



Dana Corp.

KNX AWARD Application

NINE ONE
Hannam

The First and ONLY Project
with KNX automation system
for massive residential apartment in Korea



Windows 정품 인증

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What is **HANNAM 91**?



HANNAM 91 project is a building project
which construct
the most luxury residential apartment in Korean history.

Designers Involved



ANU



SMDP



SASAKI YOJI



B&A

The most powerful design companies and artists in north east Asia are involved!

Companies Involved

Role	Company name
Owner	DaeShin F&I(대신 F&I)
Contractor	Lotte E&C
Project Management	WSP Korea
Structural Design	ANU Design Group
System integrator	Dana Corp.
KNX item supplier	Hager(KNX actuators) Berker by Hager(System switches) DIVUS(KNX server) BES ingenium(KNX gateways) (All KNX partners)

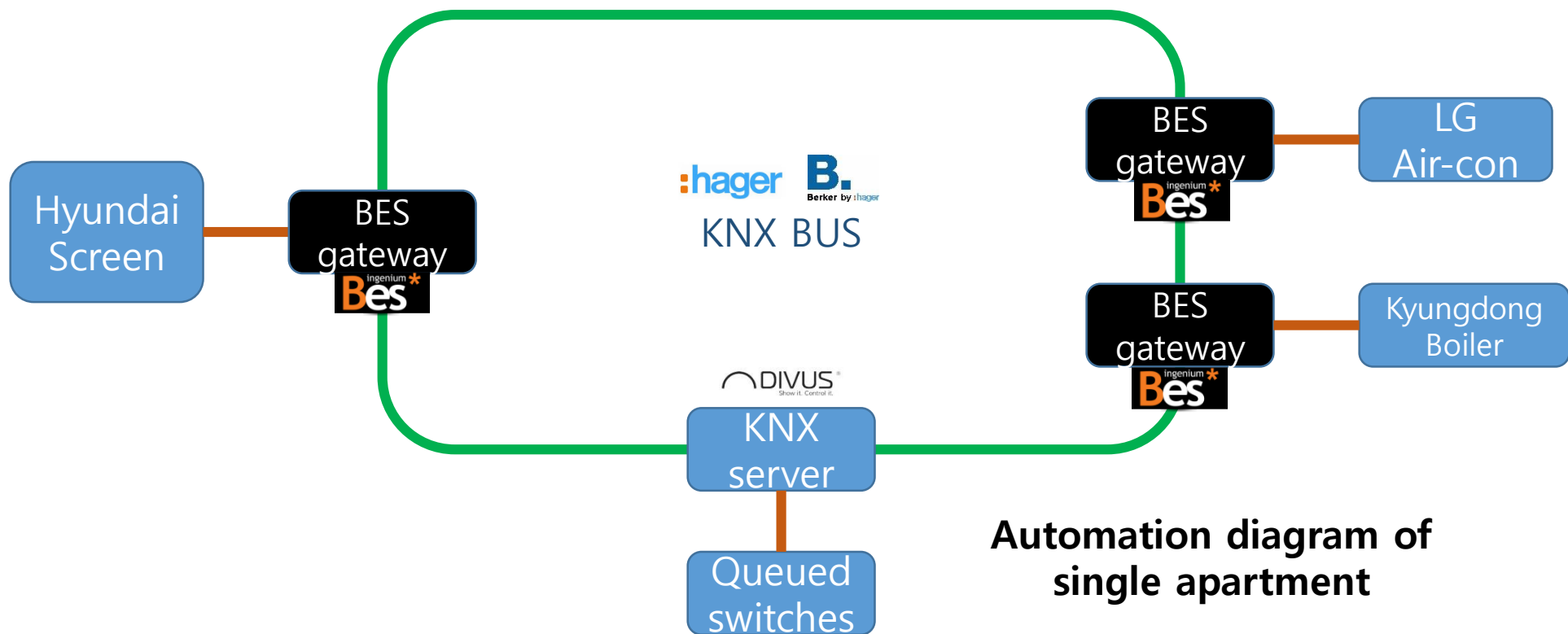
-> Total solution of KNX system is integrated!

Size of HANNAM project

Specs	Data
Location	91, Hannam-daero, Yongsan-gu, Seoul, Republic of Korea
Project period	2017. 11. ~ 2019. 10. (24 months)
Total project area	59,157m ²
Building area	17,925m ²
Total floor area	225,291m ²
Building-to-land ratio	30.30 %
Floor area ratio	146.48 %
Structure	RC(reinforced concrete), Rahmen, Flat plate floor system
Project scale	4 Basement floors, 9 floors on ground, 9 Apartment buildings(Total 341 houses)

-> The most huge residential project ever in Korean KNX integration history!

