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KX-HTS Step by Step Guide SIP Trunk

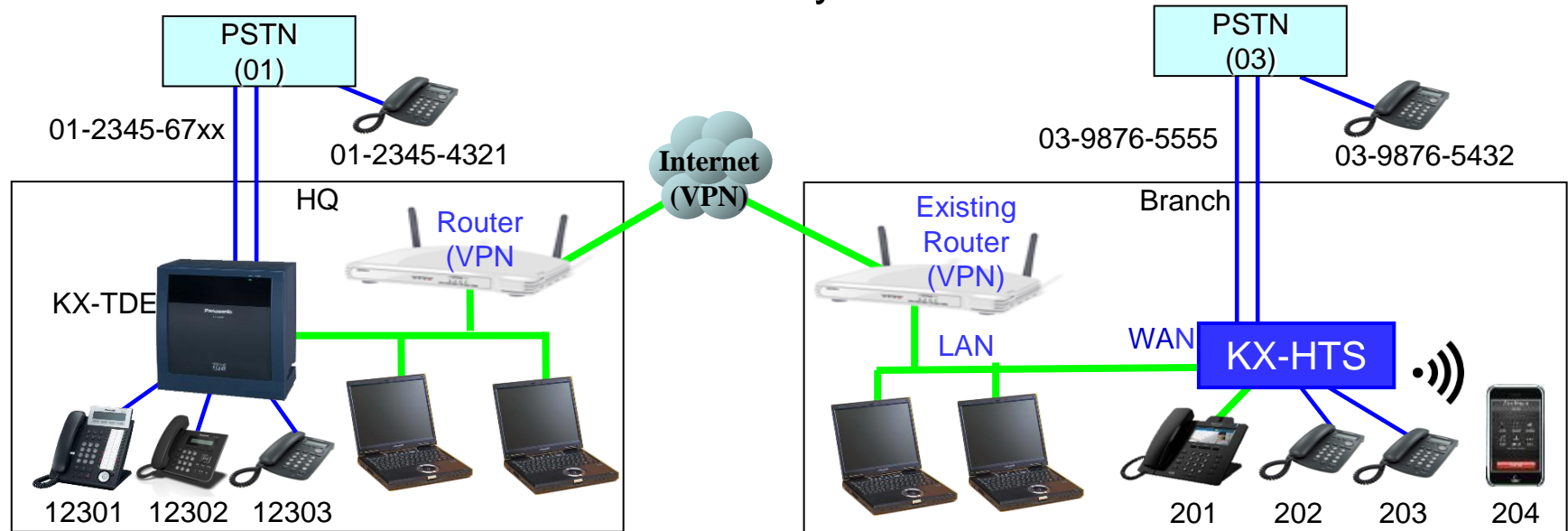
Panasonic System Networks
PBX SE team

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.

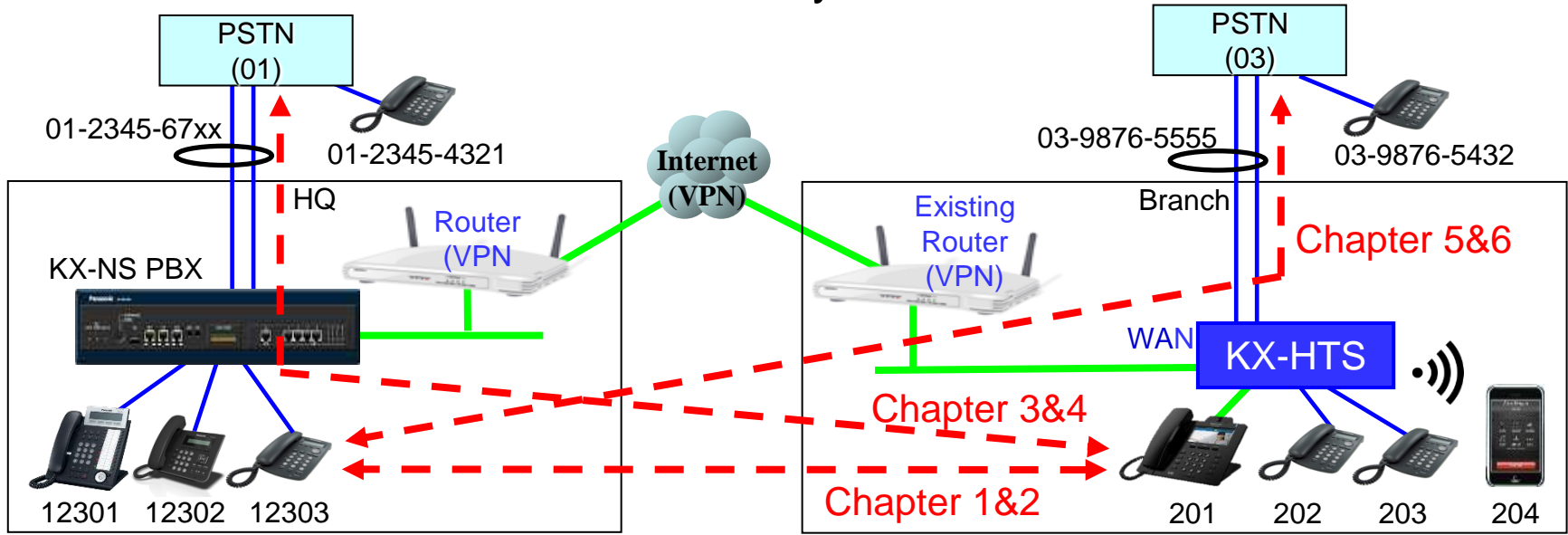
2 locations have to be connected by VPN.



