AGENDA
Bureau of Indian Standards
Electronics and Information Technology Department

11th MEETING OF CLOUD COMPUTING, IT & DATA CENTRES, LITD 31
(Face-to-face & Virtual Mode)

Venue:	BIS, Bangalore Branch Office, **Bengaluru**, Karnataka, India
Date:	13th December 2024
Time:	1030 – 1600hrs
Meeting Link	https://bismanak.webex.com/bismanak/j.php?MTID=mfadc1bca85f421643f6cfd0a7f89d605
Chairperson:	Prof G. Siva Kumar (IIT Bombay, Mumbai)
Member Secretary:	Mr Priyanshu Sharma (Scientist-C, LITD)

ITEM 0: WELCOME ADDRESS

0.1 Welcome by Member Secretary.
0.2 Opening Remarks by the Chairperson.

ITEM 1: FORMAL CONFIRMATION OF THE MINUTES OF LAST MEETING

1.1 The minutes of the last committee meeting held on 4.07.2024, were circulated on 16.07.2024. No comments have been received on the minutes. The committee may formally confirm the minutes.

The committee may formally confirm the minutes

ITEM 2: SCOPE AND COMPOSITION OF LITD 31

2.1 **Scope:** To establish Indian standards in the field of

a) Cloud Computing and Distributed Platforms including Foundational concepts and technologies, Operational issues, and Interactions among Cloud Computing systems and with other distributed systems

b) Assessment methods, design practices, operation and management aspects to support resource efficiency, resilience and environmental sustainability for and by information, data centres and other facilities and infrastructure necessary for service provisioning

The committee may please note.

2.2 LITD 31 is the national mirror committee for the following committees:

a) ISO/IEC/JTC1 / SC 38 - Cloud computing and distributed platforms - (P)
b) ISO/IEC/JTC1 / SC 39 - Sustainability, IT and data centres - (P)

The committee may please note.

2.3 The composition of "Cloud Computing, IT & Data Centres Sectional Committee LITD 31 and its panels" is given in **Annex -1.** The following co-option requests have been received for membership to LITD 31 committee:

SI. No.	Name	Organization	Remarks
1.	Dr Prathviraj N	Manipal academy of higher education, Manipal,	The committee reviewed the co-option request during the last meeting and decided to take it up in this meeting.
2.	Dr Smita Agrawal	Institute of Technology, Nirma University, Ahmedabad	The committee reviewed the co-option during the last meeting and decided to take it up in this meeting.
3.	Mr Rishabh Dangwal	KPMG	The committee reviewed the co-option during the last meeting and decided to take it up in this meeting.
4.	Dr Sudhanshu Maurya	Symbiosis International University, Pune	The committee reviewed the co-option during the last meeting and decided to take it up in this meeting.
5.	Mr Arpan Kumar Das	ECPL	The committee reviewed the co-option during the last meeting and decided to take it up in this meeting.
6.	Mr Abhishek Dhiman	Acumen Security (2020)	The committee reviewed the co-option during the last meeting and decided to take it up in this meeting.
7.	Shri R Muralidaran	HCL, Noida	During the last meeting, the committee decided to co-opt the organization as a member of LITD 31, subject to the condition that the organization authorization letter provided by the expert. Consequently, we requested for the authorization letter but have not received any communication.
8.	Mr Rahul Ingle	Veermata Jijabai Technological Institute, Mumbai	Received on Sep 13, 2024. CV enclosed in **Annexure-7**
9.	Mr Ashish Kumar	Larsen and Toubro Limited, Chennai	Received on Sep 16, 2020. CV enclosed in **Annexure-7**
10.	Mr Avaneesh Kumar Vats	Techno Electric and Engineering Co Ltd	Received on Aug 05, 2024. CV enclosed in **Annexure-7**

The committee may deliberate and decide.

ITEM 3: PROGRAM OF WORK OF LITD 31

3.1 The program of work of LITD 31 is given in **Annexure 3.**

The committee may note.

ITEM 4: UPDATES FROM PANELS UNDER LITD 31

4.1 Panel 2 "Data Centre"

LITD 31: Panel 3, Panel was constituted by the committee in the 8th meeting of LITD 31 held on 30.10.2023. Composition of the panel is placed in **Annexure-1.** As the data centre field evolves with ongoing standards development under ISO/IEC JTC 1/SC 39 ("Sustainability, IT and data centres"), it is critical to engage in discussions on key topics, including the following:

- Developing a Code of Practice (or technical report) focused on sustainability in data centres, addressing an increasingly vital area.
- Identifying new work items for standards that cater to emerging needs.

- Reviewing existing Indian and ISO/IEC standards related to data centres to ensure their relevance and applicability.

Panel discussions will be essential to guide future standardization efforts. Further, the current Panel Convenor has requested to be temporarily relieved of his duties as the Convenor due to health reasons and with a commitment to re-Convene the Panel in the near future once his health allows him to do so.

