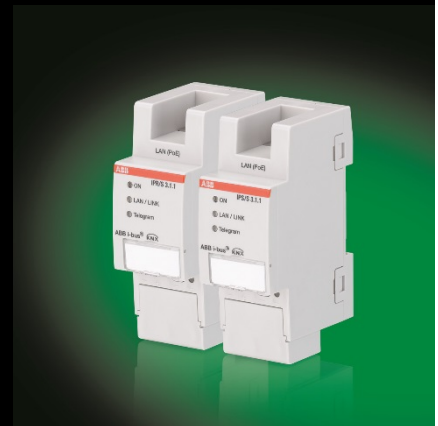




Jürgen Schilder and Thorsten Reibel – October 2015

# ABB GPG Building Automation Webinar ABB i-bus<sup>®</sup> KNX

## New IP devices: IP Router IPR/S 3.1.1 and IP Interface IPS/S 3.1.1



# Webinar “IP Router IPR/S and IP Interface IPS/S” Agenda

## IP Router IPR/S 3.1.1 and IP Interface IPS/S 3.1.1



- Overview and Principle
- Devices, Features and ETS Application
- Integration i-bus Tool
- Applications and Solutions



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## Agenda



### IP Router IPR/S 3.1.1 and IP Interface IPS/S 3.1.1

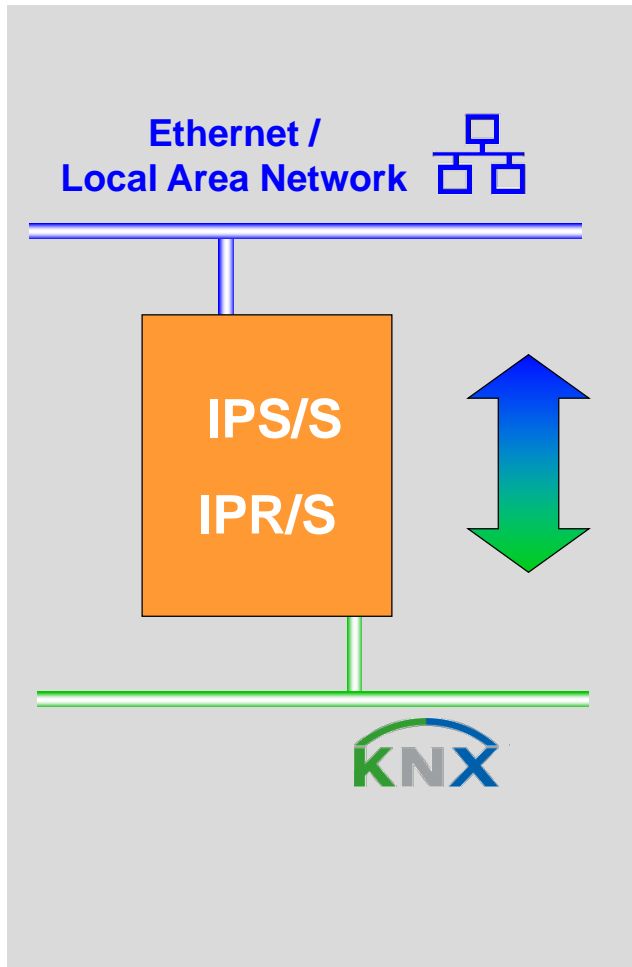
- Overview and Principle
- Devices, Features and ETS Application
- Integration i-bus Tool
- Applications and Solutions



### Next Webinar (25<sup>th</sup> of Nov.) IP Devices Part 2: Advanced Features

- i-busTool
- Filter Table
- Unicast Groups
- Record Telegrams on IP
- Remote Access / VPN
- ...

# Webinar “IP Router IPR/S and IP Interface IPS/S” Principle



- Converts KNX telegrams in IP telegrams (KNXnet/IP) and vice versa
- KNX telegrams can be sent to or received from other devices via the IP network

# Webinar “IP Router IPR/S and IP Interface IPS/S”

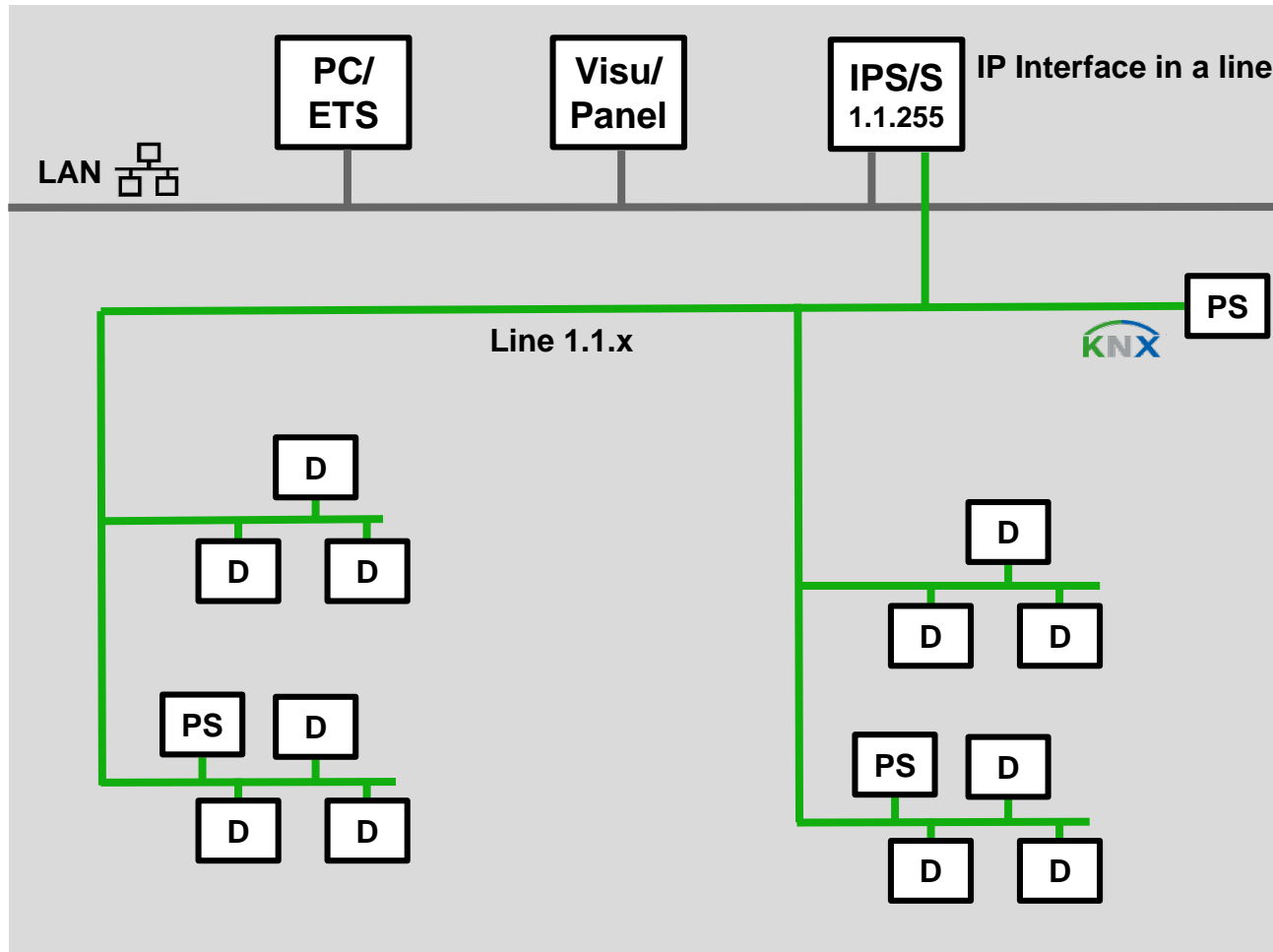
## IP Interface



- To connect a PC to KNX via IP
  - Visualisation
  - Connection of Tablet/Smart Phone with App via WiFi
  - Programming with ETS
- KNXnet/IP Capabilities:
  - Tunneling

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface connection: Tunneling



# Webinar “IP Router IPR/S and IP Interface IPS/S”

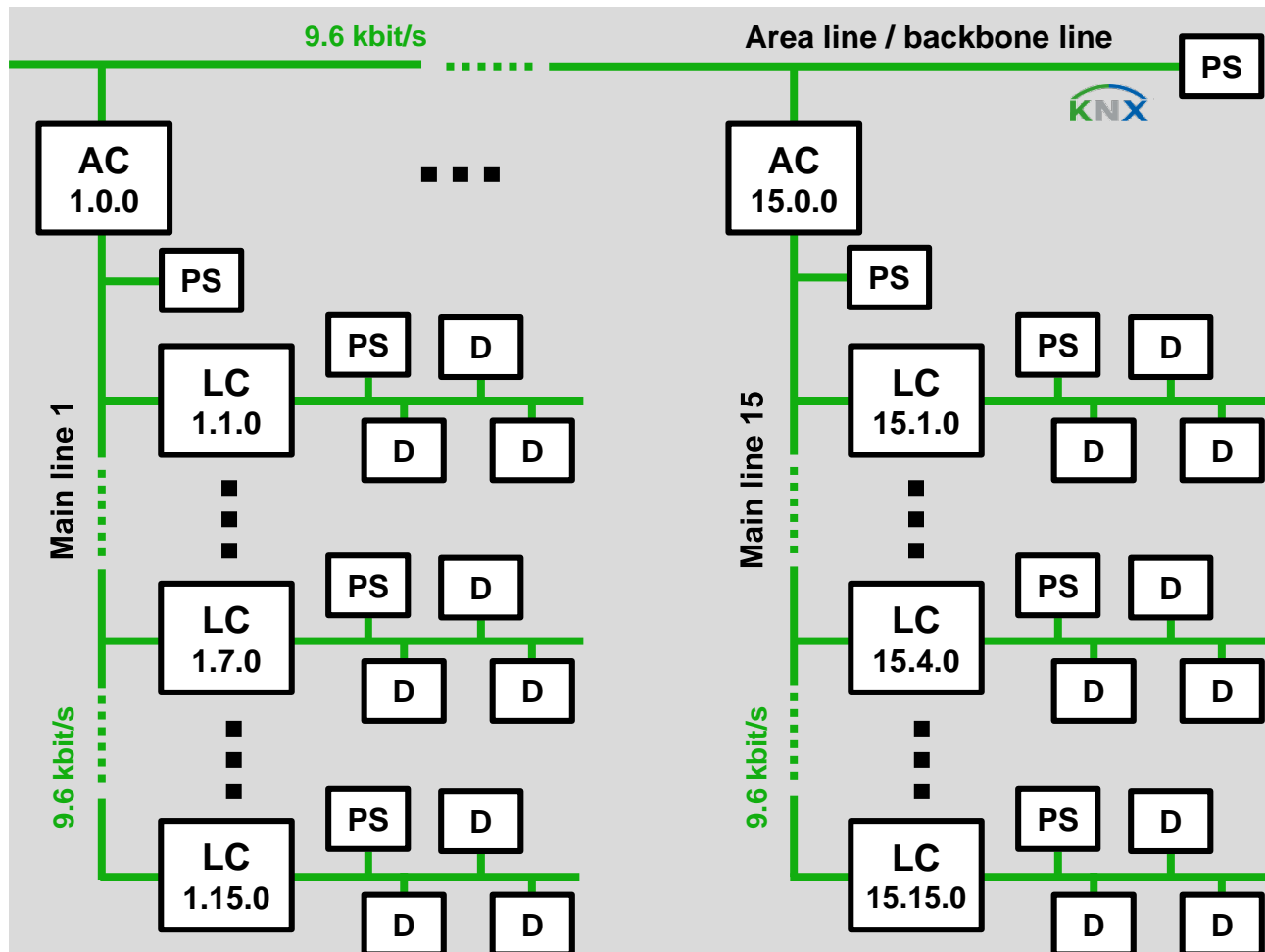
## IP Router



- Connection of KNX Lines and Areas over IP, Routing of KNX telegrams
- To connect a PC to KNX via IP
  - Visualisation
  - Connection of Tablet/Smart Phone with App via WiFi
  - Programming with ETS
- KNXnet/IP Capabilities:
  - Tunneling (Interface)
  - Routing (Coupler)

# Webinar “IP Router IPR/S and IP Interface IPS/S”

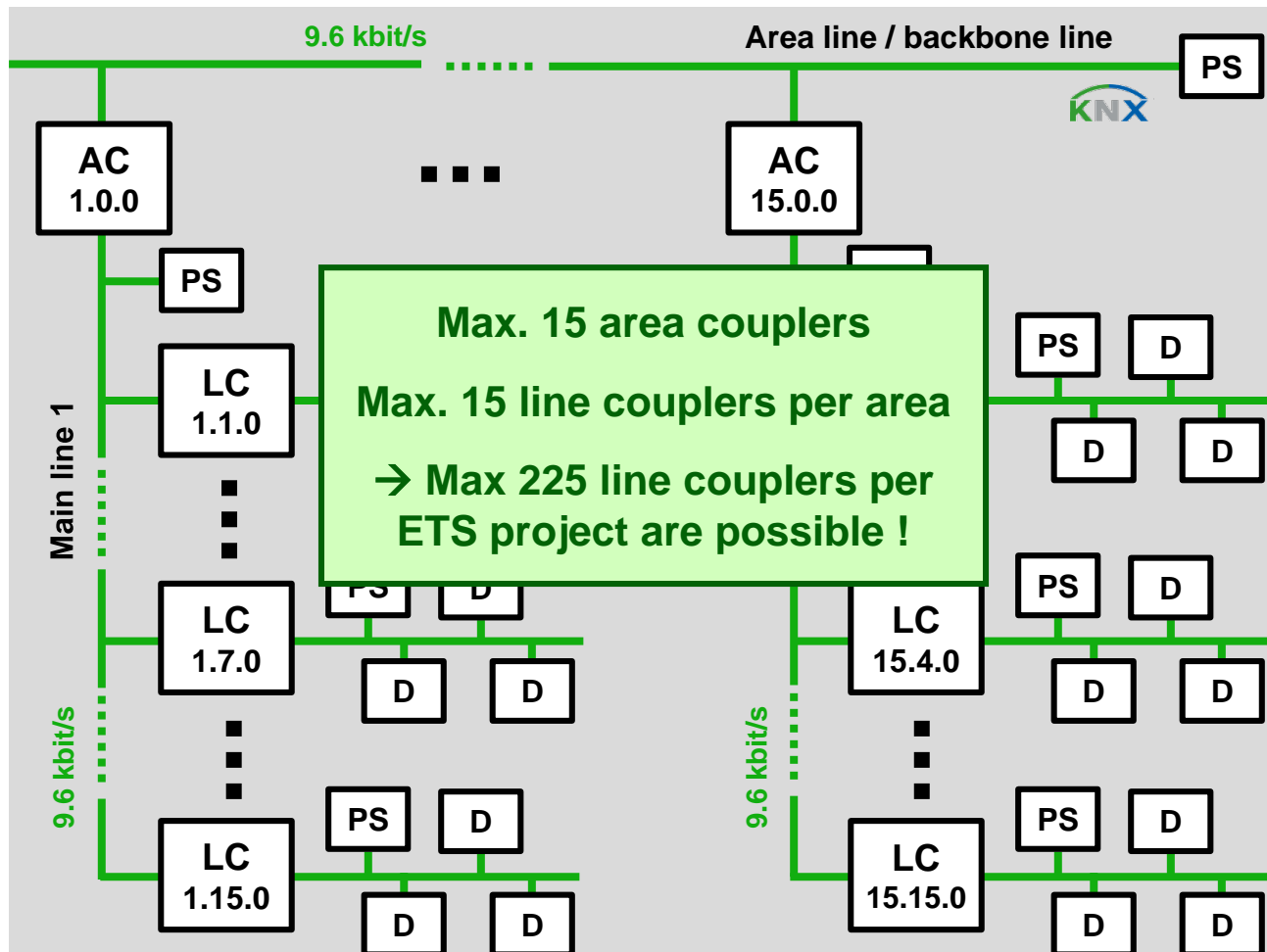
## KNX Topology classic





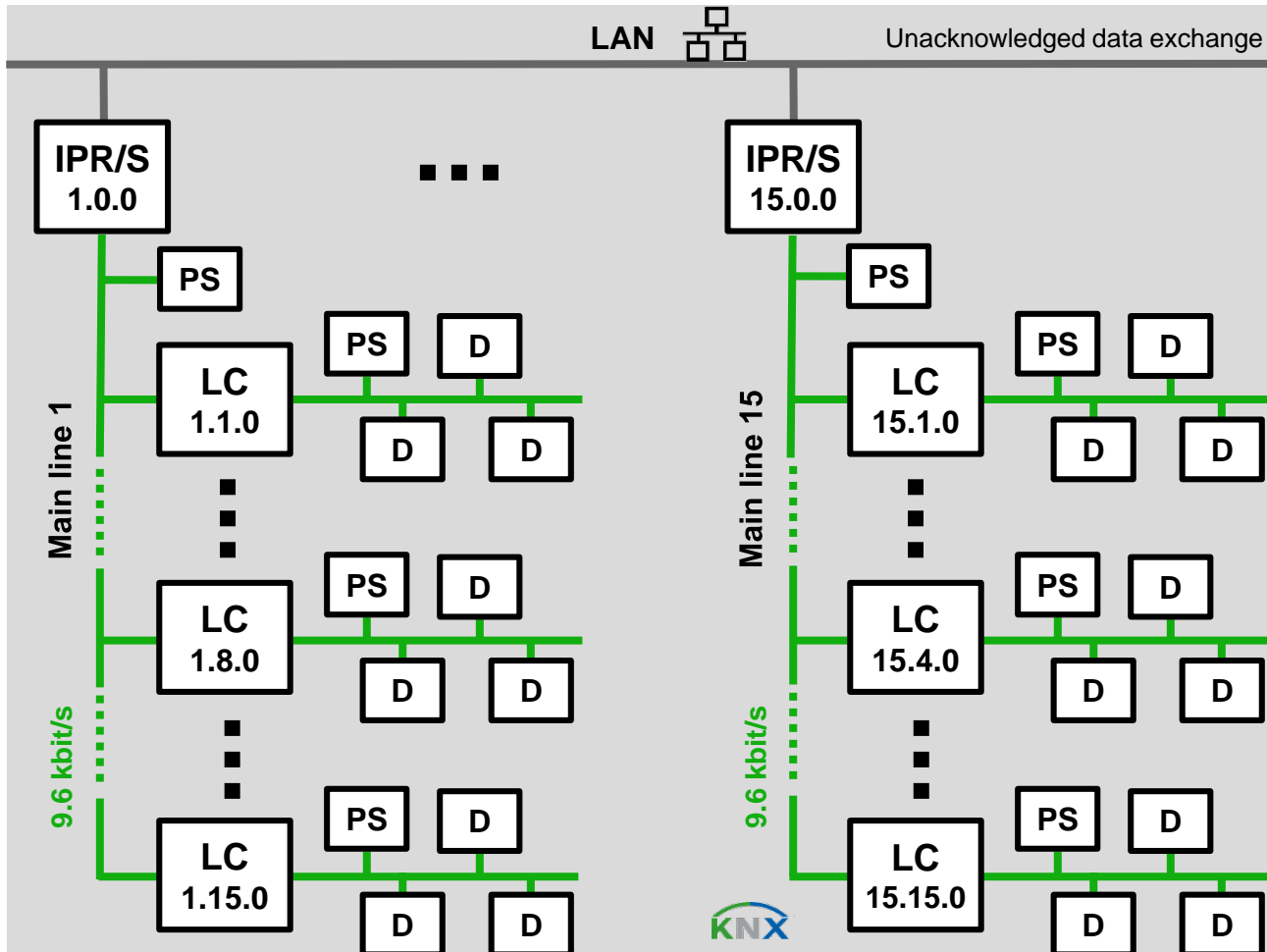
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## KNX Topology classic



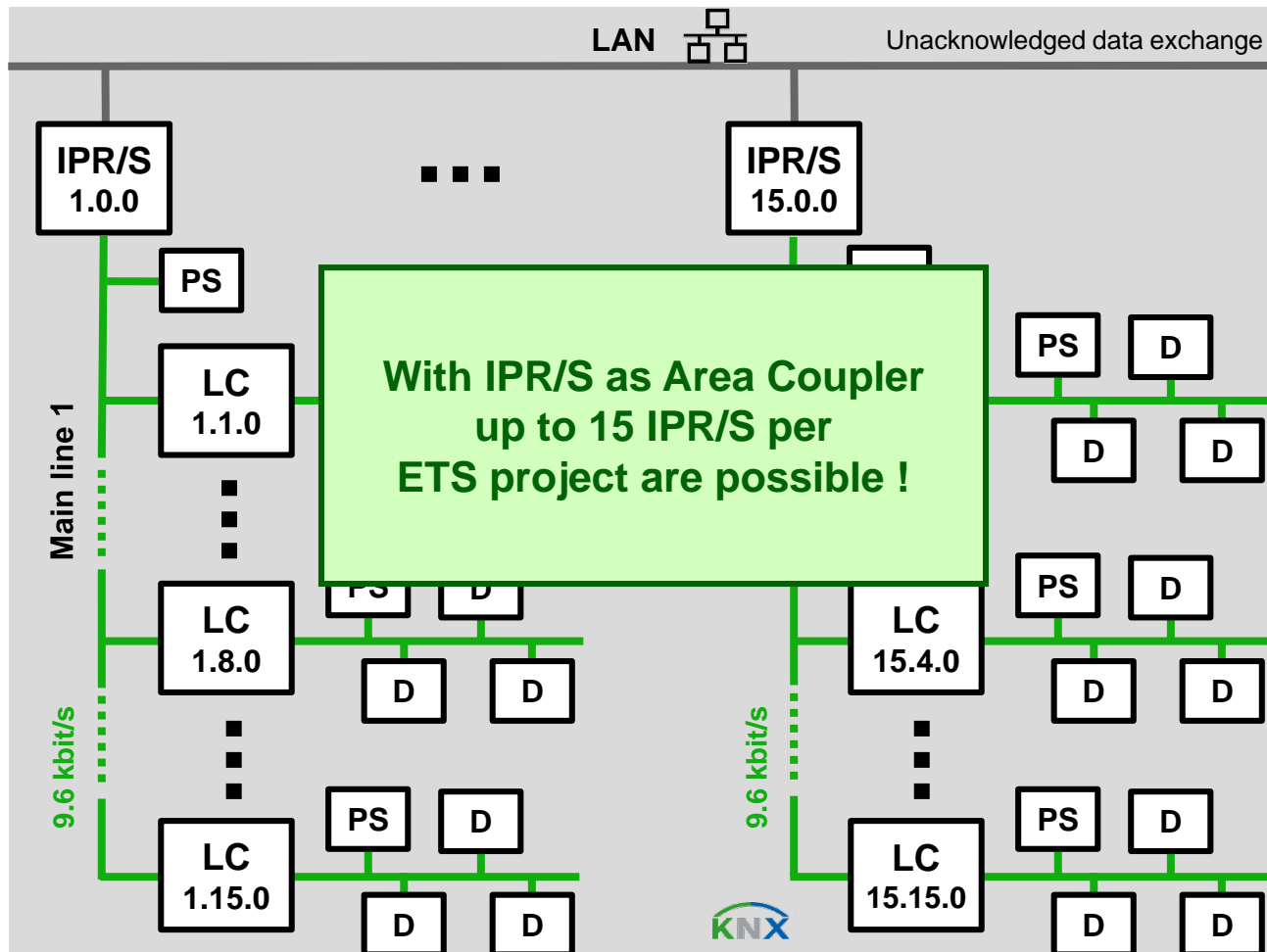
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router as Area Coupler