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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| 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.

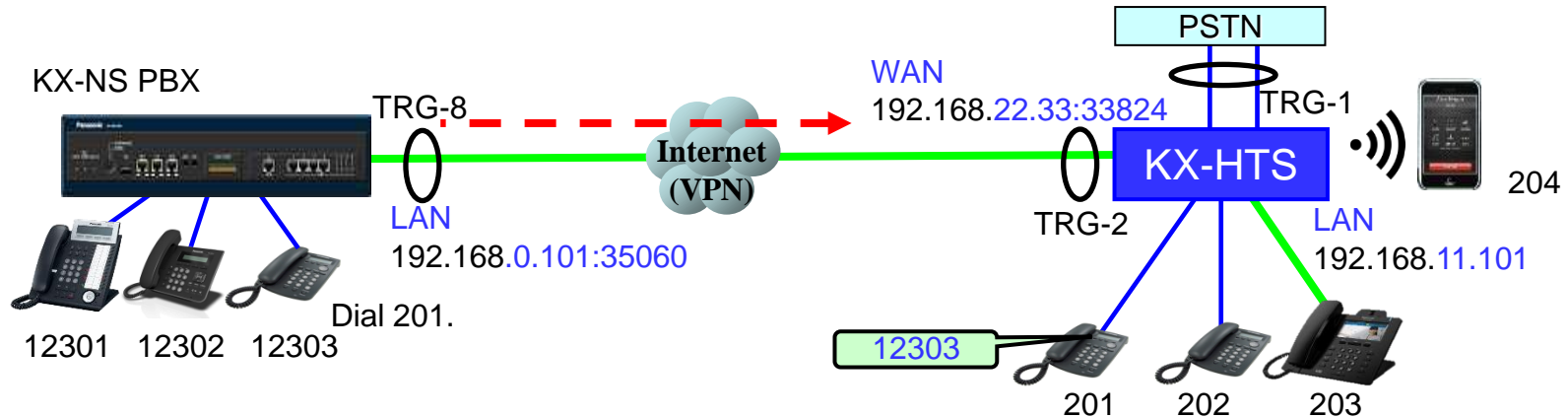
Chapter 1

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.

The screenshot displays the configuration interface for a Panasonic PBX system. On the left is a navigation menu with categories like Users, PBX Configuration, and UM Configuration. 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, there are two tables for card selection:

| Trunk Slot Card | |
|-----------------|--|
| LCOT6 | |
| PRI30 | |
| E1 | |
| DPH2 | |

| Extension Slot Card | |
|---------------------|--|
| MCSLC16 | |
| MCSLC8 | |
| DLC16 | |
| DLC8 | |
| DHLC4 | |

The central part of the interface shows a rack of slots. Slot 4 is labeled 'EXP-M' and contains three ports. Slot 5 is labeled 'Basic' and contains three ports. Slot 6 contains two ports. Slot 7 contains two ports. Below the main rack, there are four smaller slot icons labeled 1, 2, 3, and 4. Slot 1 is highlighted with a yellow box and contains a green light indicator. Below slot 1, a red oval highlights a 'Virtual Slot' button.

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 | Trunk | 8 | V-IPEXT: | 12 |
| 3 | | 7 | V-IPEXT: | 11 |
| 2 | | 6 | V-IPEXT: | 10 |
| 1 | V-SIPGW | 5 | V-IPEXT: | 9 |
| | | | | IP-CS |
| | | | | V-IPCS4 |

1 2 3 4

Virtual Slot

12-3. Set Out of Service.

The screenshot displays a web-based configuration interface for a Panasonic PBX system. On the left is a navigation menu with categories like 'Users', 'PBX Configuration', and 'UM Configuration'. 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

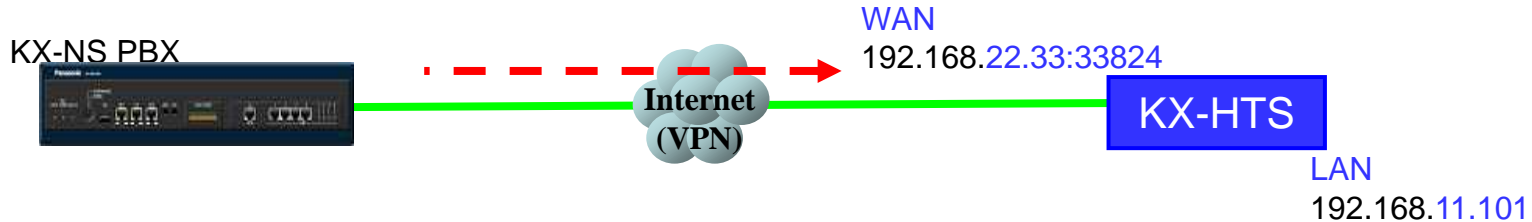
Main Account Register NAT Option Calling Party Called Party Voice/FAX RTP/RTCP T.38

| 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”.

