Panasonic
HD Visual Communication
KX-VC1600/KX-VC1300

HDVC mobile Ver3.1
Connectivity Improvement for NAT

Rel 1.00

Panasonic System Networks Co., Ltd.

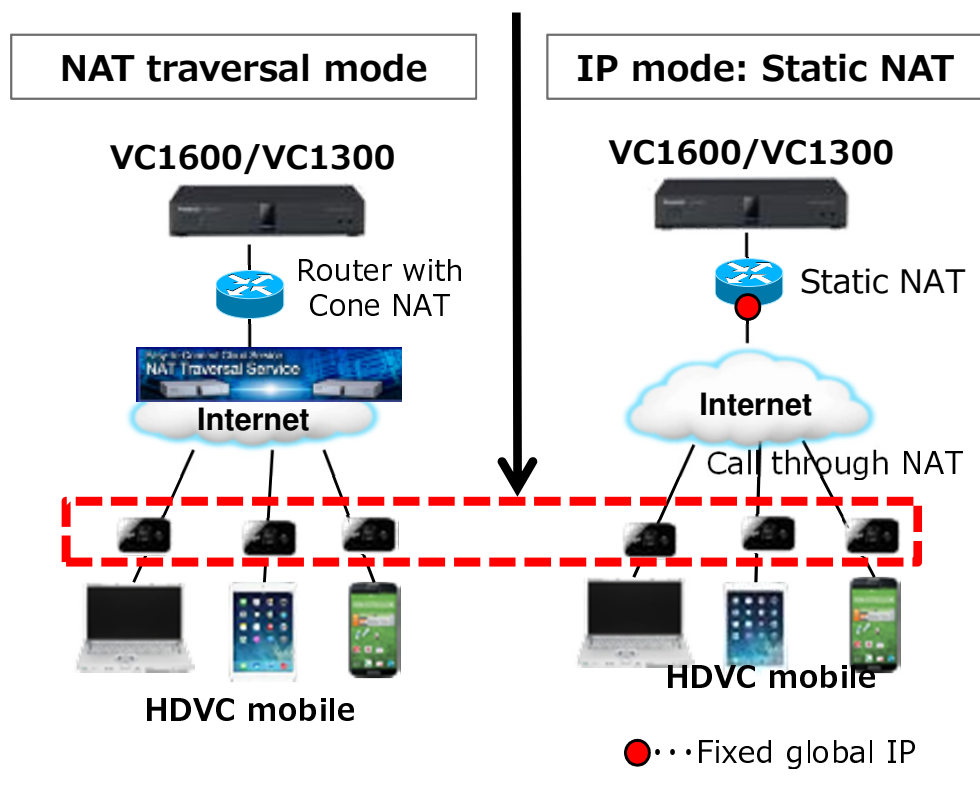Security System Business Division
HDVC Strategy Business Unit

Sep. 2015

Overview

The environment HDVC mobile can be available will increase
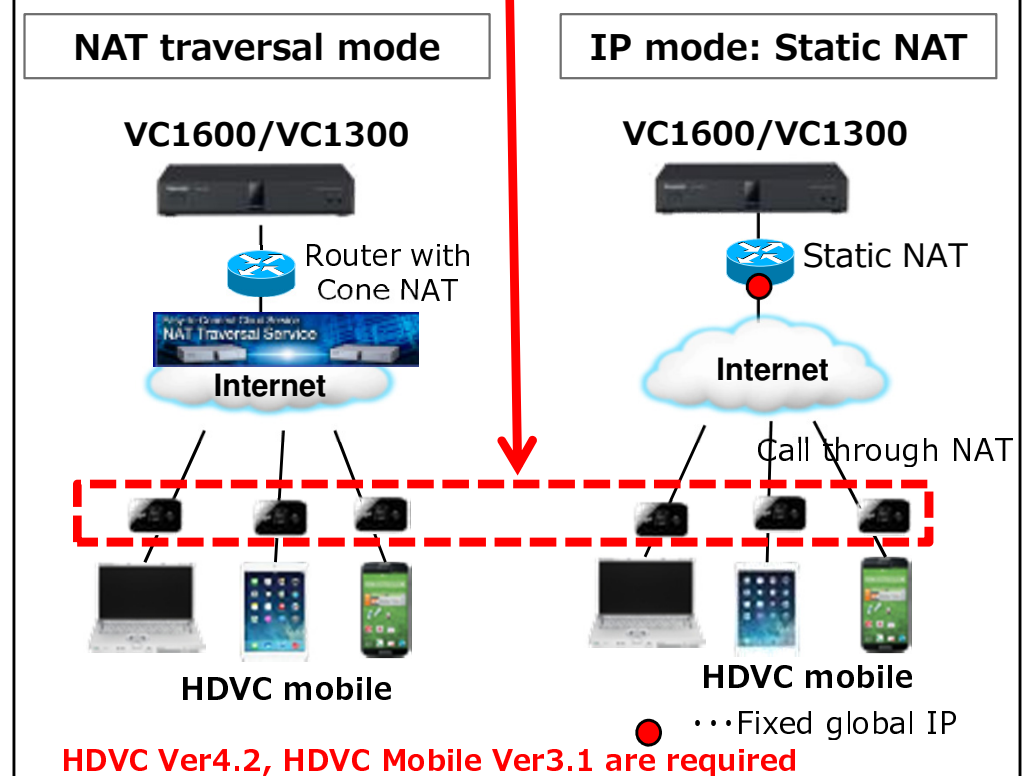
<so far>
A router with <u>Cone NAT characteristic is required</u>