The Secretariat would also like to place on record his commitment and valuable guidance in his leadership role as the Convenor of Panel 2 under LITD 31. The Secretariat is of utmost appreciation for Dr G.R. Gangadharan for the above and would like to thank him along with wishing him a speedy recovery.

It is also proposed to reconvene the Panel meetings and initiate work on these priorities, along with identification of a suitable expert as the Panel Convenor. The leadership and guidance will be instrumental in achieving the Panel's objectives.

4.2 Panel 3 "Cloud Computing"

LITD 31: Panel 3, Panel was constituted by the committee in the 9th meeting of LITD 31 held on 11.03.2024. Composition of the panel is placed in **Annexure-1**. Draft Terms of Reference for the panel is placed at **Annexure-2**.

Panel 3 had 4 meetings since the last meeting of LITD 31.

- 23rd July 2024
- 30th July 2024
- 7th Aug 2024
- 22nd Aug 2024

The panel Convenor may provide an update

ITEM: 5 DOCUMENTS DUE FOR VOTING

5.1 Following documents of SC 38 and SC 39 have been circulated for inputs of committee members. The last date to provide inputs is also mentioned below. Members are requested to provide their inputs before the due date to the BIS secretariat:

SI. No	Reference No	Title	Due Date for Voting
1.	ISO/IEC NP 10822-2	Cloud computing — Multi-cloud management — Part 2: Identity management	10/12/2024
2.	ISO/IEC PWI 22678	Information technology — Cloud computing — Guidance for policy development	10/12/2024
3.	SC 38 N2912 Text for CIB WD 20996	Text for CIB WD 20996	11/12/2024
4.	ISO/IEC CD 30134-2.2	Information technology — Data centres — Key performance indicators — Part 2: Power usage effectiveness (PUE)	04/01/2025
5.	ISO/IEC CD 20151	Information technology — Cloud computing and distributed platforms — Dataspace concepts and characteristics	20/01/2025
6.	ISO/IEC NP TS 22237-10	Information technology — Data centre facilities and infrastructures — Part 10:	05/02/2025

		Maturity model for energy management and environmental sustainability	
7.	ISO/IEC CD 22237-5.3	Information technology — Data centre facilities and infrastructures — Part 5: Telecommunications cabling infrastructure	01/03/2025

ITEM 6 INTERNATIONAL STANDARDIZATION ACTIVITIES

6.1 ISO/IEC/JTC1 / SC 38 "Cloud computing and distributed platforms" and ISO/IEC/JTC1 / SC 39 "Sustainability, IT and data centres" deals with standardization in the field of Cloud Computing and data centres. India is a participating m ember (P Member) of JTC 1/SC 38 and SC 39 and has the obligation to vote and send response on all the documents emanating from this subcommittee. Details of the members nominated in the working groups of the committees is placed in **Annexure 4.**

The committee may review the list of Indian experts registered in the given ISO/IEC WGs

6.2 Debriefing from 30th meeting of ISO/IEC JTC 1/ SC 38 held during 09th -13th September 2024

30th plenary meeting of ISO/IEC JTC 1/SC 38 was held in in London, United Kingdom 09th -13th September 2024. Indian Delegation comprising of the following members attended the meeting:

1. Shri Srinivasan Ramakrishnan (In personal capacity) - SC 38 plenary and WG 3 meetings in person
2. Shri Bijoyendra Roychowdhuri (In personal capacity) - SC 38 plenary and WG 5 meetings in person
3. Shri Kshitij Kushagra (Meity) - SC 38 plenary WG 3 & WG 5 meetings in person
4. Shri Ignesius Thambyraj (CCICI) - SC 38 plenary and WG 3 meetings online
5. Shri Madhav Chablani (CSA) - SC 38 plenary and WG 5 online
6. Shri Priyanshu Sharma (BIS) - SC 38 plenary and WG 3 & WG 5 in person

Meeting report for the Plenary, advisory group, working group meetings is placed as **Annexure-8.**

The committee may kindly review and accept

6.3 ISO/IEC projects under the leadership of Indian experts

- ISO/IEC 10822 series [Cloud computing — Multi-cloud management] – Project Leader: Mr. Bijoyendra Roychowdhuri
- ISO/IEC AWI 11034: "Information technology — Cloud computing — Trustworthiness in cloud computing - Project Leader: Mr. Shri Srinivasan Ramakrishnan & Co-editor: Mr Kshitij Kushagra, MeitY
- Revision of ISO/IEC DTR 23951: "Information technology — Cloud computing — Guidance for using the cloud SLA metric model" – Project Leader: Shri Ignesius Ernest Thambyraj
- Amendments to ISO/IEC 19086 Series – Project Leader: Shri Ignesius Ernest Thambyraj

6.4 Upcoming meetings of ISO/IEC

6.4.1 31st meeting of ISO/IEC JTC 1/ SC 38 and its working groups:

31st plenary and working group meeting is scheduled to held at Berlin, Germany during 17th March to 21st March 2025. The initial draft agenda for SC 38 Plenary meeting is given in **Annexure-6.**

Members are encouraged to consider participation in the plenary meeting as well as the working group meetings of ISO/IEC JTC 1/ SC 38.

