

Overview of Cloud Computing in India

NIST Standards in Trade Workshop with India

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Opportunities in the Cloud

Cloud Market Opportunity

\$ 111 bn	\$ 131 bn	\$148.8 bn	\$ 650-700 bn	India Global
\$ 326 mn	\$ 443 mn	\$685 mn	\$ 15-18 bn	
2012	2013	2014	2020	

New Public Cloud Spending

2013 - 2016

Largest region	Highest growth
North America: 59%	Asia/Pacific <i>Indonesia & India</i>
Western Europe: 24%	Greater China & Latin America

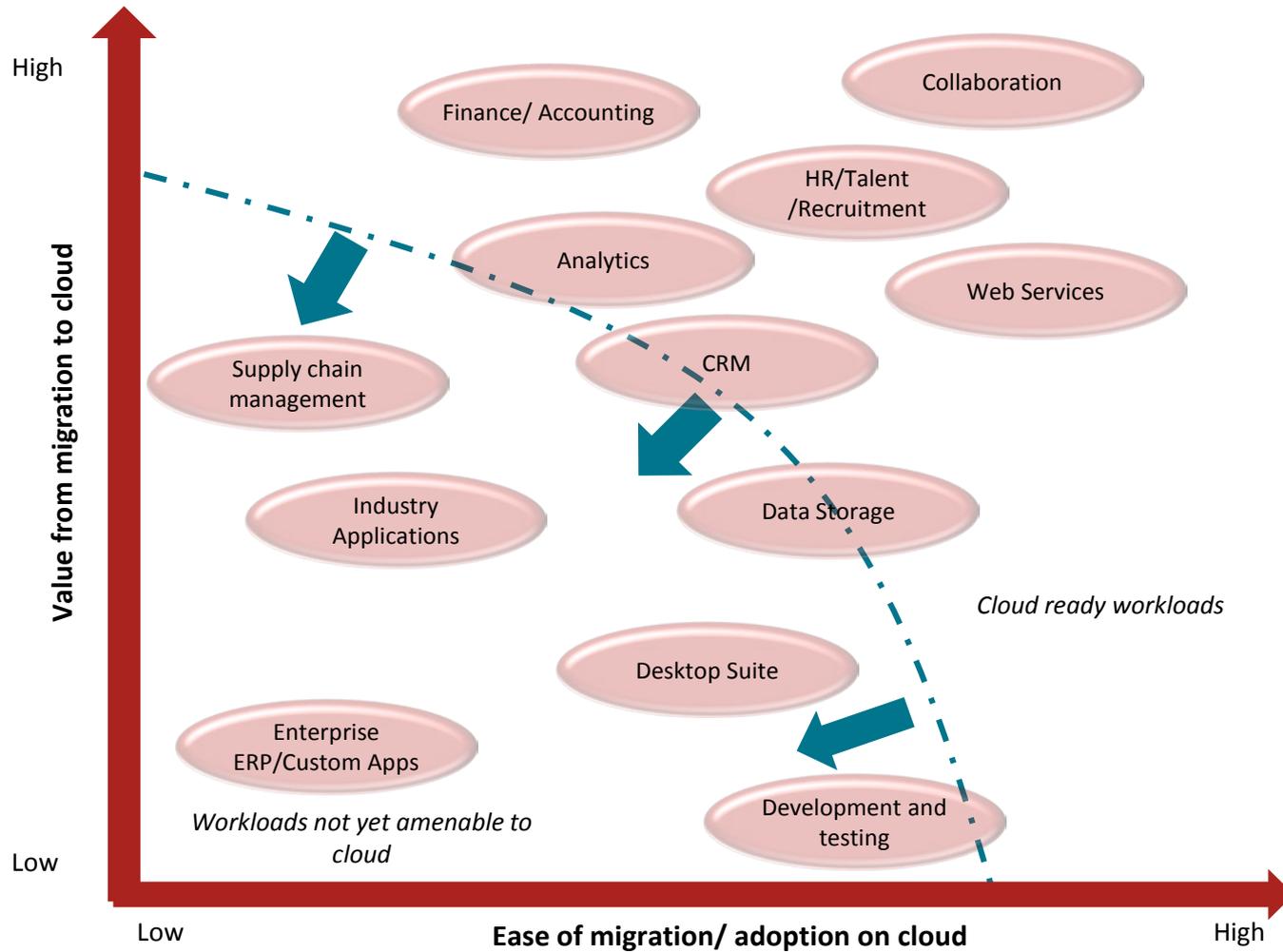
Worldwide IT Spending

Expected rise in 2013

↑ Globally	2.0%
↑ India	7.7%

\$3.6 tn	\$3.7 tn	India Global
\$66.4 bn	\$71.5 bn	
2012	2013	

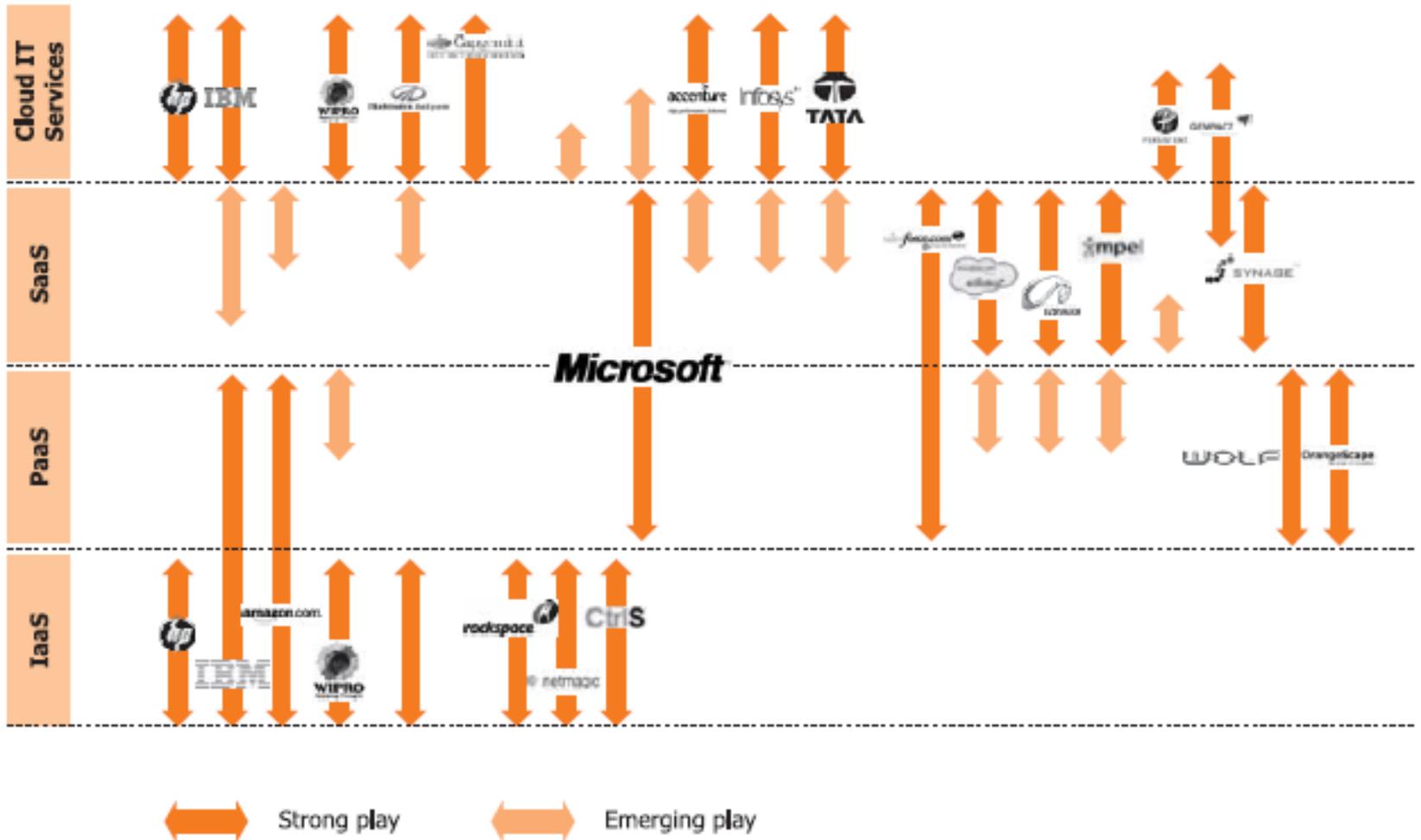
What is moving to the Cloud?