<new>
A router with not only Cone NAT but also <u>Symmetric NAT characteristic</u> can be available

NAT traversal mode	IP mode: Static NAT
VC1600/VC1300	VC1600/VC1300

Router with Cone NAT — NAT Traversal Service — Internet

Static NAT — Internet — Call through NAT

HDVC mobile

HDVC mobile

🔴‧‧‧Fixed global IP

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HDVC mobile

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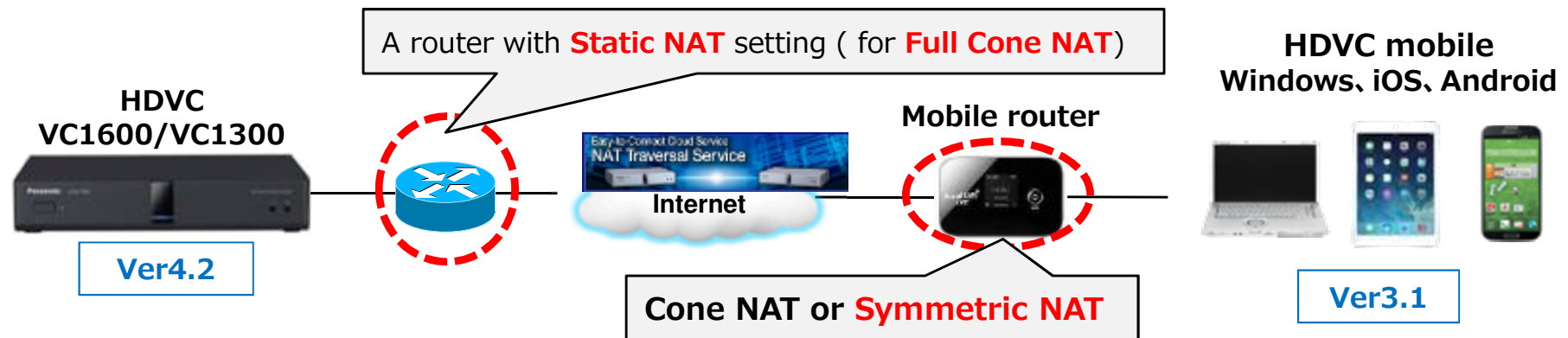**HDVC Ver4.2, HDVC Mobile Ver3.1 are required**

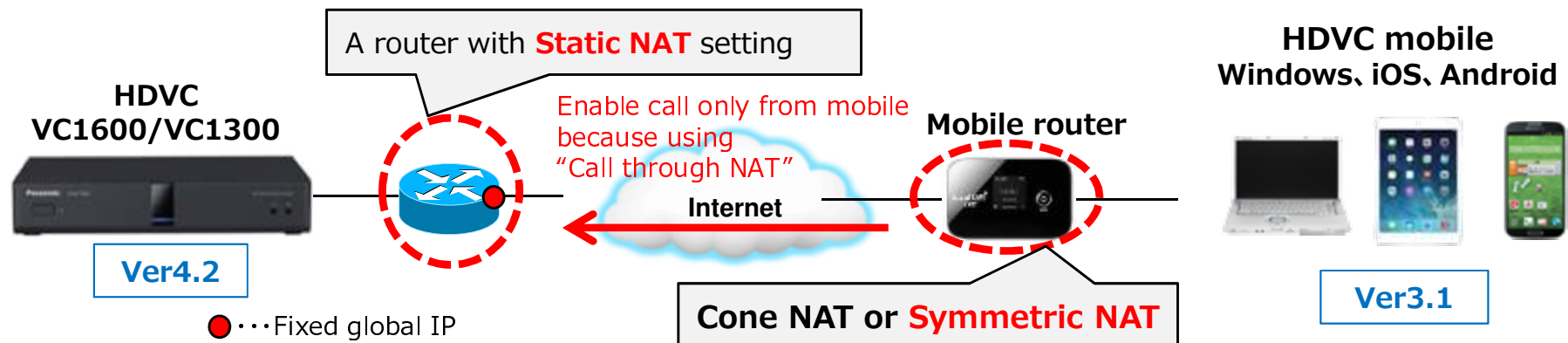**Recommend to check connectivity with FoC 3month mobile activation key.**

