Global Standardization Activities

Progress of CJK Standards Meeting and Testbed Studies

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Abstract

This article briefly describes current progress of the Next-Generation Network Working Group (NGN-WG) of the CJK (China-Japan-Korea) Meeting on Information and Telecommunication Standards (CJK Standards Meeting). It also describes the study status of the CJK testbed discussed in NGN-WG. The CJK Standards Meeting was started in 2002 by the telecommunication standardization organizations of the three countries contracting to exchange information on the trends of the telecommunication industries in their countries and to cooperate on international standards activities.

1. Overview of CJK Standards Meeting

The CJK (China-Japan-Korea) Meeting on Information and Telecommunication Standards (hereinafter, CJK Standards Meeting) was started in June 2002. It was triggered by the establishment of the China Communication Standards Association (CCSA). The objectives of the CJK Standards Meeting are to exchange information about trends of the telecommunication and information industries in the three countries to grow and evolve those industries and to contribute to international standardization activities through cooperation among the three countries. The CJK Standards Meeting was established by four standards organizations: CCSA in China, the Telecommunication Technology Committee (TTC) and the Association of Radio Industries and Business (ARIB) in Japan, and Telecommunications Technology Association (TTA) in Korea.

The CJK Standards Meeting consists of a plenary meeting and three working groups (WGs)—Beyond-3G mobile WG (B3G-WG), Next-Generation Network WG (NGN-WG), and Networked ID-related services WG (N-ID-WG)—as shown in **Fig. 1**. B3G-WG studies services using mobile telecommunication technologies beyond the third generation (3G). NGN-WG targets Next Generation Network (NGN)

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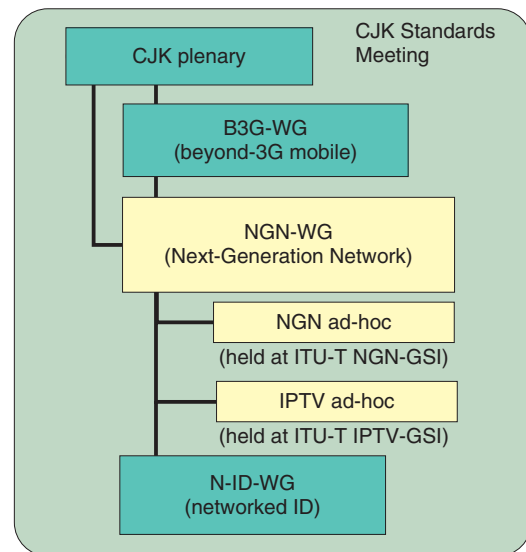 Musashino-shi, 180-8585 Japan

Fig. 1. Structure of CJK Standards Meeting.

standards, including IPTV and future networks. N-ID-WG studies services that use networked identity (ID) technologies. The CJK plenary meeting is held once a year, with the location rotating among the three countries. The host organization chairs the plenary meeting. The history of CJK Standards Meetings is shown in **Table 1**.

B3G-WG aims to cooperate on standardization

Table 1.   History of CJK Standards Meetings.

Date	Plenary (location)	NGN-WG (location)	Host	Remarks
Jun. 2002	1st (Korea, Seoul)		TTA	
Nov. 2002	2nd (Japan, Tokyo)		TTC	
Nov. 2003	3rd (China, Beijing)		CCSA	
Jul. 2004	4th (Korea, Seoul)	1st (co-located)	TTA	NGN-WG established
Nov. 2004		2nd (Japan, Tokyo)	TTC	
Mar. 2005	5th (Japan, Tokyo)	3rd (co-located)	ARIB	
Jun. 2005		4th (China, Beijing)	CCSA	Co-located with ITU-T
Dec. 2005		5th (Korea, Seoul)	TTA	
Apr. 2006	6th (China, Hangzhou)	6th (co-located)	CCSA	
Nov. 2006		7th (Japan, Tokyo)	TTC	
Feb. 2007		8th (Korea, Jeju)	TTA	N-ID-WG established
Apr. 2007	7th (Korea, Jeju)	9th (co-located)	TTA	
Oct. 2007		10th (Japan, Tokyo)	TTC	
Feb. 2008		11th (China, Beijing)	CCSA	
Mar. 2008	8th (Japan, Okinawa)	12th (co-located)	TTC	
Aug. 2008		13th (Korea, Seoul)	TTA	
Dec. 2008		14th (Japan, Tokyo)	TTC	
Apr. 2009	9th (China, Zhangjiajie)	15th (co-located)	CCSA	
Jul. 2009		16th (China, Beijing)	CCSA	
Nov. 2009		17th (China, Sanya)	CCSA	Co-located with ITU-T
Apr. 2010	10th (Korea, Gyeongju)	18th (co-located)	TTA	
Jul. 2010		19th (Korea)	TTA	

activities considering the beyond-3G mobile phone environment. NGN-WG aims to cooperate on standardization activities for NGN, including IPTV, fixed-mobile convergence (FMC), and future networks. N-ID-WG aims to cooperate on standardization activities for services using wireless tags and sensors. From the NTT Group, NTT DOCOMO participates in B3G-WG as a delegate of ARIB, and NTT Laboratories participates in NGN-WG as a delegate of TTC.

