



**APT/ITU Conformance and
Interoperability Event**

09 – 10 September 2013, Bangkok, Thailand



**Document C&I/INP-13
(Rev.1)
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NEC Corporation

**REPORT OF NGN INTEROPEABILITY TESTING AND SHOWCASING
ON C&I EVENT**

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**APT/ITU Conformance & Interoperability Event
Workshop**
Bangkok, Thailand, 9-10 September 2013

**Report of NGN interoperability testing
and showcasing
on APT C&I event 2013**

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Bangkok, Thailand, 9 - 10 September 2013

Agenda

- **NGN Interoperability testing (20min)**
 - Summary of NGN Interoperability testing
 - Introduce real NGN services
 - Testing Integration
 - Testing guideline (VoIP & Multimedia)
 - Result of Interoperability testing

- **NGN showcasing (10min)**
 - NEC: NC1000-MV
 - OKI: IP Video Phone
 - NEIX: NGN Simulator
 - NTT: NGN Application "Koemiru"

What is Interoperability testing

- What is Interoperability testing
 - Testing to assess the ability of two or more systems to exchange information and to make mutual use of the information that has been exchanged
- Who to join
 - Vendors (Big/Middle/Small companies)
 - Network Operators, Laboratories
- Why to join
 - It is necessary for vendors on developing product process
 - For operators to reduce their costs of system integration

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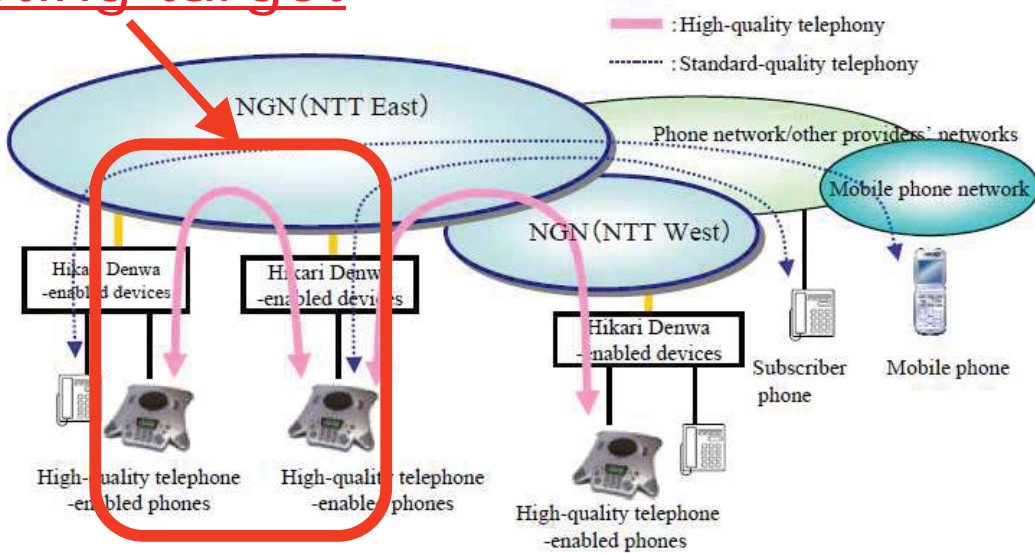
NGN testing

- Service interoperability Confirmation
 - Based on ITU-T Q.3402 NGN-UNI.
- End-to-End interoperability Confirmation
 - Based on ITU-T Q.3948(VoIP service)
 - Based on ITU-T Q.3949(Multimedia service)
 - between other vendor's NGN terminals
- Participating Organizations
 - NEIX, NEC, NTT, OKI, Teluu PJSIP

Voice service (in case of NTT)

Voice Communication (Standard Quality, High Quality)