Specialty of HANNAM 91's KNX control – Perfect local adaptation

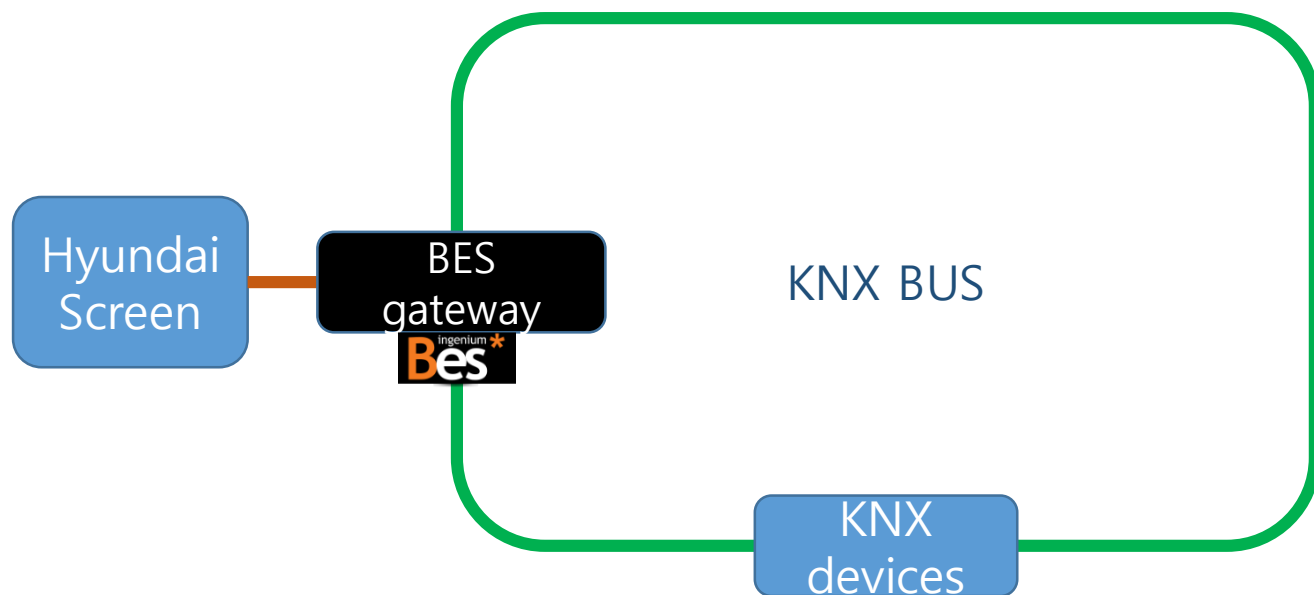


Functions in automation system of HANNAM project

1. Lightings(On/off, Dimming)
2. HVAC(Korean local protocol)
3. Wall pad(Korean local protocol)
4. Queued switches(MODBUS)
5. Elevator call