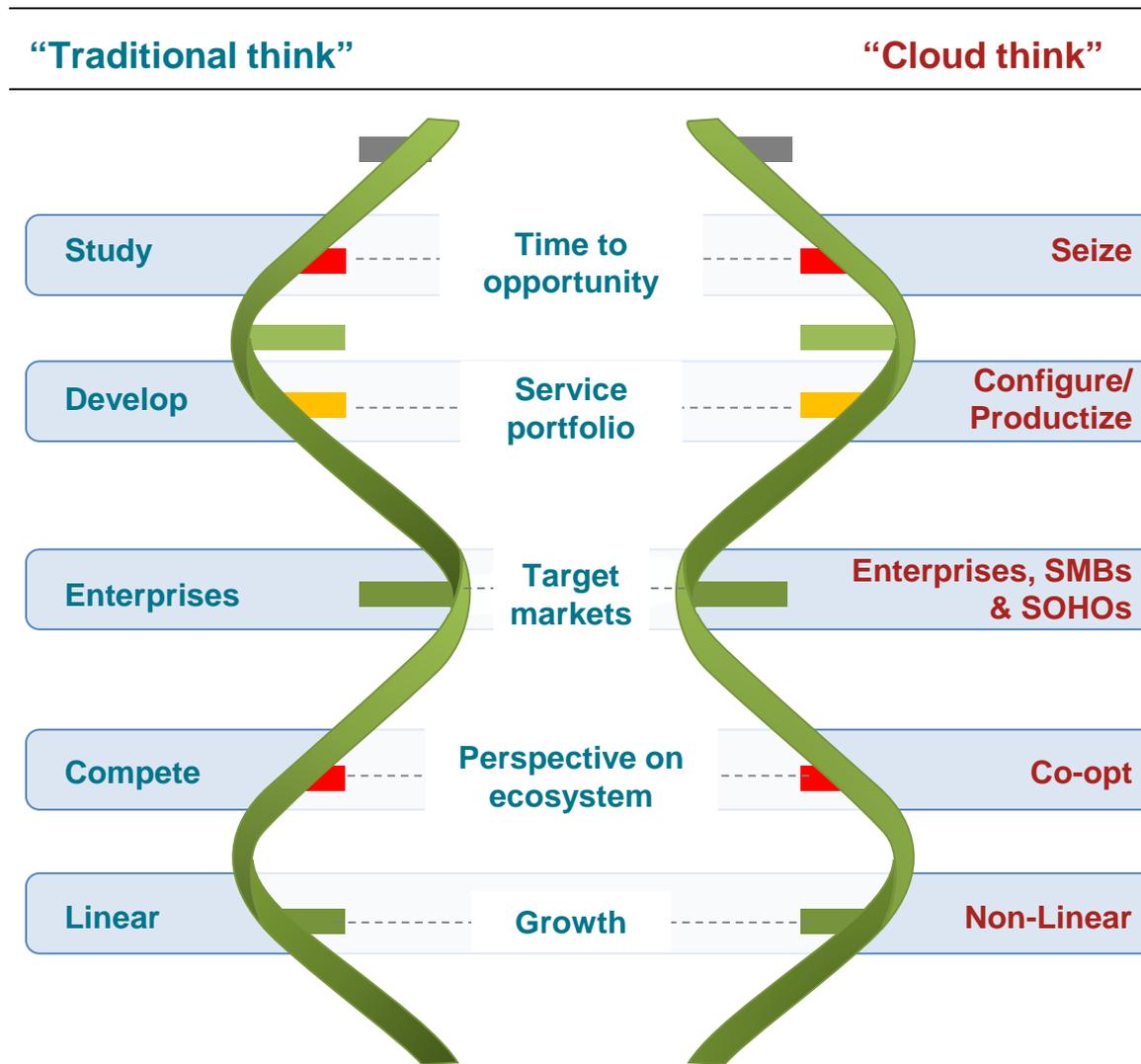
Source: NASSCOM-Deloitte Report 'Deconstructing the Cloud'