System structure

Connectivity will be improved by supporting a router with Symmetric NAT characteristics.

(1) NAT Traversal service mode

A router with **Static NAT** setting (for **Full Cone NAT**)

HDVC
VC1600/VC1300

Ver4.2

Easy-to-Connect Cloud Service
NAT Traversal Service

Internet

Mobile router

Cone NAT or **Symmetric NAT**

HDVC mobile
Windows、iOS、Android

Ver3.1

(2) IP mode with Static NAT

A router with **Static NAT** setting

HDVC
VC1600/VC1300

Ver4.2

Enable call only from mobile because using "Call through NAT"

Internet

Mobile router

Cone NAT or **Symmetric NAT**

HDVC mobile
Windows、iOS、Android

Ver3.1

●···Fixed global IP

Requirement for improvement

1. HDVC should be Ver4.2 and HDVC mobile should be Ver3.1 or later

2. Symmetric NAT setting should be set to "Enable"

3. A router connected HDVC main unit should be set Static NAT

4. In NAT traversal service mode, NAT setting of HDVC main unit should be set to "Static"

5. In IP mode, SIP setting of HDVC mobile should be set to "TCP"

All (1. ~ 5.) conditions should be required to get connectivity improvement.

Setting information

(1) Setting for HDVC main unit

Need to set "symmetric NAT setting " to ON by web console or CLI

Symmetric NAT Setting

Conversion of IP Address and Port Number   ○ ON   ● OFF

Item	Command name	Value of setting	書式
Symmetric NAT	symmetricdestport	0 ： Use IP address and Port negotiated **1 ： Change IP address and Port from negotiated value to actual media RTP value**	symmetricdestport set <1/0>

(2) Setting for HDVC mobile（IP mode with Call through NAT）

Change SIP transport protocol setting to "TCP"
・**Windows、iOS : Default setting is TCP**
・**Android   : Default setting is UDP, so need to change**
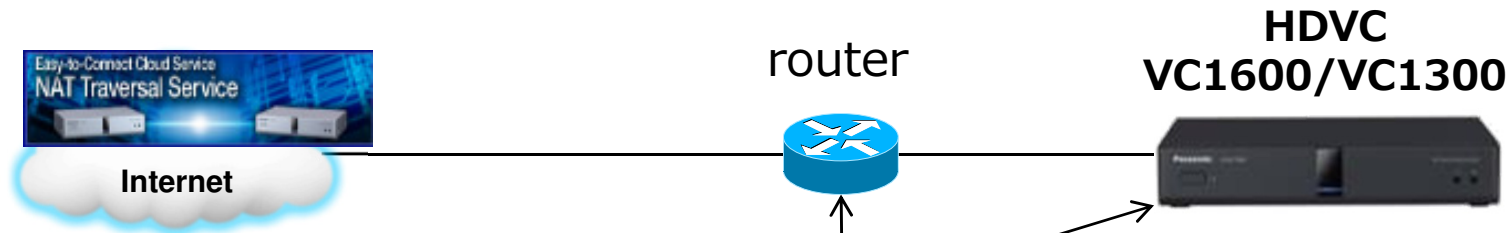
* iOS changes default as TCP from Ver3.1.
* In case of version up from older one, need to change manually

(3) Setting the router to Static NAT
*In NAT traversal service mode, recommend to use 'Static' for NAT on HDVC

router

**HDVC
VC1600/VC1300**

Easy-to-Connect Cloud Service
NAT Traversal Service

Internet

[HDVC setting (recommendation)]
GUI: Menu -> Settings
-> admin login -> NAT settings
In NAT menu, Set to **"Static"**   from "Dynamic"

* This setting is for the purpose of checking
whether the router setting is correct

