location and risk profile of a cloud provider's data centre should be important factors for enterprises in making their cloud choices.

Traditional risk factors include political stability, natural disasters, workforce quality, and reliability of power supply and the ease of doing business in a particular country. An emerging factor is climate change, which could mean increased storm activity and rising sea levels over time and could even impact the availability of adequate water supplies for cooling.

All these factors are measured in the Data Centre Risk parameter. When broken down, it illustrates that just because a data centre service provider obtained the cheapest rent or best tax break for one particular location doesn't necessarily mean it is going to be the safest place to entrust a company's vital data.

With this as the context, some of the Index findings may surprise. Some of the smaller-profile countries in the APAC cloud industry such as Thailand, are highlighted for their safe geographic location and potential advantages for fostering cloud computing.

Likewise, it also shows that while some countries may be able to offer a lot in terms of business incentives and cloud government grants, the location of a continental fault line or a power grid cannot be so easily changed.

Not that business incentives for cloud and government grants aren't appreciated - they are - but as the Index shows, each country needs to consider many different factors to encourage the cloud computing industry such as Thailand, and that companies have much to consider when selecting a cloud service provider and location.

With cloud computing now such a rich and complex combination of processes and technologies, it is really only as strong as its weakest link. None is more important than the fundamental bricks and mortar building block of the whole stack – the physical data centre. Seismically-active Japan, the CRI's league leader, falls squarely within this category.

10. Freedom of Information Access

Rank	=2	13	=2	12	10	1	=6	9	4	5	=6	=6	11	14
	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TW	TH	VN
Score	9.6	7.0	9.6	7.8	7.9	9.7	8.6	8.2	9.5	9.0	8.6	8.6	7.8	7.0

Average score: 8.6

Methodology: The power and opportunity of the cloud can best be harnessed by countries that allow free and open access to information. This draws on multiple sources to measure two attributes: freedom of the press (as a proxy for freedom of speech) and the accessibility of digital content via multiple platforms. This is an original, composite index derived from three sources, equally weighted: (1) Freedom House's Freedom on the Net 2012 global assessment of Internet and digital media, (2) Freedom House's Freedom of the Press 2012 index, and (3) WEF's Global Information Technology Report 2013's Accessibility of Digital Content. These scores were then combined and normalised.

DETERMINING LIABILITY FOR CLOUD CONTENT

The benefits of cloud computing can be harnessed only if information can be accessed and manipulated, and some modicum of security and confidentiality can be assured. Regulatory regimes that promote access to information in a consistent, predictable manner are needed.

Governments have a sovereign right to determine national information policy, no matter how restrictive. This includes censorship controls and limits on free speech. Many governments have exercised this prerogative, and we see that enacted to varying degrees of severity.

Over a period of several months alone last year, Vietnam banned bloggers and social media users from sharing news stories online, China passed a new law penalising Internet users who spread "rumours", and Singapore required that news websites be individually licensed.

The key question for cloud services is who is to be held responsible for content and behaviour that breach local laws. Traditionally ISPs and carriers are required to carry all content equally, yet many do have to abide by local jurisdictions, sometimes placing an unfair burden on them.
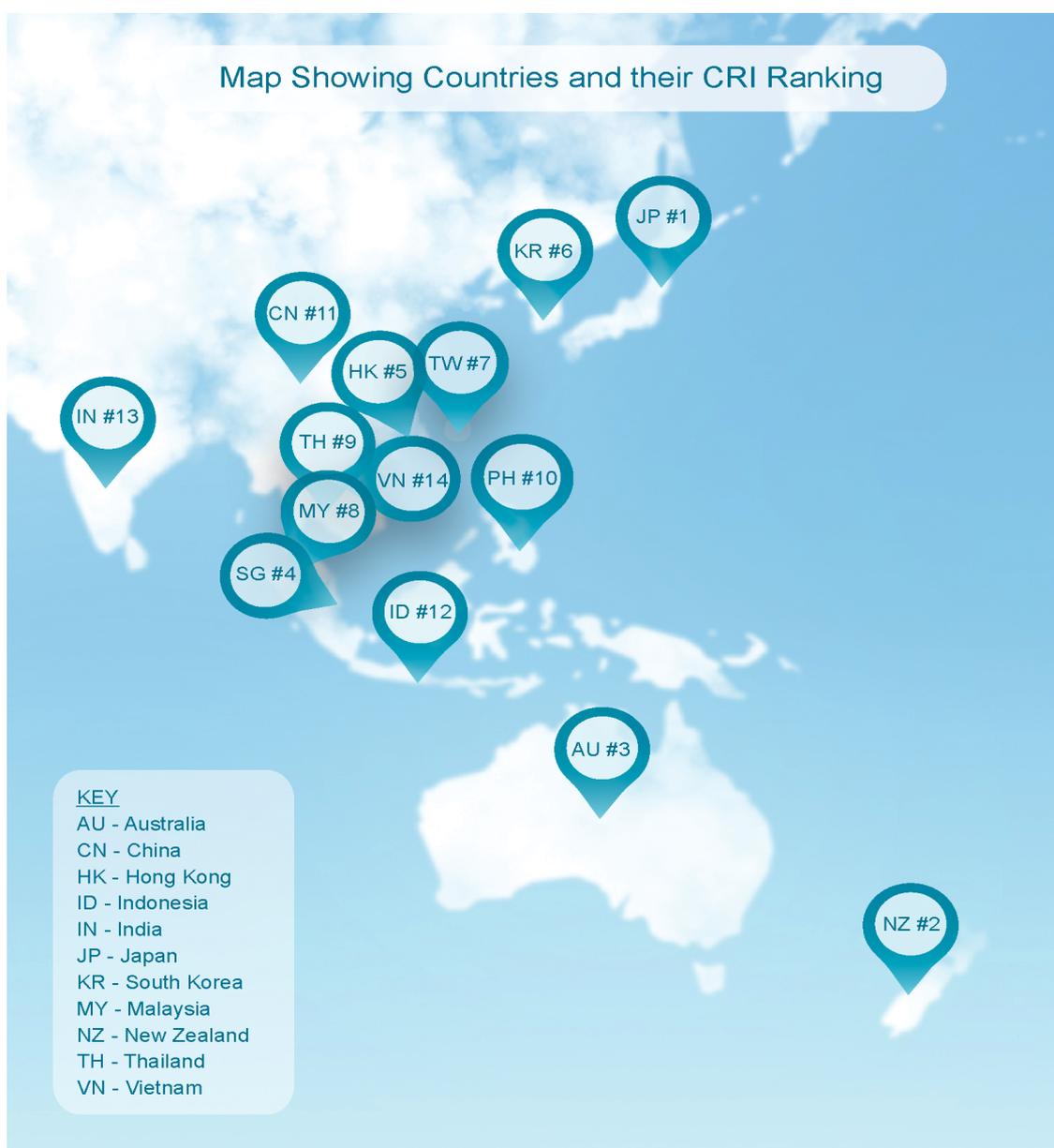
The principles behind intermediary liability – that is, where intermediaries such as ISPs are held to be responsible for content transmitted over their networks - are now being looked at as the foundation for regulating user-generated content on virtual or cloud-hosted platforms.