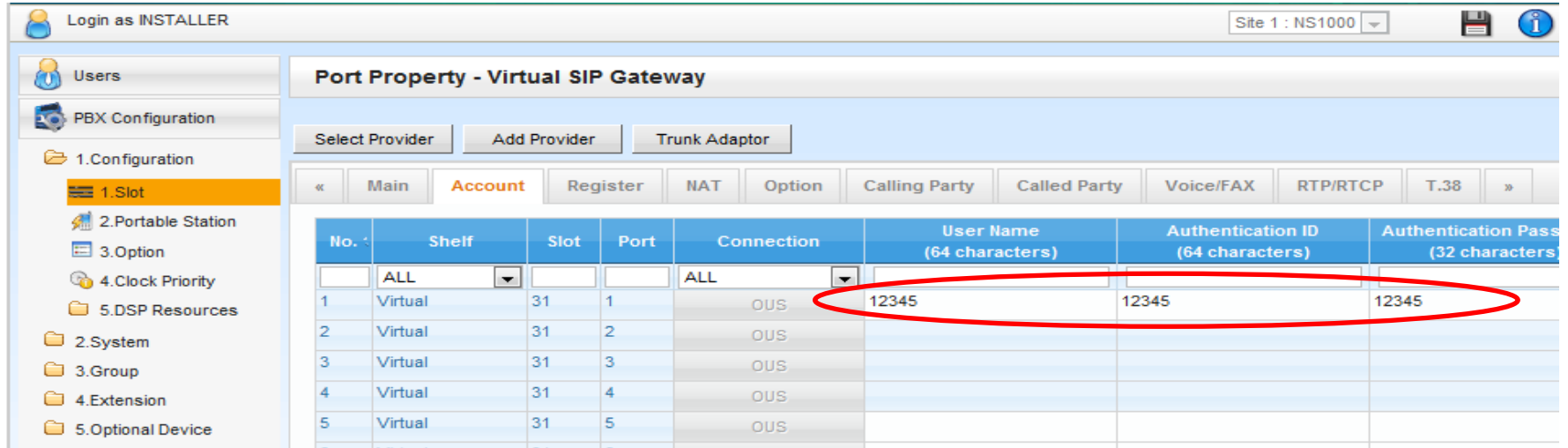
| SIP Server IP Address | SIP Server IP Address for Failover | SIP Server Port Number |
|-----------------------|------------------------------------|------------------------|
| 192.168.22.33 | | 32824 |



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.



The screenshot shows a web-based configuration interface for a PBX system. The user is logged in as 'INSTALLER' and is viewing the 'Port Property - Virtual SIP Gateway' configuration page. The interface includes a navigation menu on the left, a top navigation bar with 'Main', 'Account', 'Register', 'NAT', 'Option', 'Calling Party', 'Called Party', 'Voice/FAX', 'RTP/RTCP', and 'T.38' tabs, and a main table for user configuration. The 'Account' tab is selected, and the table displays the following data:

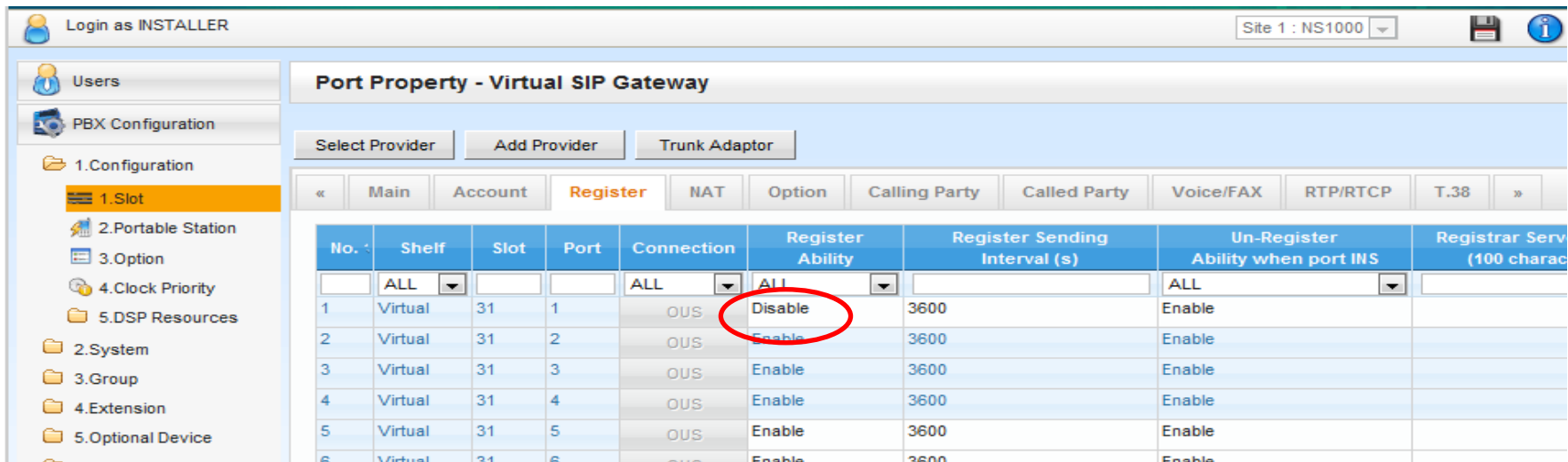
| No. | Shelf | Slot | Port | Connection | User Name (64 characters) | Authentication ID (64 characters) | Authentication Pass (32 characters) |
|-----|---------|------|------|------------|---------------------------|-----------------------------------|-------------------------------------|
| 1 | Virtual | 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 | | | |

The first row of the table is circled in red, highlighting the values '12345' for the User Name, Authentication ID, and Authentication Password fields.

12-8. Disable Register.

Registration using User Name, ID and password is disabled.

But these parameters are required as previous page.