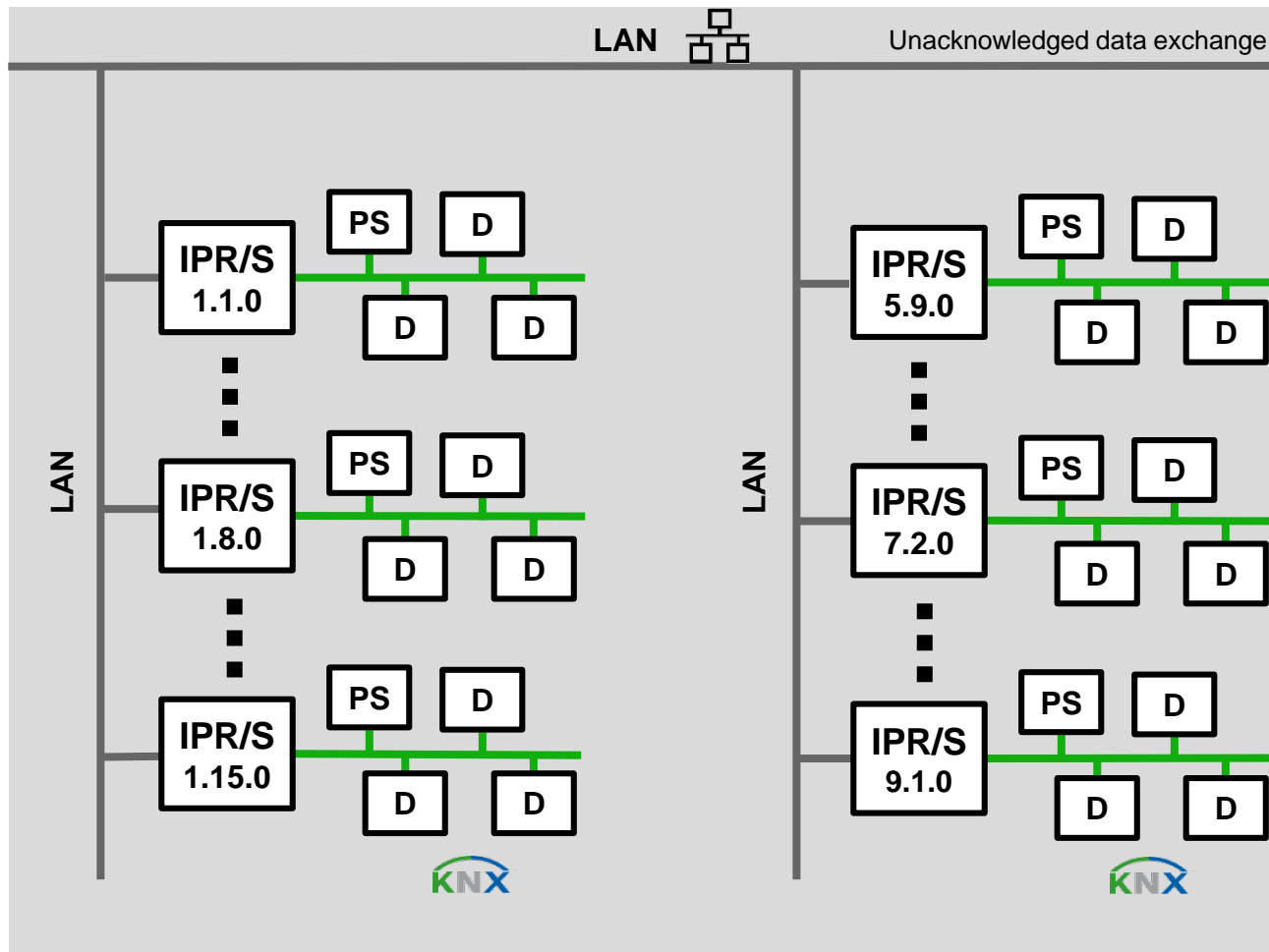
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router as Area Coupler



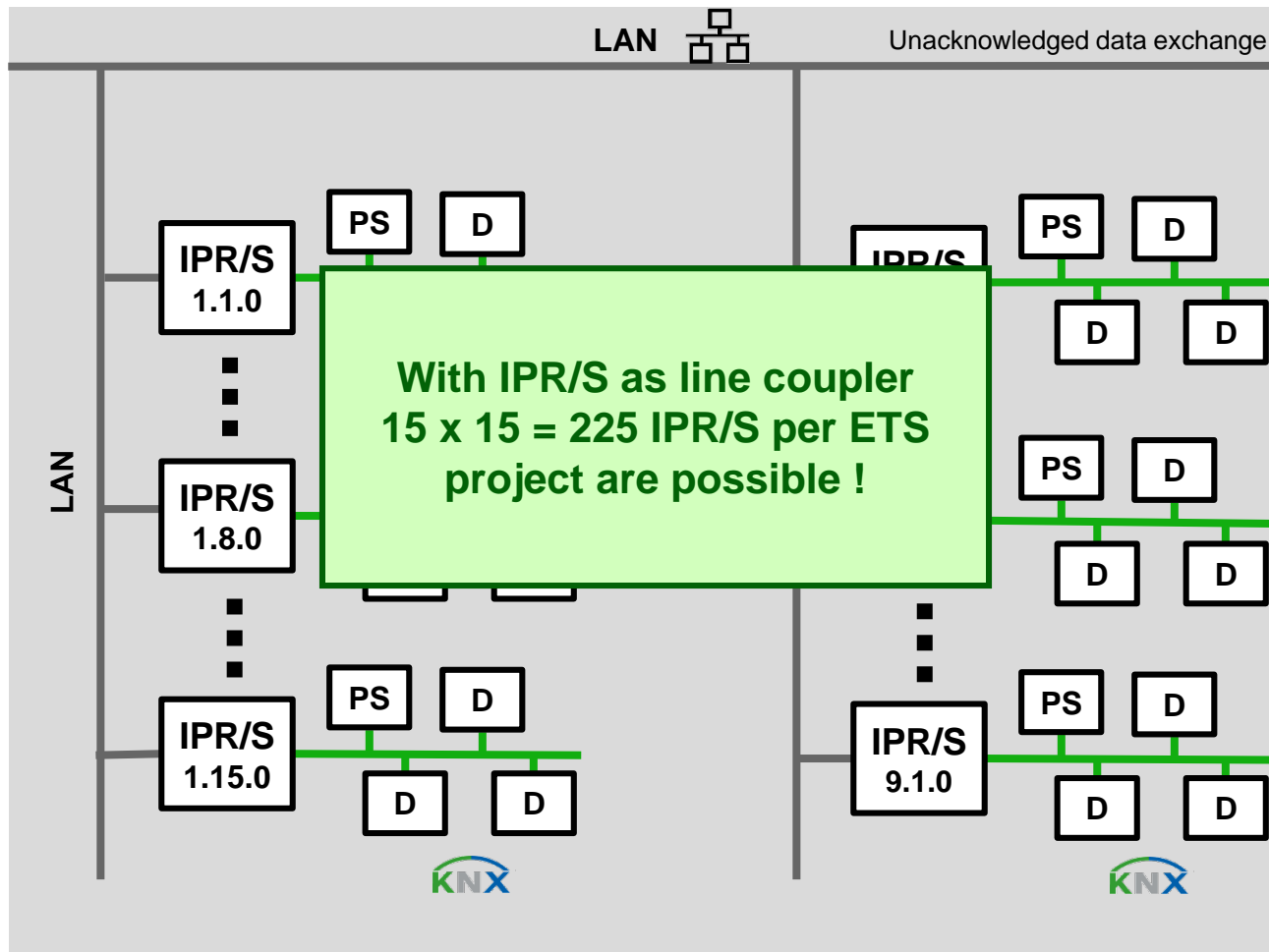
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router as Line Coupler



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router as Line Coupler



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1



- 5 Tunneling Server **NEW**
- Power supply
  - 12 ... 30 V DC
  - Power over Ethernet (PoE) IEEE 802.3af class 1 **NEW**
- Adapted hardware **NEW**
  - Network cable connection
  - Labelling field
  - DIN rail connection
  - Cover cap
  - Programming button

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1

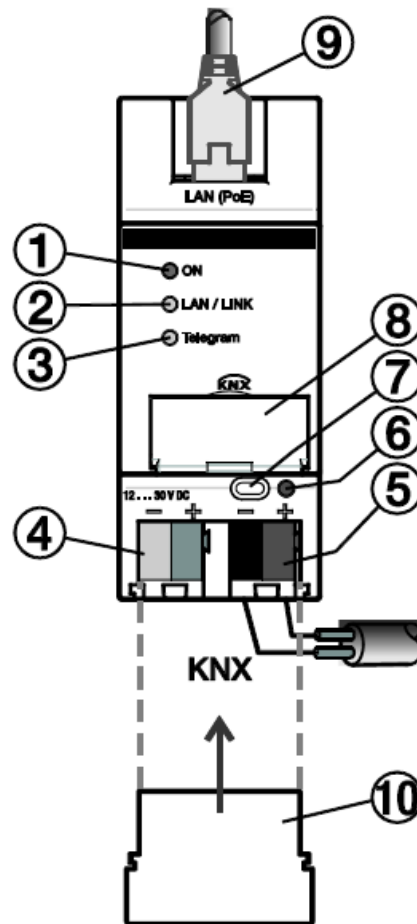
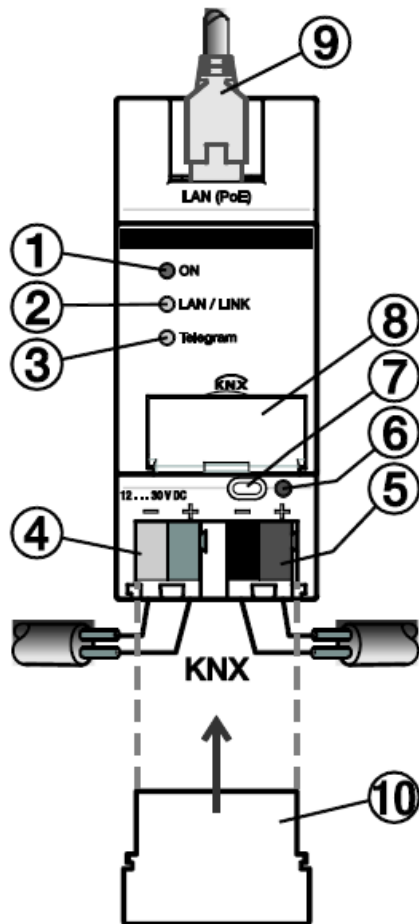


- LAN: 10/100 Mbit
- ABB i-bus Tool support



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Devices – Connection Diagram

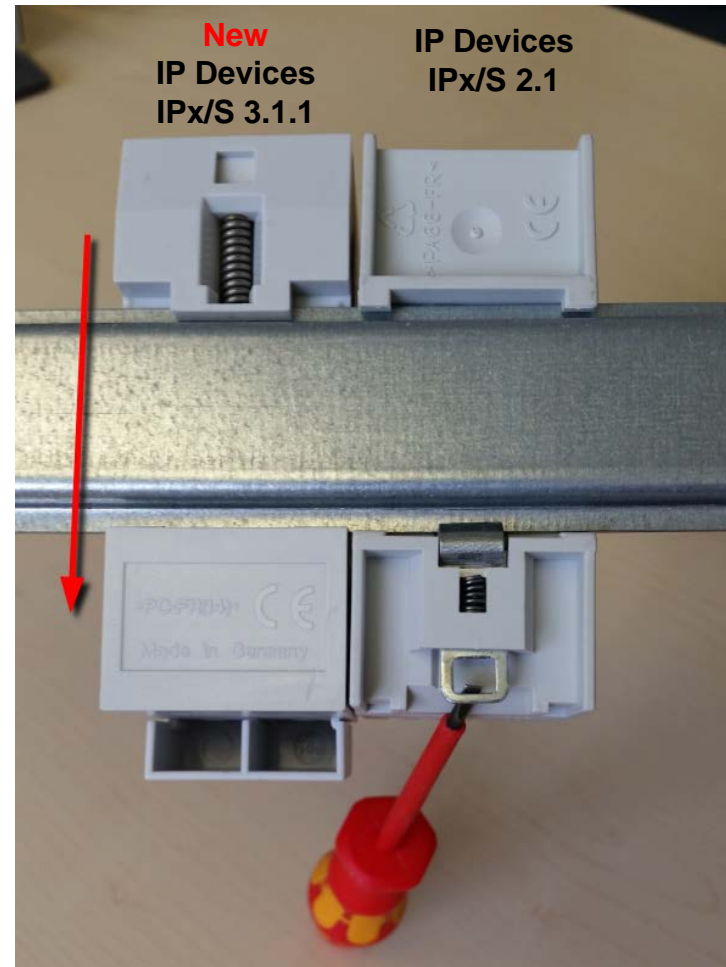


- 1) LED ON
- 2) LED LAN/LINK
- 3) LED telegram
- 4) Supply voltage connection
- 5) KNX connection
- 6) Programming LED
- 7) Programming button
- 8) Label carrier
- 9) LAN/LAN-PoE connection
- 10) Covering cap





# Webinar “IP Router IPR/S and IP Interface IPS/S” IP Devices



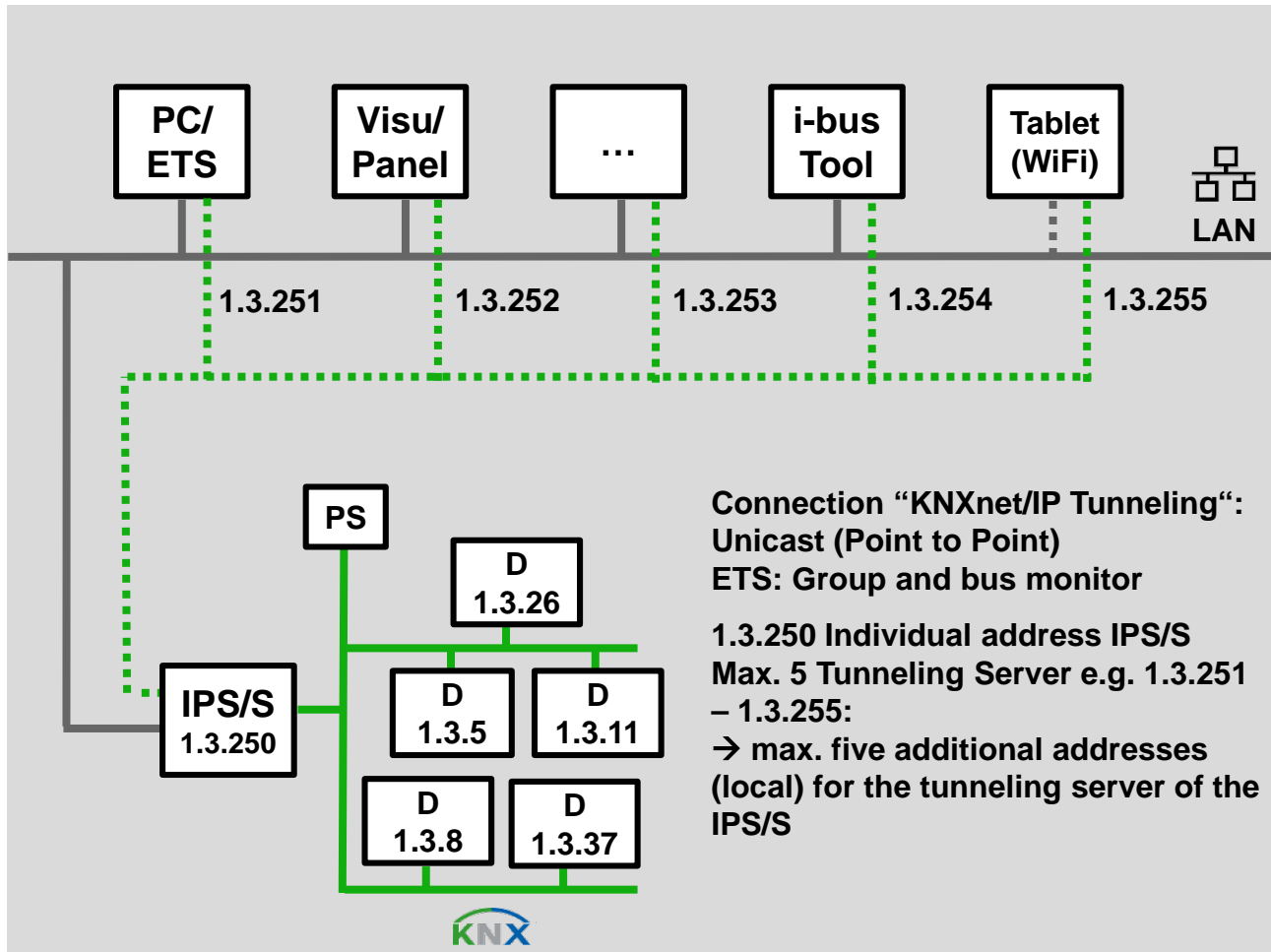
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1 – Application ETS3 and ETS4/ETS5

Device Application ETS	IPS/S 3.1.1 IP Interface/1.1 ETS 3	IPS/S 3.1.1 IP Interface/2.0 ETS 4/ETS 5
<b>Properties of the <i>IP Interface</i></b>		
Number of tunneling servers	<b>1</b>	<b>5</b>
IP discovery (i-bus® Tool)	■	■
Firmware update (i-bus® Tool)	■	■

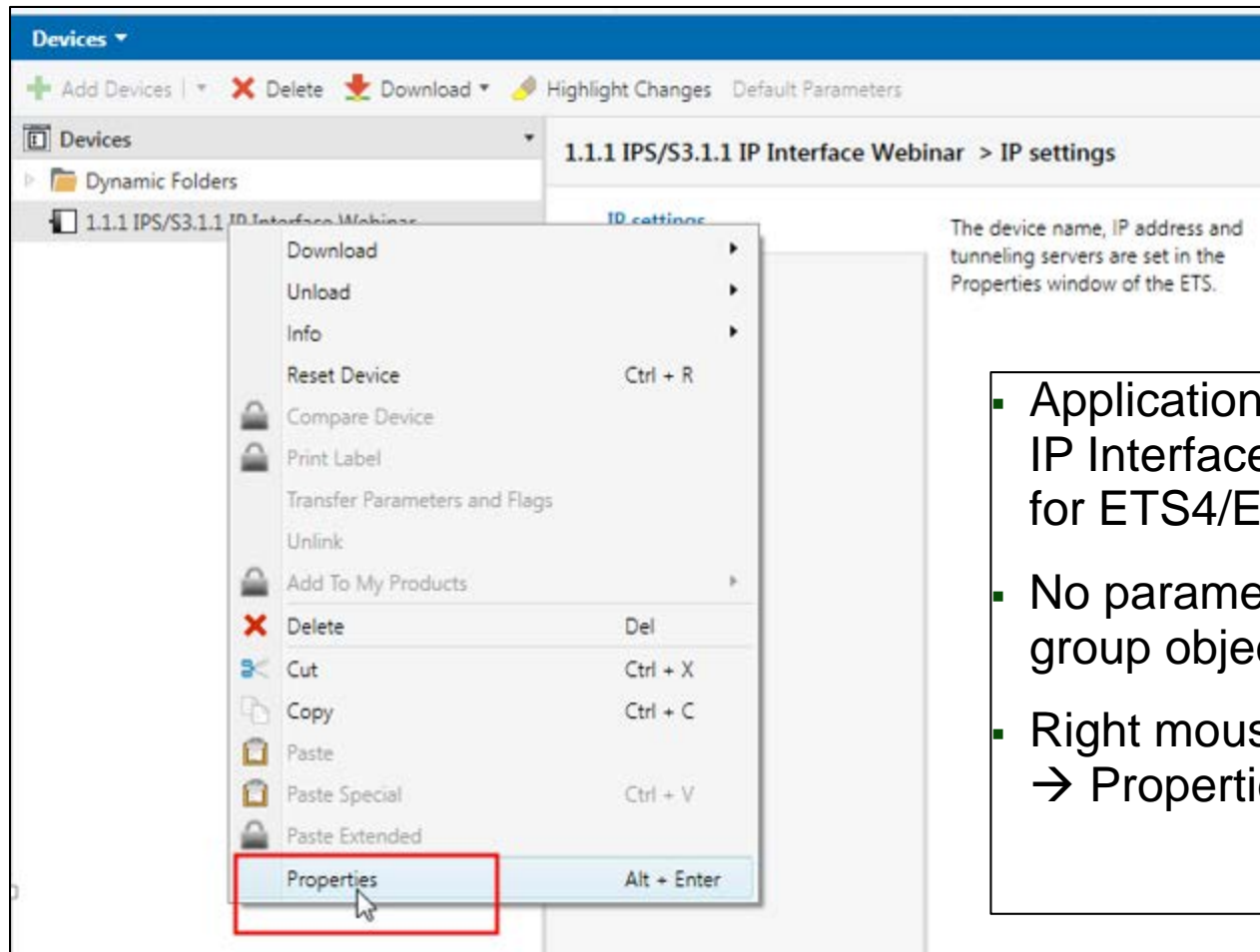
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1 - Tunneling



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1 – ETS Application



- Application IP Interface/2.0 for ETS4/ETS5
- No parameter and group objects
- Right mouse button → Properties

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1 – ETS Application

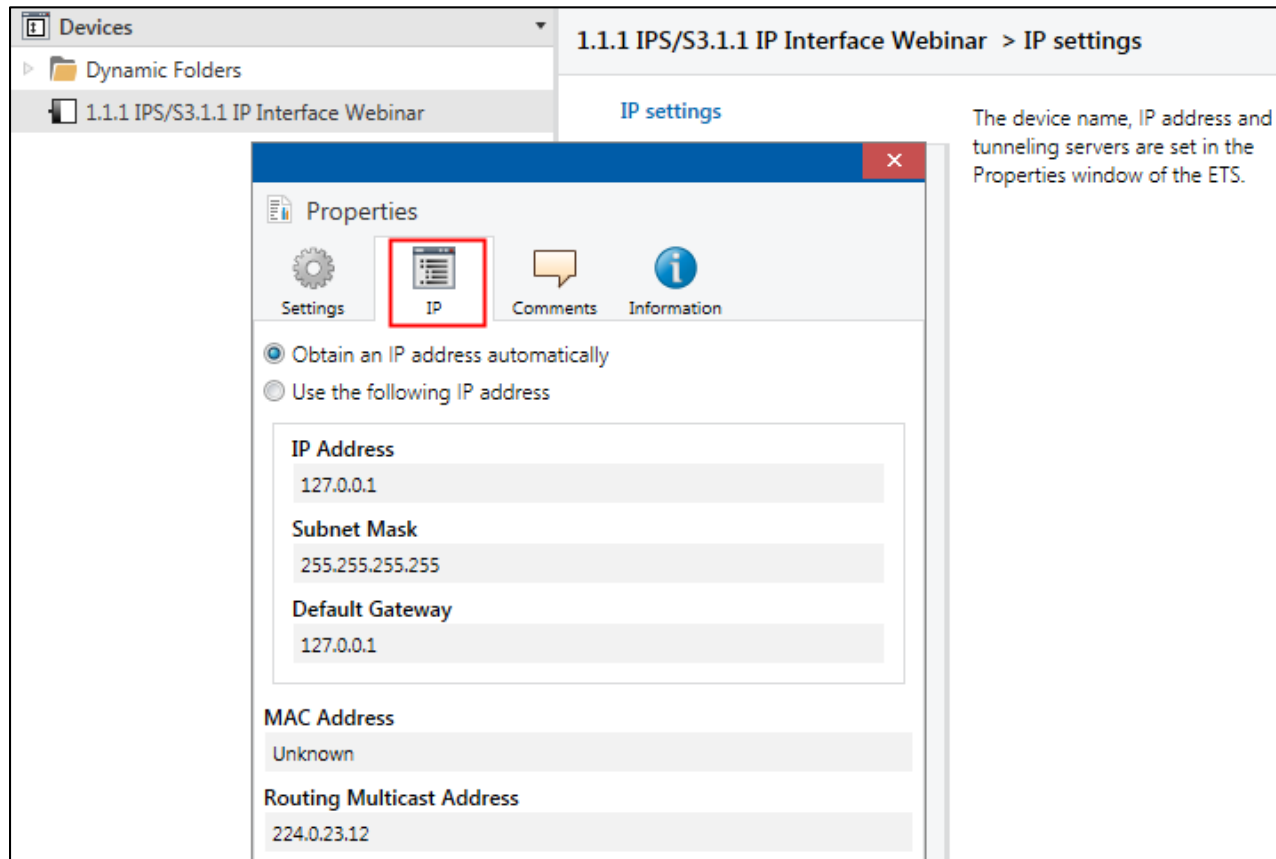
The screenshot shows the ETS application interface. The top bar displays '1.1.1 IPS/S3.1.1 IP Interface Webinar > IP settings'. The left sidebar shows a tree view with 'Dynamic Folders' and '1.1.1 IPS/S3.1.1 IP Interface Webinar'. The main area is titled 'IP settings' and contains a 'Properties' window. The 'Properties' window has a 'Settings' tab selected, which is highlighted with a red box. The 'Settings' tab shows the following information:

- Name:** IPS/S3.1.1 IP Interface Webinar
- Individual Address:** 1.1 . 1 (with a 'Park' button)
- Type:** Device address
- Address:** 1.1.1
- Additional address:** 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6
- Description:** (empty text box)
- Product:** IPS/S3.1.1 IP Interface,MDRC
- Program:** IP Interface/2.0
- Last Modified:** 20.10.2015 13:54
- Last Downloaded:** -
- Serial Number:** -
- MAC Address:** 00:00:00:00:00:00

To the right of the 'Properties' window, a note states: 'The device name, IP address and tunneling servers are set in the Properties window of the ETS.'