Those principles have already been used in a number of cases, yet it is still unclear where the line for liability can be drawn. It seems virtually impossible to draw this in the international domain, and government policy on this matter has been piecemeal at best, with some countries drawing up "safe harbour" provisions for quarantining the responsibility for questionable data travelling across borders. These issues are still unresolved.

To assess how well countries are doing on freedom of information, we derived scores from the rankings from Freedom House's Freedom of the Press 2012, and composited them with the assessment of Internet and digital media from the same report. This assessment gives us a glimpse into how freely news information can be gathered, shared and accessed in the countries under scrutiny.

In terms of updates in **regulatory policy impacting cloud service delivery**, Indonesia, India and Vietnam released a number of draft regulations around Internet management, service provisioning and data centre localisation for comments. For **protection of private data**, a number of countries such as Australia, Singapore, Malaysia, Taiwan and Vietnam began implementing regulating personal data privacy protection. South Korea mooted a "Right to be Forgotten" bill. **Updating government agencies** to serve this brave new cloud-ready world, Hong Kong has tabled for discussion the formation of a new Innovation and Technology Bureau, and similarly in New Zealand, a new Ministry of Business, Innovation and Employment was established. The Philippines released a controversial Cybercrime Prevention Act which some say impede **free speech and expression**, while Thailand arrested a number of individuals for insulting the Thai monarchy under their *lese majeste* law. **Next-generation broadband network rollout** continues unabated in Australia, Malaysia, and Singapore, while China announced the Broadband China project to add 60 million broadband users and 100 million 3G users to their country's tech footprint.

Map Showing Countries and their CRI Ranking

JP #1
KR #6
CN #11
HK #5   TW #7
IN #13
TH #9
VN #14   PH #10
MY #8
SG #4
ID #12
AU #3
NZ #2

KEY
AU - Australia
CN - China
HK - Hong Kong
ID - Indonesia
IN - India
JP - Japan
KR - South Korea
MY - Malaysia
NZ - New Zealand
TH - Thailand
VN - Vietnam

CRI 2014 PERFORMANCE
Improved from CRI 2012's 7th placement

Australia is one of the biggest improvers this year, and boasts a fairly mature environment for providing a sound legal and investment climate for cloud operations. It is the safest country in the Asia Pacific region for data centre operations (it has a low data centre risk), and ranks among the top band of countries for Freedom of Information Access, Power Grid and Green Policy, Data Privacy and Government Regulatory Environment and Usage. However, Australia ranks in the bottom third of the region for International Connectivity behind developing markets such as the Philippines and Vietnam.

RECENT GOVERNMENT LEGISLATION
- The Australian government released a National Cloud Computing Strategy covering the role of cloud in government, SMBs, and support for cloud service providers.
- A change of government brought in a revised approach to the delayed National Broadband Network (NBN). A new proposal advocating a multi-technology model of Fibre-to-the-Node (FTTN) and Hybrid Fibre Coaxial (HFC) will be completed by 2021.
  The Office of the Australian Information Commissioner (OAIC) released the Australian Privacy Principles guidelines to prepare for significant changes in privacy law.

GCLOUD AND GICT USE
- A National Digital Strategy has recommended more investment in teaching ICT skills in schools, with free WiFi to be extended to rural indigenous centres, and a single web authentication system for government services.
  The New South Wales (NSW) government has issued plans to consolidate 130 government data centres into two mega-DCs.

CLOUD ECOSYSTEM DEVELOPMENTS
- The OAIC published an information security guide which contains steps organizations can take to protect the personal information of their customers such as using privacy impact assessments.

RECOMMENDATIONS
Australia's placement at 10th for international bandwidth suggests that global connectivity may need a re-look. In addition, continued delays to the NBN project means a middle rank in Asia for domestic broadband connectivity. Once it has completed the reviews of the NBN project, the Australian government must ensure that it meets its new rollout targets.

