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# KX-HTS Step by Step Guide SIP Trunk

## July 23, 2015

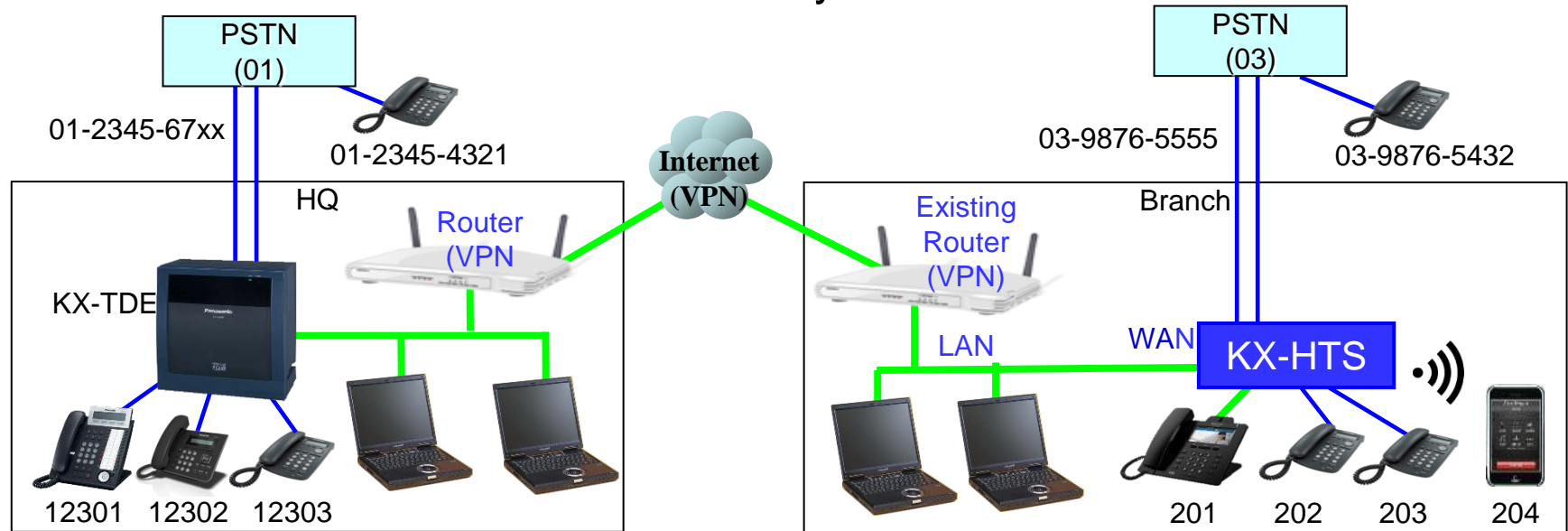
Panasonic System Networks  
PBX SE team

Specifications are subject to change without notice.

# 1. Overview 1/2

KX-HTS and other PBX such as KX-NS/TDE can be connected using SIP instead of H.323.

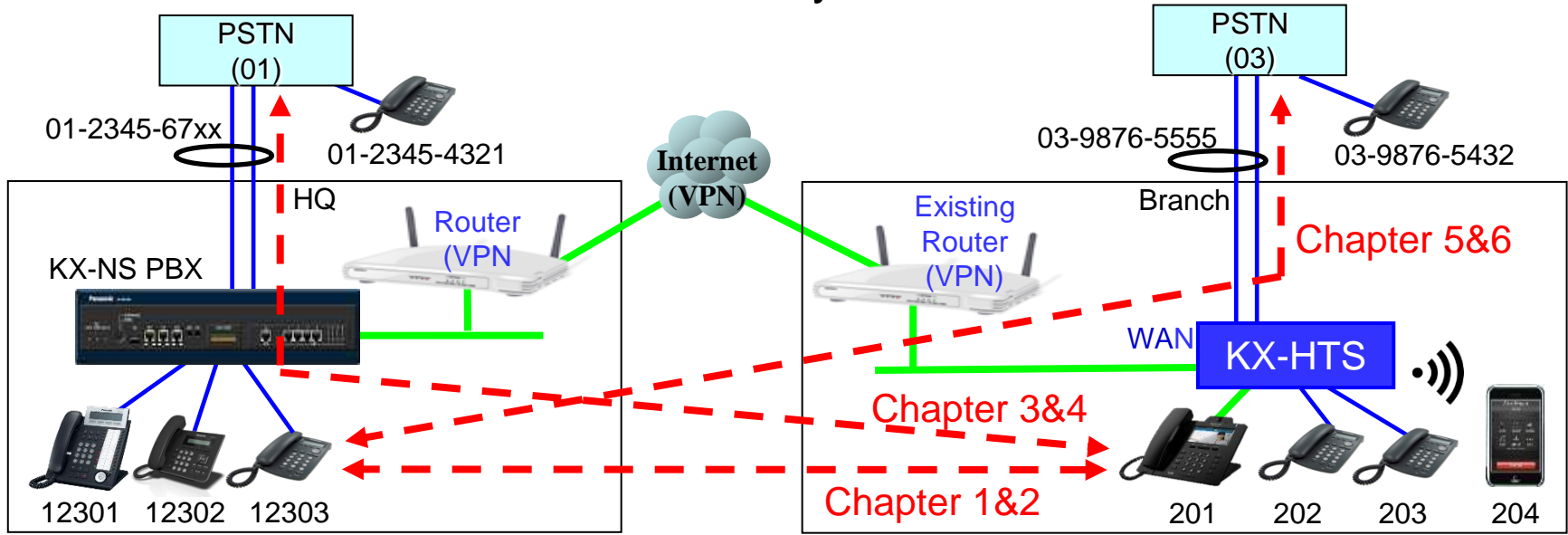
2 locations have to be connected by VPN.



## 2. Overview 2/2

KX-HTS and other PBX such as KX-NS/TDE can be connected using SIP instead of H.323.

2 locations have to be connected by VPN.



# 3. Table of Contents

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1	Extension in KX-NS to Extension in KX-HTS
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3	Trunk in KX-NS to Extension in KX-HTS
4	Trunk in KX-NS from Extension in KX-HTS
5	Extension in KX-NS to Trunk in KX-HTS
6	Extension in KX-NS from Trunk in KX-HTS

KX-NS is used as other PBX in this document.

Programming method for KX-TDE is basically same as KX-NS.