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1 – ETS Application



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1 – Programming ETS5

The screenshot displays the ETS5 software interface. The top menu bar includes 'ETS', 'Edit', 'Workplace', 'Commissioning', 'Diagnostics', 'Extras', and 'Window'. Below the menu is a toolbar with icons for 'Overview', 'Bus', 'Catalogs', and 'Settings'. The left sidebar shows a tree view with 'Connections' and 'Interfaces'. The main area is titled 'Current Interface' and shows the configuration for '2.0.20 IPS/S3.1.1 IP Interface Webina (10.49.121.169:3671)' with 'Individual Address: 2.0.21'. On the right, the 'IP Tunneling' section is expanded, showing the following configuration details:

Field	Value
Name	IPS/S3.1.1 IP Interface Webina
Host Individual Address	2.0.20
Individual Address	2.0.21
IP Address	10.49.121.169
Port	3671
MAC Address	00:0C:DE:54:51:67

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1



- 5 Tunneling Server **NEW**
- Power supply
  - 12 ... 30 V DC
  - Power over Ethernet (PoE) IEEE 802.3af class 1 **NEW**
- Adapted hardware **NEW**
  - Network cable connection
  - Labelling field
  - DIN rail connection
  - Cover cap
  - Programming button



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1

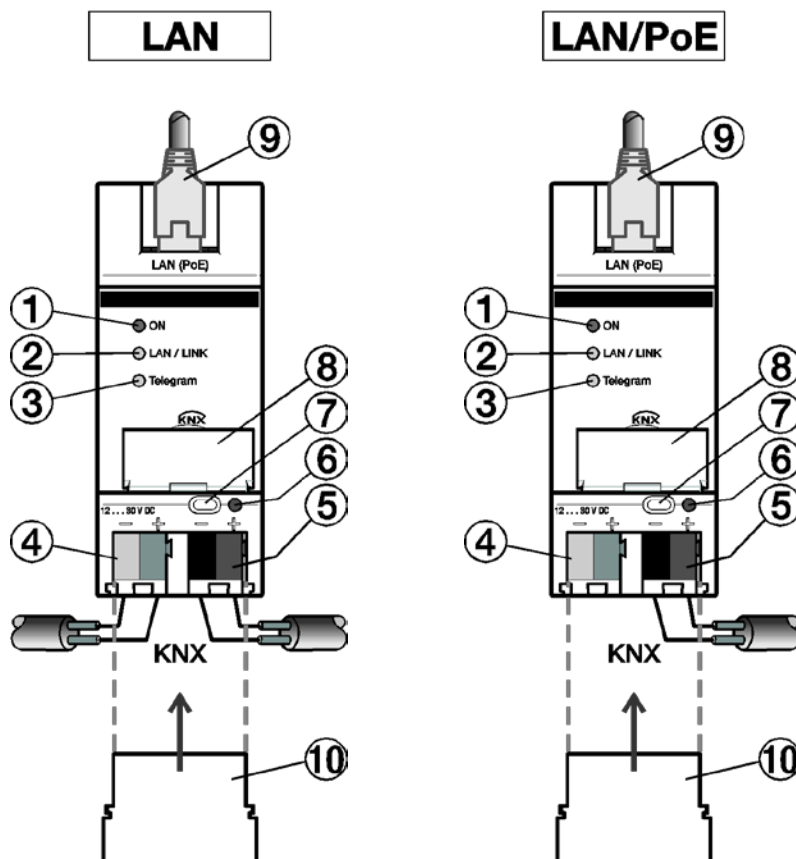


- Unicast Communication possible with up to 10 IPR/S 3.1.1 (KNX netIP: Multicast)
- Network management function “Monitoring for KNX bus voltage failure“ **NEW**
- Support of full filter table for all main groups 0...31 (or group addresses 1...65,535 with free group address view) **NEW**
- ABB i-bus Tool support **NEW**
- Enhanced Hardware
- LAN: 10/100 Mbit

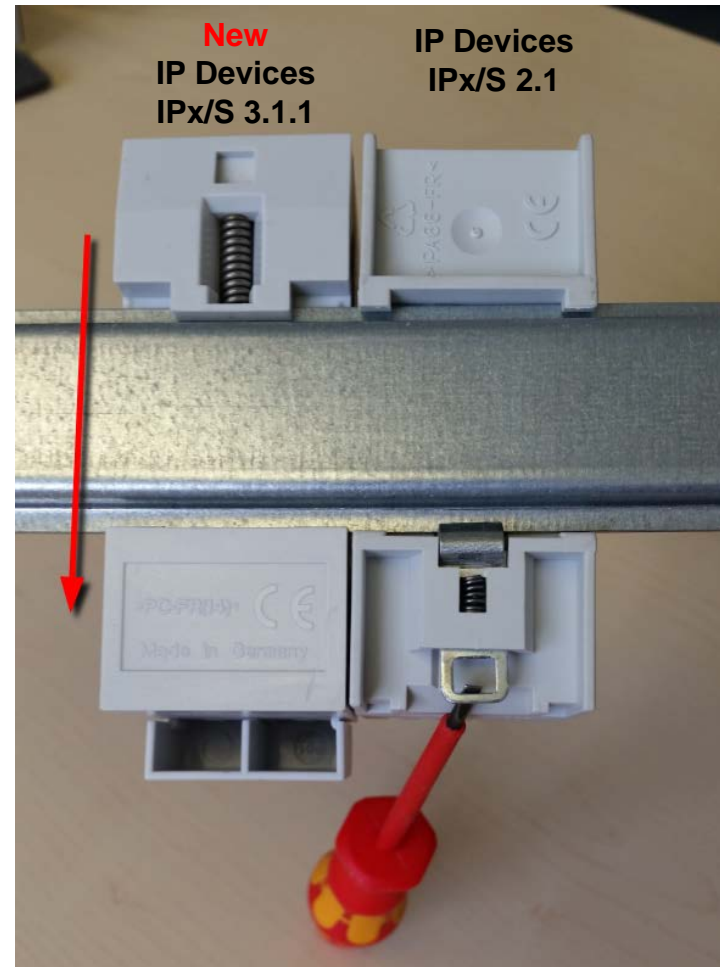
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1

- Circuit diagram



# Webinar “IP Router IPR/S and IP Interface IPS/S” IP Devices



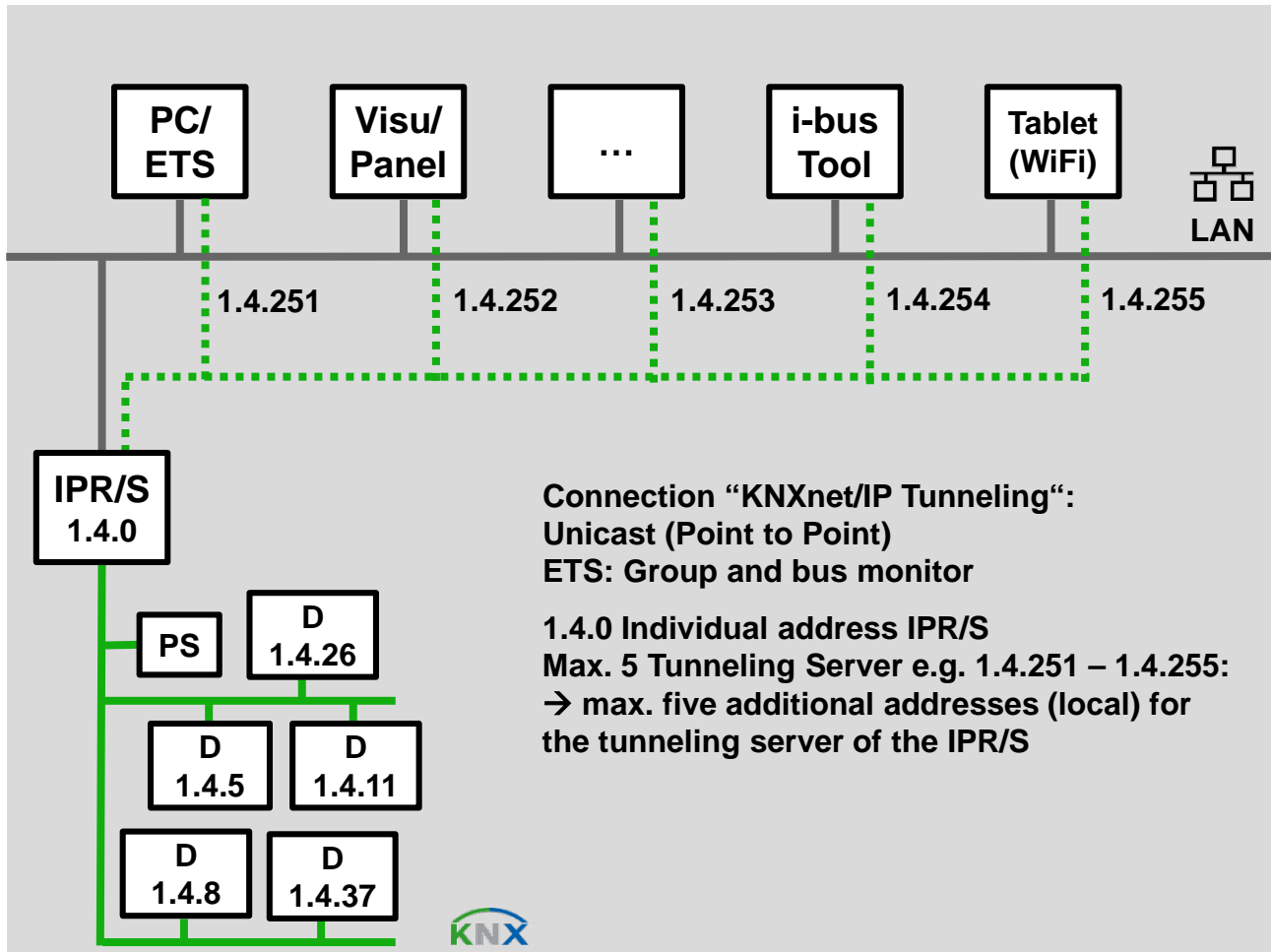
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – Application ETS3 and ETS4/ETS5

Device Application ETS	IPR/S 3.1.1 IP Router/1.1 ETS 3	IPR/S 3.1.1 IP Router/2.0 ETS 4/ETS 5
<b>Properties of the <i>IP Router</i></b>		
Number of tunneling servers	1	5
Number of unicast connections	10	10
Monitoring for bus voltage failure	■	■
Filter Group telegrams main group 0...13	■	■
Filter Group telegrams main group 14...31	-	■ (ETS 4.1.7 or higher)
IP discovery (i-bus® Tool)	■	■
Firmware update (i-bus® Tool)	■	■
Unicast parameterization (i-bus® Tool)	■	■

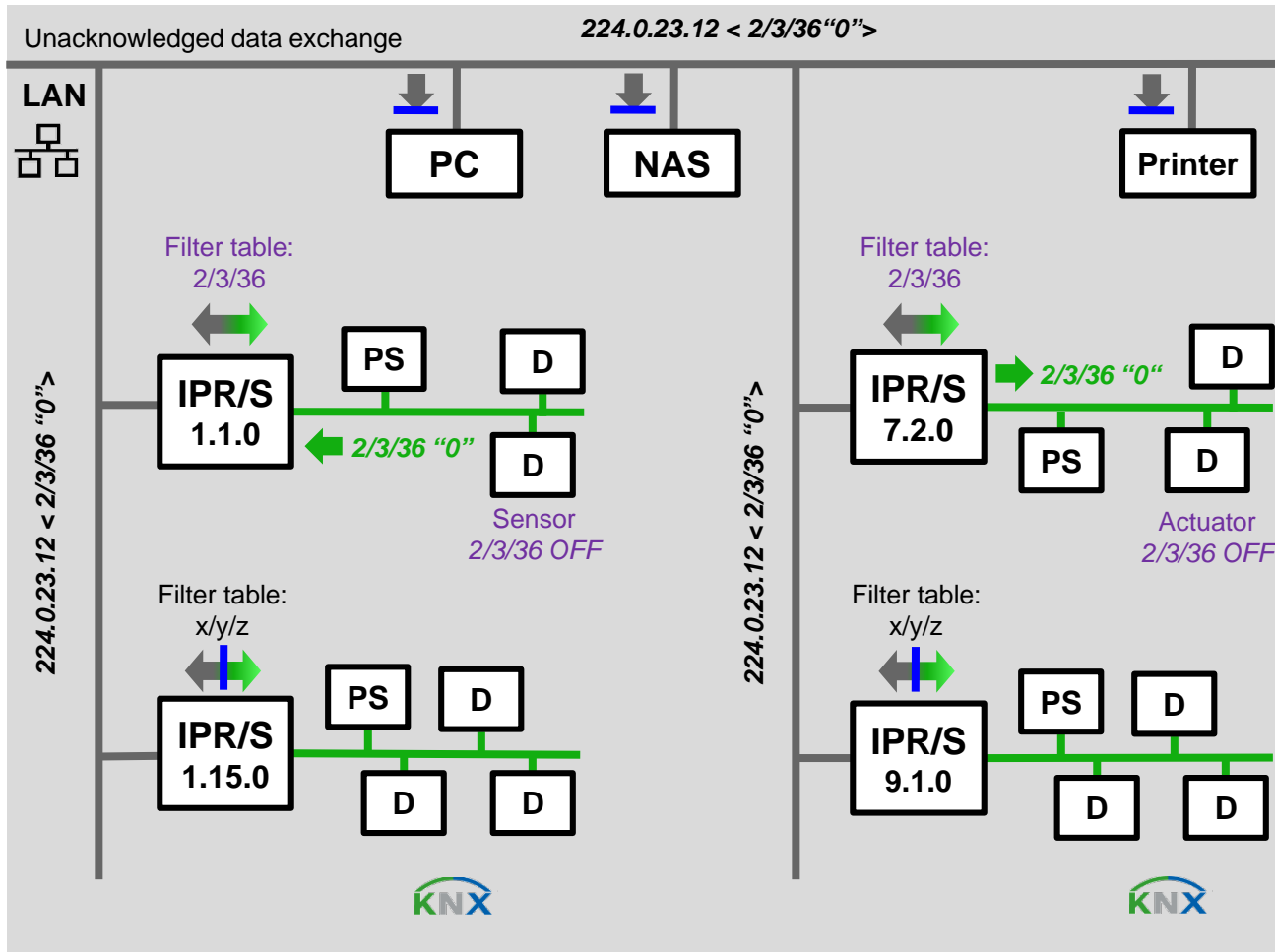
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 - Tunneling



# Webinar “IP Router IPR/S and IP Interface IPS/S”

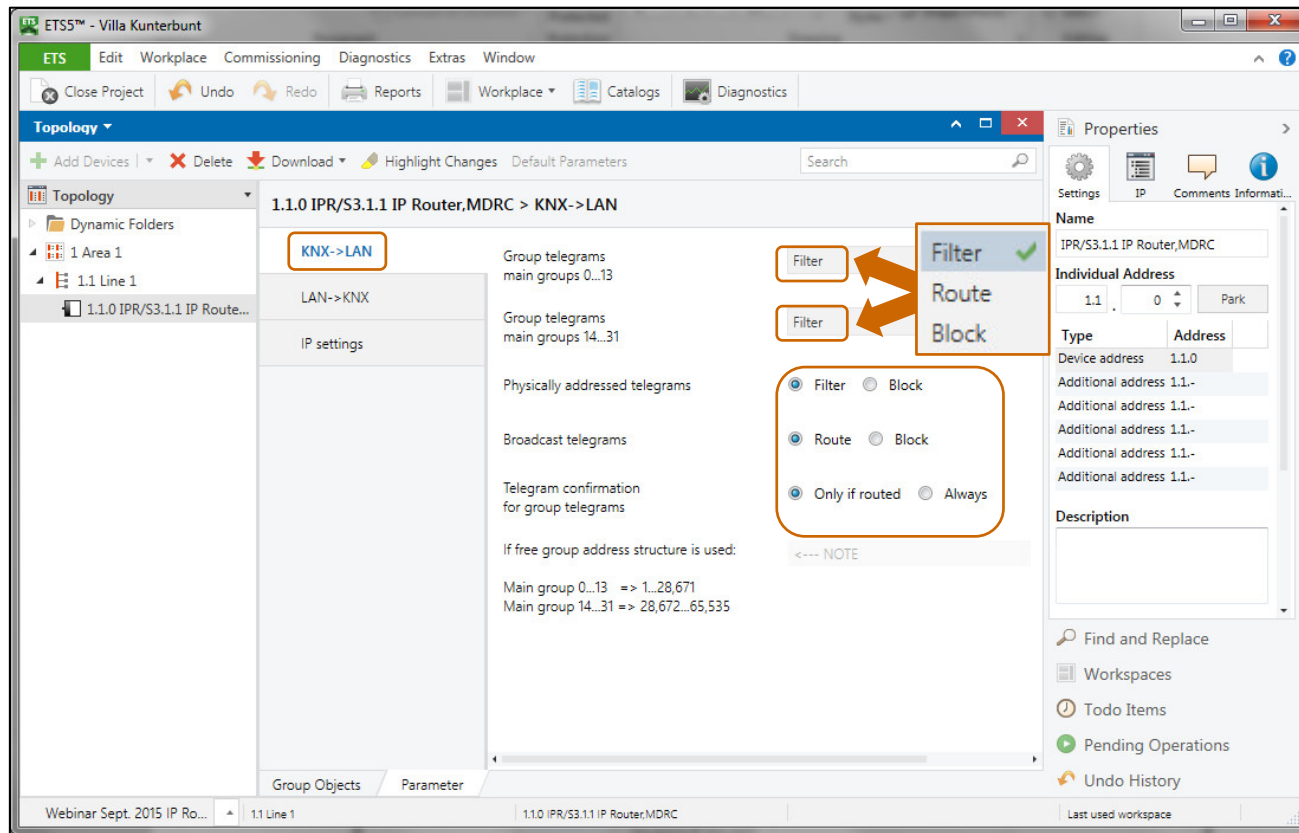
## IP Router – Routing Multicast Address 224.0.23.12