The screenshot displays the 'Port Property - Virtual SIP Gateway' configuration page. The interface includes a navigation menu on the left, a top navigation bar with 'Main', 'Account', 'Register', 'NAT', 'Option', 'Calling Party', 'Called Party', 'Voice/FAX', 'RTP/RTCP', and 'T.38' tabs, and a table of port properties. The 'Register' tab is active, and the 'Register Ability' column is highlighted with a red circle, showing 'Disable' for the first row.

| 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 | PBX-CLIP | |
| 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
- 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

4

3

2

1

Shelf Property

Card Property

Port Property

Ins

Delete

8 V-IPEXT:

7 V-IPEXT:

6 V-IPEXT:

5 V-IPEXT:

Virtual

12

11 IP-CS

10

9 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

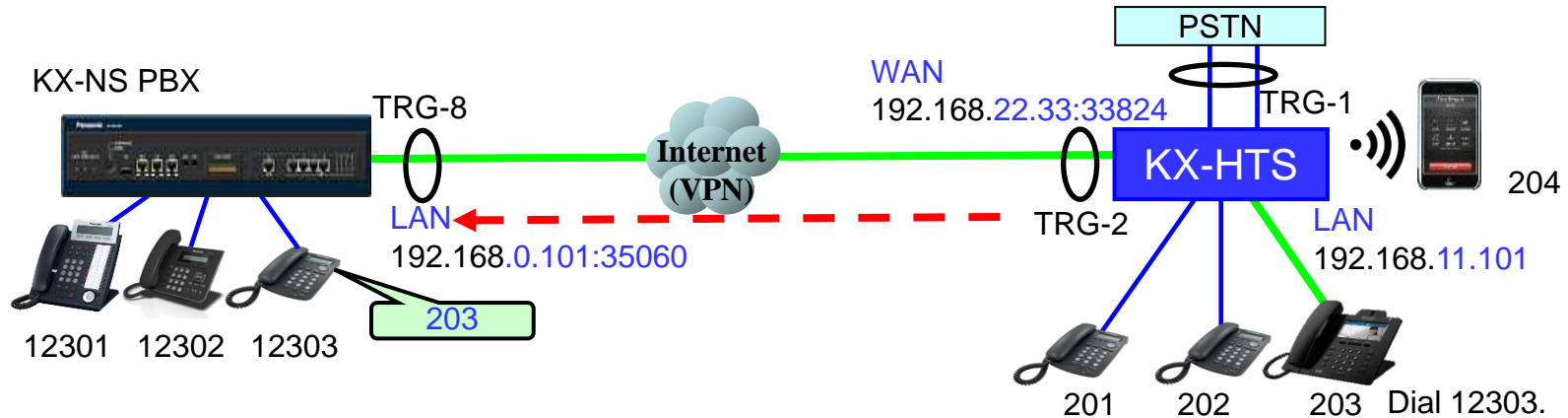
21. Concept of Programming

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.

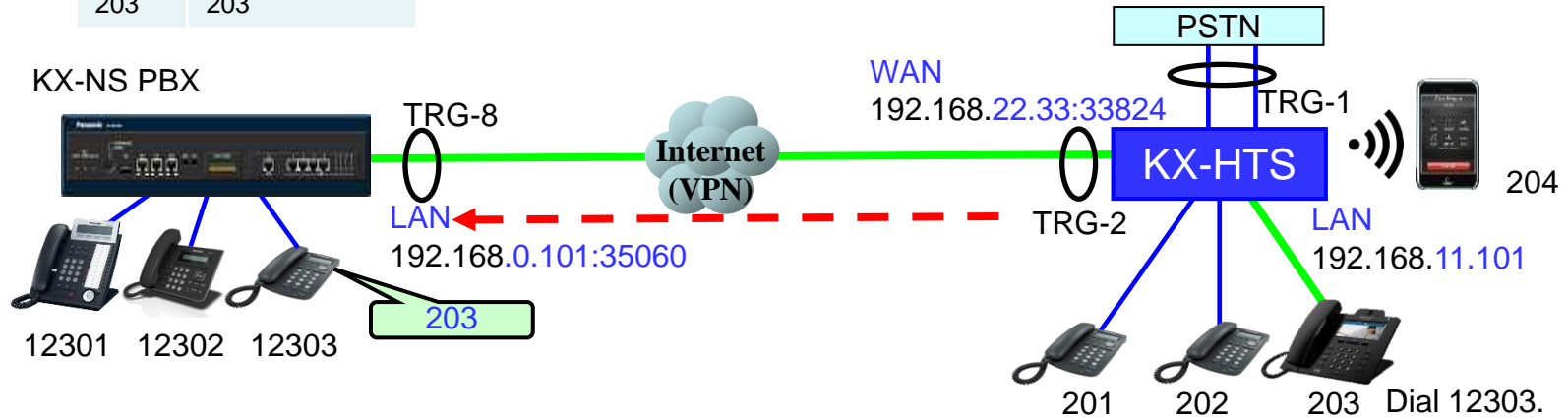
Default **SIP Trunk port** number of KX-NS is 35060.



22. CLIP

CLIP has to be programmed for each extension.