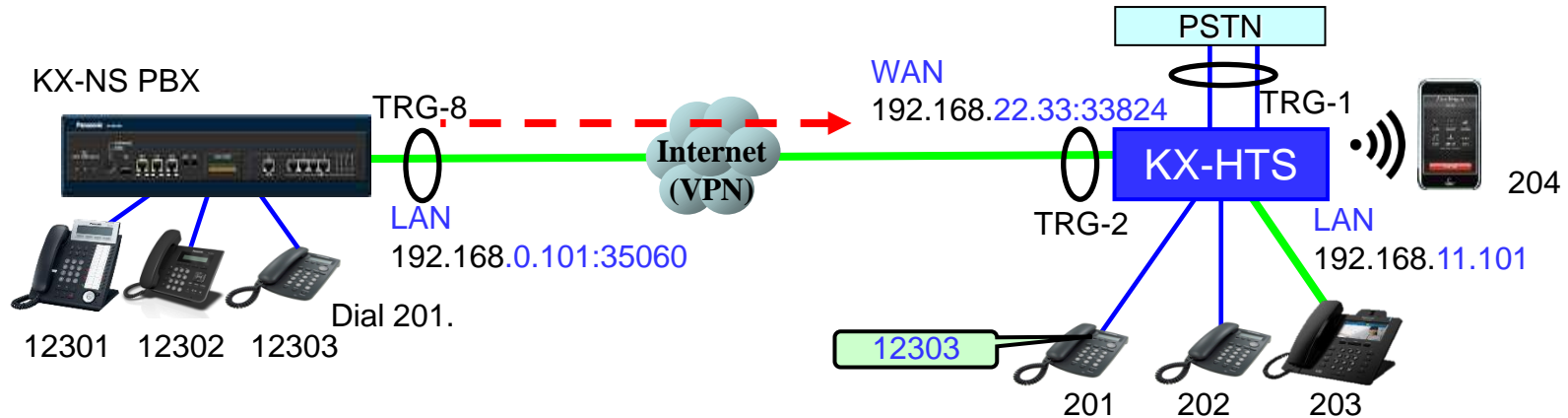
# Chapter 1

## Ext in KX-NS to Ext in KX-HTS

# 11. Concept of Programming

KX-NS PBX calls IP address of **KX-HTS WAN port**. (Not LAN port)  
KX-NS calls KX-HTS by TIE call feature so that extension number can be informed to KX-HTS as CLIP.

Default SIP port number of KX-HTS is 33824.



# 12-1. Select Virtual Cabinet.

**Users**

**PBX Configuration**

- 1. Configuration
  - 1. Slot
  - 2. Portable Station
  - 3. Option
  - 4. Clock Priority
  - 5. DSP Resources
- 2. System
- 3. Group
- 4. Extension
- 5. Optional Device
- 6. Feature
- 7. TRS
- 8. ARS
- 9. Private Network
- 10. CO & Incoming Call
- 11. Maintenance

UM Configuration

Network Service

**Slot**

System Property
Activation Key
IP Phone Registration
VoIP Property
UM Property

**Trunk Slot Card**

LCOT6
PRI30
E1
DPH2

**Extension Slot Card**

MCSLC16
MCSLC8
DLC16
DLC8
DHLC4

**Panasonic**
Basic

1

2

3

4

Virtual Slot

# 12-2. Install Virtual SIP Card.

**Slot**

System Property | Activation Key | IP Phone Registration | VoIP Property | UM Property

**Trunk Slot Card**

- V-SIPGW
- V-IPGW

**Extension Slot Card**

- V-IPEXT
- V-SIEXT
- V-UTEXT
- V-IPCS4

**Panasonic** Virtual

4  
3  
2  
1

Trunk

V-SIPGW

8  
7  
6  
5

V-IPEXT:  
V-IPEXT:  
V-IPEXT:  
V-IPEXT:

12  
11  
10  
9

IP-CS

V-IPCS4

1 2 3 4

Virtual Slot



# 12-3. Set Out of Service.

The screenshot displays a PBX configuration interface. On the left is a navigation tree with categories like 'Users', 'PBX Configuration', and '1. Configuration'. The '1. Slot' option is selected. The main area is titled 'Slot' and contains several tabs: 'System Property', 'Activation Key', 'IP Phone Registration', 'VoIP Property', and 'UM Property'. Below these tabs are three card configuration sections: 'Trunk Slot Card' (with V-SIPGW and V-IPGW), 'Extension Slot Card' (with V-IPEXT, V-SIPEXT, V-UTEXT, and V-IPCS4), and a 'Virtual' section. The 'Virtual' section shows a grid of slots (1-12) with labels like 'V-IPEXT', 'IP-CS', and 'V-IPCS4'. A context menu is open over slot 1, listing 'Shelf Property', 'Card Property', 'Port Property', and 'Ous', with 'Ous' circled in red. At the bottom, there are four physical slot icons labeled 1, 2, 3, and 4, and a 'Virtual Slot' icon highlighted with a yellow box.

# 12-4. Open Port Property.

**Users**

**PBX Configuration**

- 1. Configuration
  - 1. Slot**
  - 2. Portable Station
  - 3. Option
  - 4. Clock Priority
  - 5. DSP Resources
- 2. System
- 3. Group
- 4. Extension
- 5. Optional Device
- 6. Feature
- 7. TRS
- 8. ARS
- 9. Private Network
- 10. CO & Incoming Call
- 11. Maintenance

**UM Configuration**

**Network Service**

**Slot**

System Property    Activation Key    IP Phone Registration    VoIP Property    UM Property

Trunk Slot Card

- V-SIPGW
- V-IPGW

Extension Slot Card

- V-IPEXT
- V-SIPEXT
- V-UTEXT
- V-IPCS4

**Panasonic**    **Virtual**

4    Shelf Property

3    Card Property

2    **Port Property**

1    Inc

Delete

8    V-IPEXT:

7    V-IPEXT:

6    V-IPEXT:

5    V-IPEXT:

12    IP-CS

11    IP-CS

10    IP-CS

9    V-IPCS4

1    2    3    4

**Virtual Slot**

# 12-5. Assign Channel Attribute.

1 port for Basic channel

3 port for Additional channel to Basic channel, if you need 4 ch for example.