A relatively low score in business sophistication also suggests that more may need to be done to develop a pro-business IT environment.

CRI 2014 PERFORMANCE
Fell from CRI 2012's 10th placement

China is pro-cloud through its varied government-supported programmes, yet still performs poorly in most international indicators for cloud readiness. While programmes such as the 12th Five Year Plan and the Chongqing cloud computing special zone are big steps forward for China, it remains one of the weaker performers in the CRI, particularly for Data Sovereignty, Power Grid and Green Energy, and Freedom of Information Access.

On the flip side, China has issued new guidelines that strengthen protection of personal data held by businesses and websites, leading to a relative improvement in its data privacy score.

RECENT GOVERNMENT LEGISLATION
- The government announced plans to spend USD326 billion on its Broadband China strategy to provide broadband to 25 million people and fibre broadband to 35 million by 2013, and nationwide coverage by 2020.
- The government is drafting a comprehensive law to promote the sustainability and development of e-commerce. The final drafting of the law is expected to be completed by June 2016.

GCLOUD AND GICT USE
- Driven by China's 12th Five Year Plan, with an expected spending of RMB4 trillion (USD634 million), five cities have been selected for cloud-centre pilots, guided by the National Development Reform Commission: Beijing, Shanghai, Shenzhen, Hangzhou and Wuxi.
- The Ministry of Industry and Information Technology (MIIT) announced a list of cities pre-approved for the Cloud Computing E-government Platform Construction and Development Pilot Program. The program is designed to promote local government participation in e-government cloud platform construction and development.
- Japan's NEC has signed an MoU with the Chongqing government to help develop Chongqing as a smart city and a cloud computing hub.

CLOUD ECOSYSTEM DEVELOPMENTS
- The government has opened more than 700 Weibos on Sina and Tencent, and another 200 microblogs on people.com and xinhuanet.com to help the authorities promote clean governance and battle corruption.
- A total of 165,000 cloud computing services were built in North China's Inner Mongolia region in 2013.
- Over 845,000 publications were registered for copyright protection in 2013, up 23% year-on-year, according to the National Copyright Administration of China.

RECOMMENDATIONS
China continues to rank poorly in both "hard" and "soft" infrastructure. Its national broadband plan will help improve broadband quality over the next five years, but unless the government improves citizen access to information, develops more sustainable energy policies, and improves regulatory predictability and transparency, data flows in and through China will continue to remain bottlenecked.

CRI 2014 Performance
Fell from CRI 2012's 3rd placement

With close to 90% of homes connected by fibre, Hong Kong's quality IT infrastructure has proven to be a deciding factor in nudging South Korea into second place in overall CRI rankings this year. Its relative strength in International Connectivity – scoring second-highest in the region behind Singapore – also shows that a sustained effort to become a regional hub for connection exchanges has also paid off.

While its Data Centre Risk profile declined primarily because of the change in methodology, the city fell back in several important areas, chief among these is the declining level of media freedom, meaning its ranking in Freedom of Information Access declined. Hong Kong was also marked down in the Government Regulatory Environment and Usage indicator and fared poorly in Power Grid and Green Policy coming ninth out of 14 countries, a significant fall from its 1st ranking in 2012.

Recent Government Legislation
- The Hong Kong government is rolling out a Digital 21 Strategy, a blueprint for the SAR's ICT development.

gCloud and gICT use
- GCIO launched a one-stop portal to promote the wider use of cloud computing services and technologies.
- Chief Executive CY Leung announced that the government planned to set up an Innovation and Technology Bureau (ITB).
- The Information Services Department launched the Government Cloud Platform, GovCloud, for developing and hosting e-services for bureaus and departments, Hong Kong's first cloud computing initiative.
- Public WiFi is to be provided at selected hospitals and clinics of the Hospital Authority (HA) as part of the Digital 21 Strategy.

"The development of an Innovation and Technology Bureau is crucial for Hong Kong's continued cloud development, as the industry and government must work closely together to create a sophisticated ICT business environment."
- Charles Mok, Legislative Councillor, Hong Kong

Cloud Ecosystem Developments
- Hong Kong's government-owned Cyberport is investing USD25.8 million over the next three years in start-ups.
- The government is looking at building new data centres underground in an attempt to find new ways to build data centres in the city.

Recommendations
Hong Kong has always been a forward-looking administration. To climb back up the CRI ranks, it needs to accelerate work on its power grid and green energy policies. In addition, government support of pro-IT and pro-business policies should be integrated into a whole-of-government approach. To this end, we look forward to the newly-mooted Innovation and Technology Bureau.

CRI 2014 PERFORMANCE
Fell from CRI 2012's 9th placement

India recorded one of the biggest declines in Index ranking, falling four positions to 13th. Its performance across many of the parameters remains nascent at best, with International Connectivity and Data Centre Risk needing the most improvement - it ranked bottom of the region on both parameters.

Recent regulatory announcements to localise domestic email traffic also suggests that the industry may be in need of regulatory reform if India is to make any headway in preparing for the global cloud computing economy.

RECENT GOVERNMENT LEGISLATION
- The Indian government launched the national cloud initiative, known as "Meghraj", to accelerate delivery of government e-services and to optimise ICT spending.
- The government has launched an open data portal - Data Portal India - with more than 3,500 data sets from 49 different government offices.
- The Ministry of Commerce and Industry launched eBiz, a business portal which makes it easier for entrepreneurs to start and run businesses, combined with an integrated payment gateway with the Central Bank of India.
- National Security Council proposes 3-pronged plan to protect Internet users by mandating that all email service providers host servers for their India operations within the country.