Specialty of HANNAM 91's KNX control – Perfect local adaptation

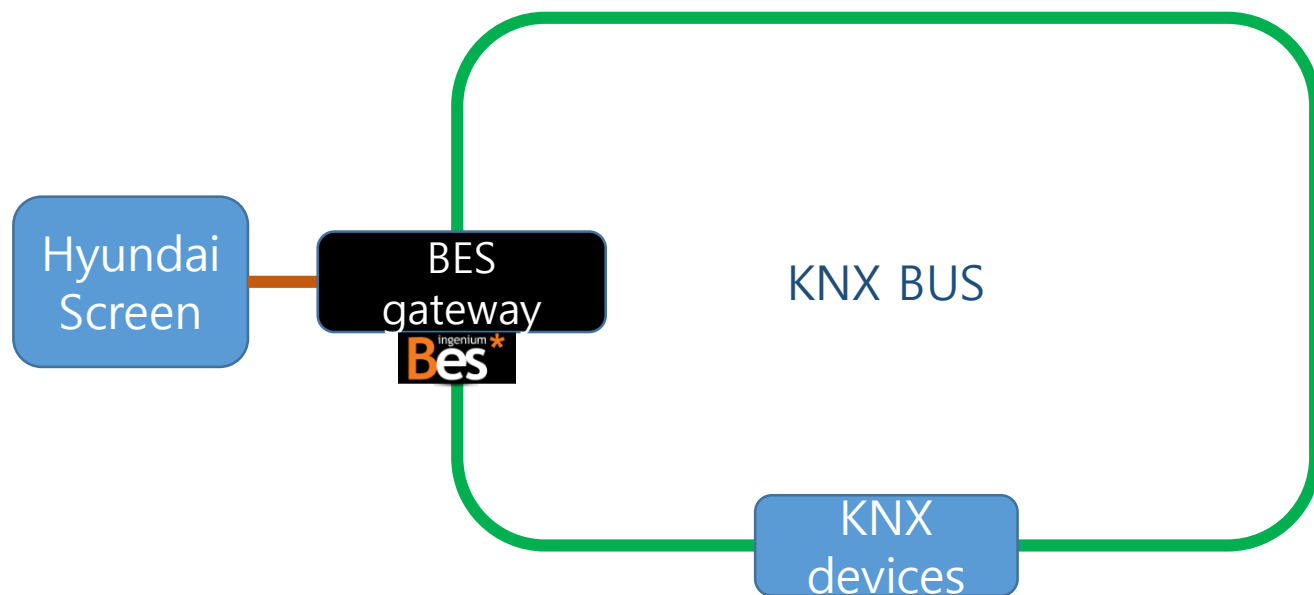
A. KNX bus and Hyundai Telecom Wall pad



- Difficulties of KNX wallpads in Korea
- 1) Normally, they do not support Korean language.
 - 2) In Korea, there are many special specs compelled in law that are must be implemented in the system.(eg. Queued switches) But there is no KNX manufacturer which have that kind of devices.
 - 3) There is no standard protocol like KNX in automation control in Korea. Each supplier uses their own protocols. So, a gateway must be in the bus to communicate between devices.

Specialty of HANNAM 91's KNX control – Perfect local adaptation

A. KNX bus and Hyundai Telecom Wall pad



❖ How to communicate

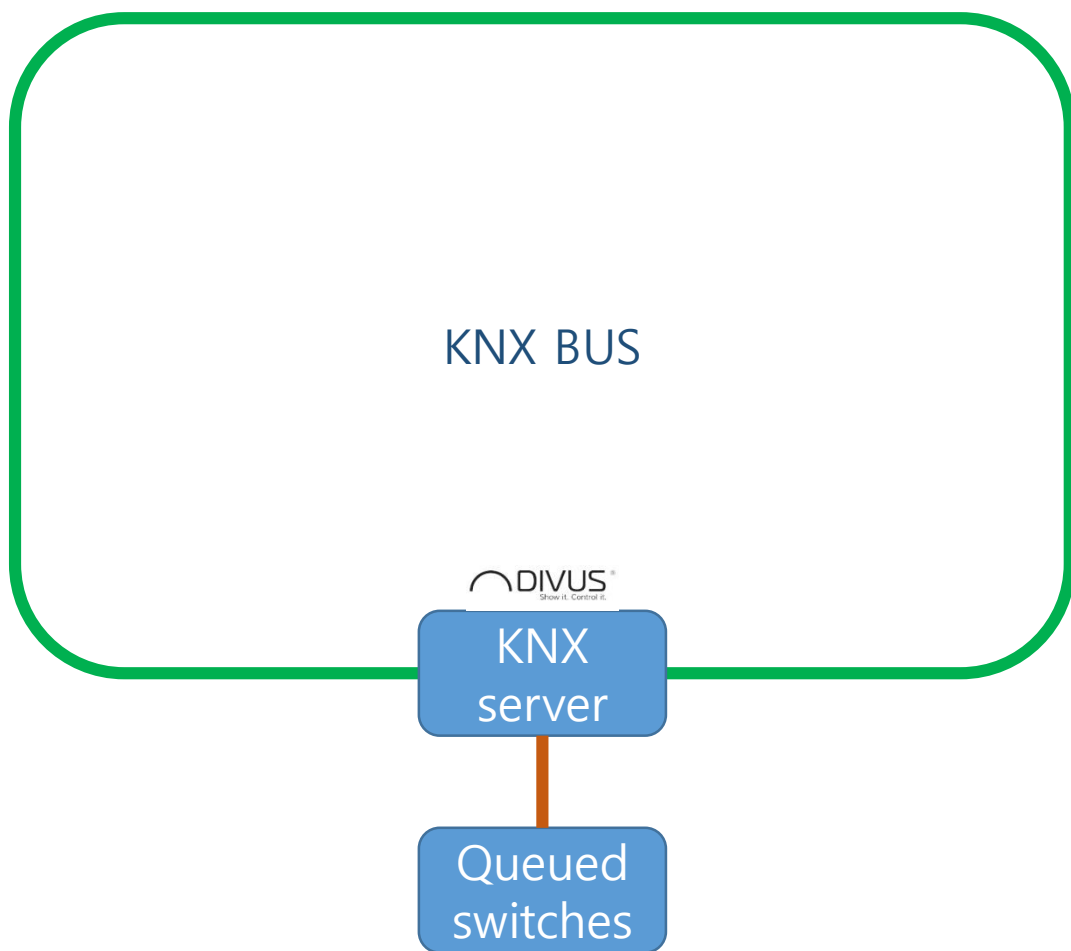
1. Hyundai screen(HT screen) communicates with their own custom protocol through serial port.
2. So, we have to translate the telegrams with gateway to control both systems.
3. For that, we developed a total new gateway for this project.