Login as INSTALLER Site 1 : NS1000

### Port Property - Virtual SIP Gateway

Select Provider Add Provider Trunk Adaptor

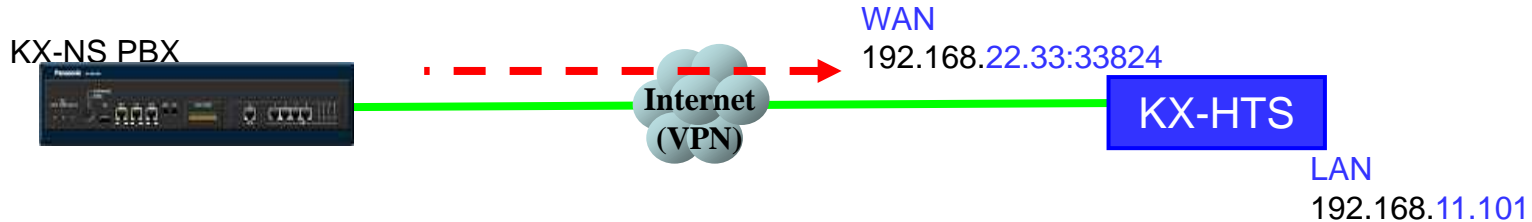
Main Account Register NAT Option Calling Party Called Party Voice/FAX RTP/RTCP T.38

No.	Shelf	Slot	Port	Connection	Connection Attribute	Trunk Property	Channel Attribute	Provider Name (20 characters)	SIP Server Name (100 characters)
	ALL			ALL	ALL	ALL	ALL		
1	Virtual	31	1	OUS	SIP Provider	Public	Basic channel		
2	Virtual	31	2	OUS	SIP Provider	Public	Additional channel for Slot 31 Ch 1		
3	Virtual	31	3	OUS	SIP Provider	Public	Additional channel for Slot 31 Ch 1		
4	Virtual	31	4	OUS	SIP Provider	Public	Additional channel for Slot 31 Ch 1		
5	Virtual	31	5	OUS	SIP Provider	Public	Not used		
6	Virtual	31	6	OUS	SIP Provider	Public	Not used		

## 12-6. Assign IP address and Port Number.

Assign IP Address of **KX-HTS WAN**. (192.168.22.33).  
Change SIP Server Port Number to “33824”.

SIP Server IP Address	SIP Server IP Address for Failover	SIP Server Port Number
192.168.22.33		32824



To connect with PBX by other maker,  
port number is 5060 usually.

# 12-7. Assign User Name, ID and Password.

These are required. Any number is OK.

Login as INSTALLER Site 1 : NS1000

Port Property - Virtual SIP Gateway

Select Provider Add Provider Trunk Adaptor

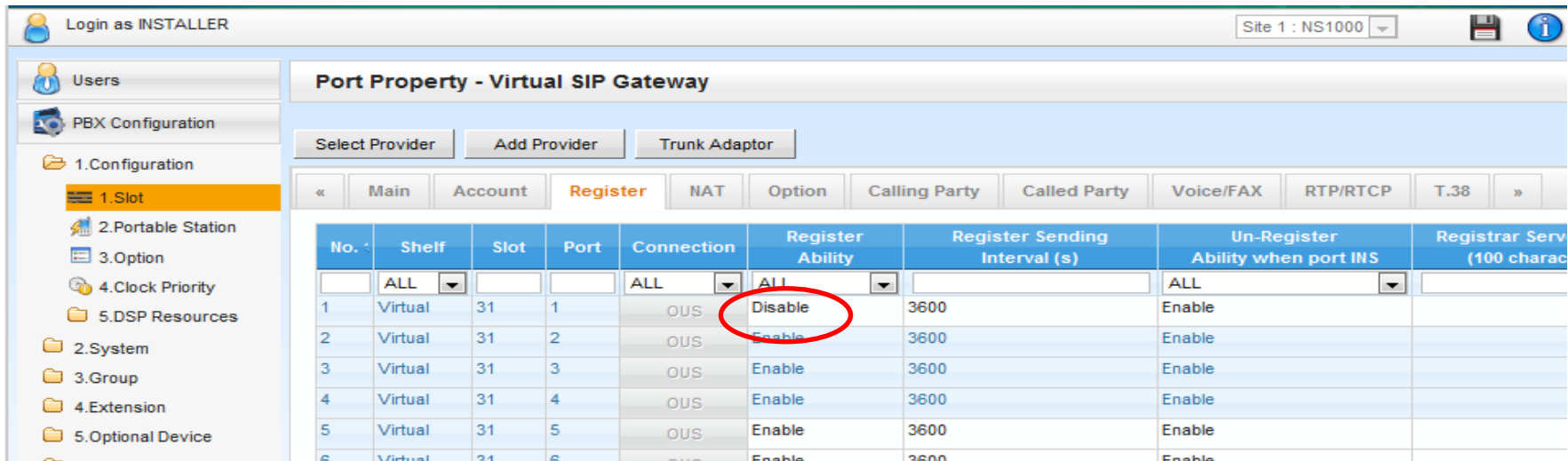
Main Account Register NAT Option Calling Party Called Party Voice/FAX RTP/RTCP T.38

No.	Shelf	Slot	Port	Connection	User Name (64 characters)	Authentication ID (64 characters)	Authentication Pass (32 characters)
1	Virtual	31	1	OUS	12345	12345	12345
2	Virtual	31	2	OUS			
3	Virtual	31	3	OUS			
4	Virtual	31	4	OUS			
5	Virtual	31	5	OUS			

# 12-8. Disable Register.

Registration using User Name, ID and password is disabled.

But these parameters are required as previous page.



The screenshot shows the 'Port Property - Virtual SIP Gateway' configuration page. The 'Register' tab is selected, and the 'Register Ability' column in the table is set to 'Disable' for the first row, which is circled in red.

No.	Shelf	Slot	Port	Connection	Register Ability	Register Sending Interval (s)	Un-Register Ability when port INS	Registrar Serv (100 charac
	ALL			ALL	ALL		ALL	
1	Virtual	31	1	OUS	Disable	3600	Enable	
2	Virtual	31	2	OUS	Enable	3600	Enable	
3	Virtual	31	3	OUS	Enable	3600	Enable	
4	Virtual	31	4	OUS	Enable	3600	Enable	
5	Virtual	31	5	OUS	Enable	3600	Enable	
6	Virtual	31	6	OUS	Enable	3600	Enable	

# 12-9. Select "PBX-CLIP"

This is required for extension to send CLIP when making a call from SIP trunk.