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – ETS Parameter

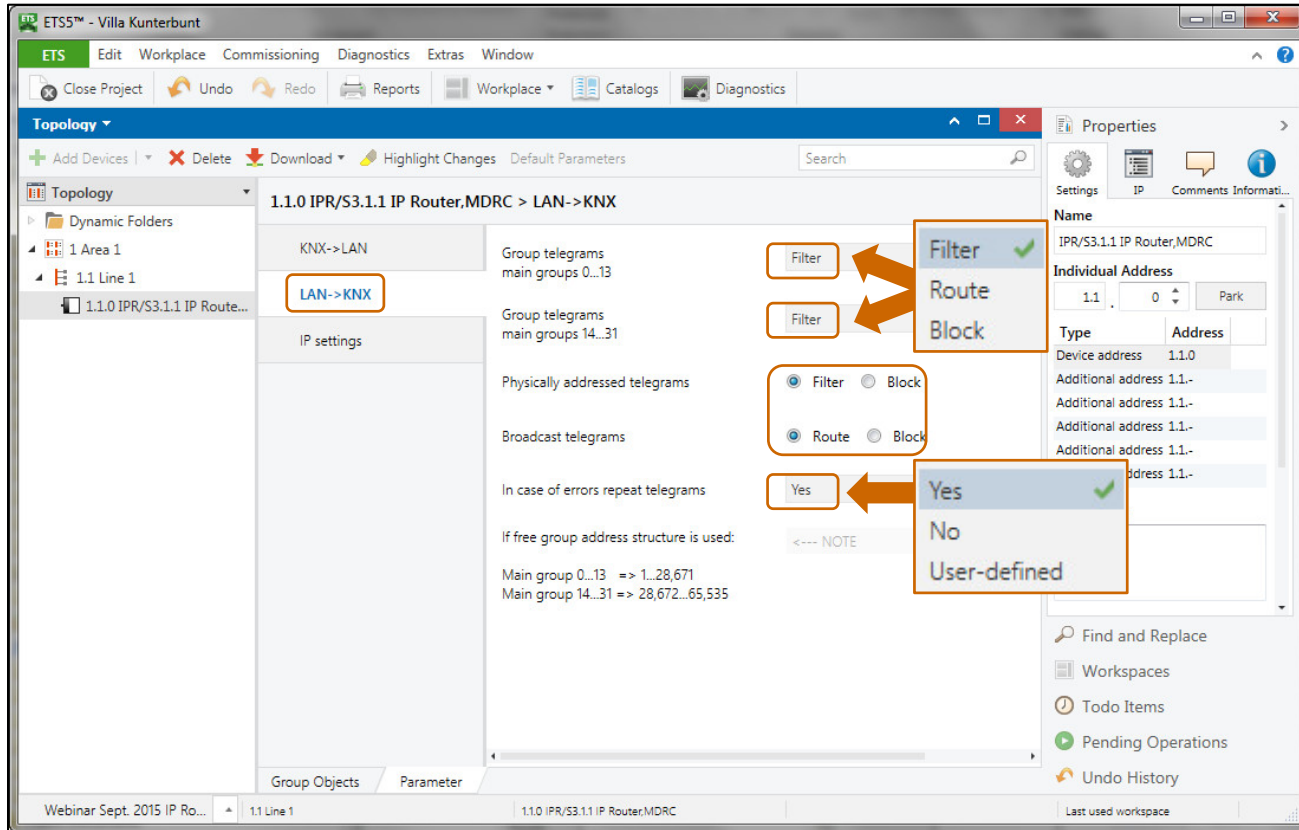
- KNX → LAN



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – ETS Parameter

- LAN → KNX

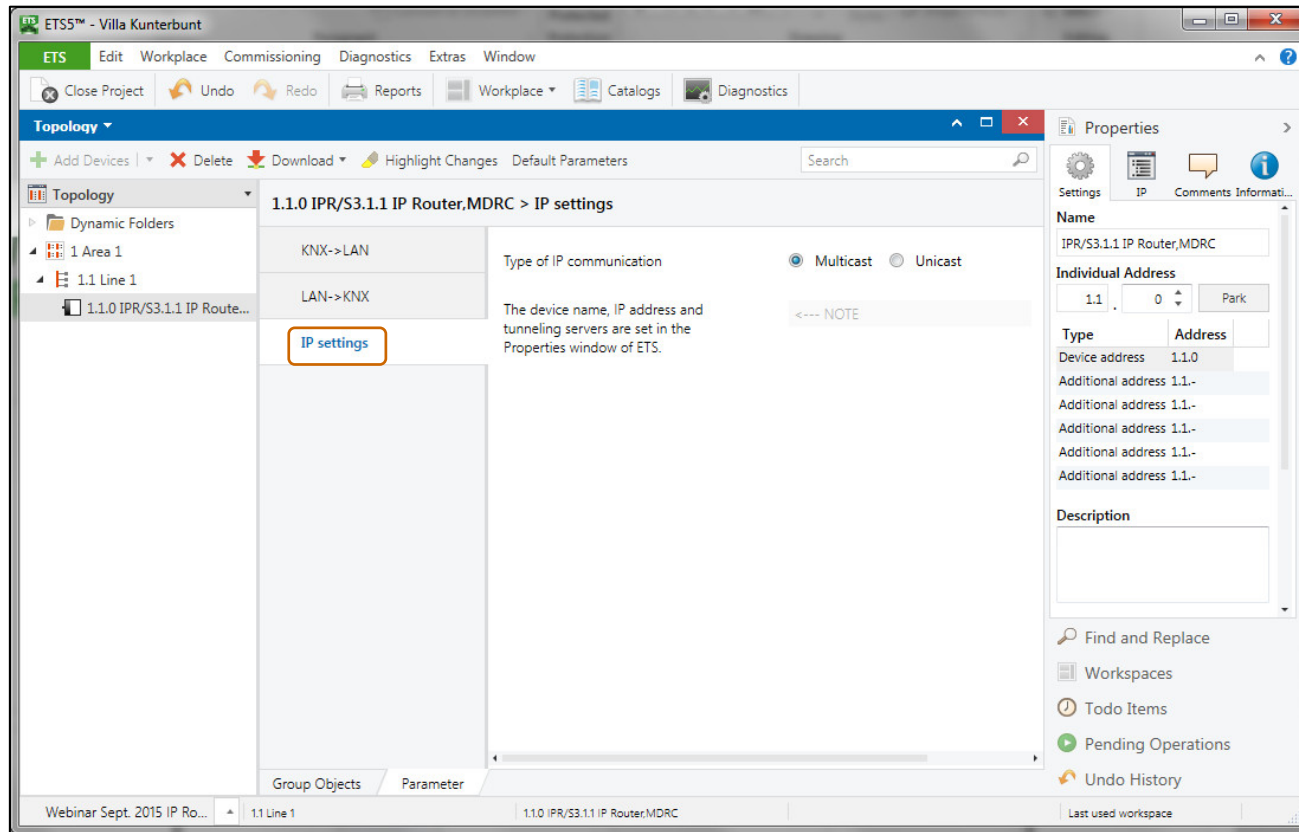




# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – ETS Parameter

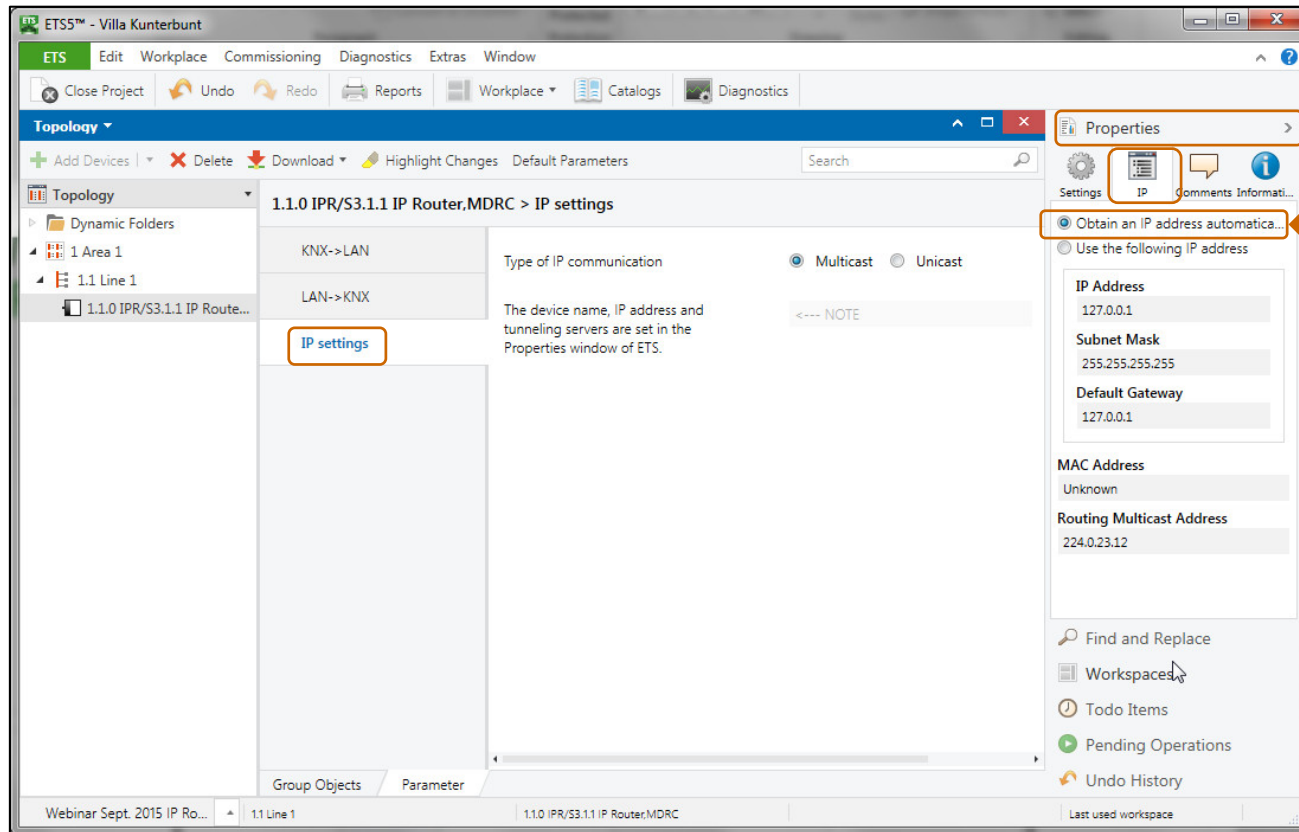
- IP Settings – Multicast



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – ETS Parameter

- Properties – IP



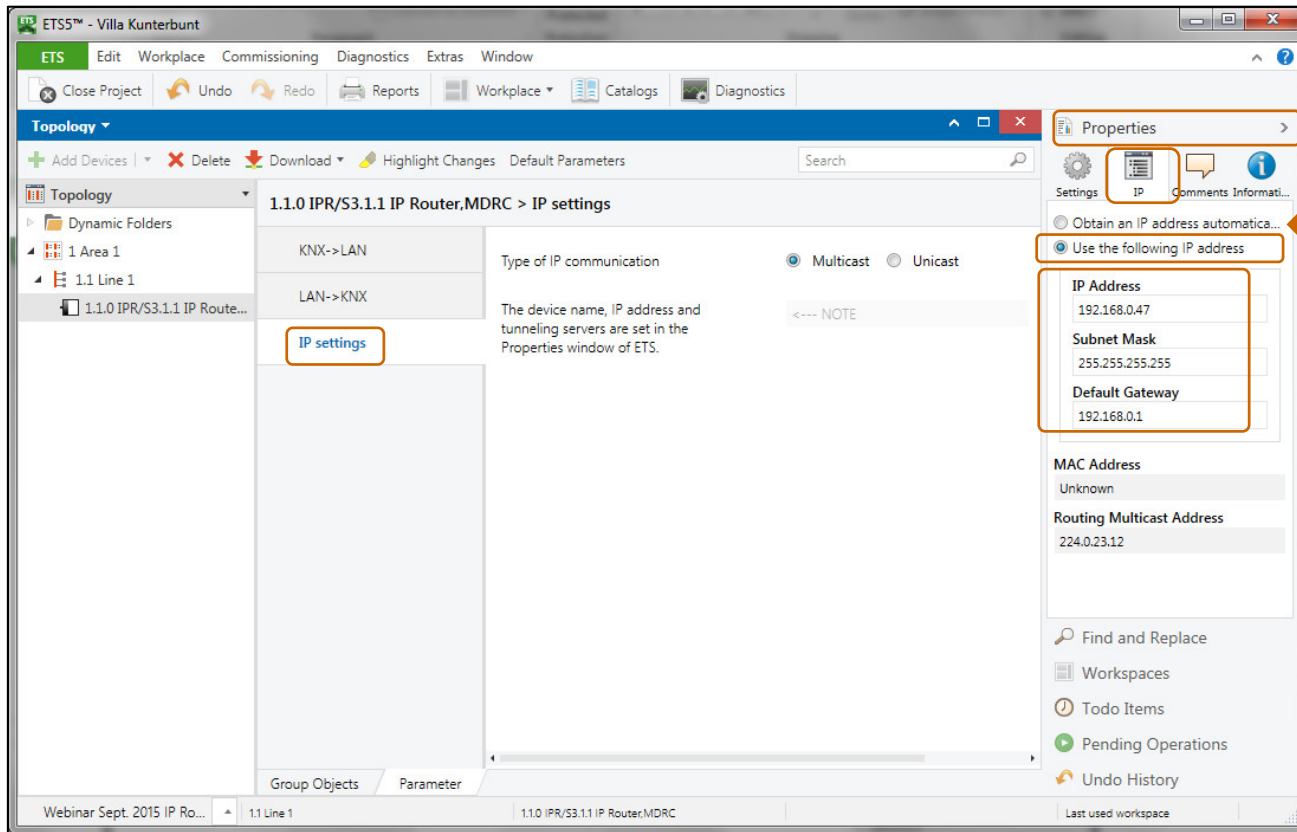
**NEW**

IP address assignment:  
*Automatically (DHCP, AutoIP)*

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – ETS Parameter

- Properties – IP



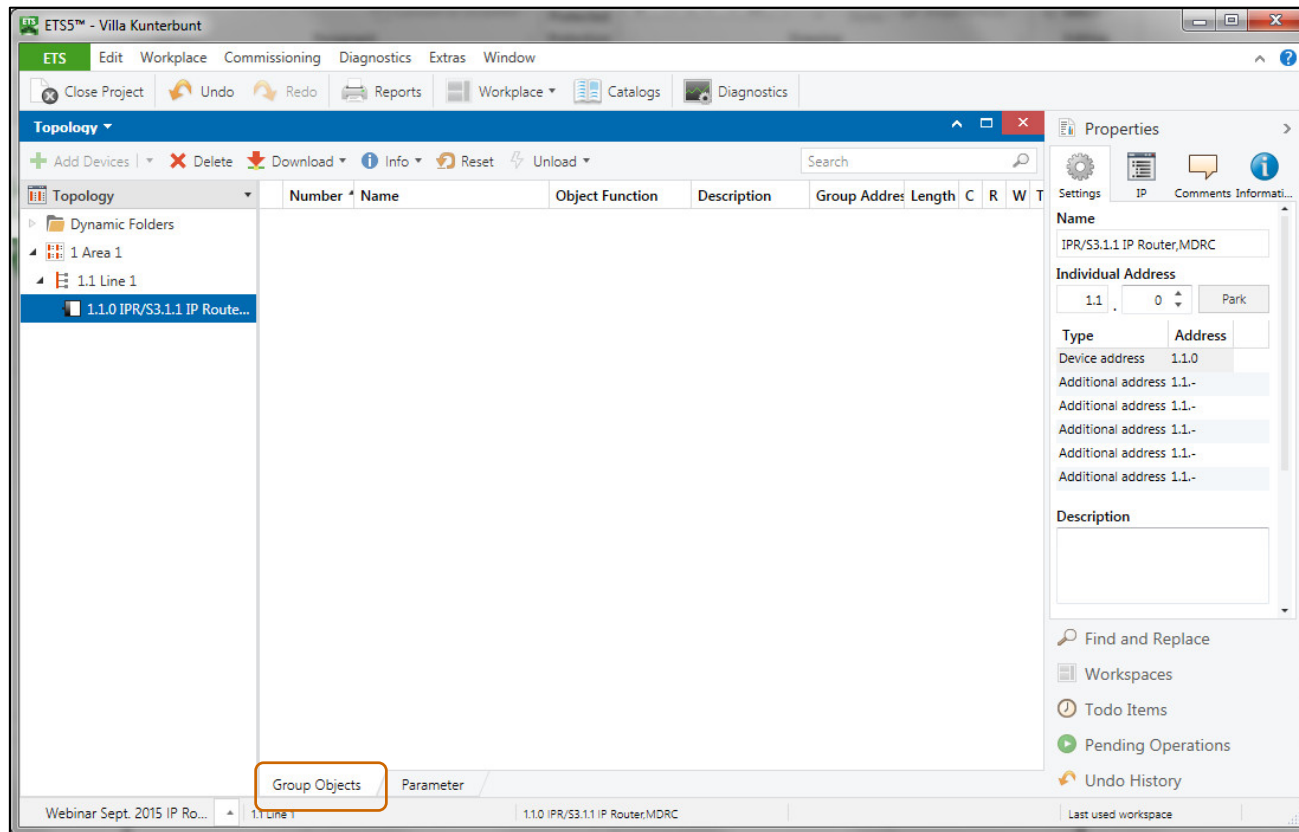
**NEW**

IP address assignment: *Fixed*

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – ETS Parameter

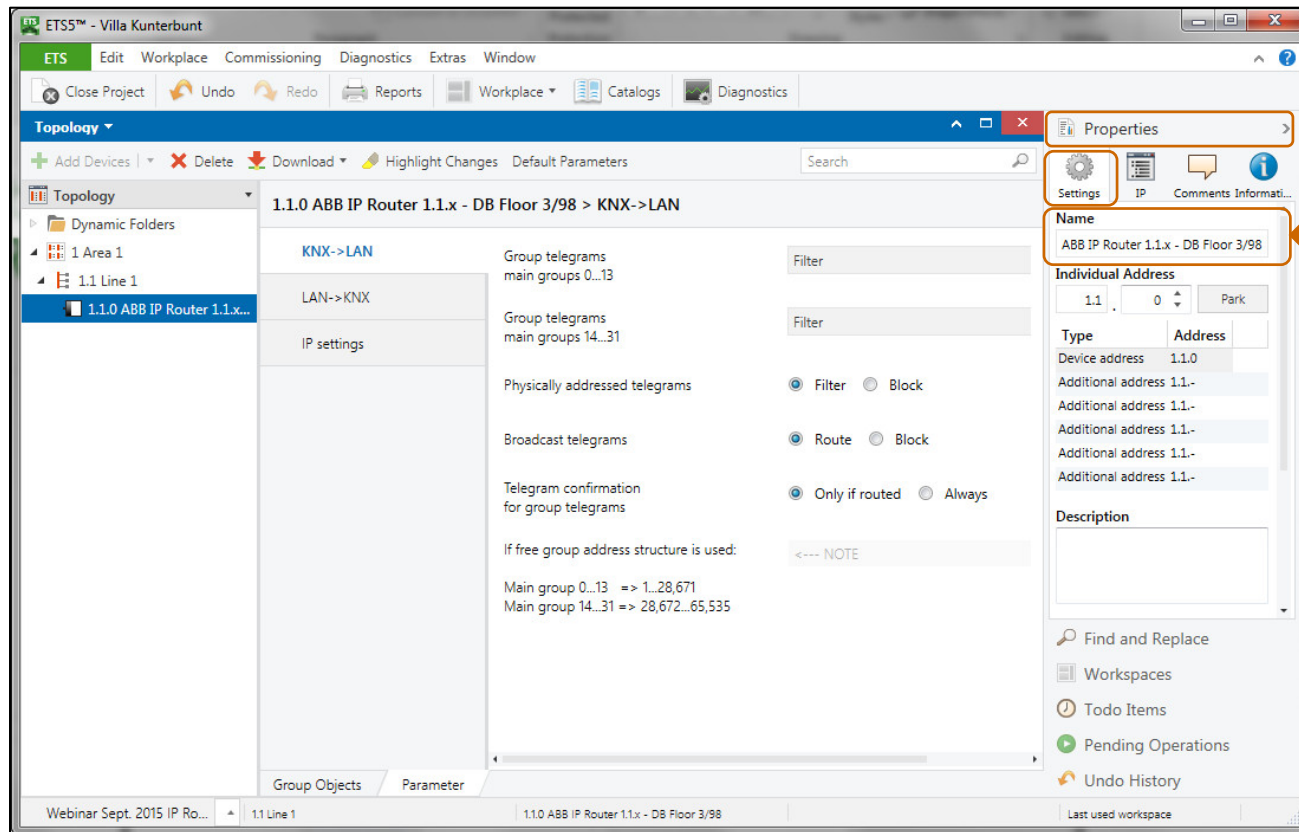
- Group Objects



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – ETS Parameter

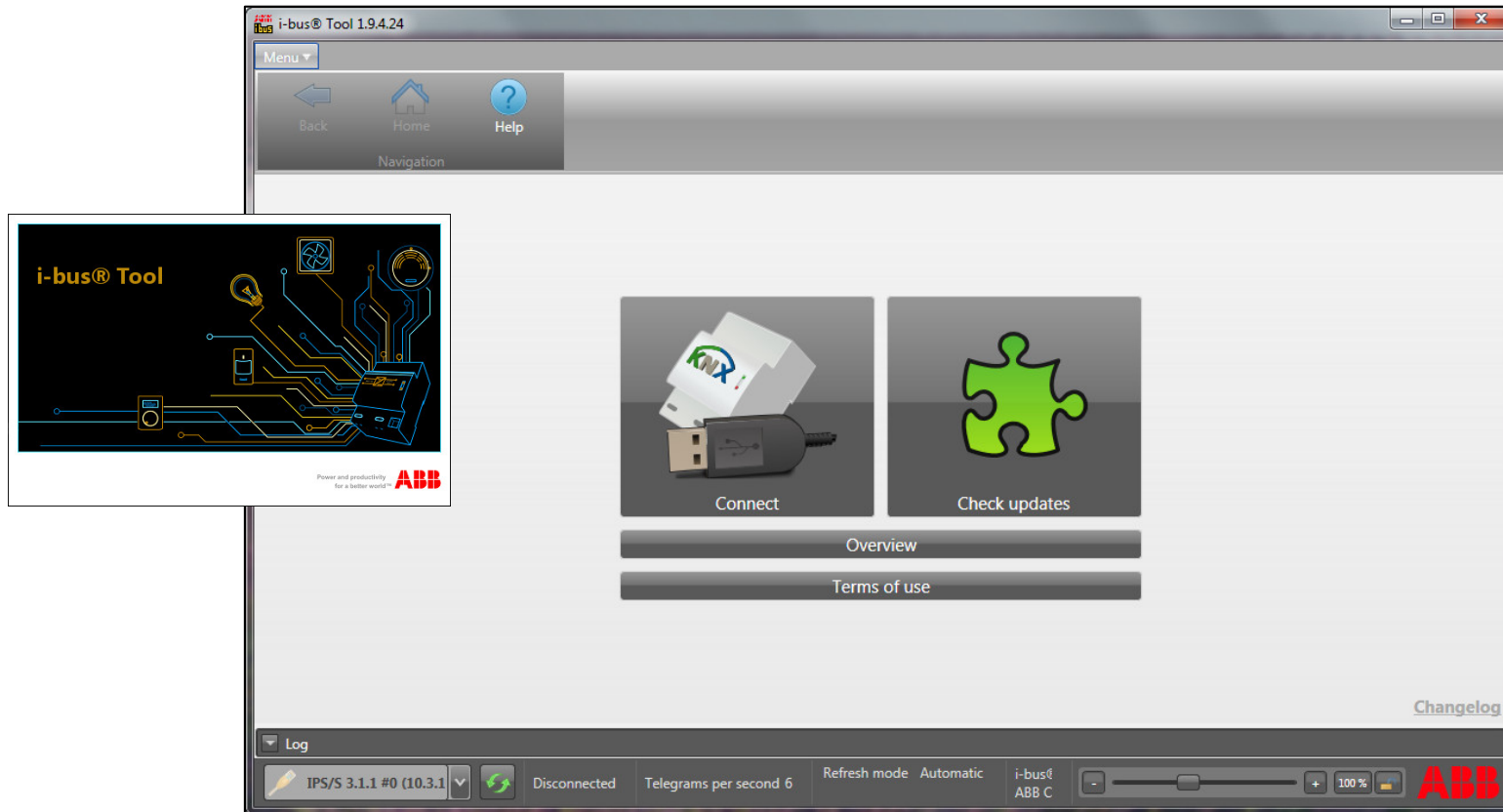
- Device name



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – i-busTool

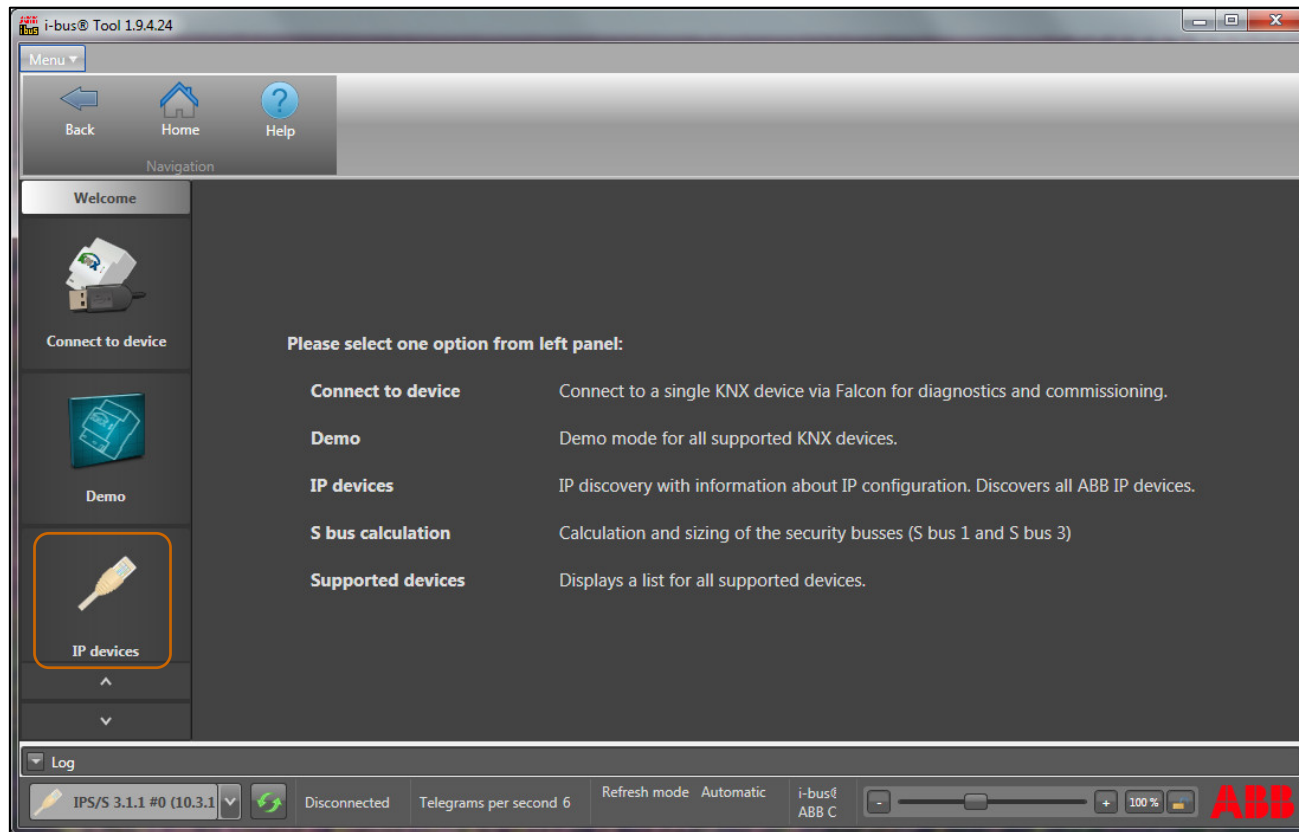
- A professional diagnostics and commissioning tool