Testing target



http://www.ntt-east.co.jp/release_e/0803/pdf/080328a_2.pdf

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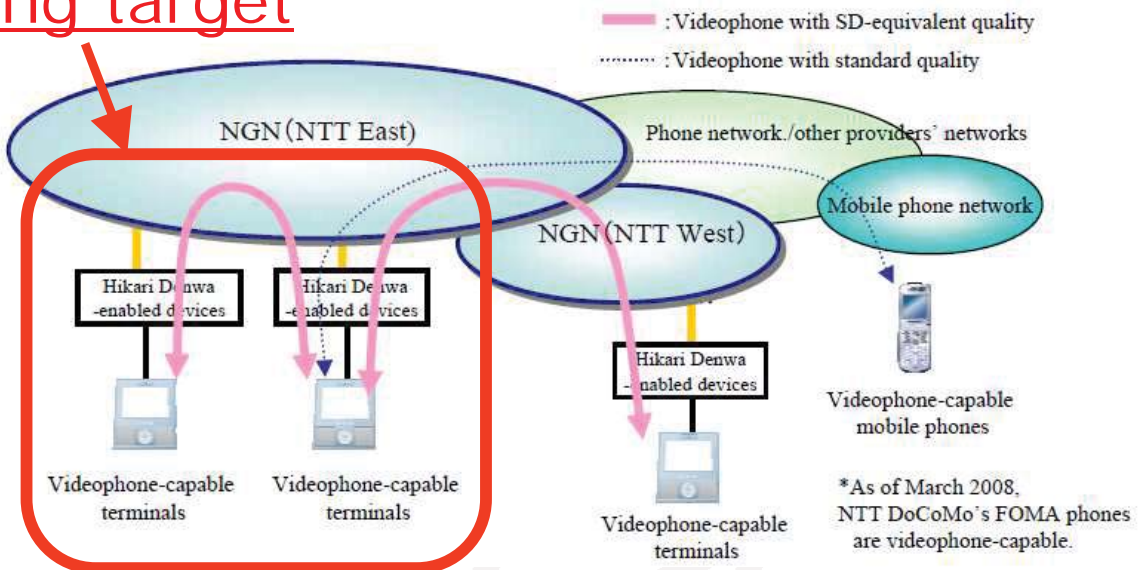
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Multimedia service (in case of NTT)

Videophone Services (Standard Quality • SD-Equivalent Quality)

and HD

Testing target



Videophone-capable mobile phones

*As of March 2008, NTT DoCoMo's FOMA phones are videophone-capable.

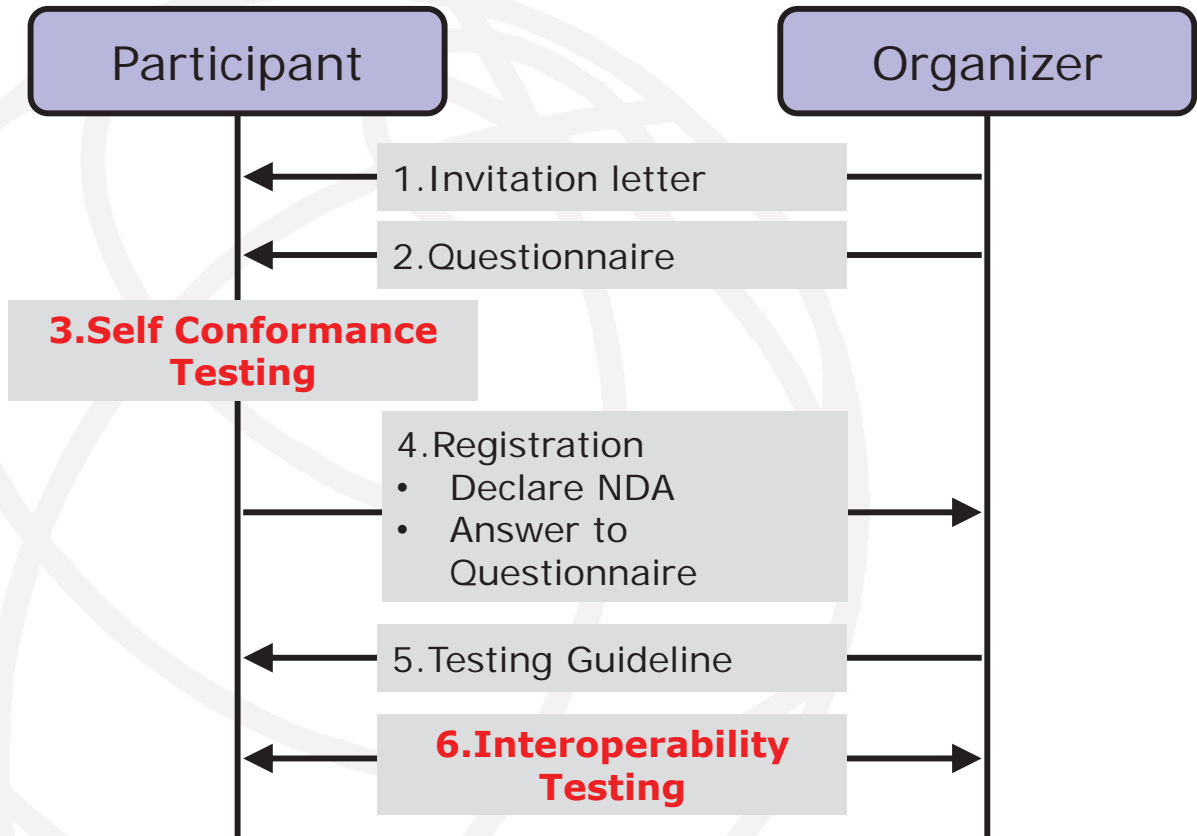
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Testing Flow