❖ Hyundai Telecom is one of the strong company in Korean local building automation market.

- So, this gateway shows us that KNX can develop it's market share in Korea by overcoming technical difficulties.

Specialty of HANNAM 91's KNX control – Perfect local adaptation

B. Queued switches control via KNX server

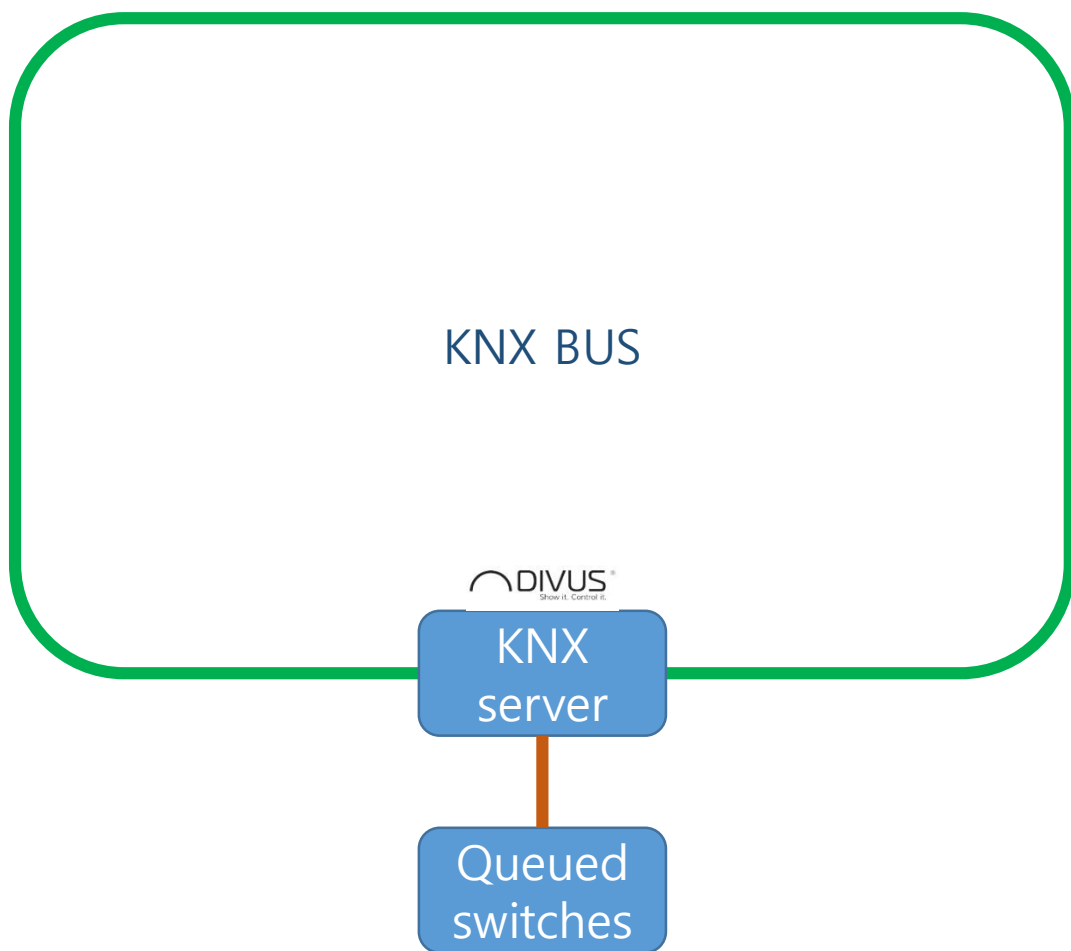


➤ What is **Queued Switch**?