Intended purpose		Protocol	Source Port (Port Number of Origin)
	BFCP	UDP	5800-5808 (VC1600: 9 ports/VC1300: 3ports)
Voice	RTP/RTCP	UDP	5100-5135 (VC1600:36ports/VC1300 12ports)
Video (Main)	RTP/RTCP	UDP	5200-5235 (VC1600:36ports/VC1300 12ports)
Video (Sub)	RTP/RTCP	UDP	5400-5435 (VC1600:36ports/VC1300 12ports)
Camera	RTP	UDP	5300-5335 (VC1600:36ports/VC1300 12ports)

[Router setting]
Set below about the ports and protocol following
at left
1. **Open the ports**
2. **Set port forwarding to HDVC IP address**

(Static NAT / to achieve Full Cone NAT characteristic)

HDVC Network requirement (NAT Traversal service mode)

Intended purpose		Protocol	Source Port (Port Number of Origin)	Packet direction	Destination information	Destination Port (Port Number of other end)	Note
NAT Traversal server	SIP (Calling)	TCP	50000〜50999 (Works as User Agent Client)	→	tsunagarunet.com 133.162.253.176	5060 (15060) *2	
	STUN	UDP	5100〜5135, 5200〜5235, 5300〜5335, 5400〜5435, 5800〜5808	→ ←	tsunagarunet.com 133.162.253.178 133.162.253.199	13478 13479	
	Device configuration	TCP	32768-61000	→	tsunagarunet.com 133.162.253.179	443	
	BFCP	UDP	5800-5808 (VC1600: 9 ports/VC1300: 3ports)	← →	Router for other end HDVC	Cannot specify (*1)	
Voice	RTP/RTCP	UDP	5100-5135 (VC1600:36ports/VC1300 12ports)	← →			
Video (Main)	RTP/RTCP	UDP	5200-5235 (VC1600:36ports/VC1300 12ports)	← →			
Video (Sub)	RTP/RTCP	UDP	5400-5435 (VC1600:36ports/VC1300 12ports)	← →			
Camera	RTP	UDP	5300-5335 (VC1600:36ports/VC1300 12ports)	← →			
Firmware Version up (DNS, version check, download)		UDP	Any (32768-61000) (To access to DNS server)	→	DNS server	53（DNS)	
		TCP + SSL	32768-61000	→	Pcmvchk .svrpf.jp	48750 443 (https)	

*1: The port will be specified by negotiation with the router in other end.

    a) When you use recommended router, communication from WAN to LAN for Voice (RTP)/ Video (RTP)/ Flow control (RTCP)/ Camera control will be made automatically by canalizing with STUN server.

    b) When Static Port Forward is configured in a router , HDVC will use same ports.

*2: Destination port for calling (SIP) could be changed from 5060 (default) to 15060 to prevent SIP by setting of HDVC.

HDVC Network requirement (IP mode : Static NAT)

IP Mode (Static NAT setting is ON)

Intended purpose		Protocol	Source Port (Port Number of Origin)	Packet direction	Destination information	Destination Port (Port Number of other end)	Note
Signaling (SIP)	SIP	TCP	5060	←	Other end HDVC	Any (32768~61000)	
			Any (32768~61000)	→		5060	
		UDP	5060	← →	Other end HDVC	5060	
	BFCP	UDP	5800~5808 (VC1600:9ports /VC1300:3ports)	← →	Other end HDVC	5800~5808 (VC1600:9ports /VC1300:3ports)	
Signaling (H.323)	H.225 (Q.931)	TCP	1720	←	Other end HDVC	5500~5599 (VC1600:20ports /VC1300:10ports)	
			5500~5599 (VC1600:20ports /VC1300:10ports)	→		1720	
	H.225 (RAS)	UDP	1719	← →	Other end HDVC	1719	
	H.245	TCP	5500~5519 (VC1600:20ports /VC1300:10ports)	← →	Other end HDVC	5500~5519 (VC1600:20ports /VC1300:10ports)	
Voice		RTP/RTCP	UDP	5100~5135 (VC1600:36ports /VC1300:12ports)	← →	Other end HDVC	5100~5135 (VC1600:36ports /VC1300:12ports)	RTCP Port: RTP port + 1 4 ports per 1 stream is required (RTP + RTCP + Alternatives of Session change (RTP + RTCP))
Video (main)		RTP/RTCP	UDP	5200~5235 (VC1600:36ports /VC1300:12ports)	← →		5200~5235 (VC1600:36ports /VC1300:12ports)	
Video (Sub)		RTP/RTCP	UDP	5400~5435 (VC1600:36ports /VC1300:12ports)	← →		5400~5435 (VC1600:36ports /VC1300:12ports)	
Camera		RTP	UDP	5300~5335 (VC1600:36ports /VC1300:12ports)	← →		5300~5335 (VC1600:36ports /VC1300:12ports)	