Cloud Capabilities

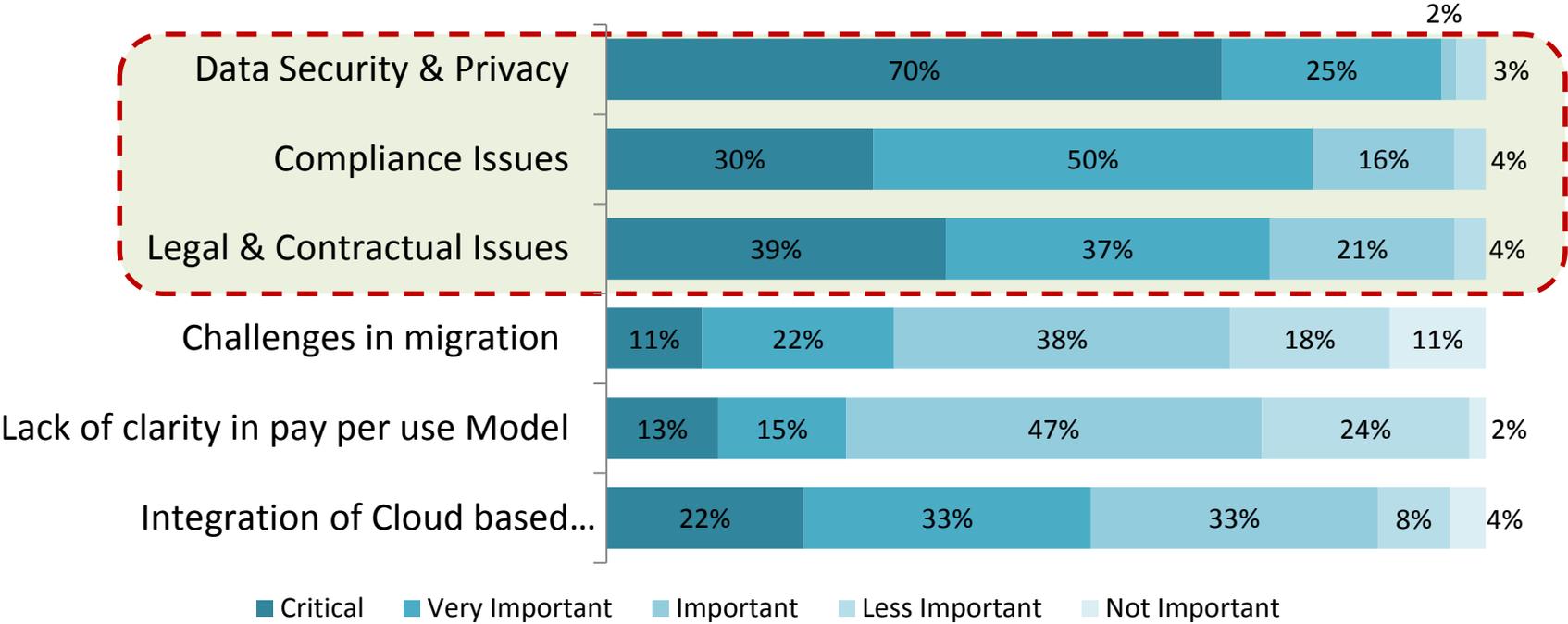
ILLUSTRATIVE



IT Service Providers to re-invent their thinking



Key Challenges and Concerns in Adoption



Source: DSCI-Wipro Study on Data Protection Challenges in Cloud Computing – An Indian Perspective

Policy and Legal Issues in the Cloud

Location of data, systems
& servers

Applicability &
interpretation of laws

Provision for transfer of data

Accountability & liability of
user organizations

Obligations of cloud service
providers

Security and privacy standards
and practices

Cyber Crime investigation
measures / Cyber forensics

Surveillance & Interception
requirements

Use of specific technology (like
encryption)

Measures for international
cooperation

The above issues would have different perspectives depending on B2B versus B2C cloud service

Impact of Restrictions on Data Transfers

Source: Nasscom Strategic Review, 2011

Share of Indian IT/BPM industry

European sourcing market (excl. UK)	24 %
Global sourcing market	55 %

Source: Nasscom Strategic Review, 2011

	Offshored (Global)	Offshored (Germanic Region)
IT outsourcing spend	26.6%	8-12%
BPM spend	24.5%	8-12%

India seeks 'Data Secure Nation' status, more Hi-end business from European Union

Amiti Sen & Harsimran Julka, ET Bureau Apr 16, 2012, 04.23AM IST

Tags: [telemedicine](#) | [Nasscom](#) | [Genpact](#) | [European Union](#) | [E](#)

NEW DELHI: New Delhi has demanded that the [European Union](#) lift restrictions on flow of sophisticated outsourcing business to India by designating it as a data secure country.