Login as INSTALLER Site 1 : NS1000

### Port Property - Virtual SIP Gateway

Select Provider Add Provider Trunk Adaptor

« Main Account Register NAT Option **Calling Party** Called Party Voice/FAX RTP/RTCP T.38 »

No.	Shelf	Slot	Port	Connection	Header Type	From Header - User Part	From Header - SIP-URI (100 characters)
	ALL			ALL	ALL	ALL	
1	Virtual	31	1	OUS	From Header	<b>PBX-CLIP</b>	
2	Virtual	31	2	OUS	From Header	User Name	
3	Virtual	31	3	OUS	From Header	User Name	
4	Virtual	31	4	OUS	From Header	User Name	
5	Virtual	31	5	OUS	From Header	User Name	

**Users**

**PBX Configuration**

- 1. Configuration
  - 1. Slot
  - 2. Portable Station
  - 3. Option
  - 4. Clock Priority
  - 5. DSP Resources
- 2. System
- 3. Group
- 4. Extension
- 5. Optional Device
- 6. Feature
- 7. TRS
- 8. ARS
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- 11. Maintenance

UM Configuration

Network Service

## Slot

System Property

Activation Key

IP Phone Registration

VoIP Property

UM Property

**Trunk Slot Card**

V-SIPGW

V-IPGW

**Extension Slot Card**

V-IPEXT

V-SIPEXT

V-UTEXT

V-IPCS4

### Panasonic

4

3

2

1

### Virtual

12

11

10

9

### Panasonic

8

7

6

5

### Virtual

12

11

10

9

Shelf Property

Card Property

Port Property

Ins

Delete

V-IPEXT:

V-IPEXT:

V-IPEXT:

V-IPEXT:

V-IPEXT:

V-IPEXT:

V-IPEXT:

V-IPEXT:

V-IPCS4

1

2

3

4

Virtual Slot



DDI programming is not required usually.  
 When received DDI number does not match with DDI table, it is treated as extension number.

**HTS** Web Maintenance Console  
 001.00001 English (US) Logout

PBX Configuration

- 1.System
- 2.Extension
- 3.Trunk
  - 1.Port
  - 2.DIL
  - 3.DDI
  - 4.Call ID Modify & Block
  - 5.DISAS
  - 6.Analogue CO Property
  - 7.SIP Trunk Property
- 4.TRS/ARS
- 5.System Speed Dialing
- 6.Conference

Network Configuration

Maintenance

**DDI**  
 PBX Configuration > 3.Trunk > 3.DDI

**Dialling Plan**

SIP Carrier	DDI	Remove Digit	Additional Dial
1	Enable	1	
2	Enable	1	

**DDI Table**

No.	DDI Number	Name	Destination Day	Destination Lunch	Destination Night
1			101/Bob	101/Bob	101/Bob
2			101/Bob	101/Bob	101/Bob
3			101/Bob	101/Bob	101/Bob
4			101/Bob	101/Bob	101/Bob
5			101/Bob	101/Bob	101/Bob

# Chapter 2

## Ext in KX-NS from Ext in KX-HTS

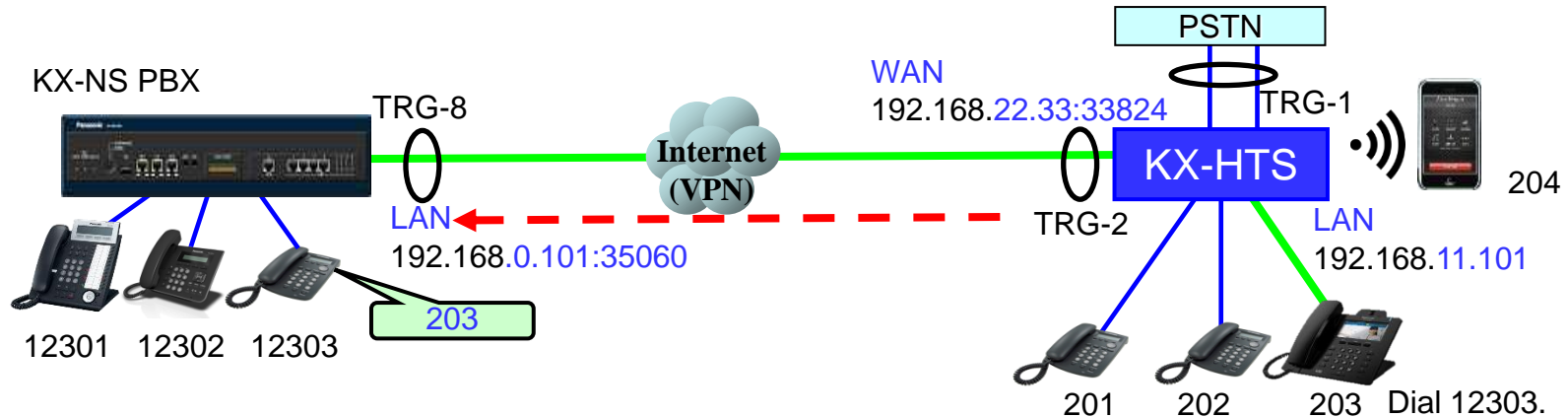
# 21. Concept of Programming

KX-HTS calls IP address of **KX-NS LAN port**.

KX-HTS calls KX-NS by Quick dialing for Trunk group access.

CLIP number has to be assigned for each extension.

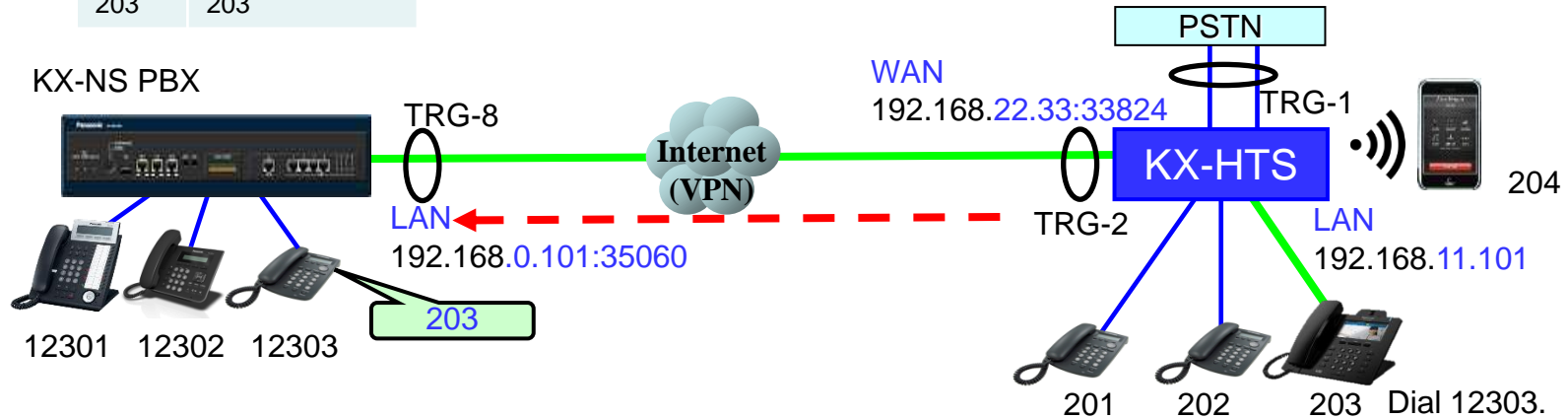
Default **SIP Trunk port** number of KX-NS is 35060.