The committee may finalize the Indian delegation for these meetings

6.4.2 12th meeting of ISO/IEC JTC 1/ SC 39 and its working groups:

12th plenary and working group meeting is scheduled to held at Seoul, South Korea in May 2025.

Members are encouraged to consider participation in the plenary meeting as well as the working group meetings of ISO/IEC JTC 1/ SC 39.

6.5 Nomination of experts for ISO/IEC Projects

As per the latest BIS policy, members interested in participating working group of ISO/IEC need to take up ISO/IEC projects (max 2) which are at NP/CD/CDV stages at ISO/IEC for review and providing country specific inputs. A list of projects presently under formulation at ISO/IEC is provided below:

- Information technology — Cloud computing and distributed platforms — Dataspace concepts and characteristics
- Information technology — Cloud computing and distributed platforms — Interoperability and portability – Revision
- Information technology — Cloud computing and distributed platforms — Networking in cloud computing and edge computing – Revision
- Information technology — Cloud computing — Trustworthiness in cloud computing Cloud computing — Multi-cloud management
- Information technology — Data centres key performance indicators — Part 9: Water usage effectiveness (WUE)

The committee may deliberate and nominate relevant Indian experts in these projects.

6.6 STANDARDS OF ISO/IEC JTC 1/SC 38 AND ISO/IEC JTC 1/SC 39

6.6.1 A list of standards published by ISO/IEC JTC 1/SC 38 and ISO/IEC JTC 1/SC 39 along with harmonized status of standards published by LITD 31 are given in **Annexure-5.**

The committee may examine and identify the standards required to be adopted as national standards

ITEM 7 NEW WORK ITEM PROPOSAL

7.1 Ministry of Electronics and IT (MeitY) has identified key areas in E&IT where the formulation and/or revision of standards is essential. List of such areas related to LITD 31 is as follows:

S. No.	Domain	Sub Domain	Indian Standards exist (Yes/ No)	Name of Indian Standards (if Yes)	International Standards exist (Yes/No)	Name of International Standards (if Yes)	Remarks (including approval status of Indian Standards)	Levels of Priority (High/Medium/Low)	Concerned BIS Technical Department
1.	Cloud Computing/ DigiGov	Information Security framework for organizations using (or considering)	No	-	Yes	ISO/IEC 27017		Medium	LITD 17

		Cloud services							
2.	Cloud Computing/ DigiGov	Protecting Personal Identifiable Information in Cloud Storage	No	-	Yes	ISO/IEC 27018		Medium	LITD 17
3.	Cloud Computing/ DigiGov	Minimum requirements for a Data Center Infrastructure	No	-	Yes	TIA-942/ UPTIME		High	LITD 31
4.	Cloud Computing/ DigiGov	Multi Cloud Interoperability and Portability	No	-	Yes	ISO/IEC 19941		High	LITD 31

The committee may deliberate and decide the way forward.

ITEM 8 RESEARCH AND DEVELOPMENT PROJECTS FOR FORMULATION AND REVIEW OF INDIAN STANDARDS

8.1 As communicated through email correspondence. The following two R&D projects were awarded by BIS based on the ToRs finalized by LITD 31 committee. The committee also approved an extension for the completion of the two R&D projects upto 30 November 2024, based on the request received from the corresponding project leads. Further, the inputs received from members of the committee on the Mid-term report submitted by the proposer were also communicated by the Member Secretary to the Project leads for suitable incorporation in the reports.

The respective Project leads may present the work they have done during the course of the R&D projects:

- **Use-case testing for Cloud interoperability and portability** – Dr Mohit Kumar, NIT Jalandhar
- **Study of Data Centre infrastructure in India -** Dr Rangarajan Saravanan, Vel Tech Multi Tech Chennai