GCLOUD AND GICT USE
- Government launched National Mission on ICT to create a national IT platform connecting all schools, providing students and teachers with opportunities to collaborate and share knowledge.
- The Department of Electronics and Information Technology (DeitY) launched Mobile Seva to provide government services through mobile phones and tablets.
- A pilot programme for an e-Gov app store was launched with the aim of streamlining efficiency in the public sector and enhancing citizen services.

CLOUD ECOSYSTEM DEVELOPMENTS
- The Minister of State for Communications and IT is launching a new email system to strengthen cyber security in government agencies.

RECOMMENDATIONS
India is insufficiently prepared for cloud computing in many areas. As well as adding connectivity - both domestic and offshore - it must address its data risk profile and weak intellectual property protection.

CRI 2014 PERFORMANCE
Fell from CRI 2012's 11th placement

Indonesia fell by one place, but in a region developing at breakneck pace any slide is not a good thing. Perhaps due to its geographical challenges, infrastructure remains a pressing challenge: the country ranks poorly on both domestic Broadband Quality and International Connectivity and is below average across all key indicators. In terms of Data Centre Risk, Indonesia is tied with Vietnam in 11th ranking, which suggests there are concerns when it comes to ensuring the kind of safe and viable business environment in which cloud computing can thrive.

RECENT GOVERNMENT LEGISLATION
- Open Government Indonesia launched an online reporting system called Lapor (meaning "report" in Bahasa) where people can report improper conduct by public servants.
- The Indonesian Defense Ministry is planning to propose a law for the creation of a "Cyber Army", a special force to address hackers of state portals and websites.
- The Agency for the Assessment and Application of Technology (BPPT) signed a deal with the General Elections Commission (KPU) for the implementation of an electronic vote counting system for the legislative and presidential elections in 2014.

GCLOUD AND GICT USE
- Indonesia police will launch a web-based centre, using email and social media functionality, to receive complaints on police officer performance.
- The Directorate General of Taxes (DGT), Ministry of Finance, processed 24,500 tax returns through its e-billing system in 2013.
- Telkom's WiFi program for schools, called IndiSchool WiFi, now has over 10 million users.

CLOUD ECOSYSTEM DEVELOPMENTS
- IP registrations have risen in past years on increasing IP awareness. The number of registered trademarks has grown significantly from 20,660 in 2003 to 62,455 by the end of 2012, according to Indonesia's Directorate General of Intellectual Property Rights (HAKI) at the Law and Human Rights Ministry.

RECOMMENDATIONS
Priorities should be further investment in offshore and domestic network infrastructure and in improving data centre power efficiency. With elections in mid-2014, it could be a good time to discuss how to move the Indonesian economy forward through innovation and ICT with cloud technologies.

CRI 2014 Performance
Maintained CRI 2012's 1st placement

As the top rank in the 2014 Cloud Readiness Index Japan has maintained its reputation as Asia's most cloud-friendly economy. It has the region's most sophisticated business environment and the best data sovereignty regime and ranks among the top band of countries for Broadband Quality, Data Privacy and Power Grid and Green Policy. Its weak points are Government Regulatory Environment and Usage and Data Centre Risk; on the former it ranked 7th overall with an average score, but on the latter it fell five places to 9th, behind less-developed cloud markets such as Malaysia and Thailand.

Recent Government Legislation
- The Japan government launched the National Open Data Portal, an open government initiative to encourage citizens and businesses to make use of government data.
- The National Information Security Centre (NISC) released a Cyber Security Strategy last year.

gCloud and gICT use
- More than 20 million people filed their tax returns online through the National Tax Agency's online e-Tax system.
- Smartphone apps have been developed through Kyushu University to monitor crops and control farming costs by sending crop data to an online data network, dubbed Nosho Navi.
- Shizuoka and Yamanashi prefectures announced the start of the Fujisan Free WiFi project to provide free WiFi for tourists climbing the iconic mountain. The service will be provided by NTT.

"Japan will continue to strive for excellence as we continue to develop our cloud readiness and data management capacity. Government working to provide official data to be used for business cloud keeping privacy. The government works to establish standard for local government systems to improve efficiency of cloud based computing."
- Prof Tadao Saito (Former President of the Association of Promotion of Public Local Information and Communication)

Cloud Ecosystem Developments
- The government is planning to tax foreign downloaded content by 2015, meant to shore up a loophole in Japan's current consumption tax.
- The Economy, Trade and Industry Ministry will invest USD2 million to promote the use of 3D printers in universities and colleges this year.
- The Japanese Patent Office started its anti-counterfeiting and anti-piracy campaign to educate younger people about pirated and counterfeit goods.

Recommendations
One of the lowest scores for Japan was in its Government Regulatory Environment and Usage, where the biggest challenge for Japan is to repair the government's reputation for transparency and effectiveness following the Fukushima nuclear plant debacle.

Given Japan's location in a seismically-active area, an opportunity exists for Japan to innovate and find alternative methods of reducing data centre risk.

CRI 2014 PERFORMANCE
Maintained CRI 2012's 8th placement

Malaysia maintains its position as one of the "dedicated improver" countries with scores in the middle ranks across most parameters, except for Power Grid and Green Energy, where it ranked 12th, suggesting that it could do with some focused attention to develop a more sustainable and stable power grid. Government policies may also be making headway in promoting Malaysia as a cloud-friendly market - it jumped three rankings on 2012 to 3rd overall in Data Centre Risk, nudging ahead of Hong Kong, New Zealand and Singapore.