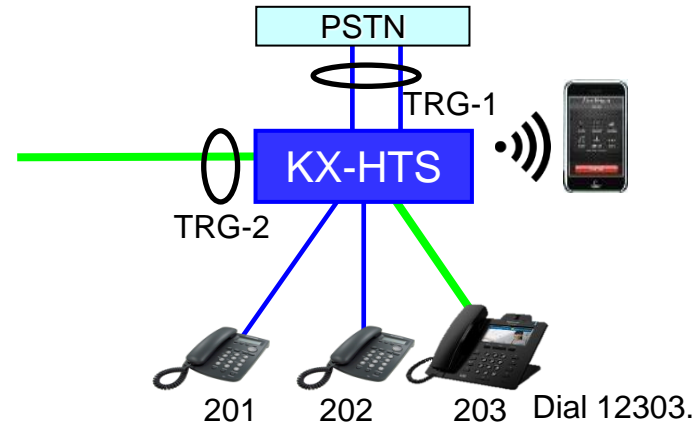
| Ext | CLIP for SIP carrier 1 |
|-----|------------------------|
| 201 | 201 |
| 202 | 202 |
| 203 | 203 |



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

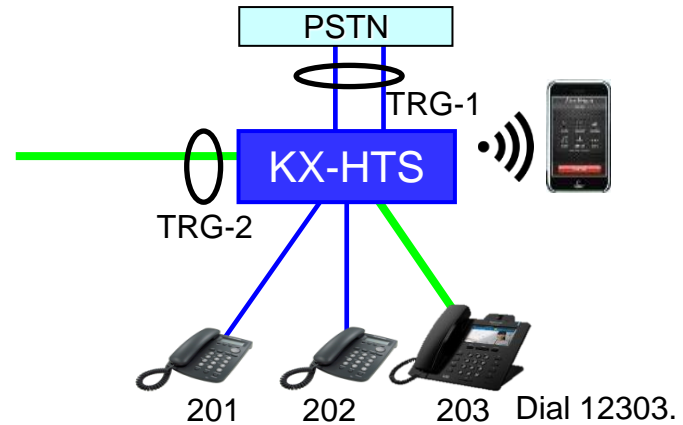
Remove "1" from Extension numbering.

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 | | |



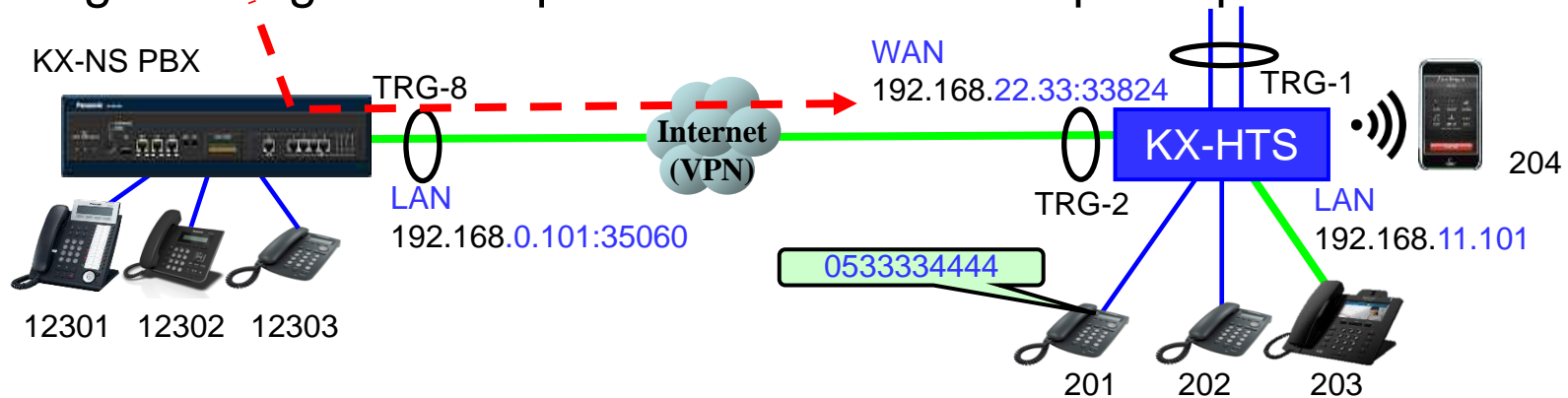
Chapter 3

Trunk in KX-NS to Ext in KX-HTS

31. Concept of Programming

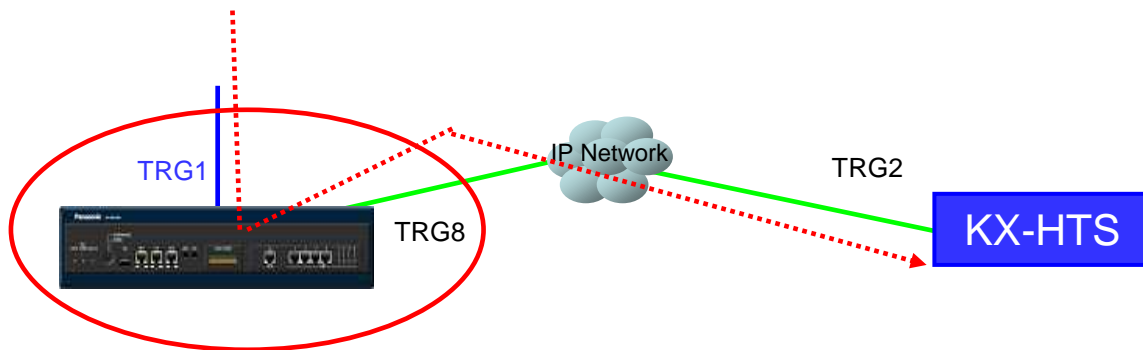
KX-NS/TDE restricts trunk incoming call to SIP trunk by default. This restriction can be removed by programming as next pages. Extension number in KX-HTS can be destination of DDI/DIL for KX-NS/TDE.