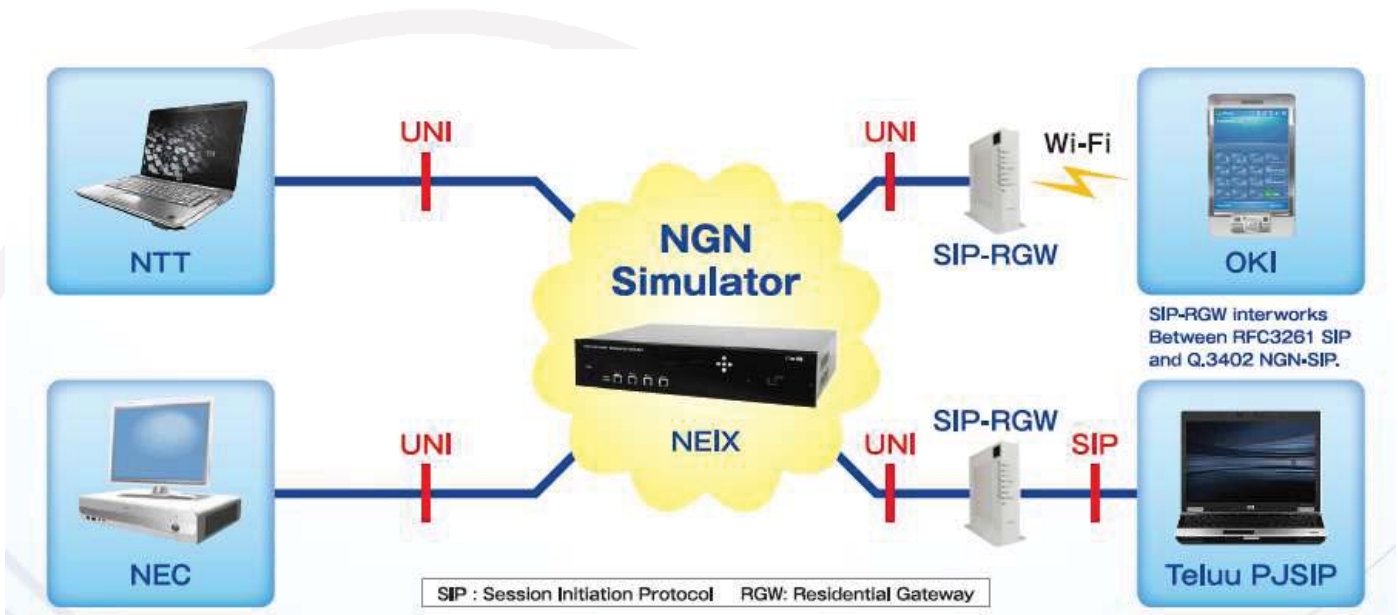
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Questionnaire

items	Description
Interface	<input type="checkbox"/> Q.3402 (NGN-UNI) <input type="checkbox"/> RFC3261 (SIP) <input type="checkbox"/> Others ()
Type of equipment	<input type="checkbox"/> Wired appliance <input type="checkbox"/> Wireless appliance <input type="checkbox"/> Soft phone <input type="checkbox"/> MCU <input type="checkbox"/> Others
Audio codec	<input type="checkbox"/> G.711 μ -low (default) <input type="checkbox"/> G.722 <input type="checkbox"/> G.711.1 <input type="checkbox"/> G.729 <input type="checkbox"/> Others ()
Payload period	<input type="checkbox"/> 20ms <input type="checkbox"/> Others ()
PRACK transfer	<input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable
Session Timer	<input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable
Video codec Profile and level	<input type="checkbox"/> H.264 (profile @ level) <input type="checkbox"/> H.263 (profile @ level) <input type="checkbox"/> MPEG-4 Visual (profile @ level) <input type="checkbox"/> Others
I-frame rate (seconds or frames)	
Asymmetric video codec transfer	<input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable
Frame size and maximum frame rate	<input type="checkbox"/> QCIF (fps) <input type="checkbox"/> CIF (fps) <input type="checkbox"/> QVGA (fps) <input type="checkbox"/> VGA (fps) <input type="checkbox"/> 4SIFi (fps) <input type="checkbox"/> 720p (fps) <input type="checkbox"/> 1080i (fps) <input type="checkbox"/> 1080p (fps) <input type="checkbox"/> Others

Testing Integration



This is first trail testing to products directly connected to NGN and connected via SIP-RGW to communicate.