- 1) **Queued switch** is a device which saves power of power socket.
- 2) It controls power of 220V socket depending on the size of connected load.
- 3) When the size of the load is below of preset value, switch automatically opens the circuit.
- 4) The automatic control function can be turned on or off by serial telecommunication.
- 5) **More than 30% of total power sockets must be connected to queued switches or queued power sockets(power sockets with queued function) in new buildings in Korea by the law.**

Specialty of HANNAM 91's KNX control – Perfect local adaptation

B. Queued switches control via KNX server



➤ How to communicate

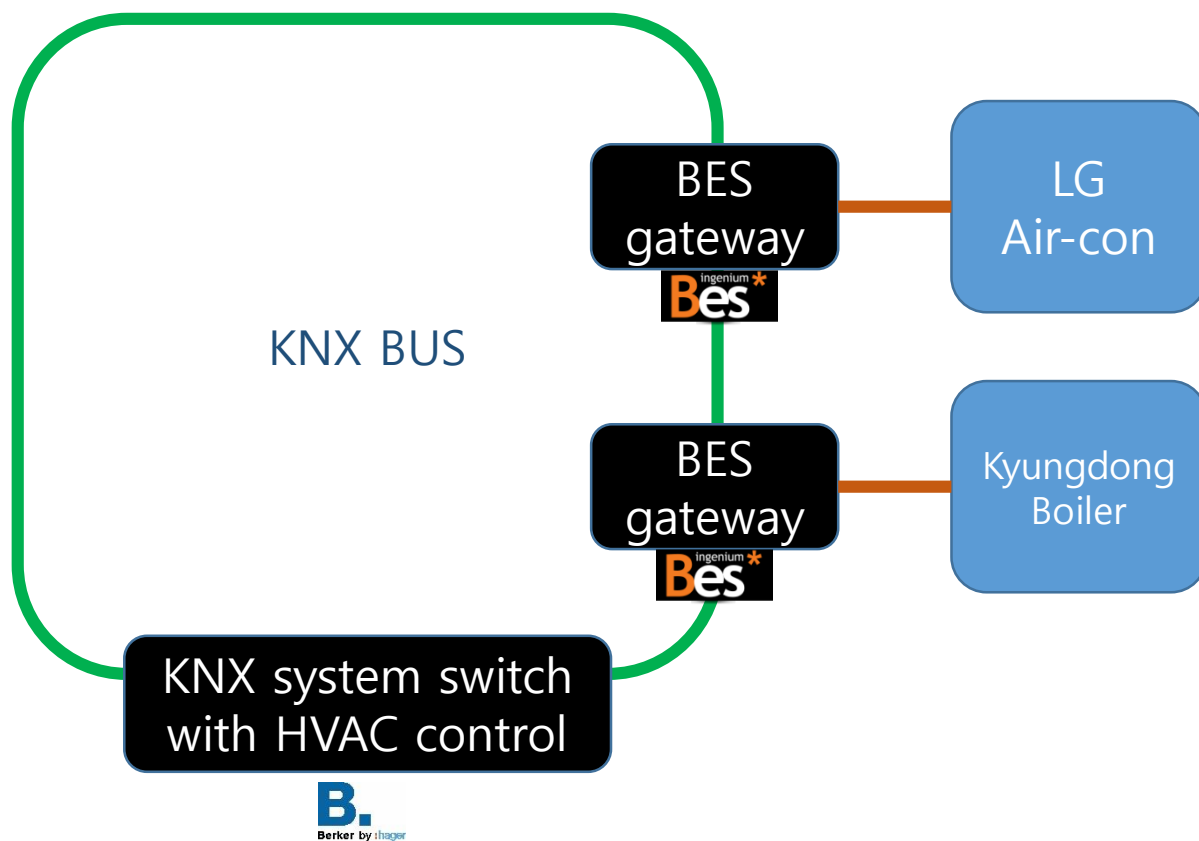
- 1) Queued switch is relatively simple device then the Wall pad. But, they have so many number of devices. So we planned to make own communication bus for the queued switches.
- 2) KNX server has its own serial port for communication via **MODBUS** protocol.
- 3) Dana, Queued switch maker and DIVUS co-developed queued switch which controllable by MODBUS protocol.

➤ Meaning of Queued switch control

- 1) **Queued switch control** is **totally necessary function in Korean automation market**.
- 2) By developing KNX-controllable queued switch is one of the way to overcome local technical challenge.