RECENT GOVERNMENT LEGISLATION
- Multimedia Development Corporation (MDeC), Ministry of Communications and Multimedia (KKMM) and the Malaysian Administrative Modernisation And Management Planning Unit (MAMPU) will jointly implement four government initiatives for Big Data Analytics (BDA) pilot projects by 2015.
- The government's Digital Malaysia initiative is aiming to turn the country into a digital economy by 2020.
- Malaysia's Personal Data Protection Act (PDPA 2010) commenced, and the Personal Data Protection Commissioner appointed in Nov 2013.

"Recent developments to Malaysia's data management policies have positioned us to be one of the most cloud-friendly technology markets in Southeast Asia."
- Ong Kian Yew, Executive Director, PIKOM (National ICT Association of Malaysia)

GCLOUD AND GICT USE
- The education ministry launched an initiative to allow students access to digital textbooks online as an alternative to print versions.
- The Malaysian Centre for Geospatial Data Infrastructure launched the Malaysia Geospatial Online Services (MyGOS) portal which will function as a single integrated portal providing geospatial services and information for government agencies and private organisations.

CLOUD ECOSYSTEM DEVELOPMENTS
- The MDeC led Malaysian Data Centre Alliance (MDCA) was launched to oversee the collective development of data centres in Malaysia and lead key initiatives to grow the industry and help position Malaysia as a preferred regional hub.
- Malaysia's focus on cybercrime will include updates and amends to laws such as the Penal Code, Criminal Procedure Code, Evidence Act 1950, Computer Crimes Act 1997, and Cyber Crimes Act 2003.
- The Malaysian Communications and Multimedia Commission (MCMC) blocked a total of 2,753 websites from Jan-Oct 2013 for violating the Communications and Multimedia Act 1998 and other regulations.

RECOMMENDATIONS
Malaysia's Personal Data Protection Act came into force in late 2013, and its inception will improve Data Privacy scores. However, Broadband Quality and Power Grid and Green Policy efficiency must remain priorities.

CRI 2014 PERFORMANCE
Climbed from CRI 2012's 6th placement

With high scores in Data Sovereignty, Government Regulatory Environment and Usage, and IP Protection parameters, New Zealand is one of the largest positive jumps in the CRI 2014, up four places on 2012. While it still ranks poorly in terms of International Connectivity - 9th overall - it leads the region in Power Grid and Green Policy. New Zealand's jump up the CRI rankings could be the end result of the adoption of an all-of-government approach to cloud computing in their public sector.

RECENT GOVERNMENT LEGISLATION
- Government launches its ICT Strategy and Action Plan to 2017 focused on new savings through bringing all new government services online, creating info hubs, and focus on data security.
- The Government will invest USD296 million in education over the next four years including for ICT teaching.

"Addressing challenges in infrastructure regulation and connectivity will create an excellent platform for New Zealand businesses based on cloud computing."
- Hon. David Butcher, principal of DBA Consultants, Wellington, New Zealand

GCLOUD AND GICT USE
- An NZ legislation website will provide free, official and up-to-date online legislation to citizens.
- HealthLink to launch CareSelect eReferral service in Auckland and Northland - the service went live in Dec 2013 and uses GPS to identify a suitable medical specialist and send them a referral in real-time.
- NZ Ministry of Health has put in place IBM unified e-health records software platform which incorporates the National Health Index (NHI) with the healthcare provider index to improve patient safety and reduce back-office costs.
- A new website has been launched by the NZ Ministry of Health to make it easier for citizens to find information on aged care services.
- National e-prescribing system allows pharmacists to scan barcodes for details.

CLOUD ECOSYSTEM DEVELOPMENTS
- New Patents Bill will outlaw software patents and is called an innovation driver. NZ companies will have more flexibility to adapt and enhance existing inventions.
- The government has established a new government and industry working group, New Zealand Data Futures Forum, to develop and share ideas around the use of personal data.
- New Zealand is home to Xero, a cloud based accounting package now challenging Intuit in the USA.

RECOMMENDATIONS
The outliers in New Zealand's index parameters provide an indicator on where work needs to be focused – International Connectivity (9th), Broadband Quality, and developing Business Sophistication within their economy. Broadband regulation has suffered because the government failed to develop regulatory measures alongside the infrastructure roll out. In addition, the lack of an alternative international connection to the South Pacific Cable is a negative, effectively keeping broadband speeds relatively low. It is also worth noting that the poor showing in these parameters could be due to divided government attention, following the Christchurch earthquake of 2011, which required extensive rebuilding efforts. Keeping all eyes on the prize, New Zealand's priority must be to accelerate infrastructure and connectivity investment, particularly viable alternative cable connections to improve for international connectivity.

CRI 2014 PERFORMANCE
Climbed from CRI 2012's 12th placement

The Philippines has improved its responsiveness to the changing cloud environment in the last 12 months, in particular through the passage of a new data privacy law and the dropping of libel provisions originally included in its draft cybercrime law. It is one of the stronger Asia Pacific countries in terms of Freedom of Information Access; it has also expanded its connectivity by adding new international capacity. However, Government Regulatory Environment and Usage is still a problem: the Philippines ranks bottom of the region alongside Thailand on this indicator, which also keeps its showing on Data Sovereignty, Business Sophistication and Data Centre Risk below average.