The committee may review and provide suggestions

ITEM 8 DATE AND PLACE FOR THE NEXT MEETING

ITEM 9 ANY OTHER BUSINESS

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ANNEXURE 1

Composition and Attendance

S. No.	Organization	Member Name	Role	8th Meeting	9th Meeting	10th Meeting	Total
1.	Indian Institute of Technology Bombay, Mumbai	Prof G. Siva Kumar	C	Y	Y	Y	3/3
2.	Amazon India, Bengaluru	Shri Narayana Birakayala	P	Y	Y	N	2/3
3.	Centre for Development of Advanced Computing, Pune	Shri Kailash	P	Y	Y	Y	3/3
		Shri Chandrakant Dhutadmal	A				
4.	Clearing Corporation of India Ltd, Mumbai	Shri Santosh Bhalerao	P	Y	N	N	1/3
5.	Cloud Computing Innovation Council of India, Bengaluru	Shri Ignesius Ernest Thambyraj	P	Y	Y	Y	3/3
		Dr Dinkar Sitaram	A				
6.	ESDS Software Solution Limited, Bengaluru	Shri Rishi Jadhav	P	Y	Y	Y	3/3
		Shri Kalpesh Parikh	P				
7.	Cloud Security Alliance, Noida, Uttar Pradesh	Shri Madhav Chablani	P	-	-	Y	1/1
8.	Google India Private Limited, Bengaluru	Shri Manoj Kumar	P	-	-	Y	1/1
9.	International Institute of Information Technology, Bangalore	Prof ShrishaRao	P	Y	Y	Y	3/3
		Shri Vinu Venugopal	A				
10.	Microsoft Corporation (India) Private Limited, Gurgaon	Shri Ashutosh Chadha	P	Y	Y	Y	3/3
		Shri Rajesh Ranjan	A				
11.	Ministry of Electronics and Information Technology, New Delhi	Shri Kshitij Kushagra	P	Y	Y	Y	3/3
		Shri Sanjay Koul	A				
12.	National Informatics Centre, New Delhi	Shri Ashok Kaul	P	Y	N	N	1/3
		Shri Mohd Sibli Sirajee	A				
13.	National Institute of Technology, Tiruchirapalli	Dr. G.R. Gangadharan	P	Y	Y	Y	3/3
14.	Oracle India Private Limited, New Delhi	Shri Bharat Sondhi	A	Y	Y	N	2/3
		Shri Angiah Santhanaswamy	P				

15.	Standardization Testing and Quality Certification (STQC)	Shri NakulAgarwal	P	Y	N	N	1/3
		Shri Sunil Kumar Yadav	A				
		Praveen Kumar Singh	A				
16.	Telecommunications Standards Development Society India, New Delhi	Shri Vijay Madan	P	Y	N	N	1/3
		Shri Satish Jamadagni	A				
		Shri Vishnu	A				
		Shri Pritam Bishnoi	A				
17.	United Nations Children's Fund, New Delhi	Shri Manish Wasuja	P	Y	N	Y	2/3
18.	In Personal Capacity	Dr Gargi Keeni	-	Y	N	Y	
19.	In Personal Capacity	Shri Bijoyendra Roy chowdhuri	-	Y	Y	Y	3/3
20.	In Personal Capacity	Shri Srinivasan Ramakrishnan	-	Y	Y	Y	3/3

COMPOSITION OF LITD 31: PANEL 2

S.No.	Organization	Member Name
1.	National Institute of Technology, Tiruchirapalli	Shri Dr. G.R. Gangadharan (Convenor)
2.	Centre for Development of Advanced Computing, Pune	Shri Kailash
3.	Centre for Development of Advanced Computing, Pune	Shri Vinodh Kumar M
4.	Clearing Corporation of India Ltd, Mumbai	Shri Santosh Bhalerao
5.	Cloud Computing Innovation Council of India, Bengaluru	Shri Ignesius Ernest Thambyraj
6.	ESDS Software Solution Limited, Bengaluru	Shri Kalpesh Parikh
7.	Ministry of Information and Technology, New Delhi	Shri Sanjay Koul
8.	In Personal Capacity	Shri Shri Srinivasan Ramakrishnan
9.	Cloud Security Alliance, Noida, Uttar Pradesh	Shri Madhav Chablani

COMPOSITION OF PANEL-3 OF LITD 31

S.No.	Organization	Member Name
1.	Cloud Computing Innovation Council of India, Bengaluru	Dr. Dinkar Sitaram (Convenor)
2.	Ministry of Electronics and Information Technology, New Delhi	Shri Kshitij Kushagra
3.	Ministry of Electronics and Information Technology, New Delhi	Shri Sanket Bhondve
4.	In Personal Capacity	Shri Bijoyendra Roy Chowdhuri
5.	In Personal Capacity	Shri Srinivasan Ramakrishnan

ANNEXURE 2

LITD 31: Panel 2 – Data Centres Panel

The Data Centre Panel is established to comprehensively assess, enhance, and develop standards pertaining to data centers in India. The Panel will actively monitor and align its work with the developments and standards set by the ISO/IEC JTC 1/SC 39 committee.
The primary objectives of the Panel are as follows:

a) Review and Evaluate Existing Standards: Conduct a thorough examination of current Data center standards. Identify gaps, redundancies, and areas for improvement in the existing standards.

b) Develop and Enhance Standards: Propose updates, amendments, and new standards to address identified gaps. Collaborate with stakeholders to ensure relevance, practicality, and effectiveness.

c) Alignment with ISO/IEC JTC 1/SC 39: Regularly monitor the work undertaken by the ISO/IEC JTC 1/SC 39 committee. Align Indian data center standards with international best practices and advancements and vice-versa.

d) Assess Ongoing Requirements: Stay abreast of technological advancements and evolving needs in the field of data centers. Periodically assess the ongoing requirements of Indian data centers.