India protests European Union study of data laws

Amiti Sen, ET Bureau Jul 9, 2012, 04.40AM IST

Commerce and industry minister [Anand Sharma](#) had in a recent meeting with EU trade commissioner Karel De Gucht stressed India be given the status of a data secure country before the two sides sign the FTA.



Lawful Access in the Cloud

Jurisdictional Issues with respect to lawful access to data:

- Location of computer resource
- Service provided in the country, irrespective of location of computer resource
- Breach of National Security or Terrorist Act or involves citizen(s)
- Legal framework in requesting and requested country
- Contractual terms / Terms of service
- Instruments: MLAT, Budapest convention

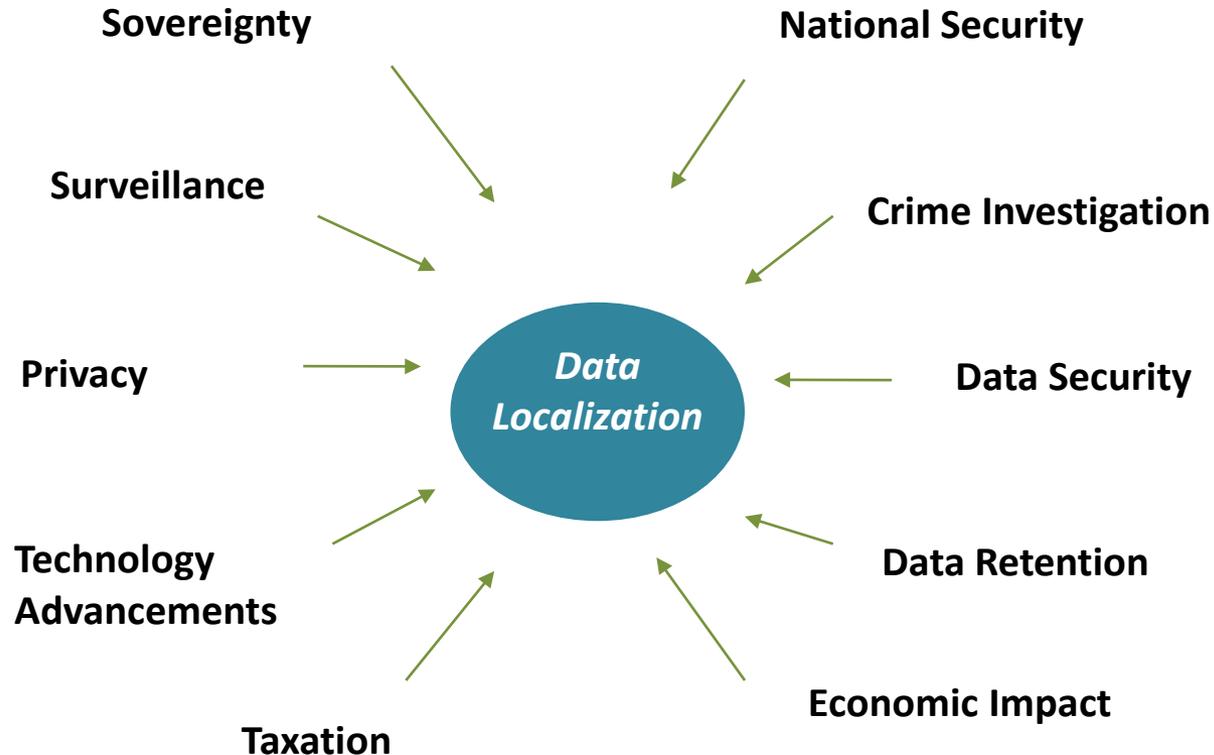
Indian Regulatory Regime & Implications for Cloud