RECENT GOVERNMENT LEGISLATION
- The government revealed the latest ICT Strategy in Feb 2013 called "Smarter Philippines".
- Legislators have begun drafting Implementation Rules and Regulations (IIR) around the 2012 Data Privacy Act. The Business Process Outsourcing (BPO) industry is likely to benefit from this clarity in rules.
- The government's 2012 Cybercrime Law continues to attract much opposition, with critics observing that its rules contravene their right to freedom of speech, and were overly draconian when applied to cyber libel. The Supreme Court has suspended the implementation of the law due to constitutional concerns.
- The government launched Faith (*www.gov.ph/faith*), a web-based initiative that will allow public and foreign donors to monitor the status of foreign aid for Typhoon Haiyan.

"We see healthy growth prospects for the entrepreneurs in the Philippines to use cloud services to develop and grow their businesses globally."
- Rey Lugtu, Vice President, IT Enabled Services Group, Globe Telecom

GCLOUD AND GICT USE
- The Department of Science and Tech (DOST) and Department of Health (DoH) are collaborating on remote telehealth via RxBox and TV White Spaces technology.
- The DOST launched five priority eGov IT Services on iGovPhil – (1) public key infrastructure, (2) GovMail, (3) a government cloud server (GovCloud); (4) Agency Records Inventory System (AgRIS); and (5) the use of a Government Website Template (GWT).
- The DOST is finalising the setup of a 154-kilometre fibre optic network that runs on the Metro Manila rail system infrastructure. The fibre optic network will link the data centres of 162 government agencies around the metro.
- The government launched the Open Data Initiative at http://www.data.gov.ph to promote government accountability and transparency.

CLOUD ECOSYSTEM DEVELOPMENTS
- The Office of the President has proposed that legislators provide free Internet in public places using the Priority Development Assistance Fund.

"We are encouraged by the acknowledgement that the Philippines has been dedicated to improving our cloud and ICT readiness for our citizens."
- Monchito Ibrahim, Deputy Executive Director of Information and Communications Technology Office of the Department of Science and Technology (DOST-ICTO)

RECOMMENDATIONS
Investment in high-speed connectivity is the most urgent requirement. The government has a great opportunity to show the way in offering incentives for cloud adoption and making wider use of the cloud in its own services.

CRI 2014 PERFORMANCE
Maintained CRI 2012's 4th placement

Singapore has maintained its Index ranking as one of Asia's most advanced cloud environments, although it is facing increased competition from its rapidly-developing neighbours. Its government once again is rated the best in Asia for its use of the cloud and the regulatory environment it has created. Singapore has also supplanted Japan in 1st place for International Connectivity and also maintains top ranking on IP protection. Its new personal data protection law has helped lift its Data Privacy score, but it is still ranked 6th, while its strict media and information control means it remains anchored in the bottom third in Freedom of Information and Access.

RECENT GOVERNMENT LEGISLATION
- Data Privacy Protection Act (PDPA) enacted in Nov 2012; a Do-Not-Call (DNC) registry has been set up. The PDP Commission (PDPC) has released advisory sector-specific guidelines on how the PDPA will apply to everyday situations in the property and telco sectors. These are the first sector-specific guidelines to be introduced.

"A concerted effort by all government agencies has helped to develop Singapore's cloud sector, both in the public and private sectors. We will continue to strive for an all-rounded excellence in cloud readiness."
- Dr Lee Hing Yan, Director, National Cloud Computing Office, Infocomm Development Authority of Singapore (IDA)

- New Masterplans: The Ministry of Law announced a new Masterplan in Apr 2013 to develop Singapore as a global IP hub in Asia; the 5-year National Cyber Security Masterplan 2018 was also launched in Jul 2013; and a new InfoComm Media Masterplan was announced.
- The Media Development Authority (MDA) released new Internet content guidelines, requiring online news sites which fit certain criteria to register for a traditional news license.

GCLOUD AND GICT USE
- The Infocomm Development Authority of Singapore (IDA) and FireEye have collaborated to open a cybersecurity training centre.
- The IDA launched the Multi-Tier Cloud Security Standard (MTCSS), the first of its kind, offering clarity and standards for cloud providers' security levels.

CLOUD ECOSYSTEM DEVELOPMENTS
- Broadband competition has heated up with new entrants MyRepublic and ViewQwest offering low 1Gbps consumer plans.
- There is a large push by the government to support Small and Medium Enterprises (SMEs), with the Productivity and Innovation Credit scheme (PIC), and a SGD42 million (USD33 million) sectoral productivity call for collaborative initiatives to drive IT adoption by companies. The Singapore Budget 2014 also included many incentives for SMEs to adopt IT solutions.

RECOMMENDATIONS
A concerted effort to break into the top three ranks for cloud readiness may need a radical re-think of the management of data and information in and through Singapore. It is already well-positioned for this shift, being both an economic trade and financial hub for the region and the world, and recent moves to establish rules for virtual currencies like BitCoin are encouraging moves in the right direction. The task is to ensure a concerted effort to translate this pro-business environment, into one which enables and supports smooth and safe passage for information data flows via the country.

CRI 2014 PERFORMANCE
Fell from CRI 2012's 2nd placement

South Korea slipped to its lowest ever CRI ranking, dropping four places from 2012 despite its reputation as one of the region's cloud leaders. It remains among the leading nations on Broadband Quality and ranks near the top on Data Centre Risk and Data Sovereignty - all areas in which it has been traditionally very strong. However, it fell seven rankings for IP protection - from 1st in 2012 to 8th this year - an unusually steep drop for one of the region's leading cloud markets.