The Data Centre Panel will play a pivotal role in ensuring the adequacy, effectiveness, and international alignment of standards governing data centers in India. This initiative aims to promote innovation, sustainability, and resilience in the rapidly evolving field of data management and storage.

LITD 31: Panel 3 – Cloud Computing Panel

(Draft Terms of reference)

This panel is constituted to cater to the requirements in the domain of cloud computing aspects of the committee. The primary objectives of the Panel are as follows:

Review of Standards Published by ISO/IEC JTC 1/SC 38:

a. Conduct an in-depth review of the standards published by ISO/IEC Joint Technical Committee 1/Subcommittee 38 (JTC 1/SC 38) on Cloud Computing and Distributed Platforms – from time to time, on a regular basis.
b. Assess the suitability of these international standards for adoption as Indian Standards, taking into account the specific needs and conditions prevalent in India.
c. Identify any gaps in the current standards and propose modifications or enhancements to better align with Indian requirements.

2. **Updation of catalogue of Cloud computing related Indian standards:**
   a. Identify the key stakeholders, ongoing initiatives, and existing standards being used within the country.

b. Develop India specific standards for cloud computing and related services in consultation with industry and MeitY.
c. Propose a roadmap for the development and adoption of cloud standards that can enhance the operational efficiency, security, and scalability of cloud services in India.
d. Evaluate the gaps and opportunities in the Indian context, focusing on areas such as data sovereignty, security, privacy, and infrastructure readiness.

3. **Active Participation in ISO Standards Development:**
   a. Engage actively in the development of a series of standards on Multi-cloud Interoperability at the ISO level.
   b. Contribute to the writing, editing, and shaping of documents, ensuring that the interests and perspectives of India are well represented.
   c. Foster collaborations with international experts and working groups to stay updated on global trends and advancements in multi-cloud technologies.
   d. Foster collaboration with Indian experts at appropriate times of the ISO standard project development to enable valuable inputs and approaches.
   e. Ensure that the emerging standards on multi-cloud interoperability address key challenges such as data portability, seamless integration, security, and compliance.

4. **Utilizing Available Resources to Position India as a Leader in Cloud Domain:**
   a. Leverage existing research, knowledge, and technological advancements to position India as a global leader in the cloud computing domain.
   b. Promote the adoption and implementation of cloud standards aligned with global best practices, ensuring they cater to the needs of Indian businesses and government.
   c. Foster innovation and collaboration between industry, academia, and research institutions to drive forward-looking initiatives in cloud computing.
   d. Advocate for policy frameworks and incentives that encourage the development and deployment of cloud technologies in India, aiming to create a robust ecosystem that supports startups and established enterprises alike.

5. **Identification of experts in the domain:**
   a. The panel is also tasked with identification of experts from time to time in cloud computing, who would be willing to contribute to the standardization in the domain to ensure continuity of efforts and active persuasion of Indian interests.

ANNEXURE 3

PROGRAM OF WORK

SI. No.	IS No.	TITLE	Reaffirm M-Y	No. of Amds	Eqv.
1.	IS 11713 (Part 1) : 1986	Guide for physical planning of computer complexes: Part 1 layout	June, 2019	-	Indigenous
2.	IS 11713 (Part 1) : 1986	Guide for physical planning of computer complexes: Part 2 safety	June, 2019	-	Indigenous
3.	IS 11713 (Part 1) : 1986	Guide for physical planning of computer complexes: Part 3 Security considerations	June, 2019	-	Indigenous
4.	IS 11713 (Part 1) : 1986	Guide for physical planning of computer complexes: Part 4 services	June, 2019	-	Indigenous
5.	IS/ISO/IEC 17788 : 2014 ISO/IEC 17788 : 2014	Information technology Cloud computing Overview and vocabulary	- (Published in July 2022)	-	Identical under single numbering
6.	IS/ISO/IEC 19944-1 : 2020 ISO/IEC 19944 Part 1:2020	Cloud computing and distributed platforms Data flow data categories and data use Part 1: Fundamentals	- (Published in Aug 2022)	-	Identical under single numbering
7.	IS/ISO/IEC 22123-1 : 2021 ISO/IEC 22123 Part 1:2021	Information technology Cloud computing Part 1: Vocabulary	- (Published in Aug 2022)	-	Identical under single numbering
8.	IS/ISO/IEC 22237-1 : 2021 ISO/IEC 22237-1:2021	Information Technology Data Centre Facilities and Infrastructures Part 1: General Concepts	- (Published in Dec 2023)		Identical under single numbering
9.	IS/ISO/IEC 22237-3 : 2021 ISO/IEC 22237-3:2021	Information Technology Data Centre Facilities and Infrastructures Part 3: Power Distribution	- (Published in Dec 2023)		Identical under single numbering
10.	IS/ISO/IEC 22237-4 : 2021 ISO/IEC 22237-4: 2021	Information Technology Data Centre Facilities and Infrastructures Part 4: Environmental Control	- (Published in Dec 2023)		Identical under single numbering
11.	IS/ISO/IEC 30134-1 : 2016 ISO/IEC 30134-1:2016	Information Technology Data Centers Key Performance Indicators Part 1 Overview and General Requirements	March, 2023	-	Identical under single numbering
12.	IS/ISO/IEC 30134-2 : 2016 ISO/IEC 30134-2 : 2016	Information Technology Data Centres Key Performance Indicators Part 2 Power Usage Effectiveness (PUE)	March, 2023	-	Identical under single numbering
13.	IS/ISO/IEC 30134-3 : 2016 ISO/IEC 30134-3 : 2016	Information Technology Data Centres Key Performance Indicators Part 3 Renewable Energy Factor (REF)	March, 2023	-	Identical under single numbering
14.	IS/ISO/IEC 30134-4 : 2017 ISO/IEC 30134-4 : 2017	Information Technology Data Centres Key Performance Indicators Part 4 IT Equipment Energy Efficiency for Servers (ITEEsv)	March, 2023	-	Identical under single numbering