# 22. CLIP

CLIP has to be programmed for each extension.

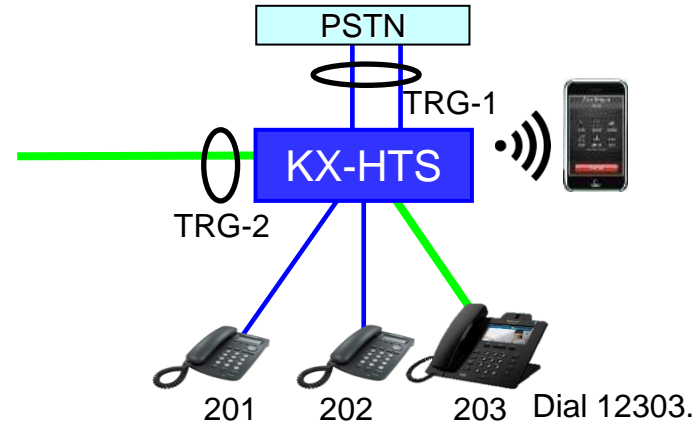
Ext	CLIP for SIP carrier 1
201	201
202	202
203	203



# 23. Trunk Property

Trunk property and TRG have to be programmed.

CO	Property	Trunk Group
1	Analog	1
2	Analog	1
3	SIP Carrier 1	2
4	SIP Carrier 1	2
5	SIP Carrier 1	2
6	SIP Carrier 1	2
7	SIP Carrier 1	2
8	SIP Carrier 1	2



# 24. Quick Dialing

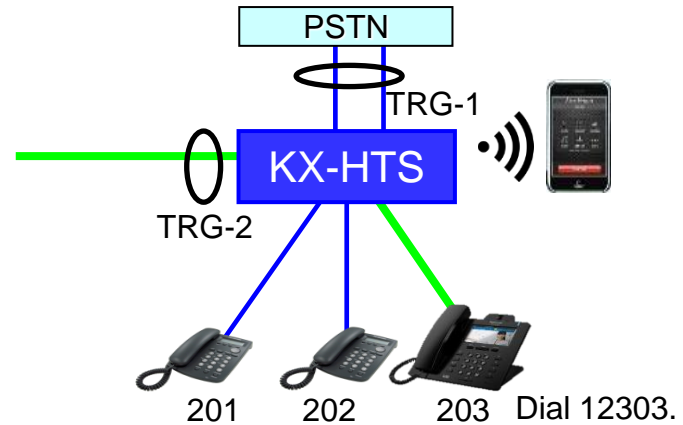
Remove "1" from Extension numbering.

Program quick dial 1 = 8#21

1xxxx to 8#2(TRG2)1xxxx

8#X is for TRG access. 80X is for single CO access.

No.	Quick Number	Dial
1	1	8#21
2		
3		
4		



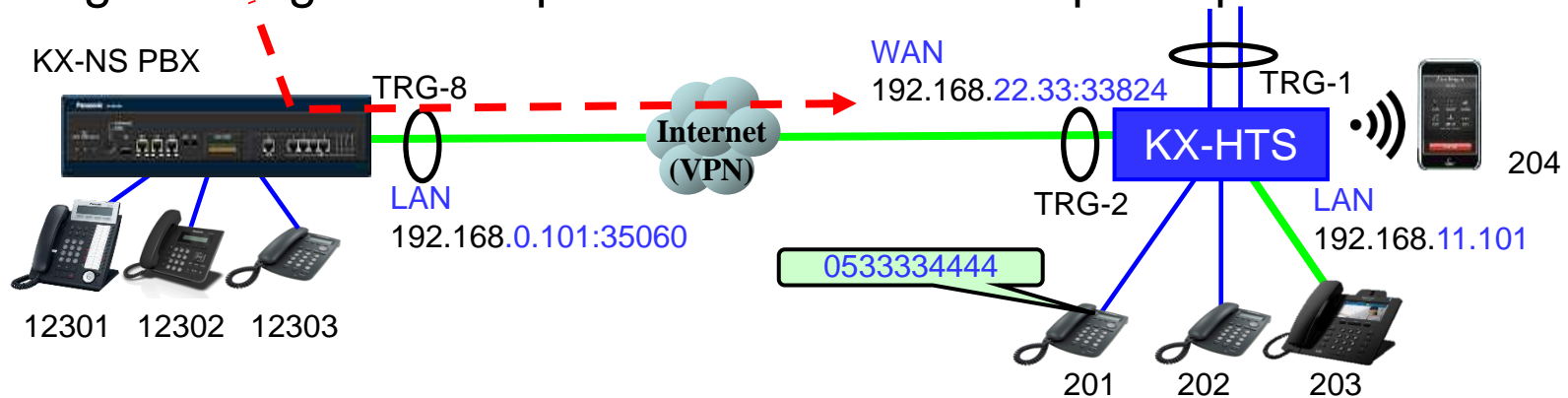
# Chapter 3

## Trunk in KX-NS to Ext in KX-HTS

# 31. Concept of Programming

KX-NS/TDE restricts trunk incoming call to SIP trunk by default. This restriction can be removed by programming as next pages. Extension number in KX-HTS can be destination of DDI/DIL for KX-NS/TDE.