RECENT GOVERNMENT LEGISLATION
- The Ministry of Science, ICT and Future Planning (MSIP) has picked five firms as trial service providers to expand giga-speed Internet connection services in the country. The government aims to have giga-speed Internet connection speeds available in most parts of the country by 2017.
- The government announced a strategy to improve the embedded software industry and make it a core growth engine of the economy. The strategy is expected to contain details on research and development plans, and training of manpower.

GCLOUD AND GICT USE
- Ministry of Public Administration and Security (MOPAS) announced 22 projects that are part of the government's budget for e-government services including a comprehensive anti-disaster and safety system; KRW5 billion (USD4.6 million) for the building of a medical equipment integration system; and KRW5 billion for the building of the government's data analysis capability infrastructure.
- South Korea plans to assist ASEAN countries develop mobile apps for a range of government services, such as healthcare and transport. South Korea announced the plans at the close of the 13th ASEAN Telecommunications and Information Technology Ministers Meeting (TELMIN).

CLOUD ECOSYSTEM DEVELOPMENTS
- South Korea and China signed an MoU to form a cooperative group to respond to Advanced Persistent Threats (APT), phishing, and DDoS attacks, exchange cyber security specialists, conduct joint research and share cyber security information.
- The Ministry of Science, ICT and Future Planning will plough KRW31.47 billion (USD28.9 million) into nurturing the development of IT and IT convergence experts.

RECOMMENDATIONS
South Korea's Data Sovereignty, IP protection and Business Sophistication scores are weak relative to its overall ranking, which provides an indication on what the country needs to be working on improving. However, the absence of a concerted government focus on cloud may be a stumbling block to its continued position as the leader of the pack.

CRI 2014 PERFORMANCE

Fell from CRI 2012's 5th placement

Taiwan's general business environment might be cloud-ready, but it is falling behind in several areas leading to a drop of two places in its CRI 2014 ranking. It is one of the better-resourced markets in Asia for International Connectivity and Power Grid and Green Policy, but its ranking has slipped on Broadband Quality, Data Sovereignty and Data Centre Risk. It ranks highly for Business Sophistication (3rd), however, meaning that despite slipping back it retains its status as a cloud-ready market.

RECENT GOVERNMENT LEGISLATION

- The Ministry of Economic Affairs (MOEA) will adopt a three-pronged approach to aid the development of the cloud computing industry in Taiwan. Its three strategies will focus on operating system developments, standardised protocols, and viable certification processes for developers and engineers.
- The government is setting up a cloud platform for environmental administration, with a four-year budget of TWD600 million (USD20 million).

GCLOUD AND GICT USE

- The National Communications Commission (NCC) will set up a new Internet protection agency to handle complaints over online content, enforce the Internet content rating system and study Internet usage patterns of children and teenagers.
- Taipei City will invest TWD128.9 billion (USD4.36 billion) to build a cloud computing park by 2017.
- The Ministry of the Interior plans to launch a web-based platform to allow people to express their condolences electronically through the use of electronic scrolls.
- The R.O.C. Army has launched a trial run at selected military camps to allow soldiers to use smartphones in designated areas at designated time periods.

CLOUD ECOSYSTEM DEVELOPMENTS

- Asustek and the Industrial Development Bureau announced a digital platform known as the "Taiwan Digital Mega Mall" which will host 10,000 content providers for B2B services, with a focus on cloud service providers.
- The Executive Yuan has collaborated with local governments to expand Taiwan's free WiFi network to cover major tourism spots and hubs.
- The Taiwan Open Data Alliance has been formed to promote open government data in Taiwan.

RECOMMENDATIONS

Taiwan's Data Privacy score will advance following the introduction of a new personal data protection law, which was implemented in late 2012. A concerted effort to build out cloud by the MOEA would help in improving Taiwan's cloud readiness, and we encourage Taiwan to develop an "all-of-government" approach to ensure that cloud economies of scale and adoption can be maximised.

CRI 2014 PERFORMANCE
Climbed from 2012's 13th placement

Thailand is another economy to have significantly improved its cloud preparedness, jumping four places in the CRI 2014. Thailand has gained markedly in its Data Centre Risk profile (5th), possibly learning lessons from the massive flooding it faced in 2011 which negatively affected its harddisk manufacturing industry. Yet in a region where one has to run to keep pace with the leaders, Thailand still has a way to go, remaining in the "steady developing" country cluster, especially when it comes to Data Privacy, IP Protection, Freedom of Information Access and Government and Regulatory Environment for cloud computing.

"Thailand is working on creating a smarter and greener society, built on ICT development that supports social needs, and achieves a high quality of life with wisdom shared by our people. The strong performance in cloud readiness is an encouraging sign that efforts to improve the country's technology capacities are bearing fruit."
- Dr. Surachai Srisaracam, Permanent Secretary, Ministry of Information and Communication Technology, Thailand

RECENT GOVERNMENT LEGISLATION
- The Information and Communication Technology Ministry is drafting the third five-year national ICT master plan to upgrade the country's technology sector.
- The Electronic Government Agency (EGA) has announced plans to enhance the development and use of cloud in Thailand in 2013.
- The Ministry of Education Technology Master plan includes five strategies designed to improve the use of technology in learning and improve students' access to digital content.