15.	IS/ISO/IEC 30134-5 : 2017 ISO/IEC 30134-5 : 2017	Information Technology Data Centres Key Performance Indicators Part 5 IT Equipment Utilization for Servers (ITEUsv)	March, 2023	-	Identical under single numbering
16.	IS/ISO/IEC 30134-6 : 2021 ISO/IEC 30134-6:2021	Information Technology Data Centres Key Performance Indicators Part 6: Energy Reuse Factor ERF	- (Published in Dec 2023)		Identical under single numbering
17.	IS/ISO/IEC 30134-8 : 2022 ISO/IEC 30134-8:2022	Information Technology Data Centres Key Performance Indicators Part 8: Carbon Usage Effectiveness CUE	- (Published in Dec 2023)		Identical under single numbering
18.	IS/ISO/IEC 30134-9 : 2022 ISO/IEC 30134-9:2022	Information Technology Data Centres Key Performance Indicators Part 9: Water Usage Effectiveness WUE	- (Published in Dec 2023)		Identical under single numbering

ANNEXURE 4

EXPERTS FROM INDIA REGISTERED IN WGs

ISO/IEC JTC 1/SC 38 Cloud computing and distributed platforms

S.No.	Member Name	Member Organization
1.	Mr Madhav Chablani	In Personal Capacity
2.	Dr Gargi Keeni	In Personal Capacity
3.	Mr Kshitij Kushagra	Ministry of Electronics and Information Technology
4.	Dr Srinivasan Ramakrishnan	In Personal Capacity
5.	Mr Bijoyendra Roychowdhury	Capgemini
6.	Mr Dinkar Sitaram	Cloud Computing Innovation Council of India
7.	Mr Ignesius Ernest Thambyraj	Cloud Computing Innovation Council of India, Bengaluru
8.	Ms Nisha Bura	BIS
9.	Mr Rajneesh Khosla	BIS
10.	Ms. Ankita Srivastava	BIS
11.	Mr Ashish Tiwari	BIS
12.	Mr Abhishek S. Naidu	BIS

ISO/IEC JTC 1/SC 38/AG 5 Long-term strategy

S.No.	Member Name	Member Organization
1.	Mr Bijoyendra Roychowdhury	Capgemini
2.	Ms. Ankita Srivastava	BIS
3.	Mr Kshitij Kushagra	Ministry of Electronics and Information Technology
4.	Shri Sanket Bhondve	Ministry of Electronics and Information Technology, New Delhi
5.	Mr Kshitij Kushagara	Ministry of Electronics and Information Technology

ISO/IEC JTC 1/SC 38/WG 3 Cloud Computing Fundamentals (CCF)

S.No.	Member Name	Member Organization
1.	Mr Srinivasan Ramakrishnan	In Personal Capacity
2.	Mr Bijoyendra Roychowdhury	Capgemini
3.	Mr Ignesius Ernest Thambyraj	Cloud Computing Innovation Council of India, Bengaluru
4.	Ms. Ankita Srivastava	BIS
5.	Mr Priyanshu Sharma	BIS

ISO/IEC JTC 1/SC 38/WG 5 Data in cloud computing and related technologies

S.No.	Member Name	Member Organization
1.	Mr Madhav Chablani	In Personal Capacity
2.	Mr Rajeev Papneja	ESDS Software Solution Limited

3.	Mrs Uma Chauhan	Ministry of Electronics and Information Technology
4.	Mr Bijoyendra Roychowdhury	Capgemini
5.	Mr Kshitij Kushagara	Ministry of Electronics and Information Technology
6.	Mr Ashok Kaul	National Informatics Centre
7.	Mr Kshitij Kushagara	Ministry of Electronics and Information Technology
8.	Shri Sanket Bhondve	Ministry of Electronics and Information Technology, New Delhi
9.	Mr Srinivasan Ramakrishnan	In Personal Capacity
10	Mr Dinkar Sitaram	Cloud Computing Innovation Council of India
11	Ms. Ankita Srivastava	BIS
12	Mr Priyanshu Sharma	BIS