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – i-busTool

- IP Devices



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – i-busTool

- Discovery

The screenshot displays the i-bus Tool 1.9.4.23 interface in Discovery mode. The top navigation bar includes buttons for Back, Home, Help, Refresh, Discovery (active), Update, Unicast, Open website, Blink LED, and Restart device. A sidebar on the left contains icons for Welcome, Connect to device, Demo, and IP devices. The main area shows a table of discovered IP devices:

Device type	Device name	Individual address	IP Address	MAC Address	Firmware status
ABB IPR/S 3.1.1	ABB IP Router 1.3.x - DB Floor	1.3.0	192.168.0.36	00:0C:DE:03:80:48	Up to date
ABB IPR/S 3.1.1	ABB IP Router 1.5.x - DB Floor	1.5.0	192.168.0.12	00:0C:DE:03:80:4F	Up to date
ABB IPR/S 3.1.1	ABB IP Router 2.7.x - DB Floor	2.7.0	192.168.0.88	00:0C:DE:03:80:52	Up to date

Below the table, a detailed configuration window for the selected device (192.168.0.36) is shown, displaying the following information:

- Firmware = 1.0.470
- IP address assignment method = Fixed
- IP address = 192.168.0.36 Subnet = 255.255.255.0 Gateway = 192.168.0.1
- BaseT = 10 MBit/s
- Serial number = 000290FDF50
- Physical address = 1.3.0
- Programming mode = Off
- Bus state = OK
- Routing multicast = 224.0.23.12

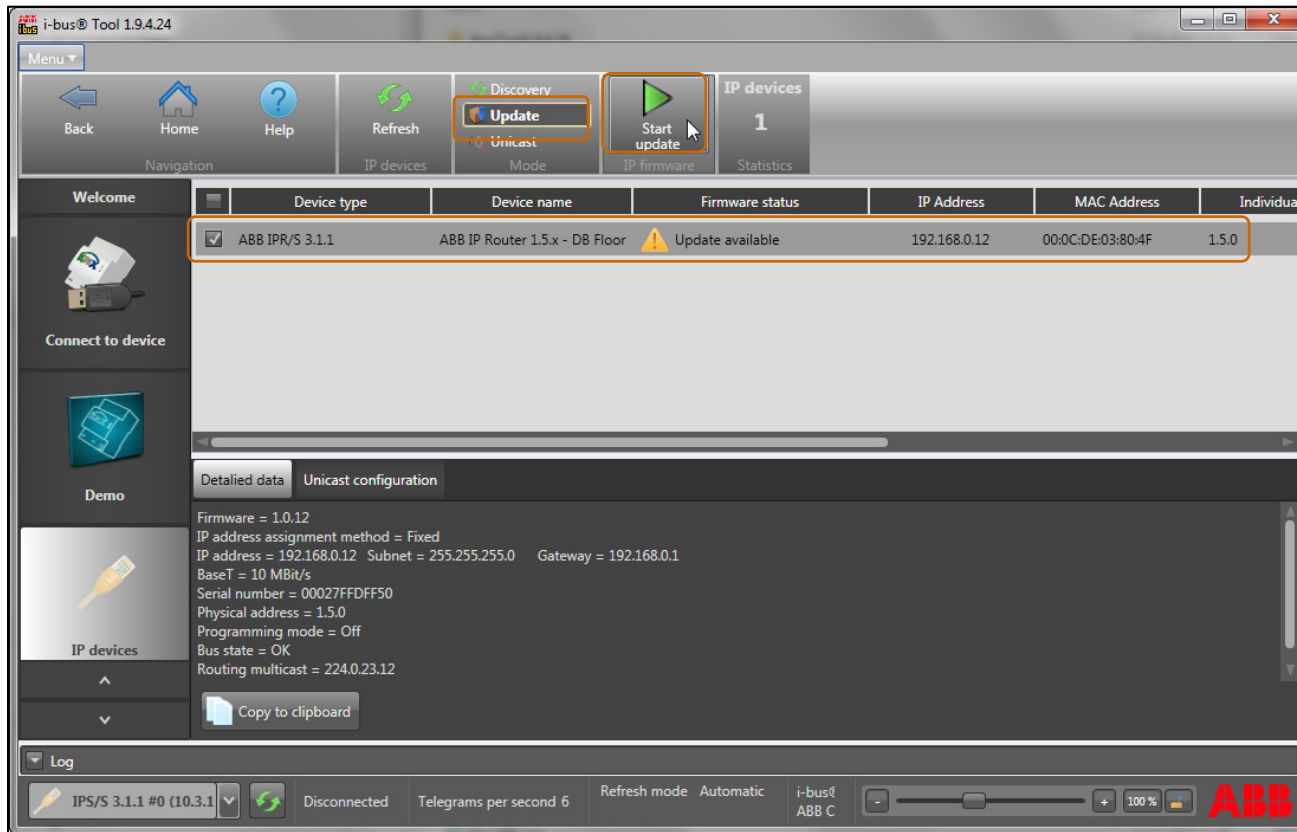
A 'Copy to clipboard' button is located below the configuration details. The bottom status bar shows the connection status as 'Disconnected', the refresh mode as 'Automatic', and the i-bus C status as '98 %'.



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – i-busTool

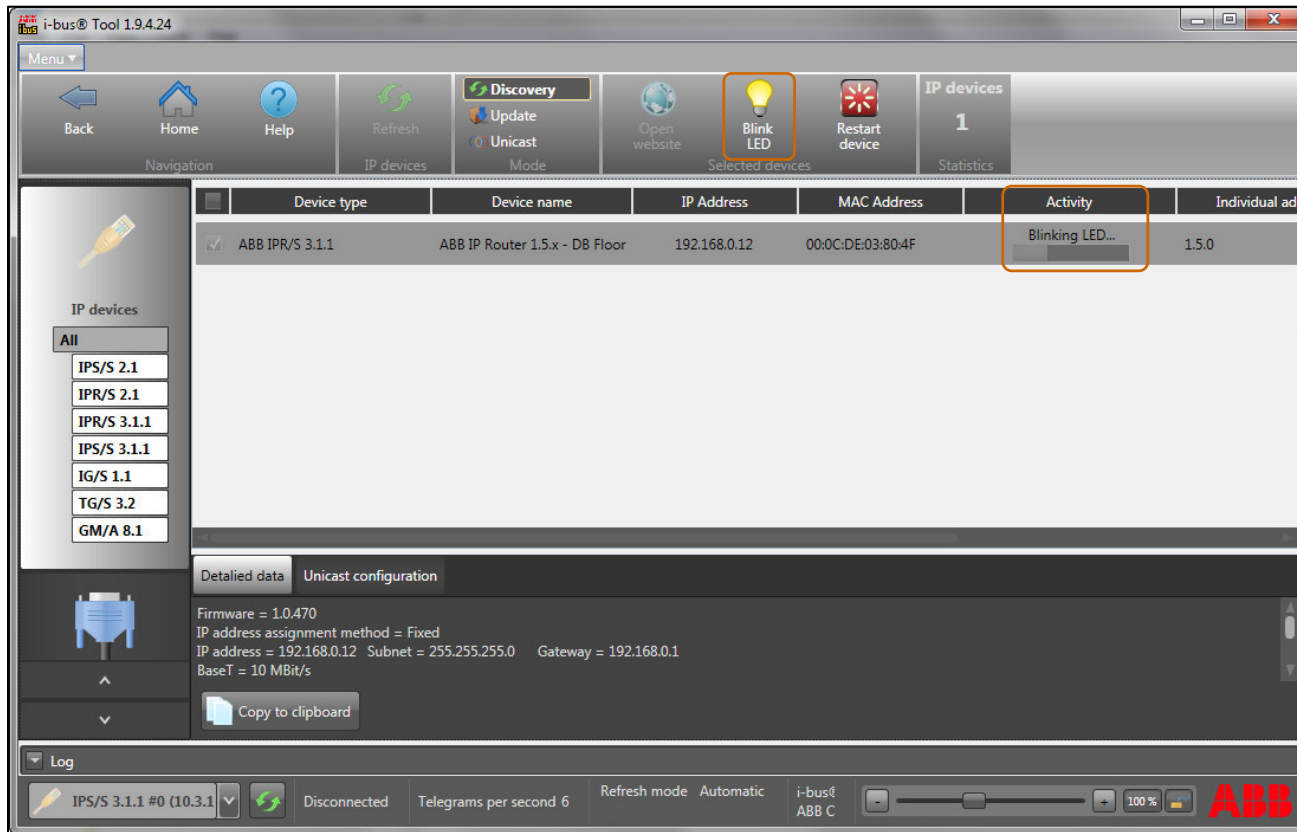
- Firmware update



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – i-busTool

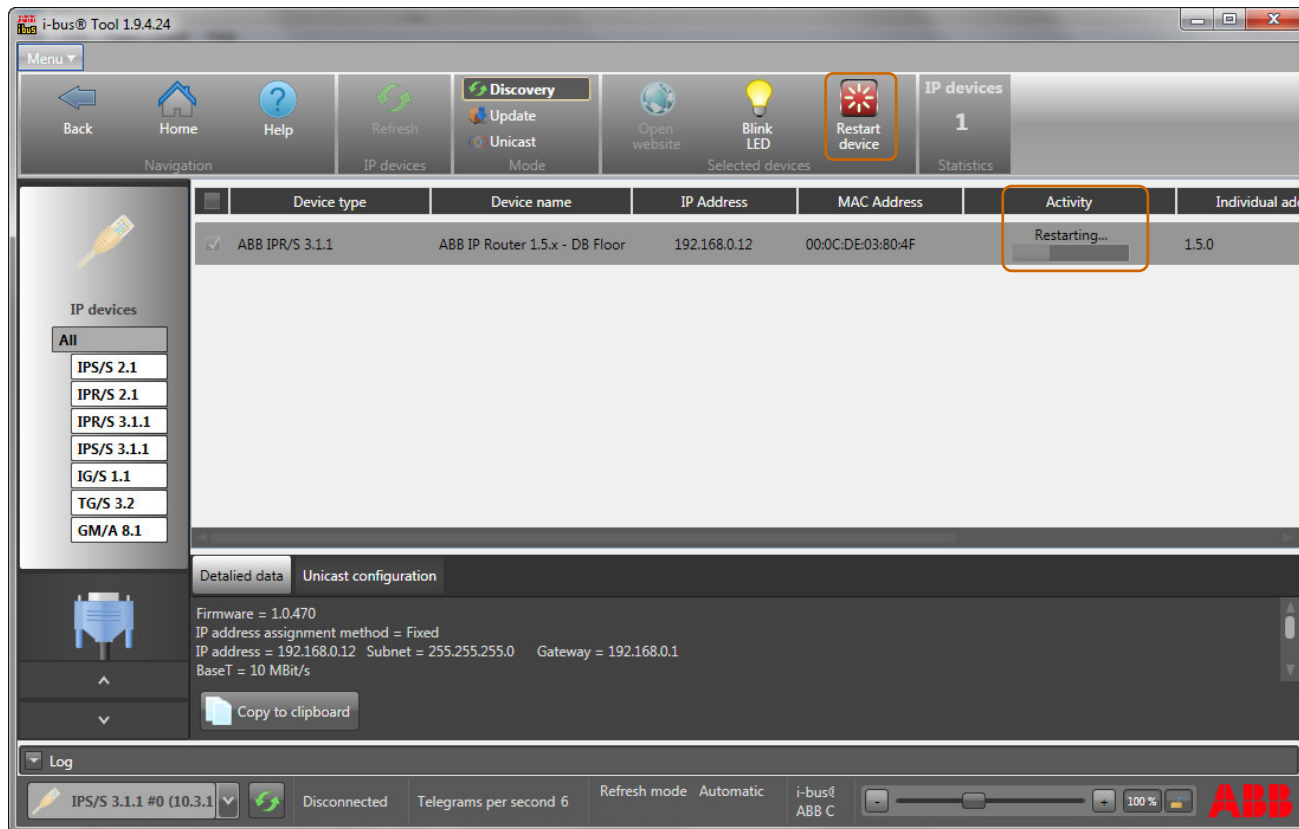
- Blink LED



# Webinar “IP Router IPR/S and IP Interface IPS/S”

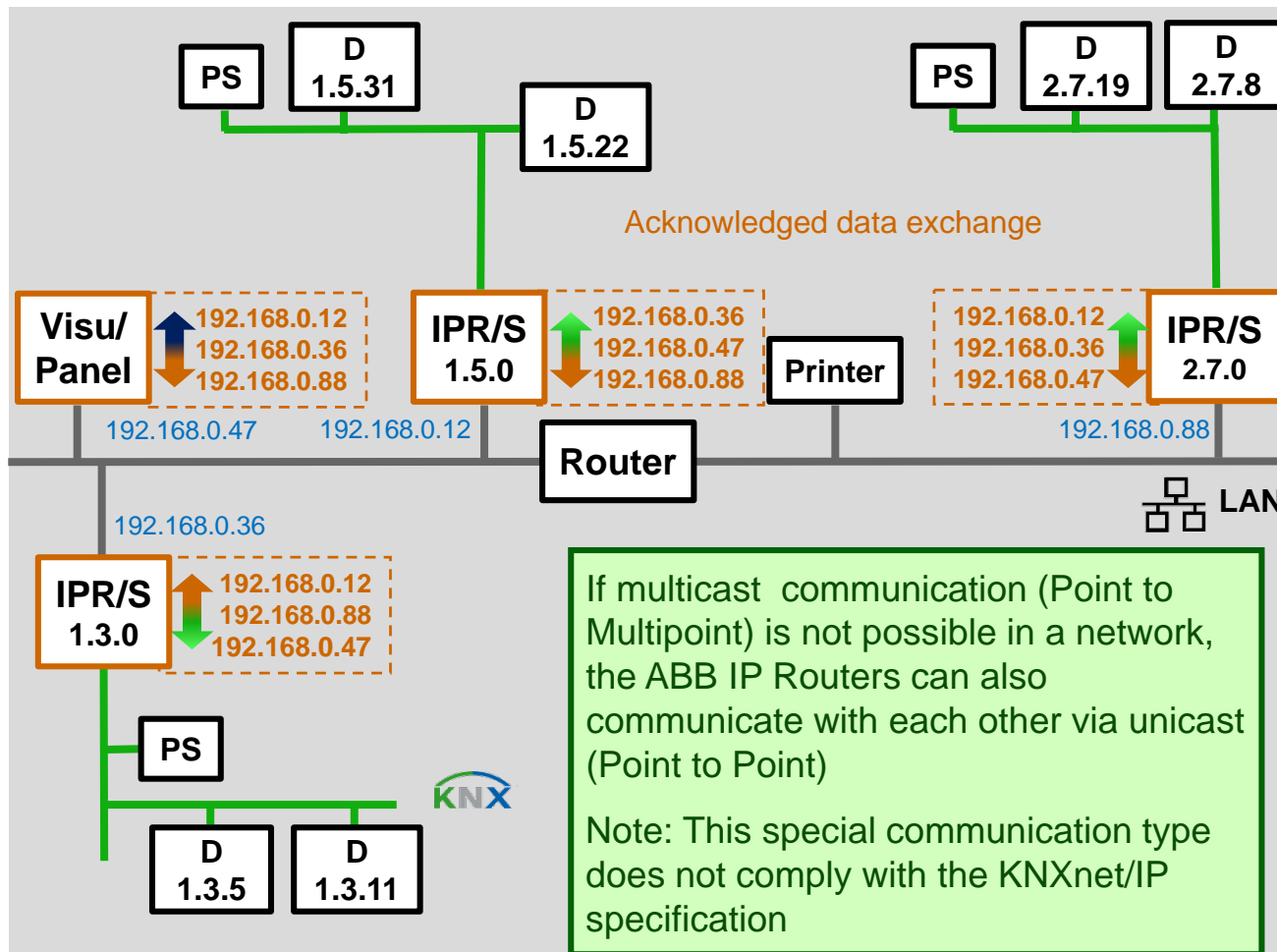
## IP Router IPR/S 3.1.1 – i-busTool

- Restart device



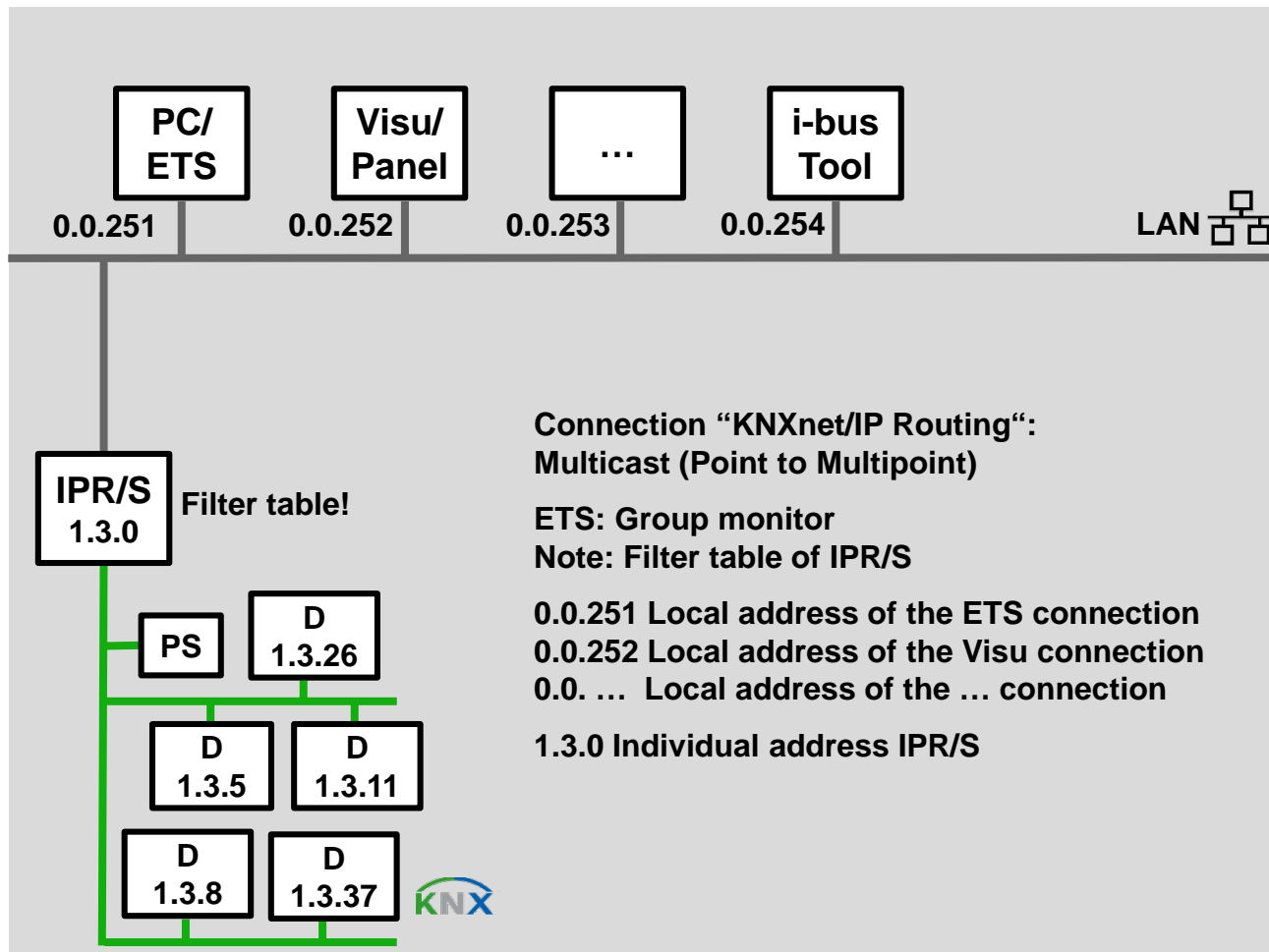
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – Unicast Group (max. 10 dev.)