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 '2.9 System Options' dialog box in the 'Reserved (bits)' tab. The bit matrix is as follows:

| | 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 | | | | | | | | |

Legend:
 [Blue square] : Enable
 [White square] : Disable

Buttons: OK(O), Cancel(C), Apply(A)

System Menu: 1.Configuration, 2.System, 3.Group, 4.Extension, 5.Optional Device, 6.Feature, 7.TRS, 8.ARS, 9.Private Network, 10.CO & Incoming Call, 11.Maintenance

System Menu (Expanded): 1.Date & Time, 2.Operator & BGM, 3.Timers & Counters, 4.Week Table, 5.Holiday Table, 6.Numbering Plan, 7.Class of Service, 8.Ring Tone Patterns, 9.System Options, 10.Extension CID Settings, 11.Audio Gain, 12.Tone

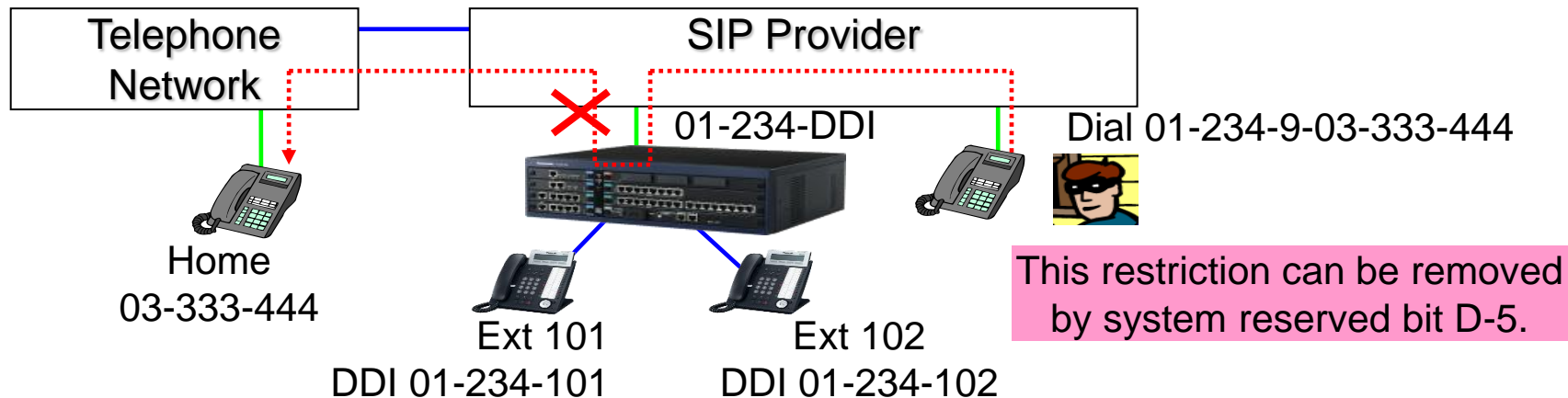
System Options: 3.1.1 TRG Settings, 2.9 System Options

System Options (Expanded): Option 1, Option 2, Option 3, Option 4, Option 5, Option 6 (CTI), Option 7, Reserved (byte), Reserved (bits)

System Information: Interactive Mode : 7-80 TDE200 SE (LAN) Type : TDE200 | Level : Sales Company | Version005-000 | Region000-000

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.

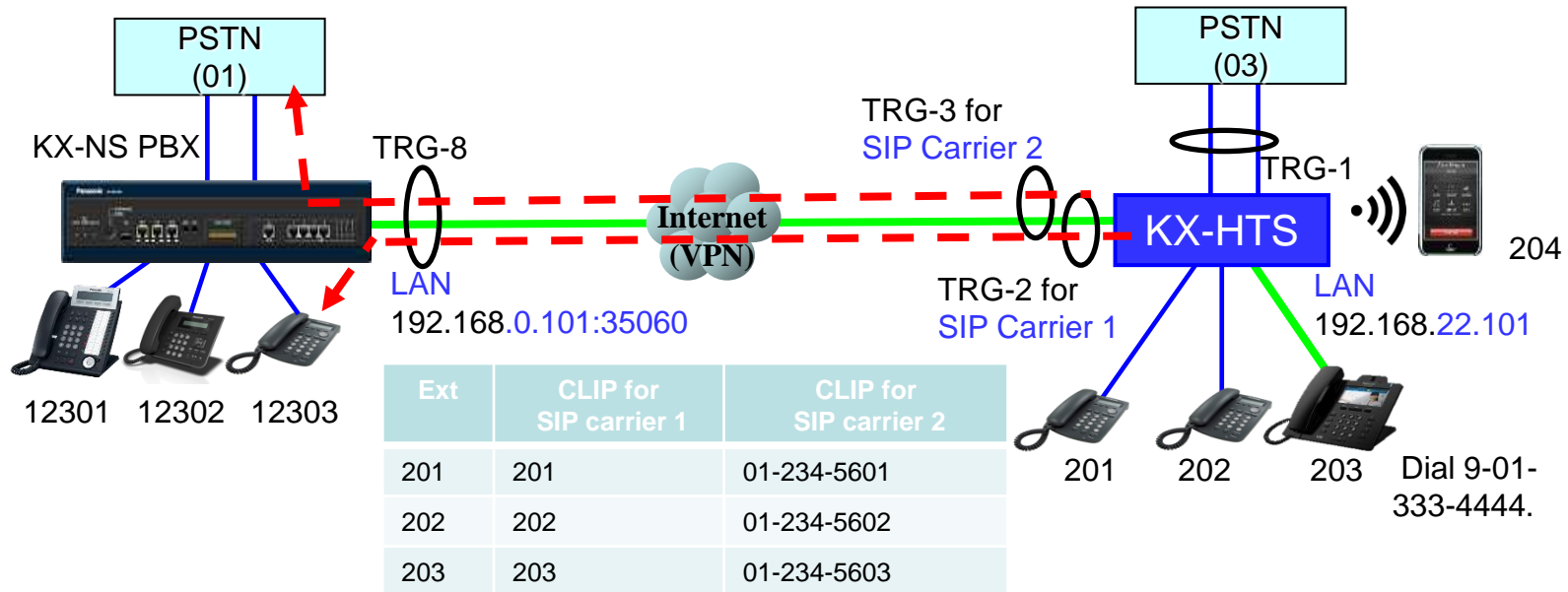
=> Some SIP provider may allow this call. But this does not happen even for TDE-NCP version 4, because TRS level for call from trunk is 7 (Cannot call) by default. TDE-NCP version 5 restricts this call even for other TRS level.