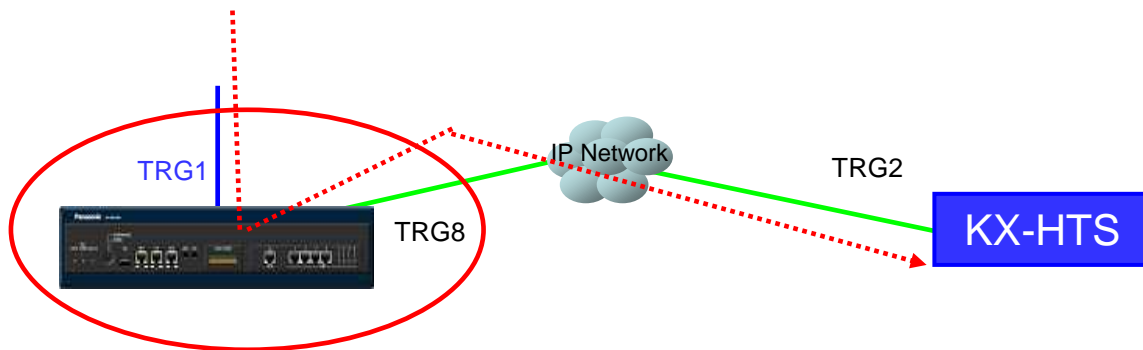
Programming is not required for KX-HTS except chapter 1.





## 32. Restriction by TRS level

CO/TIE to CO is restricted by default.  
COS default for TRG is COS 7 (= TRS 7).  
So change COS for TRG1 in TDE to COS 1.



# 33. Restriction by Reserved Bit

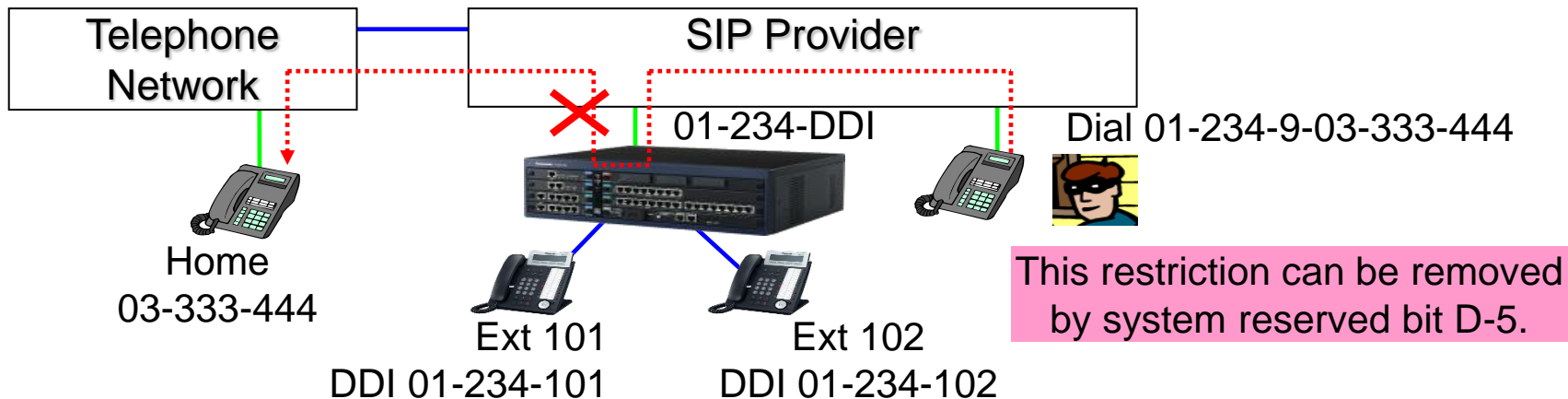
System reserved bit (D-5) is also required for DDI call to KX-NS/TDE.

The screenshot shows the '7-80 TDE200 SE - KX-TDE Maintenance Console' window. The '2.9 System Options' tab is active, and the 'Reserved (bits)' sub-tab is selected and circled in red. The main area displays a grid of options for various system settings. The grid has columns labeled 0 through 7 and rows labeled 00 through 13. A legend indicates that a blue square represents 'Enable' and a white square represents 'Disable'. The grid shows that bit 5 is reserved for DDI call to KX-NS/TDE, as indicated by the blue square in the cell for bit 5 and row 0D, which is also circled in red.

	0	1	2	3	4	5	6	7
00								
01								
02							Enable	
03								
04								
05								
06								Enable
07								
08								
09								
0A								
0B								
0C								
0D						Enable		
0E								
0F								
10								
11								
12								
13								

# 34. Reference

DDI to Public call is restricted from KX-TDE version 5.  
Indirect call such as Fwd is not restricted.



Ext 102 can be called from other extension by "102".

Ext 102 can call the home by "9-03-333-444".

Ext 102 can be called by DDI "01-234-102".

Some employee may try DDI "01-234-9-03-333-444" instead of "01-234-102" from outside without caller ID display.

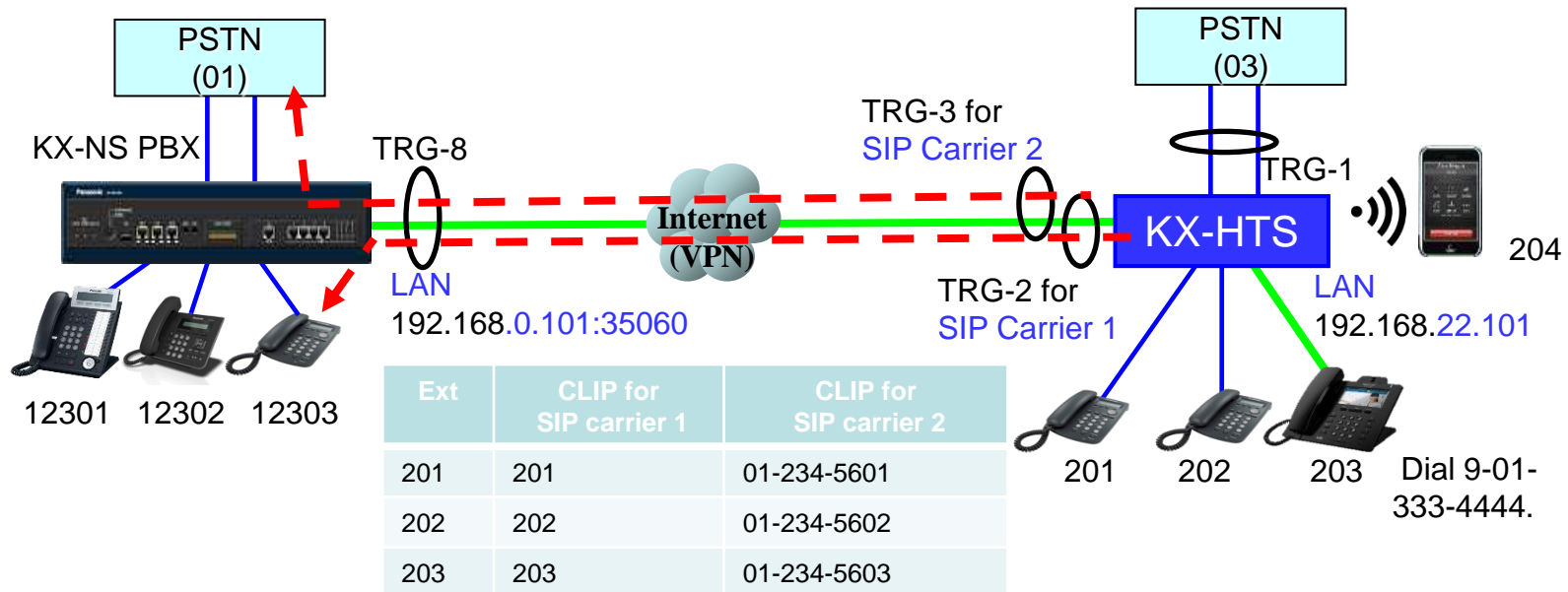
=> Some SIP provider may allow this call. But this does not happen even for TDE-NCP version 4, because TRS level for call from trunk is 7 (Cannot call) by default. TDE-NCP version 5 restricts this call even for other TRS level.