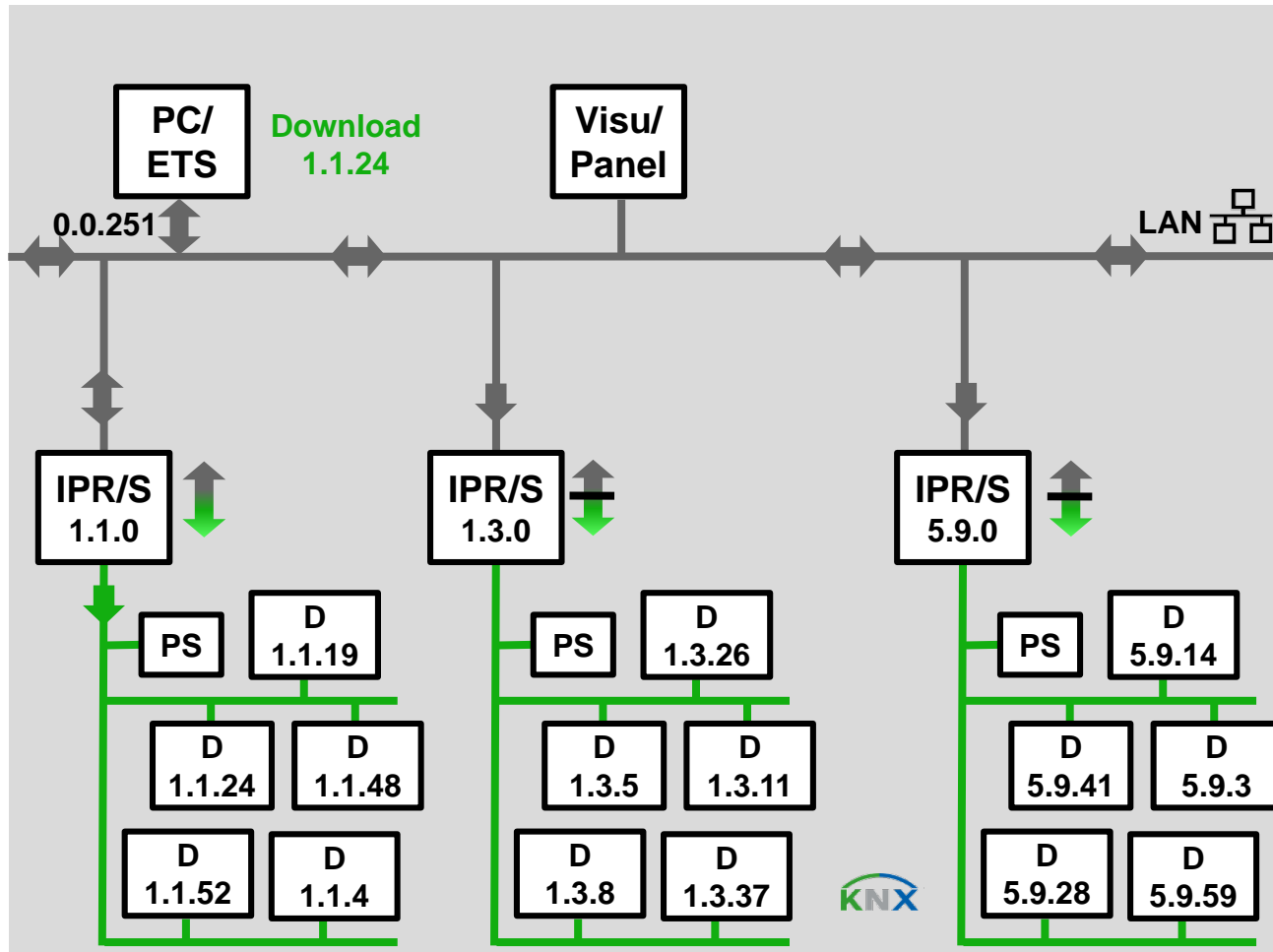
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “ETS”-Routing (only one)



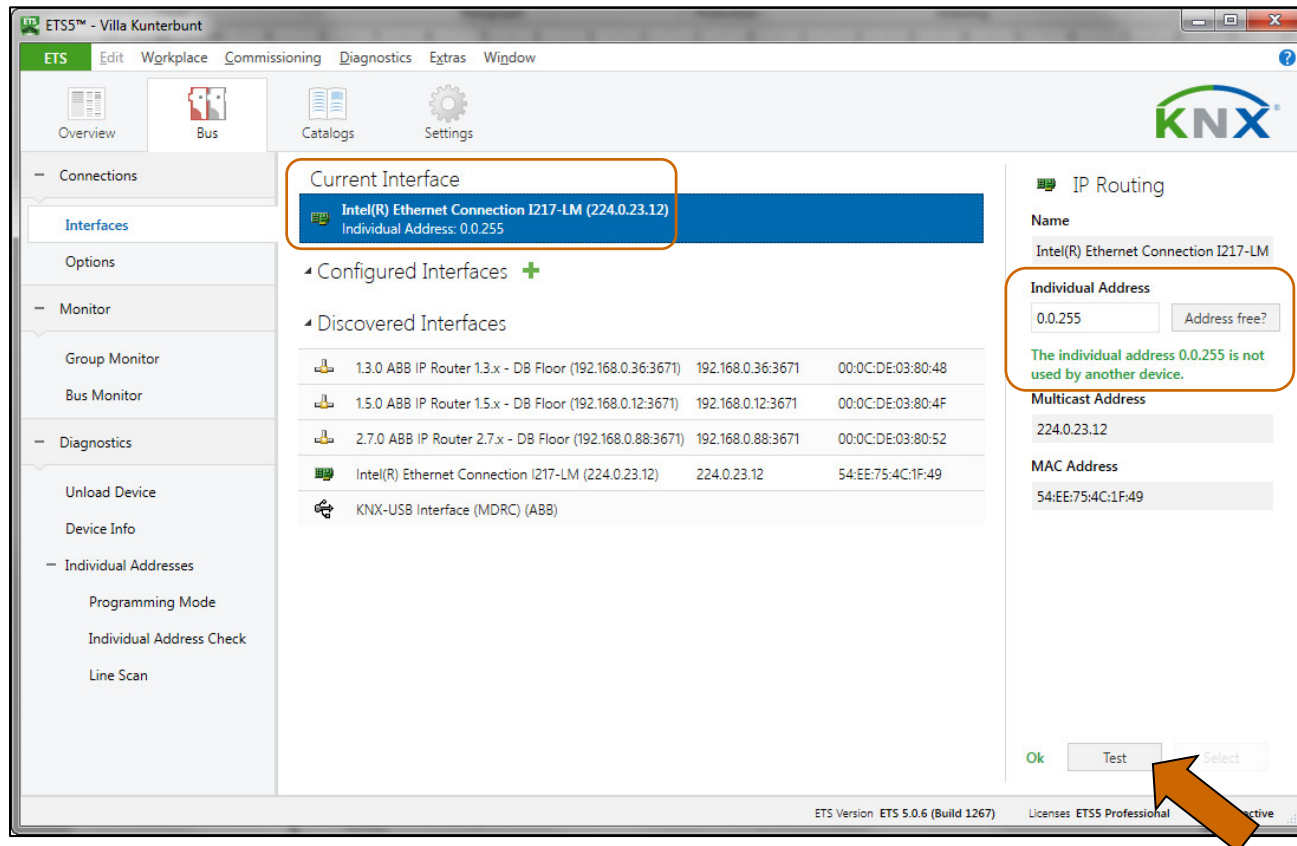
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “ETS”-Routing (only one)



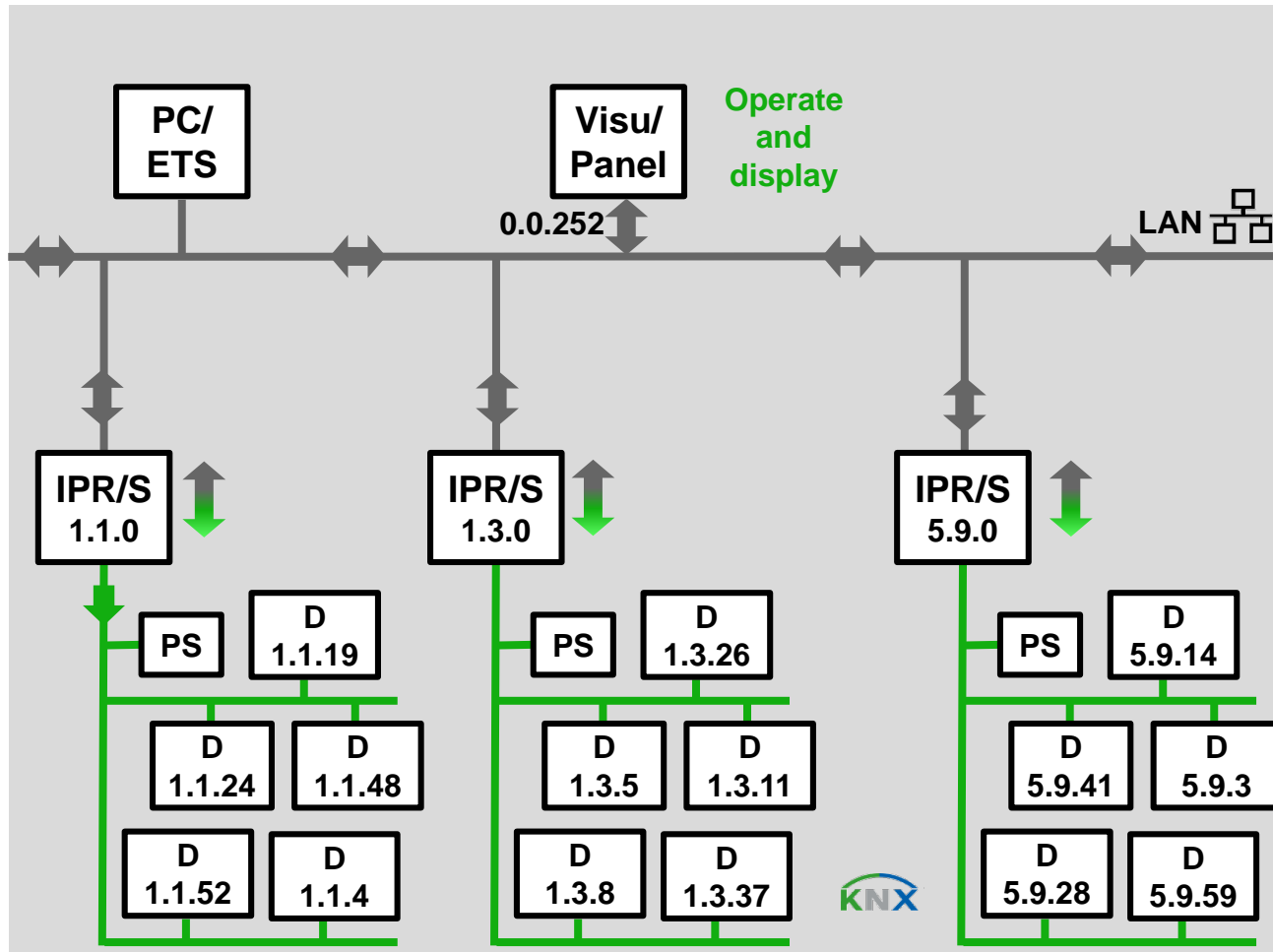
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “ETS”-Routing (only one)



# Webinar “IP Router IPR/S and IP Interface IPS/S”

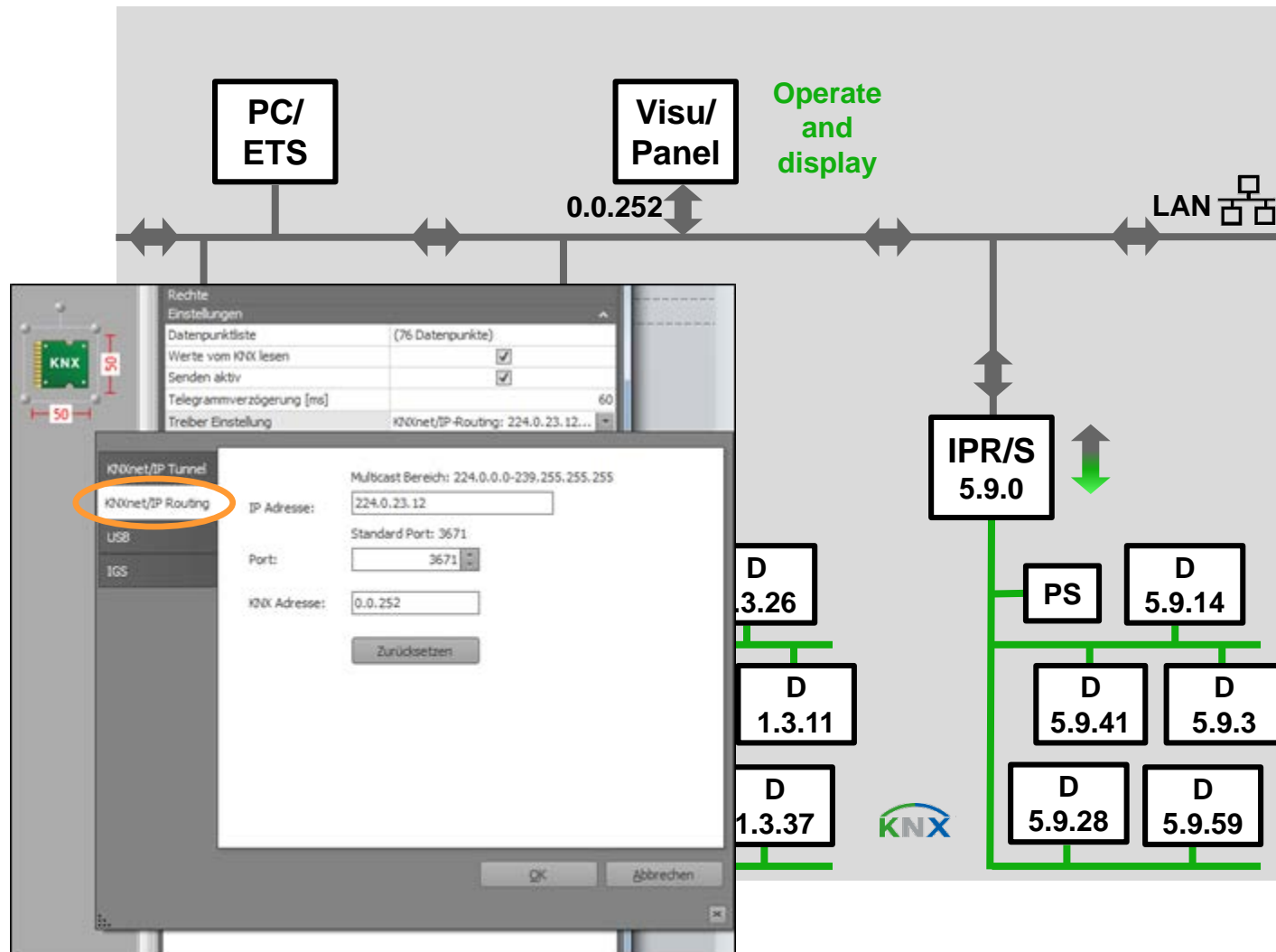
## IP Router connection: “Visu”-Routing (only one)





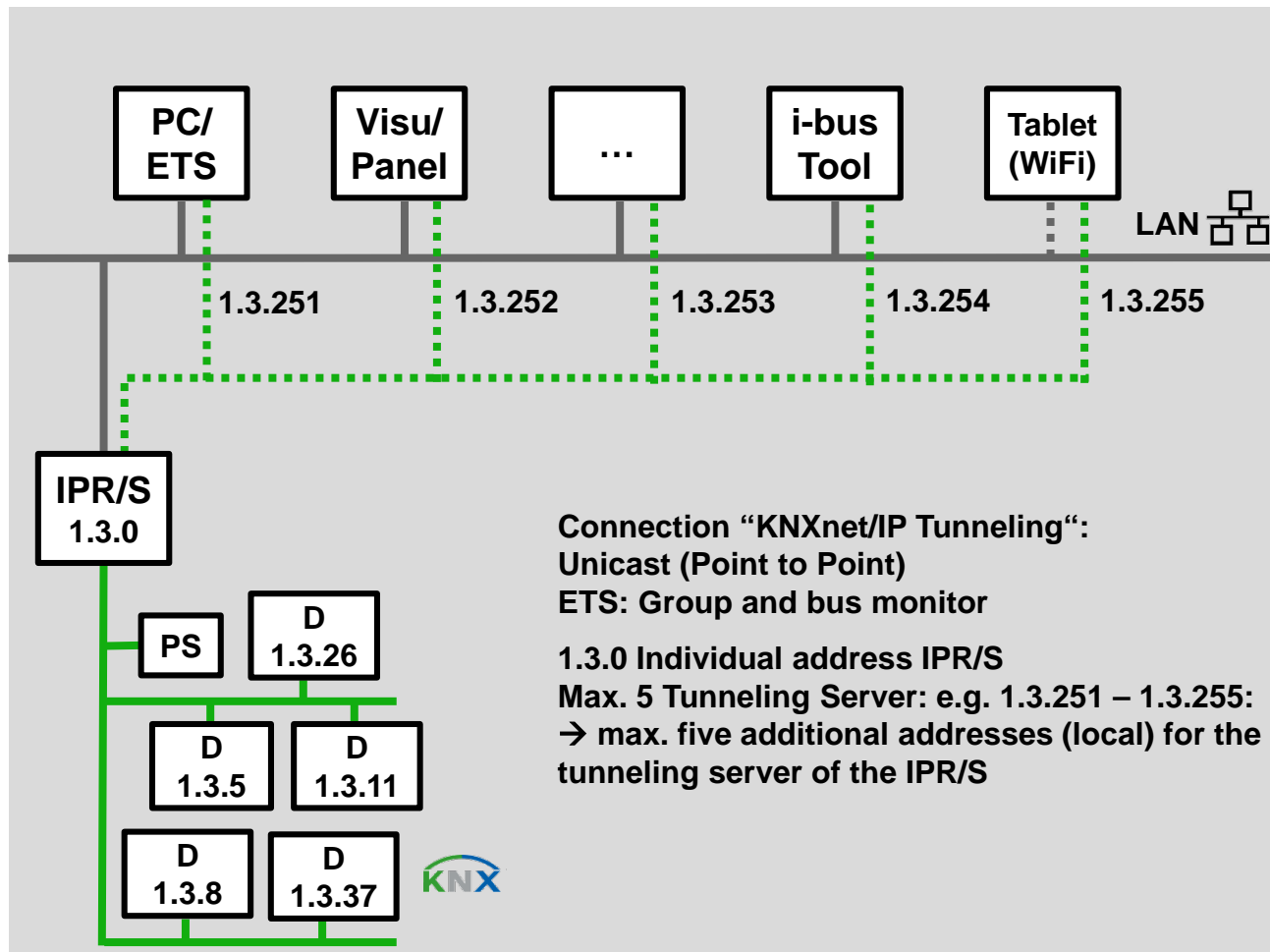
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “Visu”-Routing (only one)



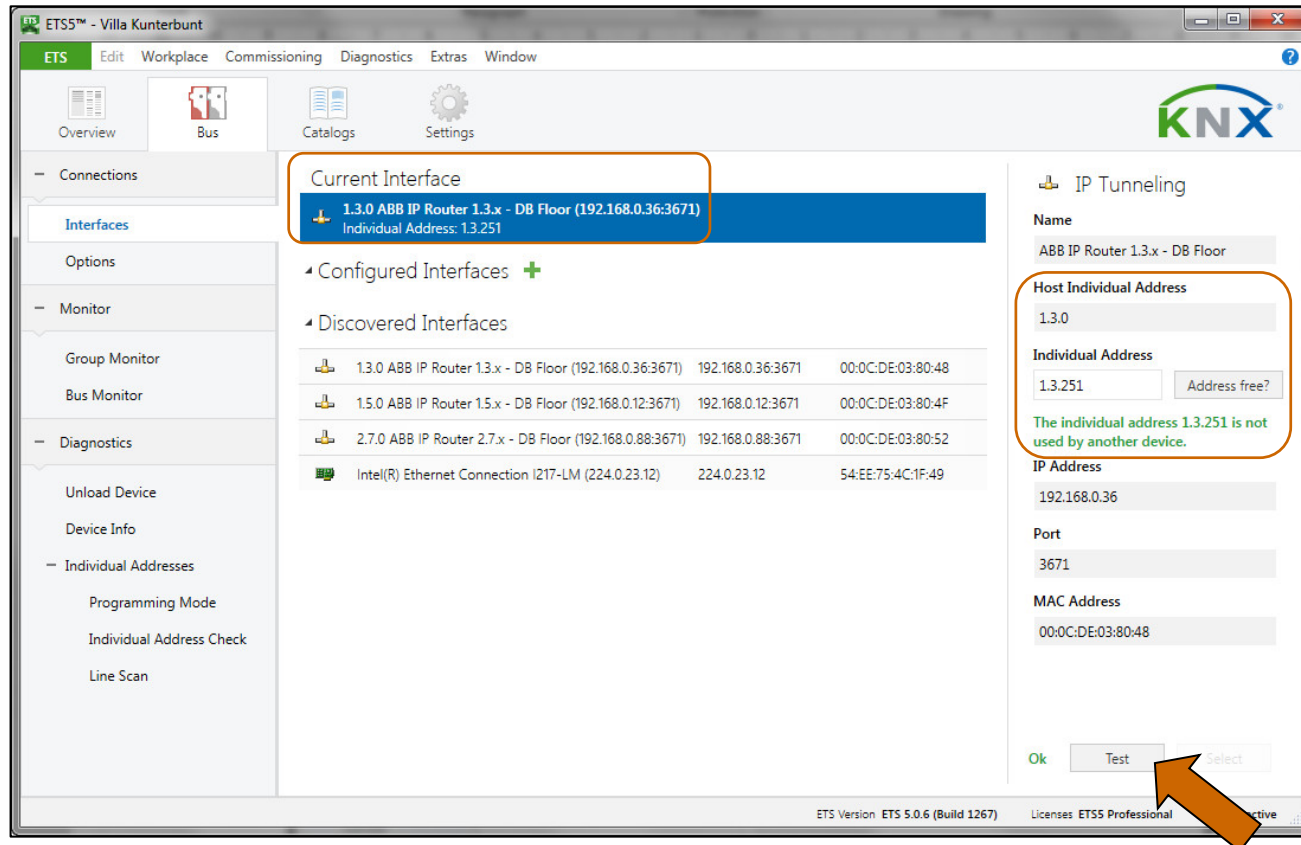
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “ETS”-Tunneling to each IPR/S