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.



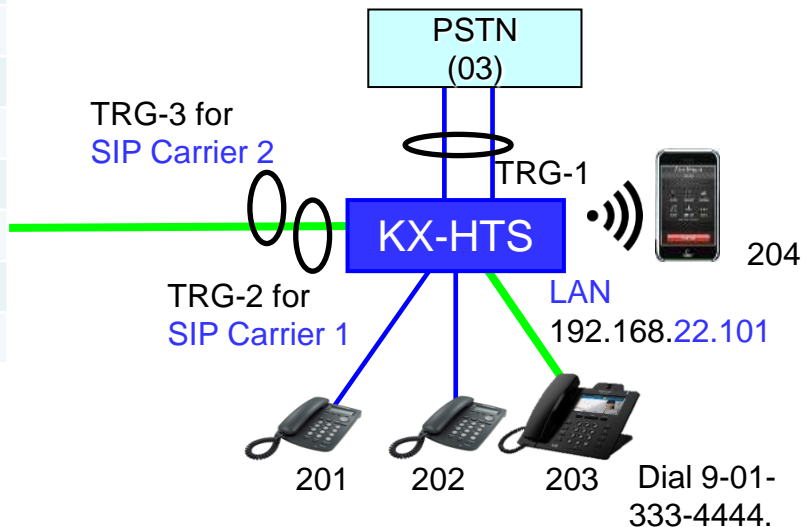
CLIP has to be programmed for each extension.

| 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 |



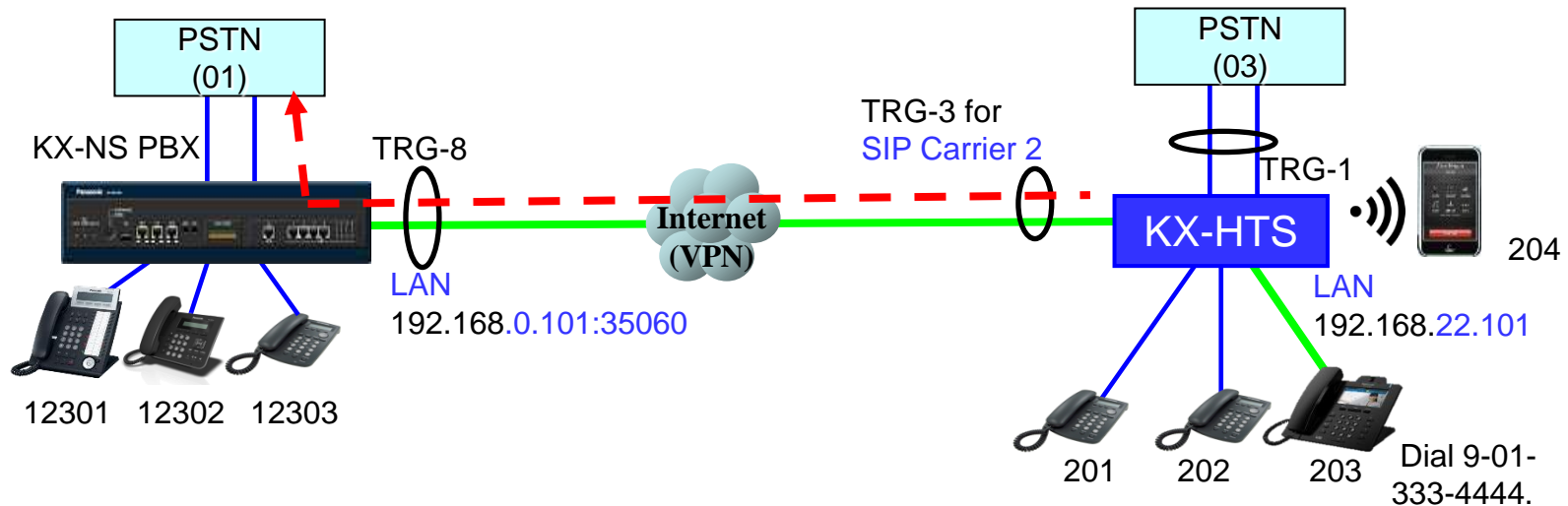
ARS has to be programmed.

| 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.