ISO/IEC JTC 1/SC 39 Sustainability, IT and data centres

S.No.	Member Name	Member Organization
1.	Dr Shrisha Rao	International Institute of Information Technology
2.	Mr Vinodh Kumar Markapuram	CDAC
3.	Mr Kailash S	CDAC
4.	Mr Ignesius Ernest Thambyraj	Cloud Computing Innovation Council of India, Bengaluru
5.	Ms Nisha Bura	BIS
6.	Mr Rajneesh Khosla	BIS
7.	Mr Abhishek S. Naidu	BIS
8.	Ms. Ankita Srivastava	BIS

ISO/IEC JTC 1/SC 39/WG 3 Sustainable facilities and infrastructures

S.No.	Member Name	Member Organization
1.	Dr G.R. Gangadharan	National Institute of Technology, Tiruchirapalli
2.	Mr Rishi Jadhav	ESDS Software Solution Limited
3.	Mr Vinodh Kumar Markapuram	CDAC
4.	Mr Kailash S	CDAC
5.	Mr Ignesius Ernest Thambyraj	Cloud Computing Innovation Council of India, Bengaluru
6.	Ms. Ankita Srivastava	BIS

ANNEXURE 5

ISO/IEC JTC 1/SC 38 Cloud computing and distributed platforms

S. No.	Published Standards	Adoption Status
1.	ISO/IEC TR 3445:2022 Information technology — Cloud computing — Audit of cloud services	N
2.	ISO/IEC 5140:2024 Information technology — Cloud computing — Concepts for multi-cloud and the use of multiple cloud services	N
3.	ISO/IEC TS 5928:2023 Information technology — Cloud computing and distributed platforms — Taxonomy for digital platforms	N
4.	ISO/IEC 17203:2017 Information technology — Open Virtualization Format (OVF) specification	N
5.	ISO/IEC 17963:2013 Web Services for Management (WS-Management) Specification	N
6.	ISO/IEC 18384-1:2016 Information technology — Reference Architecture for Service Oriented Architecture (SOA RA) — Part 1: Terminology and concepts for SOA	N
7.	ISO/IEC 18384-2:2016 Information technology — Reference Architecture for Service Oriented Architecture (SOA RA) — Part 2: Reference Architecture for SOA Solutions	N
8.	ISO/IEC 18384-3:2016 Information technology — Reference Architecture for Service Oriented Architecture (SOA RA) — Part 3: Service Oriented Architecture ontology	N
9.	ISO/IEC 19086-1:2016 Information technology — Cloud computing — Service level agreement (SLA) framework — Part 1: Overview and concepts	Y
10.	ISO/IEC 19086-2:2018 Cloud computing — Service level agreement (SLA) framework — Part 2: Metric model	Y
11.	ISO/IEC 19086-2:2018/Amd 1:2023 Cloud computing — Service level agreement (SLA) framework — Part 2: Metric model — Amendment 1	N
12.	ISO/IEC 19086-3:2017 Information technology — Cloud computing — Service level agreement (SLA) framework — Part 3: Core conformance requirements	Y
13.	ISO/IEC 19941:2017 Information technology — Cloud computing — Interoperability and portability	N
14.	ISO/IEC 19944-1:2020 Cloud computing and distributed platforms – Data flow, data categories and data use — Part 1: Fundamentals	Y
15.	ISO/IEC 19944-2:2022	N

	Cloud computing and distributed platforms — Data flow, data categories and data use — Part 2: Guidance on application and extensibility	
16.	ISO/IEC 22123-1:2023 Information technology — Cloud computing — Part 1: Vocabulary	Y
17.	ISO/IEC 22123-2:2023 Information technology — Cloud computing — Part 2: Concepts	N
18.	ISO/IEC 22123-3:2023 Information technology — Cloud computing — Part 3: Reference architecture	N
19.	ISO/IEC 22624:2020 Information technology — Cloud computing — Taxonomy based data handling for cloud services	Y
20.	ISO/IEC TR 22678:2019 Information technology — Cloud computing — Guidance for policy development	Y
21.	ISO/IEC TS 23167:2020 Information technology — Cloud computing — Common technologies and techniques	Y
22.	ISO/IEC TR 23186:2018 Information technology — Cloud computing — Framework of trust for processing of multi-sourced data	N
23.	ISO/IEC TR 23187:2020 Information technology — Cloud computing — Interacting with cloud service partners (CSNs)	Y
24.	ISO/IEC TR 23188:2020 Information technology — Cloud computing — Edge computing landscape	Y
25.	ISO/IEC TR 23613:2020 Information technology — Cloud computing — Cloud service metering elements and billing modes	Y
26.	ISO/IEC 23751:2022 Information technology — Cloud computing and distributed platforms — Data sharing agreement (DSA) framework	N
27.	ISO/IEC TR 23951:2020 Information technology — Cloud computing — Guidance for using the cloud SLA metric model	Y
28.	ISO/IEC TR 30102:2012 Information technology — Distributed Application Platforms and Services (DAPS) — General technical principles of Service Oriented Architecture	N