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Check sheet

No	Item	Judging standard	Result
1	Terminal registration	Confirm receiving the correct response from Network.	
2	Deletion of terminal registration	Confirm receiving the correct response from Network.	
3	Confirmation of audio communication	Confirm the communication of audio and the video in each mode. Record the mode used.	
4	Confirmation of video communication		
5	Confirmation of the RTP packet format	Confirm that the DCI information is sent through [IETF RFC 6416] (a). Confirm that VP is sent through [IETF RFC 6416] (b).	
6	Update of Session Timer	Confirm the session timer is updated by UPDATE request and OK response at least one time.	
7	Call disconnection	Confirm that Terminal disconnected properly when Terminal disconnected.	
8	Fall back reconnection	Confirm that returning an error response with the correct code for setting the warning capability mismatch and recalling and establishing to ensure communication dropped	

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Testing Scene



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NGN testing result

Result (VoIP)	%
Audio	
OK	40%
One way	60%

Result (Multimedia)		%
Audio	Video	
OK	OK	13%
OK	One way/NG	37%
One way	One way/NG	50%

- Consideration
 - Some case not connect Video and happen one way Video;
 - Mismatched SDP of HD-Video profile
 - Band-width control parameter error via SIP GW
 - Some case happen one way audio;
 - The problem are mismatched wide-band audio codec profile.
 - changing port number process in NGN specification

NGN Showcasing

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NEC

Smart Visual Station (NC1000-MV)

High-Quality Video

- H.264/AVC true HD/Full HD video quality
- Packet-shaping and FEC for preventing packet-loss

High-Quality Audio

- MP4-AAC (high quality audio) for accurate voice communication

Proven over multiple Access Network

- ADSL optimized features for customers to utilize existing access
- Proven over new access networks such as WiMAX and LTE

Flexible Network Support

- Internet, SIP, IP-VPN all supported
- RACF based QoS over NGN/IMS network



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IP Video Phone for Smart-Devices on NGN

- IP Video Phone are multimedia communication tool for smart devices on NGN
- Automatically recognition for current access network and adapt the optimized profiles



- Specification
 - Protocol: RFC3261(SIP)
 - Media Codec:
 - Audio: G.711/G.722
 - Video: H.264(SD/HD), MPEG-4
 - OS: Android 4.x