GCLOUD AND GICT USE
- Government Cloud Service by the EGA has been in operation since 2012 with more than 300 apps running. All mobile apps developed by government ministries are to be gathered under one portal (apps.go.th) which will be officially launched in mid-2014.
- The Electronic Transactions Development Agency (ETDA) is considering implementing an e-court with the hope of promoting economic growth.
- The Ministry of Information and Communication Technology (MICT), EGA and Software Industry Promotion Agency (SIPA) have launched three software services on G-cloud under the G-SaaS initiative; the EGA has launched an electronic correspondence management system on G-cloud in order to improve the system's interoperability standard among government agencies.
- The Ministry of Labour (MOL) has established a "National Data Centre for Labour" to integrate data from relevant agencies within the MOL.

CLOUD ECOSYSTEM DEVELOPMENTS
- MICT has launched a free WiFi project to promote free access to over 300,000 points all over Thailand, to promote the use of the Internet in public areas, government offices, and designated educational institutions. MICT's partners include TOT, CAT, AIS, DTAC, True, #BB and EGAT.

RECOMMENDATIONS
The ICT and cloud development in Thailand does not look promising, as the current political gridlock continues to grind the country's economic gears to a near-standstill. Regaining the international community's trust in its regulatory stability is expected to be a major shortcoming for Thailand's cloud computing industry, as risk-averse investors stay away.

CRI 2014 PERFORMANCE
Fell from CRI 2012's 13th placement

Vietnam has considerable improvement to make before cloud providers will invest and host within its borders. It featured bottom overall in four parameters: Business Sophistication, Data Privacy, Freedom of Information Access and IP protection. In a region which is becoming increasingly competitive, Vietnam has significant challenges, not least among them the progress that is being made in other ASEAN countries to become more cloud friendly.

RECENT GOVERNMENT LEGISLATION
- Vietnam has established a National Committee for Information Technology in Jan 2014, chaired by Prime Minister Nguyen Tan Dung.
- Vietnam enacted the Decree on Management, Provision, and Use of Internet Services and Information Content Online (Decree 72) in Sep 2013, which supervises the provision, use of Internet services and online data. The controversial law is widely viewed as a form of Internet censorship.
- A draft law on Information Security was released in Jul 2013 for comments.

GCLOUD AND GICT USE
- Vietnam has formed a committee on e-Gov in Aug 2013.
- Ministry of Communications released the Vietnam ICT White Book 2013, supplying information on ICT infrastructure, IT, post and telecoms, IT training and safety.

CLOUD ECOSYSTEM DEVELOPMENTS
- Danang has started on a USD270 million development on its IT Park, and has been working with IBM via its Smarter Cities effort.
- The Ministry of Science and Technology is launching its Silicon Valley project (www.siliconvalley.com.vn) with a USD400,000 investment, which will be allocated toward incubation, acceleration, seed funding, and eventual exits. The project is aimed at creating an ecosystem for technology entrepreneurship and stimulate growth for start-ups in Vietnam.
- Free WiFi networks have been deployed in Hoi An, Danang, Ha Long, Hue and Haiphong.
- Wildly successful Flappy Bird app developed but shut down; suggests a hostile environment which penalises rather than celebrates success.
- Local companies which have launched cloud services include Lac Viet for resource management and planning, and Fast Software, which launched their cloud-based accounting service in 2013.

RECOMMENDATIONS
The rollout of fast broadband networks and free WiFi in cities like Hoi An, Danang, Ha Long, Hue and Haiphong could stimulate demand for cloud services. The government should also focus its attention on building up a more pro-business legal environment and, in particular, strengthen the protection for intellectual property and personal data.

V. Conclusions and Looking Ahead

This is the third year which the Cloud Readiness Index has been produced, and the ACCA has seen a steady increase in interest by government policymakers and regulators. We are anticipating a seismic data revolution once information access in Asia becomes universally cheap, powerful, and available. We believe the knowledge economy and cloud computing is the next great "leveller" for the region, poised to help accelerate the momentum around trade and economic integration in Asia.

Drawing up a coherent "cloud first" strategy that sets clear priorities for cloud readiness and technology development would require the combined effort of multiple parties – the "3P sectors" of the public, private, and people sectors. The CRI is the ACCA's sustained effort to track relative developments in the factors which contribute to cloud computing – such as data privacy, infrastructural developments, freedom of information, and the sustainability and stability of the power grid – are offered as a starting point by which more in-depth discussions can be structured around.

The ACCA's mandate is to accelerate the development of cloud computing across the region through thought leadership, education and training, dialogue and discussion, and we celebrate the improvements that have been made in Asia's overall cloud readiness. As a member-driven trade association, we represent the voice of the cloud computing industry and ecosystem, and offer a platform by which emerging issues in the technology sphere can be aired and deliberated.

We welcome discussions with government agencies, businesses, and other associations, who would work to improve these conditions for cloud uptake in the region. Should this resonate with you, we look forward to having such a conversation with you. Please contact us at info@asiacloudcomputing.org, or visit http://www.asiacloudcomputing.org to find out more: We look forward to hearing from you.

For more information on the Asia Cloud Computing Association (ACCA) or the ACCA's Cloud Readiness Index ©, please visit http://www.asiacloudcomputing.org or email info@asiacloudcomputing.org

The ACCA was established in 2010 as an industry trade association that represents the stakeholders of the cloud computing ecosystem in Asia, working to ensure that the interests of the cloud computing community are effectively represented in the pubic policy debate. The ACCA's primary mission is the accelerate the growth of the cloud market in Asia, where we promote the growth and development of cloud computing in Asia Pacific through dialogue, training and public education. We also provide a platform for members to discuss implementation and growth strategies, share ideas and establish policies and best practices relating to the cloud computing ecosystem.

Visit us at www.asiacloudcomputing.org or email us at info@asiacloudcomputing.org.