# Chapter 4

## Trunk in KX-NS from Ext in KX-HTS

# 41. Concept of Programming

ARS of KX-HTS calls IP address of **KX-NS LAN port** using “2nd SIP carrier” so that CLIP for PSTN can be sent instead of extension number as CLIP.



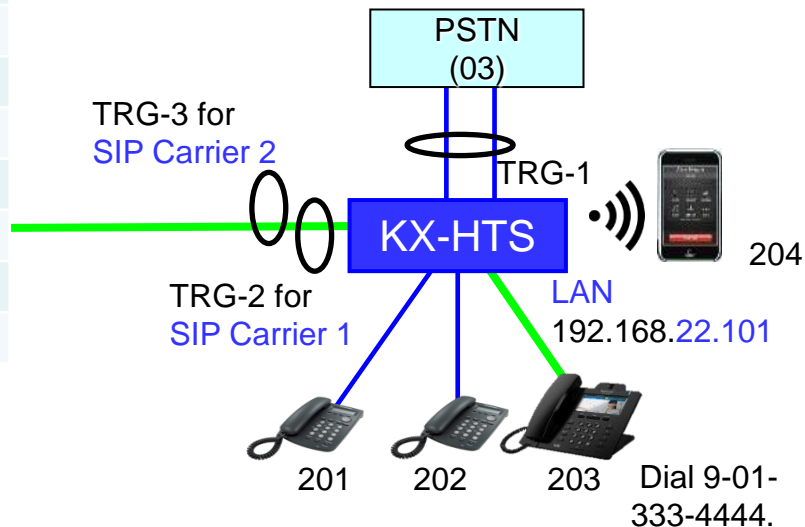
CLIP has to be programmed for each extension.

Ext	CLIP for SIP carrier 1	CLIP for SIP carrier 2
201	201	01-234-5601
202	202	01-234-5602
203	203	01-234-5603

# 43. Trunk Property

Trunk property and TRG have to be programmed.

CO	Property	Trunk Group
1	Analog	1
2	Analog	1
3	SIP Carrier 1	2
4	SIP Carrier 1	2
5	SIP Carrier 1	2
6	SIP Carrier 2	3
7	SIP Carrier 2	3
8	SIP Carrier 2	3



ARS has to be programmed.

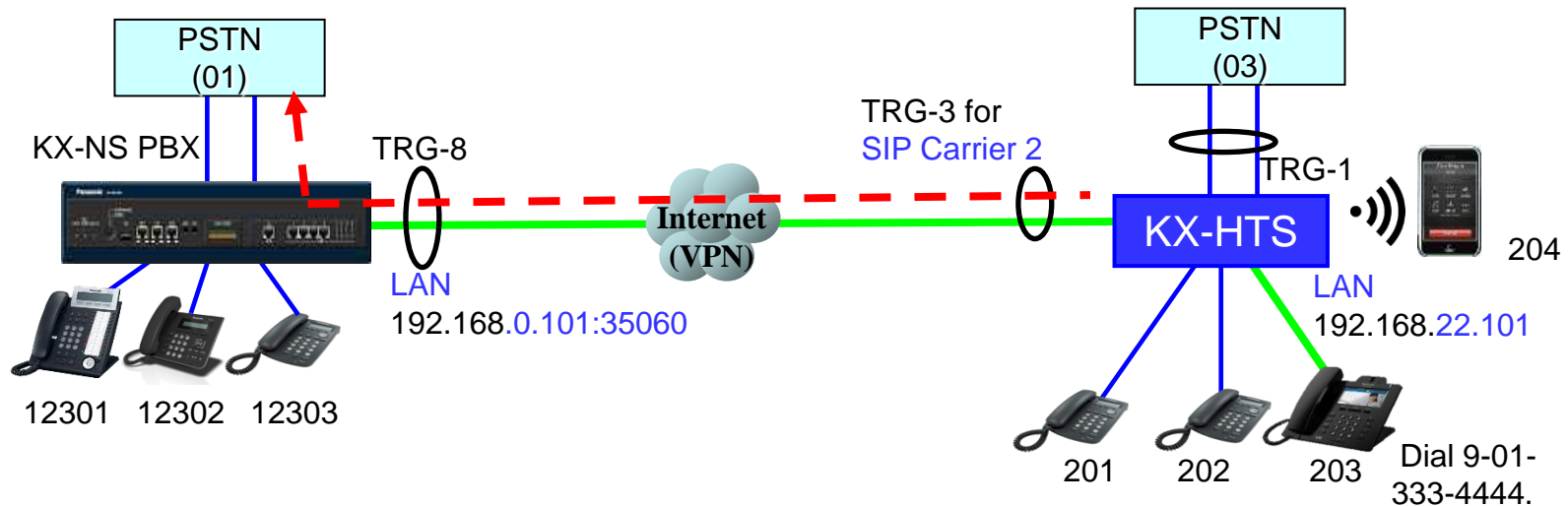
Leading Digits	ARS Carrier
01	Carrier 1
0N	Carrier 2

ARS Carrier	TRG	Add
1	TRG1	
2	TRG3	9
3		



# 45. Remove Restriction

Restriction by TRS and system reserved bit has to be removed as well as chapter 3.