2.   NGN-WG activities

The establishment of NGN-WG was agreed at the CJK plenary meeting in July 2004 in order to cooperate in global NGN standardization activities and exchange information about NGN standards trends in the three countries. Since the first meeting in July 2004, it has met 18 times. The chairman's term is one year. From NTT, Yoichi Maeda (then a senior research engineer and supervisor at NTT Access Network Service Systems Laboratories) and Naotaka Morita (a senior research engineer and supervisor at NTT Service Integration Laboratories) chaired the WG in

2004 and 2007, respectively. Around 40 people in total attended every NGN-WG meeting.

As well as information exchange, the activities of NGN-WG can be divided broadly into two categories: cooperating on NGN standardization in ITU-T (International Telecommunication Union, Telecommunication Standardization Sector) and experimentally studying NGN-related capabilities by using the CJK testbed.

Regarding NGN standards cooperation, to coordinate studies in Study Group 13 (SG13) in ITU-T, which standardizes NGN including FMC and future networks, relatively big issues such as the organizational structure of SG13 (i.e., establishment of NGN-GSI (NGN Global Standards Initiative)) and new work items (i.e., beginning a future network study) were discussed and opinions were exchanged before the ITU-T meeting. In addition, the chairman of SG13 (a Korean representative from Electronics and Telecommunications Research Institute (ETRI) and two SG13 vice-chairman (Mr. Morita and a Chinese representative from the China Academy of Telecommunication Research (CATR)) are actively attending CJK NGN-WG. This means that it is possible to con-
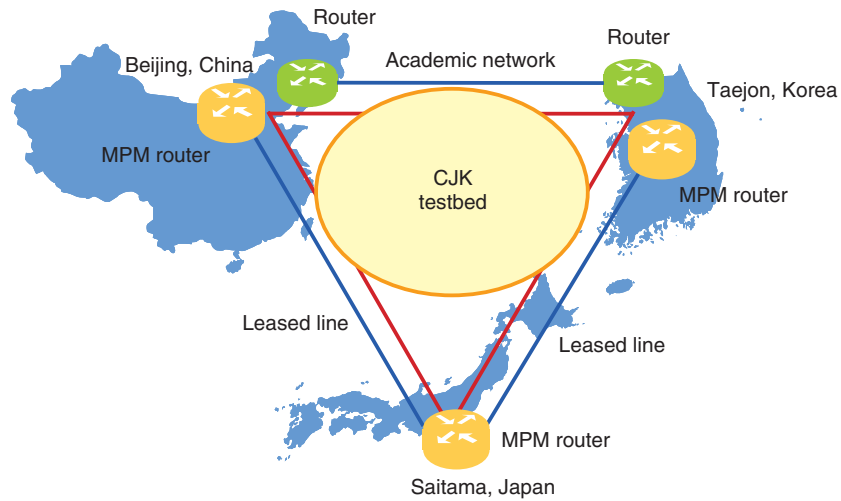
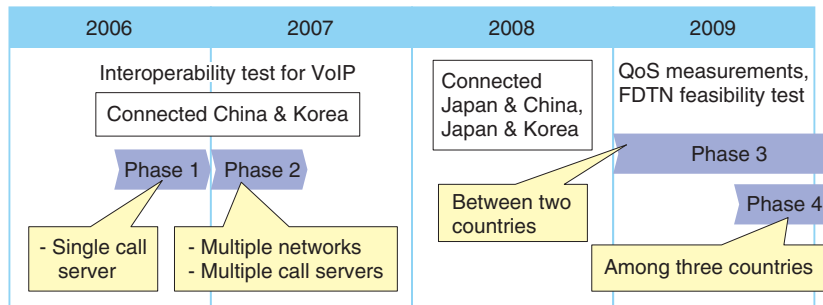Fig. 2.   Configuration of CJK testbed.

Fig. 3.   Schedule for CJK testbed studies.

firm management issues directly with SG13 management and to make practical decisions on the operation and management policies of SG13. Therefore, from the Japanese viewpoint, CJK NGN-WG is a valuable forum offering very good opportunities.

Moreover, for the exchange of opinions on ITU-T contributions from CJK countries, an NGN ad-hoc meeting has been held during every NGN standards meeting in ITU-T. Similarly, IPTV ad-hoc meetings are also held during IPTV standards meetings in ITU-T to exchange opinions on IPTV-related contributions in ITU-T.