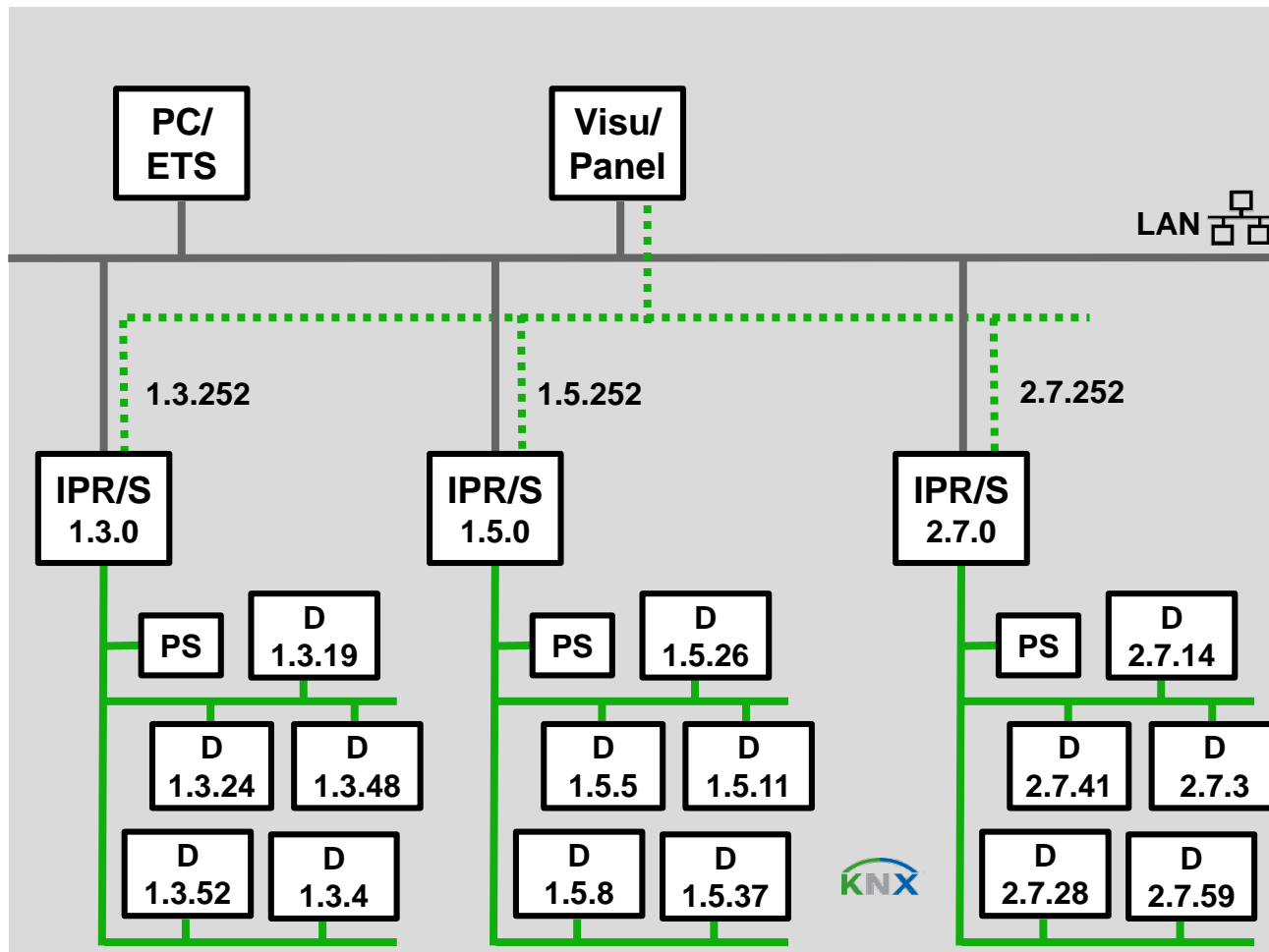
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “ETS”-Tunneling to each IPR/S



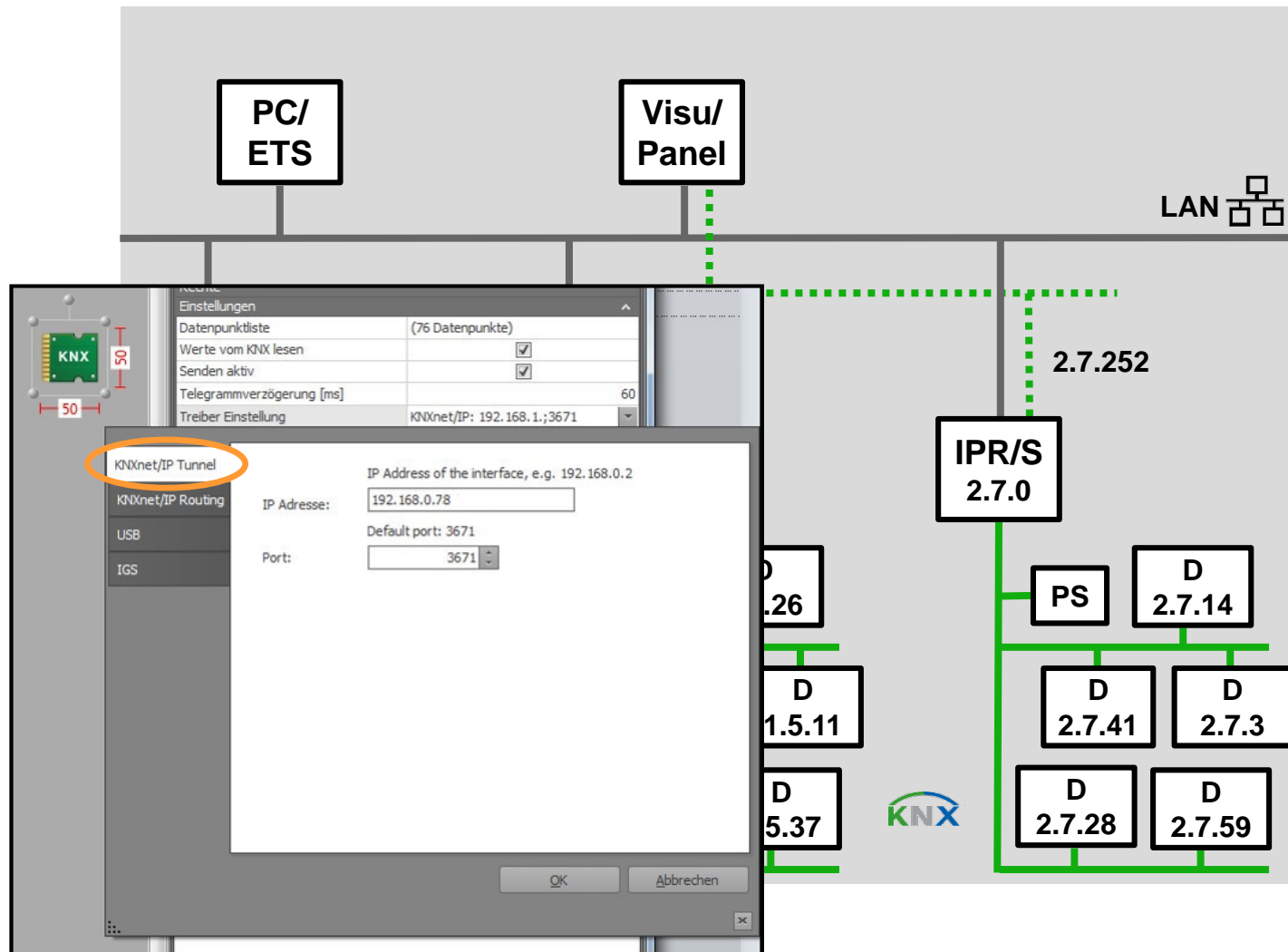
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “Visu”-Tunneling to each IPR/S



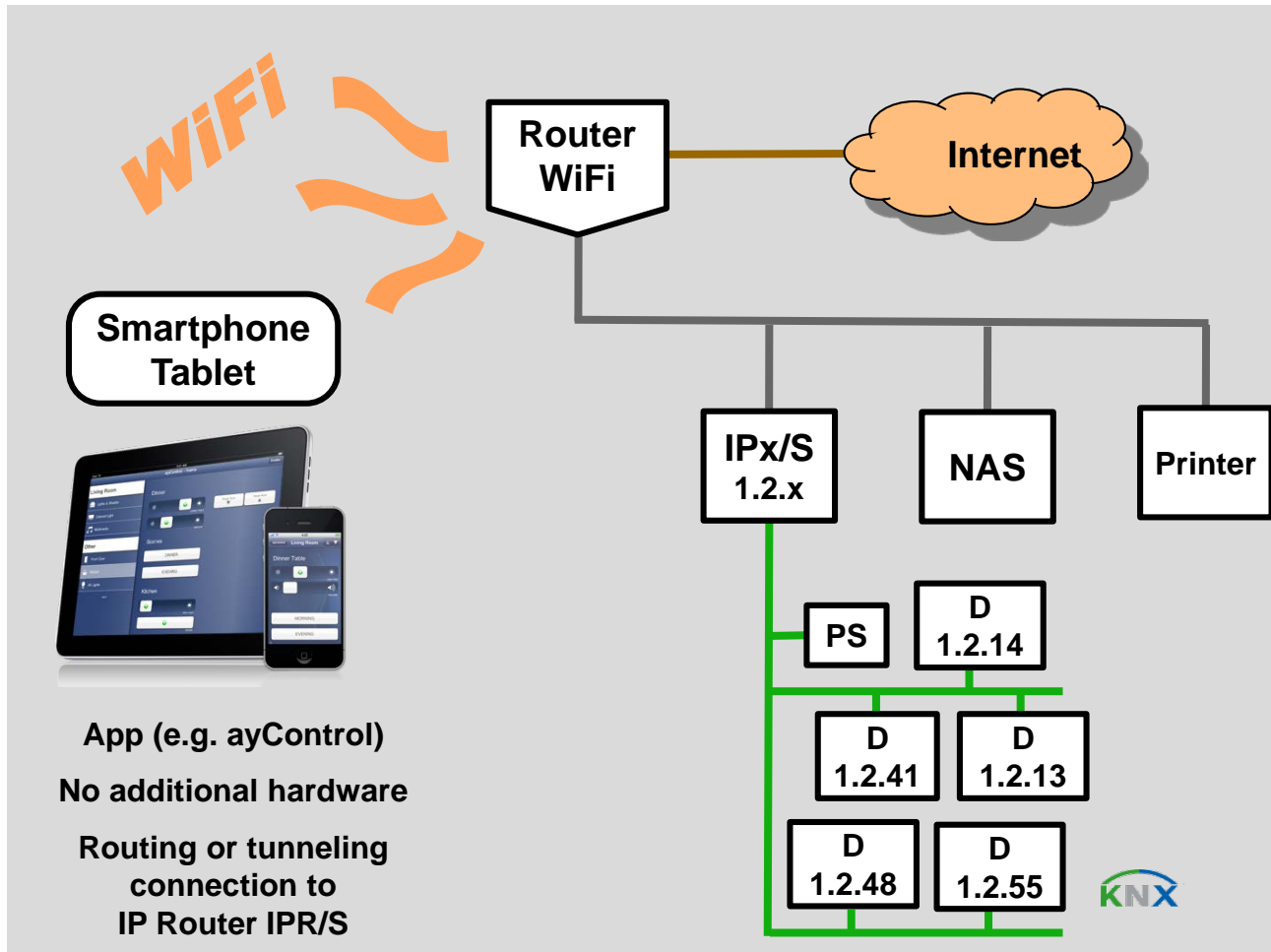
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router connection: “Visu”-Tunneling to each IPR/S



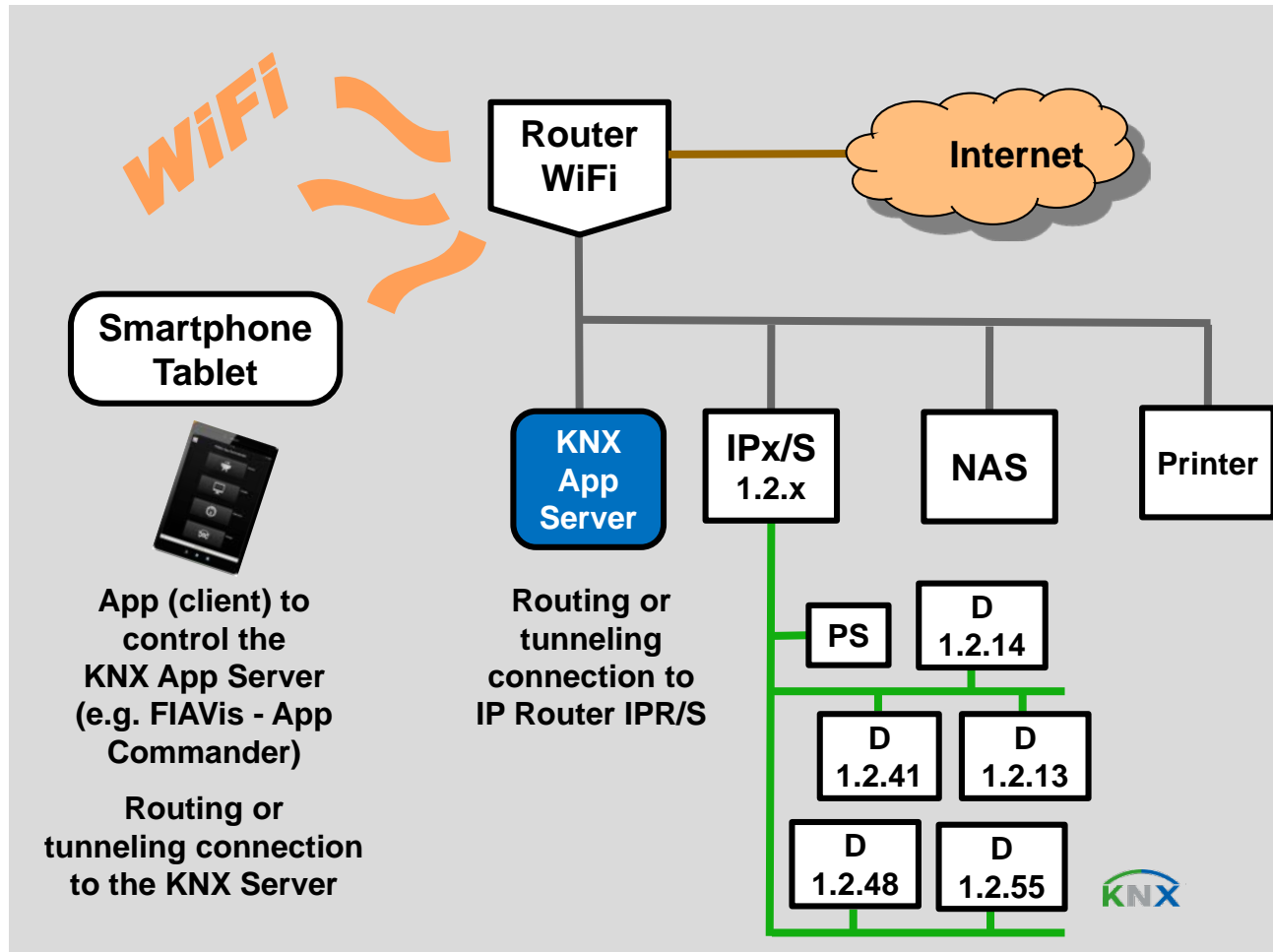
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## Remote access to KNX



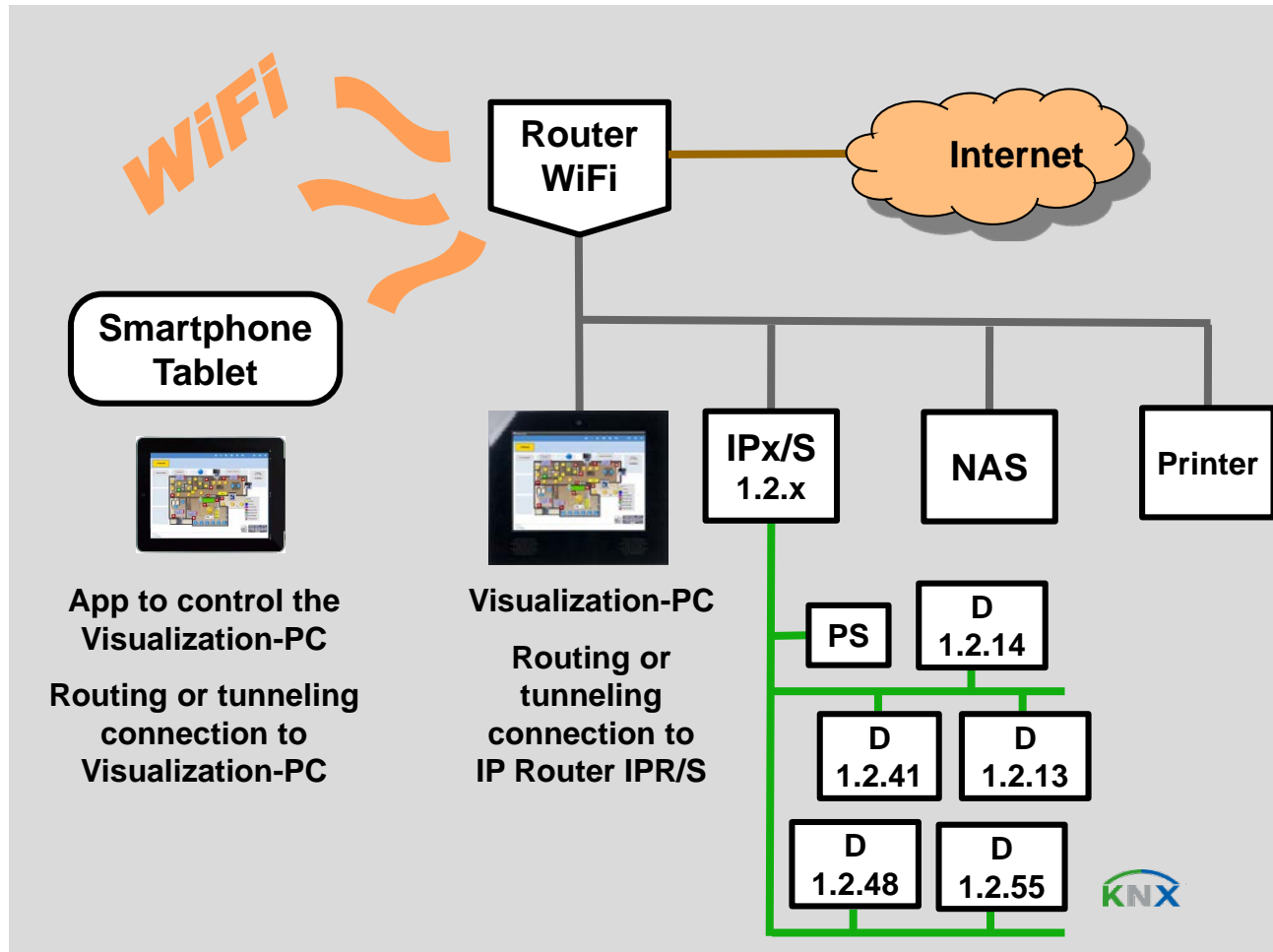
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## Remote access to KNX