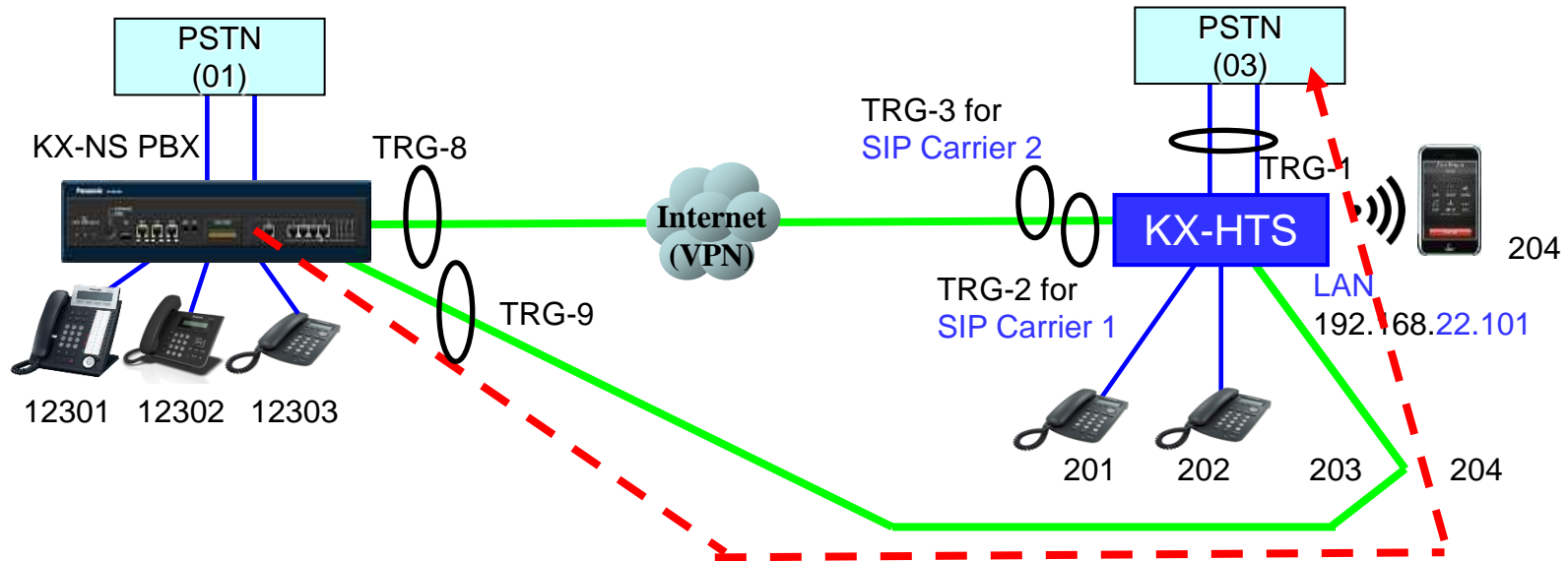


# Chapter 5

## Ext in KX-NS to Trunk in KX-HTS

# 51. Concept of Programming

KX-NS/TED can call trunk of KX-HTS as SIP extension of KX-HTS. This is useful for paging to KX-HTS from KX-NS/TDE also.

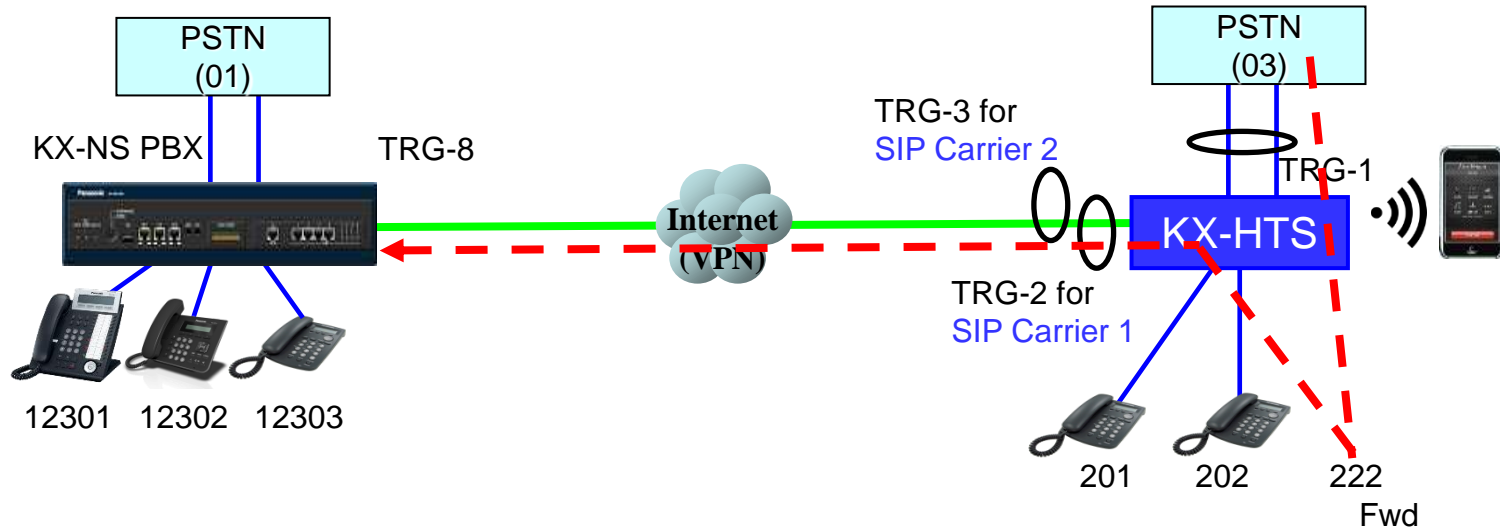


# Chapter 6

## Ext in KX-NS from Trunk in KX-HTS

# 61. Concept of Programming

Incoming call from trunk of KX-HTS can be forwarded by unused extension.



**Thank you !**

# Revision

Date	No.	Change
July 8, 2015	All	First draft
July 23, 2015	All	2nd draft