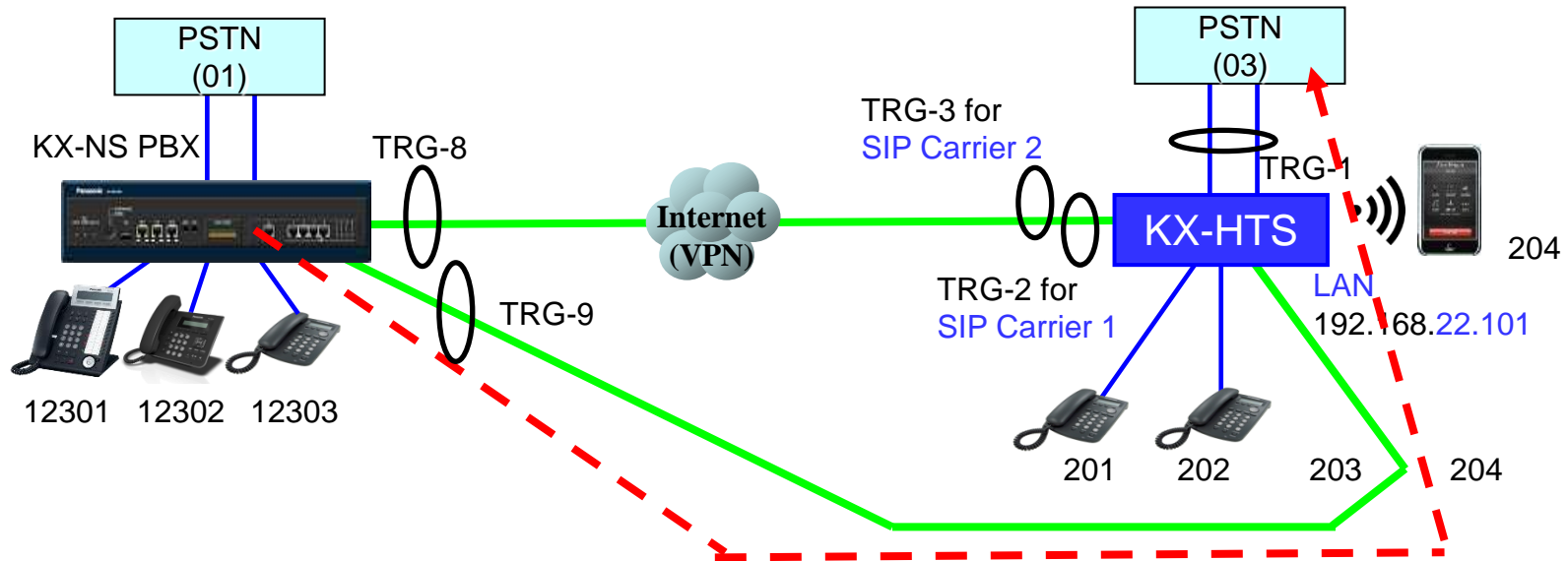


Chapter 5

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.

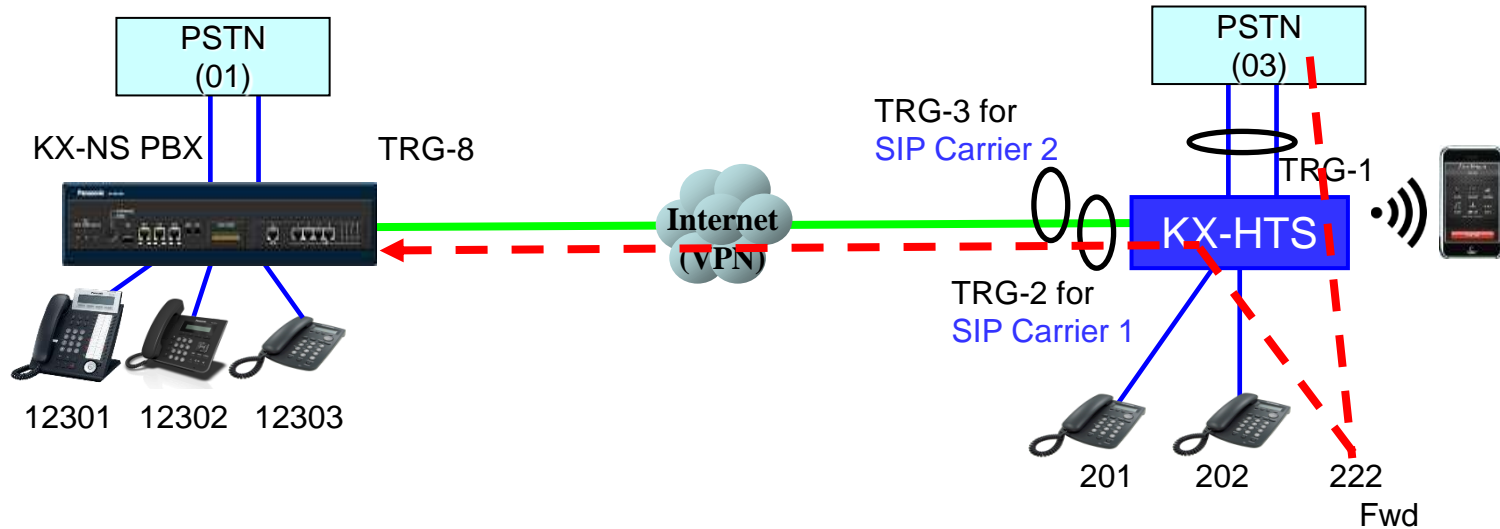


Chapter 6

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 |
| | | |
| | | |
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| | | |
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