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NGN Network Simulator

-- For telecom testing for NGN Terminals --

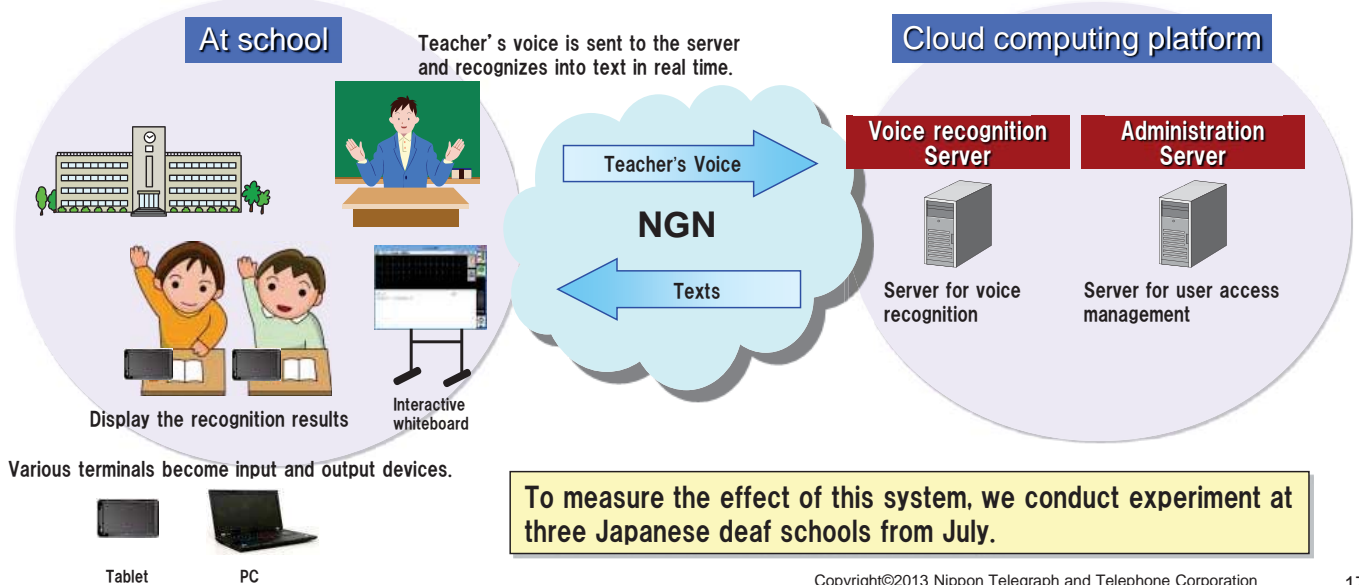
■ Feature

- NGN Exchange Simulation
 - Supports 4 NGN line ports.
 - Provides NGN-UNI interface on each line.
 - SIP based on ITU-T Q.3402 NGN-UNI.
 - Supports regional terminal registration procedure.
 - Supports extra network services on regional NGN.
- SIP Scenario Testing
 - Provides Scenario function for ITU-T Q.3402 NGN-SIP.
 - Customizing various SIP sequences.
- Regulation Testing
 - Conformance testing for regional IP terminal regulation.

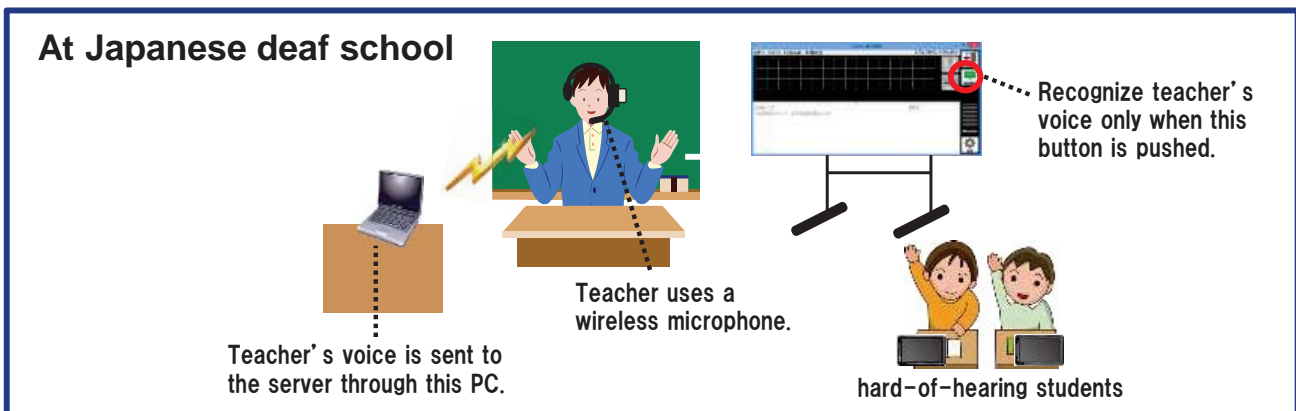


“Koemiru”, which literally means “see the voice” in Japanese, is voice recognition system to support education for hard-of-hearing students at Japanese deaf school. In addition, Koemiru is also helpful for Non-Japanese people who learn Japanese language.

Koemiru recognizes speaker’s voice and translates it into texts in real time, and displays them on an interactive whiteboard and tablet PC, to support students communication with their teacher.



Use scene of “Koemiru”



At Japanese language school for Non-Japanese people

The following are examples of utilization.

1. Complement the sign language (visible hand gestures).
2. Review the classroom using past voice by text.
3. Use as an alternative to blackboard.
4. Practice Japanese pronunciation.

Conclusion

- This Interoperability event was successful to be conducted with ITU-T testing recommendation documents, and tested only NGN-UNI. It is necessary to consider how to do other interfaces.
- Interoperability event can identify both issues of current standardized recommendation protocols and issues of participating products. It is important to feedback this event's result to future recommendation and product's implementation.

Thank you!