S.no.	Published Standards	Adoption Status
1.	ISO/IEC 19395:2015 Information technology — Sustainability for and by information technology — Smart data centre resource monitoring and control	N
2.	ISO/IEC TR 20913:2016 Information technology — Data centres — Guidelines on holistic investigation methodology for data centre key performance indicators	N
3.	ISO/IEC 21836:2020 Information technology — Data centres — Server energy effectiveness metric	N
4.	ISO/IEC TR 21897:2022 Information technology — Data centres — Impact of the ISO 52000 series on energy performance of buildings	N
5.	ISO/IEC 22237-1:2021 Information technology — Data centre facilities and infrastructures — Part 1: General concepts	Y
6.	ISO/IEC TS 22237-2:2018 Information technology — Data centre facilities and infrastructures — Part 2: Building construction	N
7.	ISO/IEC 22237-3:2021 Information technology — Data centre facilities and infrastructures — Part 3: Power distribution	Y
8.	ISO/IEC 22237-4:2021 Information technology — Data centre facilities and infrastructures — Part 4: Environmental control	Y
9.	ISO/IEC TS 22237-5:2018 Information technology — Data centre facilities and infrastructures — Part 5: Telecommunications cabling infrastructure	N
10.	ISO/IEC TS 22237-6:2018 Information technology — Data centre facilities and infrastructures — Part 6: Security systems	N
11.	ISO/IEC TS 22237-7:2018 Information technology — Data centre facilities and infrastructures — Part 7: Management and operational information	N
12.	ISO/IEC TS 22237-30:2022 Information technology — Data centre facilities and infrastructures — Part 30: Earthquake risk and impact analysis	N
13.	ISO/IEC TS 22237-31:2023 Information technology — Data centre facilities and infrastructures — Part 31: Key performance indicators for resilience	N
14.	ISO/IEC TR 23050:2019 Information technology — Data centres — Impact on data centre resource metrics of electrical energy storage and export	N
15.	ISO/IEC 23544:2021 Information Technology — Data centres — Application Platform Energy Effectiveness (APEE)	N
16.	ISO/IEC TR 30132-1:2016 Information technology — Information technology sustainability — Energy efficient computing models — Part 1: Guidelines for energy effectiveness evaluation	N
17.	ISO/IEC TR 30133:2023 Information technology — Data centres — Practices for resource-efficient data centres	N

18.	ISO/IEC 30134-6:2021 Information technology — Data centres key performance indicators — Part 6: Energy Reuse Factor (ERF)	Y
19.	ISO/IEC 30134-1:2016 Information technology — Data centres — Key performance indicators — Part 1: Overview and general requirements	Y
20.	ISO/IEC 30134-1:2016/Amd 1:2018 Information technology — Data centres — Key performance indicators — Part 1: Overview and general requirements — Amendment 1	Y
21.	ISO/IEC 30134-2:2016 Information technology — Data centres — Key performance indicators — Part 2: Power usage effectiveness (PUE)	Y
22.	ISO/IEC 30134-2:2016/Amd 1:2018 Information technology — Data centres — Key performance indicators — Part 2: Power usage effectiveness (PUE) — Amendment 1	Y
23.	ISO/IEC 30134-3:2016 Information technology — Data centres — Key performance indicators — Part 3: Renewable energy factor (REF)	Y
24.	ISO/IEC 30134-3:2016/Amd 1:2018 Information technology — Data centres — Key performance indicators — Part 3: Renewable energy factor (REF) — Amendment 1	Y
25.	ISO/IEC 30134-4:2017 Information technology — Data centres — Key performance indicators — Part 4: IT Equipment Energy Efficiency for servers (ITEEsv)	Y
26.	ISO/IEC 30134-5:2017 Information technology — Data centres — Key performance indicators — Part 5: IT Equipment Utilization for servers (ITEUsv)	Y
27.	ISO/IEC 30134-6:2021 Information technology — Data centres key performance indicators — Part 6: Energy Reuse Factor (ERF)	Y
28.	ISO/IEC 30134-7:2023 Information technology — Data centres key performance indicators — Part 7: Cooling efficiency ratio (CER)	N
29.	ISO/IEC 30134-8:2022 Information technology — Data centres key performance indicators — Part 8: Carbon usage effectiveness (CUE)	Y
30.	ISO/IEC 30134-9:2022 Information technology — Data centres key performance indicators — Part 9: Water usage effectiveness (WUE)	Y