- Sensitive Personal Information and Reasonable Security Practices (Sec 43A)
- Conditions for transferring sensitive personal information (Rule 7, Sec 43A) & DoT Guidelines
- Interception, monitoring, decryption (Sec 69, 69 A, 69B)
- Preservation and retention of information (Sec 67C)
- Encryption Policy (Sec 84A) & Limitation on encryption as per DoT Guidelines
- Intermediaries & associated liabilities (Sec 79)

Specific Issues based on Industry Consultations

- **Data Classification Technology** – data segregation based on defined parameters – to help classify data as lawful or unlawful
- **Cloud Forensics** - gap between the demand and supply of required set of skills and technology in cloud forensics is significant. LEAs need to be trained.
- **Digital Certificates** – debate on non-recognition of the root certificates authorized by the Indian CCA in imported software products. Jurisdictional issues also discussed.
- **Encryption** - variance in the legal and regulatory requirements | sensitive dual use technologies - Wassenaar Arrangement – India not a member – impact on cloud services?
- **Export and Import Controls maintained by the US** – restrictions on export of state-of-the-art technology through Export Administration Regulations (EAR) | Trade Agreement Act (TAA) list – India not there | Impact on cloud services to & from India?

Data Localization



Findings from recent New America's Open Technology Institute Report – "Surveillance Costs: The NSA's Impact on the Economy, Internet Freedom & Cybersecurity":

- **Decline in global trust** - American companies that offer cloud computing and webhosting services are experiencing the most acute economic fallout
- The PRISM program is predicted to **cost the cloud computing industry from \$22 to \$180 billion** over the next three years
- **"NSA-proof" or "safer" alternatives** to American-made goods is an increasingly viable strategy for foreign companies

Government Policies & Cloud Standards

Policies

- Cloud First Policy, USA
- An integrated Cloud Computing Strategy for the European Union
- Cloud Computing Strategic Direction Paper, Australia
- G-Cloud Strategy, UK
- Smart Cloud Strategy, Japan

GI Cloud Initiative, India (Meghraj)

WG setup by GoI comprising government and industry officials

Standards, Frameworks & Guidelines

- Cloud Security Alliance – STAR certification
- Federal Risk and Authorization Management Program (FedRAMP)
- NIST – SP 500-291, 500-299, 800-144, etc
- PCI-DSS – cloud specific guidelines
- ITU – T X. 1601 – Security Framework for cloud
- ISO/IEC 27017, 27018, 27036, Part 4
- ETSI – analysis of standardization requirements

Bilateral

US-EU & US-Japan Trade Principles for ICT services – Cross border data flows, local infrastructure

India-EU trade negotiations for getting India declared as a country with ‘adequate level of protection’

Treaty

Budapest **Convention on Cybercrime** for International Cooperation



DSCI Policy Recommendations

- Establishment of **assurance mechanisms** (security standards, assessments & certification) for enabling organizations including government agencies and SMEs to adopt Cloud
- Exploring the possibility of **setting up 'Cloud Zones'** for hosting global Cloud hubs, on the lines of SEZs, where there can be assurance of infrastructural elements (power, water, etc), strengthened security, possible relaxation in lawful interception and surveillance, among others
- **Issuance of clarification of existing laws and policies** (such as relevant provisions of IT Act e.g. Intermediaries) w.r.t. Cloud; Identification of legal issues, not presently covered by the existing legal framework, and creation of appropriate provisions for addressing the same; issuance of **encryption policy**
- **Promoting international trans-border data flows** through appropriate domestic policy instruments, multi-lateral / bi-lateral trade agreements; e.g. Data protection related issues in India-EU FTA negotiations
- Participating in **international efforts that will impact Cloud** – policies, standards & frameworks (e.g. ISO SC 27) , cyber crimes & police investigations (e.g. Budapest convention, MLATs), cyber security & privacy (Global Privacy Enforcement Network), etc
- Identification of **government commodity services**, establishment of **governance & management structure** for Cloud migration, creation of **resource pool** for guidance, reform of **procurement policies; SLA, contract & RFP standardization, empanelment of Cloud service providers, service / vendor catalogue**

Thank You