3.   Status of CJK testbed

The CJK testbed for testing interoperability and/or feasibility for NGN standards was proposed by TTA of Korea in 2004. CJK began constructing the testbed

between China and Korea following TTA's proposal. CATR in Beijing (China) and ETRI in Taejon (Korea) were connected using the China Education and Research Network (CERNET) and Korea Advanced Research Network (KOREN). Then, both CATR and ETRI were connected to KDDI Laboratories in Japan via leased lines (**Fig. 2**). There are four test phases, as shown in **Fig. 3**.

Interoperability tests for VoIP (voice over Internet protocol) services were conducted as test phases 1 and 2 between China and Korea. Interoperability tests between call servers in China and Korea and interworking tests between a VoIP service network and a conventional public switched telephone network were included in test phases 1 and 2. These test phases were closed at the March 2008 NGN-WG meeting.

A passive quality of service (QoS) measurement in

the CJK testbed was proposed by KDDI Laboratories for studying session control based on user quality of experience (QoE) at the August 2007 NGN-WG meeting and started after test phases 1 and 2. For that purpose, the CJK testbed was extended by two links between KDDI Laboratories & CATR and between KDDI Laboratories & ETRI. Routers having the management of performance measurement (MPM) function were installed in the three parties.

KDDI Laboratories and Oki Electric Industry are measuring the QoS of multimedia streams with Real-Time Transport Protocol (RTP) and RTP Control Protocol (RTCP) between Japan & China and between Japan & Korea in the CJK testbed to study end user QoE estimation as phase 3 (Fig. 3). The results already obtained were provided for studying interface specifications between an MPM function and a resource and admission control function (RACF) at ITU-T SG13 Question 4 (Q4/13). It was agreed at the September 2009 Q4/13 meeting to include those results in Y.2111 rev.2 Annex A, and detailed specifications are now being studied.

On the other hand, NTT introduced a functionally distributed transport network (FDTN) and proposed feasibility tests on the CJK testbed at the March 2008 NGN-WG meeting. This proposal was agreed, and NTT started an FDTN feasibility test for cooperation with ETRI (Japan-Korea cooperation) as phase 3 (Fig. 3). NTT then conducted a feasibility test for cooperation with CATR and Huawei (Japan-China cooperation) as phase 3. After these two feasibility tests, NTT moved to phase 4 (Fig. 3), which was a feasibility test among all three countries. The results were included to study the independent scalable control plane (iSCP) in ITU-T SG13 Q20 (Q20/13). The iSCP scenario document was agreed as Y Sup.11 at the January 2010 SG13 plenary meeting. A require-ments document (Y.iSCP-req) and an architecture document (Y.iSCP-arch) of iSCP are now being stud-ied at Q20/13.

4. Future work plan

The CJK Standards Meeting is a loose-knit discussion place compared with European or North American standards organizations because it does not produce its own standards. It is a good place to make contributions toward realistic global standards by discussing the directions of international standards for NGN, IPTV, and future networks in ITU-T and by examining standard specifications by conducting on-the-spot inspections using the CJK testbed. NTT Laboratories will actively participate in CJK Standards Meetings and contribute to the growth of telecommunications and the telecommunication industries in these three countries and to global standards activities.

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He received the B.E., M.E., and Ph.D. degrees in electrical engineering from Mie University in 1985, 1987, and 2001, respectively. After joining NTT Telecommunication Network Laboratories in 1987, he was engaged in research of a fiber optic access network architecture and network operation process reengineering methods. From 1996 to 2003, he was engaged in enterprise resource planning (ERP) systems integration as a consultant in the Solutions Business Division of NTT Communications. Since 2004, he has been engaged in NGN standardization work in ITU-T. He is the Rapporteur of Question 1 of Study Group 13. He also plays an active role in IPTV standardization work in ITU-T. He received the ITU-AJ award from the ITU Association of Japan in 2009. He is a member of the Institute of Electronics, Information and Communication Engineers (IEICE) of Japan and the Society of Instrument and Control Engineers.

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He received the B.E. degree from Sophia University, Tokyo, and the M.E. degree from Waseda University, Tokyo, in 1986 and 1988, respectively. In 1988, he joined NTT Switching System Laboratories, where he worked on the development of an ATM traffic control scheme and the first commercial ATM switching system for frame relay service. From 1998, he worked on the standardization of the VB5 interface in ITU-T and the development of a B-PON system for the ATM Mega-data link service in NTT Access Network Service Systems Laboratories. In 2002, he moved to NTT Service Integration Laboratories, where he engaged in basic network design for FLET'S Hikari Premium service based on IPv6 technology. In 2004, he engaged in R&D of value-added functions for the transport network. He also designed a logical IP network for the NGN. He is now engaged in R&D of basic technologies and architectures for transport systems focused on future networks. He is a member of IEEE and IEICE.