# Webinar “IP Router IPR/S and IP Interface IPS/S”

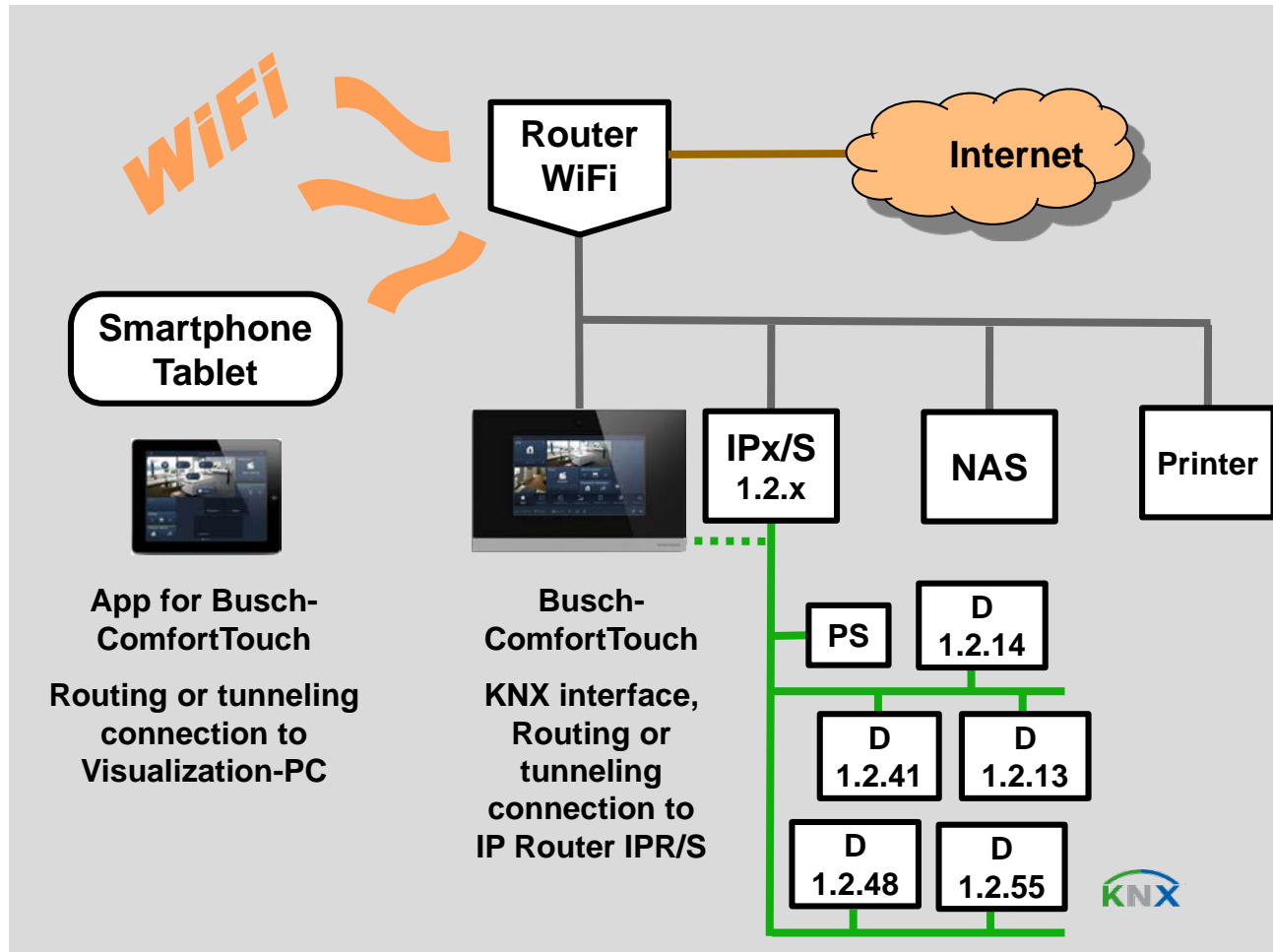
## Remote access to KNX



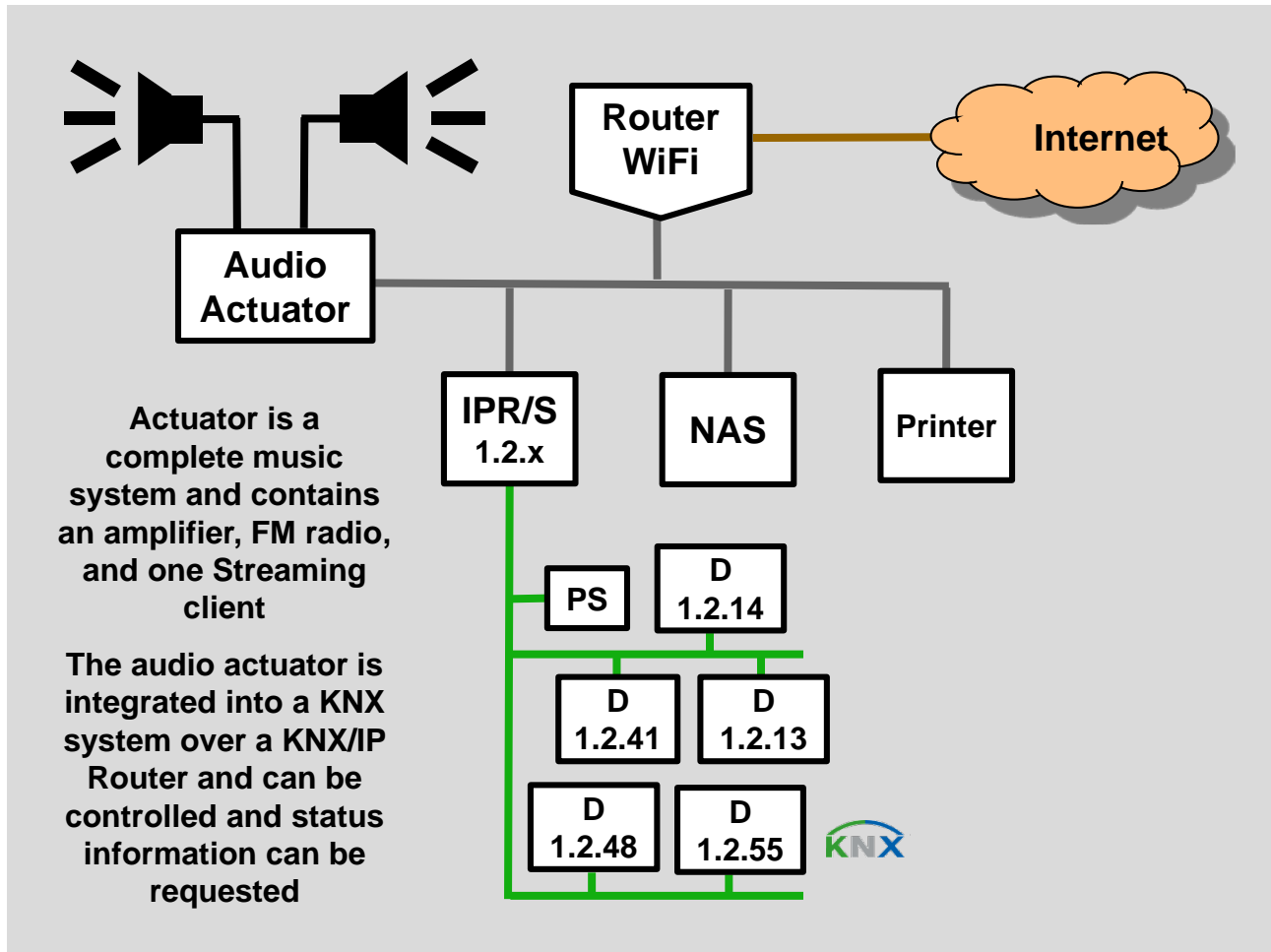


# Webinar “IP Router IPR/S and IP Interface IPS/S”

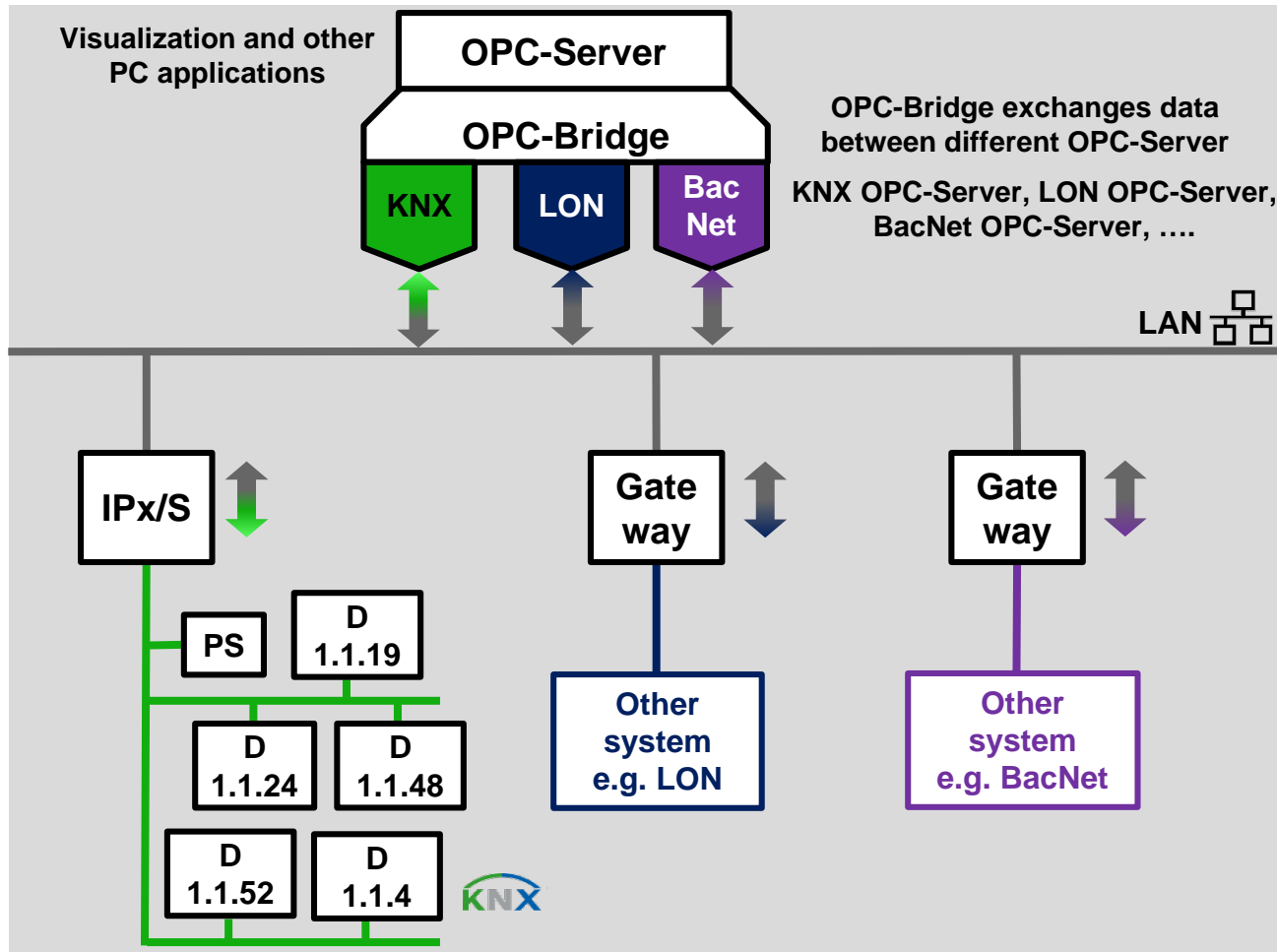
## Remote access to KNX



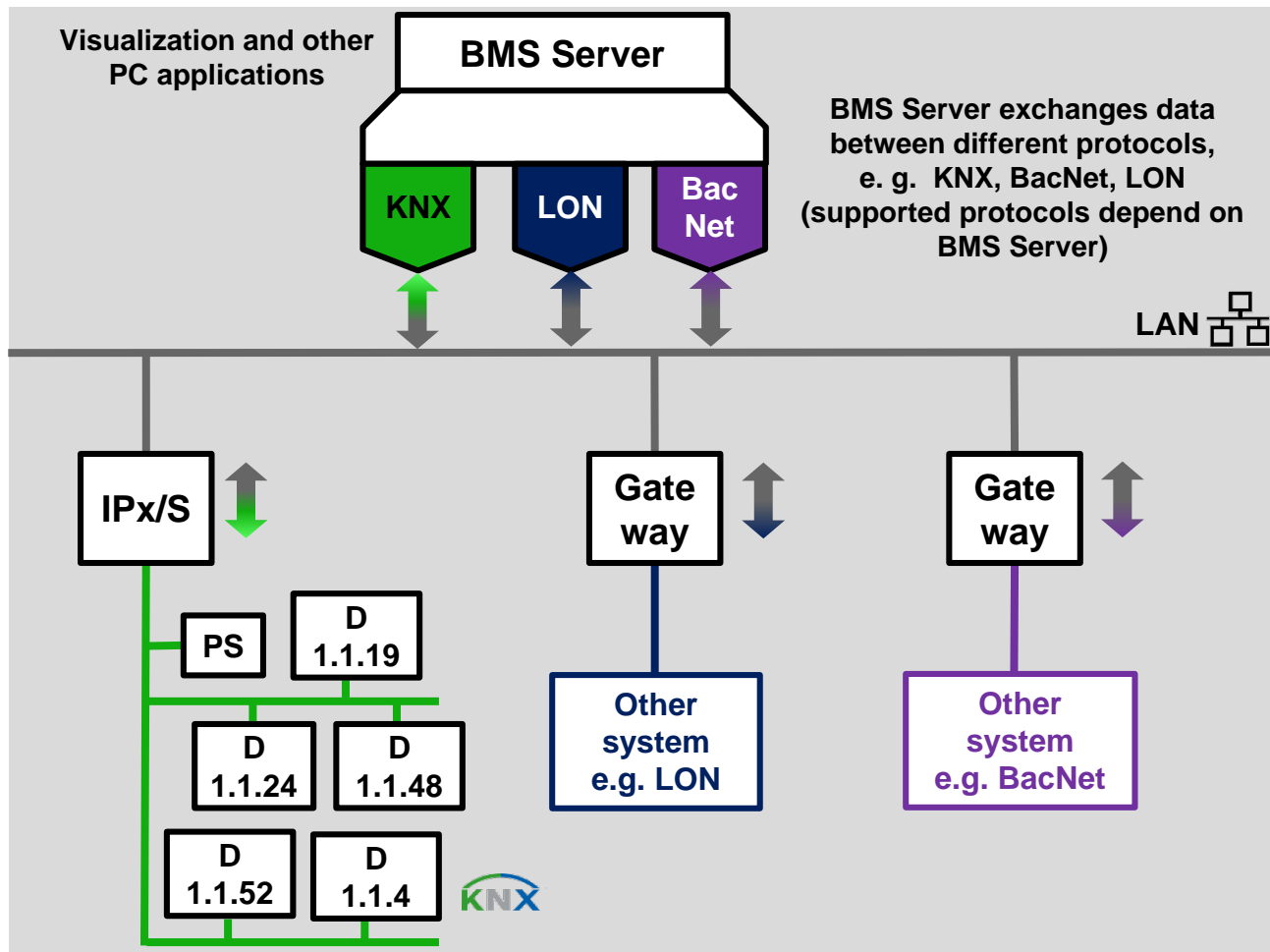
# Webinar “IP Router IPR/S and IP Interface IPS/S” KNX and Audio



# Webinar “IP Router IPR/S and IP Interface IPS/S” KNX-Gateway Connection via OPC

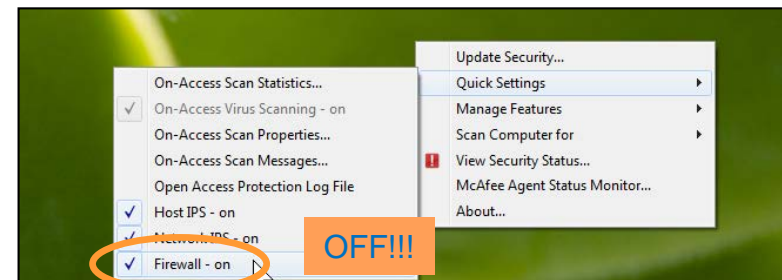
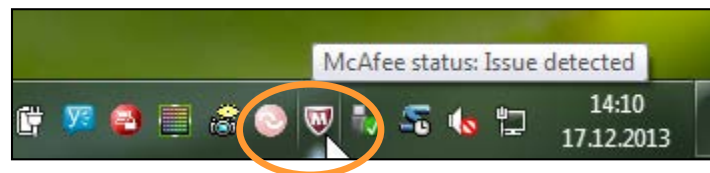
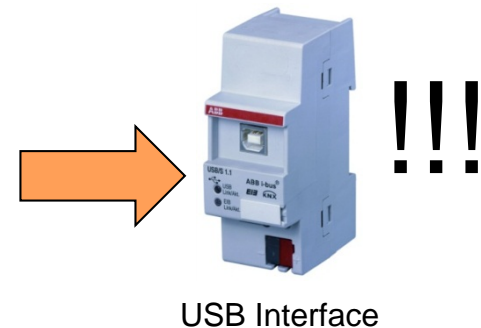
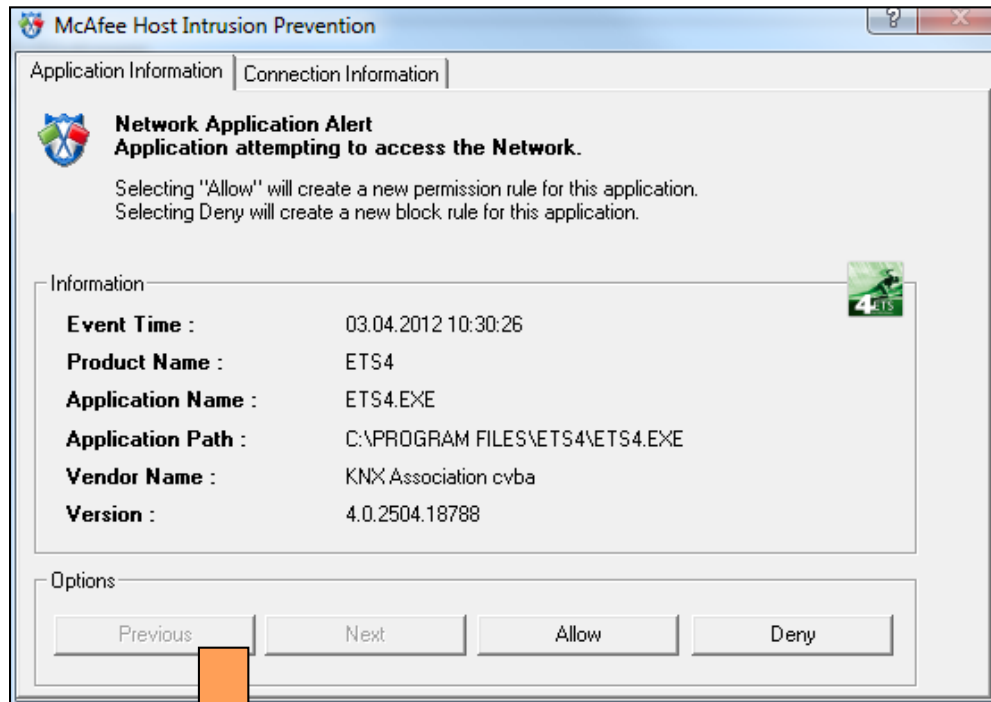


# Webinar “IP Router IPR/S and IP Interface IPS/S” KNX-Gateway Connection via BMS



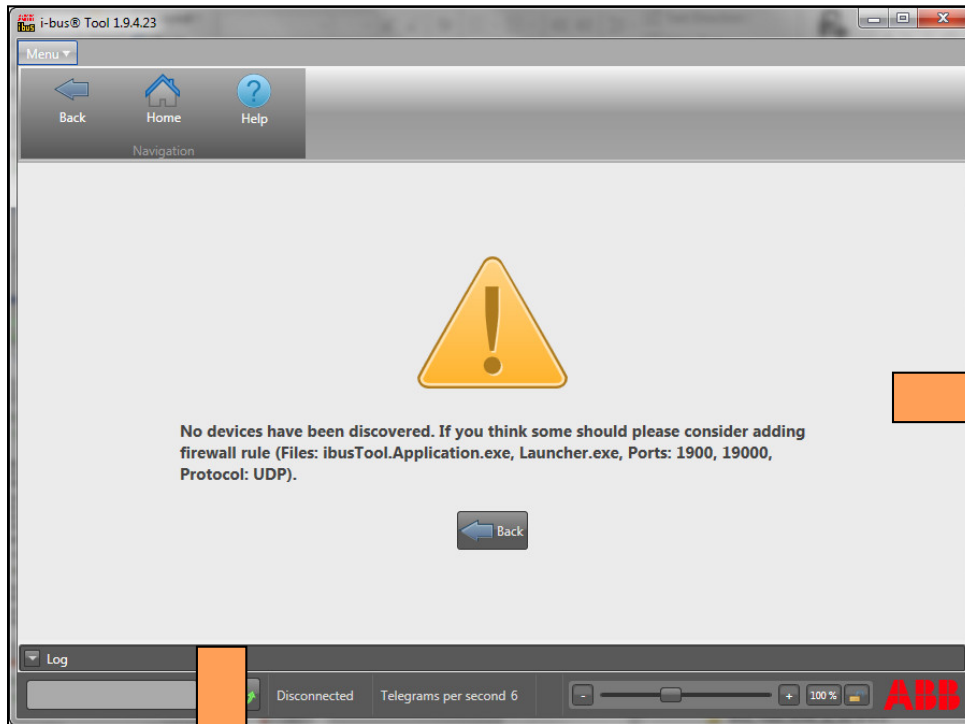
# Webinar “IP Router IPR/S and IP Interface IPS/S”

## Firewall, virus scanner, ... can block a download



# Webinar “IP Router IPR/S and IP Interface IPS/S”

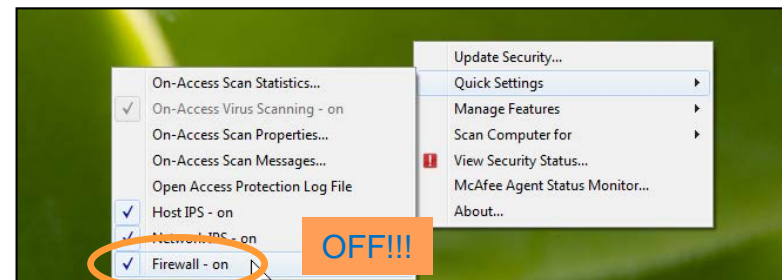
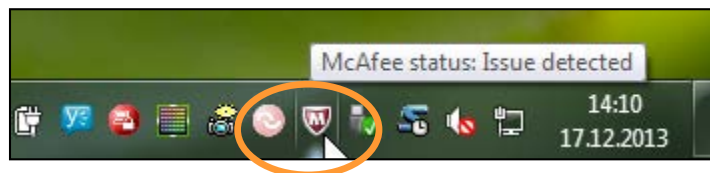
## i-busTool Discovery: Firewall, virus scanner, ...



The screenshot shows the SoftPerfect Network Scanner interface. It displays a list of discovered devices with columns for IP Address, Host Name, MAC Address, Response Time, Port, and SNM. An orange arrow points from the i-bus Tool warning message to this table.

IP Address	Host Name	MAC Address	Response Time	Port	SNM
192.168.1.1			0 ms		
192.168.1.42			11 ms		
192.168.1.10			13 ms		
192.168.1.46			11 ms		
192.168.1.75			3 ms		
192.168.1.76			18 ms		
192.168.1.100	schilder-and		0 ms		
192.168.1.102	ACER-NETBOOK		0 ms		
192.168.1.101			1 ms		

Network scanner



# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Interface IPS/S 3.1.1 – Summary of the Features



- 5 Tunneling Server → *parallel access, less hardware*
- Power over Ethernet (PoE) → *no additional power supply, less wiring*
- ABB i-bus Tool support → *easier commissioning and diagnostic*
- Smart housing concept → *better and safer installation, wiring and commissioning*

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# Webinar “IP Router IPR/S and IP Interface IPS/S”

## IP Router IPR/S 3.1.1 – Summary of the Features



- Unicast Communication → *Solution if Multicast is not possible*
- Network management function “Monitoring for KNX bus voltage failure” → *improved performance of the complete solution*
- Support of full filter table for all main groups 0...31 → *no restrictions for usage of the extended group address range*

# Webinar “IP Router IPR/S and IP Interface IPS/S” Market Introduction



IPS/S 3.1.1



IPR/S 3.1.1



IPS/S 2.1



IPR/S 2.1

- Market Launch: Week 44/2015 (End of October)
- Official product information will follow

Ident No.	Type	Status
2CDG110177R0011	IPS/S 3.1.1	New
2CDG110175R0011	IPR/S 3.1.1	New
2CDG110098R0011	IPS/S 2.1	to be discontinued
2CDG110061R0011	IPR/S 2.1	available further on

**NEW**

**NEW**

# Webinar “IP Router IPR/S and IP Interface IPS/S” Marketing Material



IPS/S 3.1.1



IPR/S 3.1.1

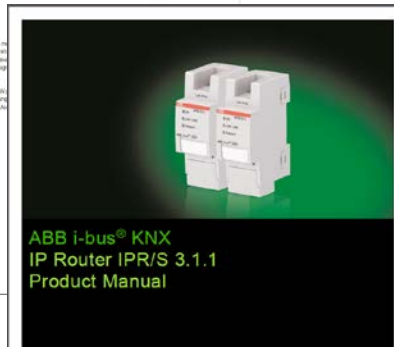
- Product Manuals
- Technical Data
- [www.abb.com/knx](http://www.abb.com/knx)



#### Produktdatenblatt

Der IP-Router 3.1.1 bietet die Schnittstelle zu Installationen und Netzwerken für eine 100% Stundensicherung abgewandelt werden und dabei Netzwerk- & IP-Adressen von einem Netzwerk zum anderen übertragen können.

Mit der ICS können 100 Geräte über den LAN, der bei einem Störungsfall zur Verfügung steht, werden das 100% Produkt der IPR/S und IPR/S.



# Webinar “IP Router IPR/S and IP Interface IPS/S”

[www.abb.com/KNX](http://www.abb.com/KNX)


→ Product categories → System Components



IPS/S 3.1.1



IPR/S 3.1.1



<b>ABB</b>	
<b>ABB i-bus® KNX</b>	
Product Tree	
ABB i-bus® KNX	
1	Power Supplies
2	System Components and Interfaces
	• 6149/21-500 priOn - Commissioning interface/adaptor
	• 6186/01 UP-500 - Power adapter module TP for use with ComfortTouch(R)/xx
	• EG/A32.2.1 - KNX/EnOcean Gateway, SI
	• IPM/S1.1 - IP Patch Module, MDRC
	• IPR/S2.1 - IP Router, MDRC
	• IPS/S2.1 - IP Interface, MDRC
	• ISM/S5.1 - IP Switch Master, 5 Port, MDRC
	• ISS/S5.1 - IP Switch Slave, 5 Port, MDRC
	• LK/S4.2 - Line Coupler, MDRC
	• LL/S1.1 - Optical fibre interface, MDRC
	• MKE/A32.1 - Magnetic Contact EnOcean
	• US/S1.1 - USB Interface, MDRC
3	Connection and Wiring
	Room Automation
5	Sensors
	Outputs
7	Shutters and Sun Protection
8	Illumination and Light sensors
9	Heating and Cooling
10	Control, Logic and Time
11	Visualisation, Display and Signalling
12	Operation
13	Energy Management
14	Security and Surveillance
15	Labelling Material
16	Frames and Socket Outlets

- Application Software ETS3 and ETS4/5
- Product Manual
- Technical Data
- Installation and Operating Instructions
- Specification Text
- Product Information
- Presentation Slides
- CE Declaration of Conformity (.PDF)
- Environmental Information
- RoHS - Declaration of Conformity
- ...

# Webinar “IP Router IPR/S and IP Interface IPS/S”

## Next Webinar



IPS/S 3.1.1



IPR/S 3.1.1

- **Wednesday 25<sup>th</sup> of November 2015**
  - Morning 09:00 am Europe Time (Berlin, UTC + 1h)
  - Afternoon 03:00 pm Europe Time (Berlin, UTC + 1h)
- **IP Router IPR/S and IP Interface IPS/S**
  - Advanced features
    - i-busTool
    - Filter table
    - Unicast groups
    - Record telegrams on IP
    - Remote access / VPN
    - ...

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for a better world™