Specialty of HANNAM 91's KNX control – Perfect local adaptation

C. HVAC devices control uses their own protocol with KNX

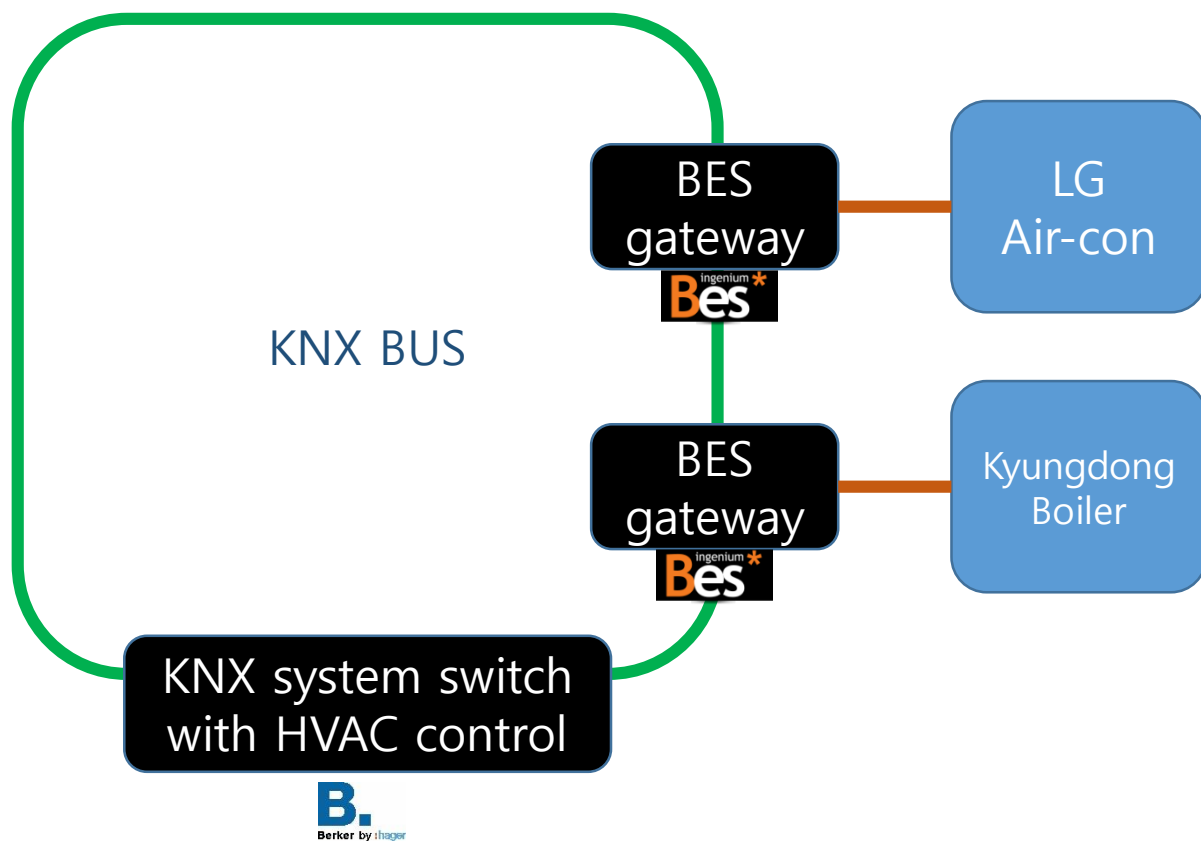


➤ **There is no standard HVAC protocol in Korea**

- 1) Every manufacturer has their own protocol.
- 2) To control them all by KNX, we need gateways for each device.
- 3) LG A/C gateway is already released on the market, so we selected it as a part of our system.
- 4) But Kyungdong boiler gateway is not exist at the start of the project.
- 5) Kyungdong is a manufacturer of heating system solution which has biggest market share in Korea.
- 6) So, we decided to make a new one for Kyungdong boiler.

Specialty of HANNAM 91's KNX control – Perfect local adaptation

C. HVAC devices control uses their own protocol with KNX



➤ How to communicate

- 1) Both HVAC devices(LG Air-conditioner & Kyungdong Boiler) are connected to each gateways by serial port of their own protocols.
- 2) The user can control HVAC by KNX system switch just same as full KNX system control.
- 3) Also HT wall pad can work as system switch.

➤ Meaning of HVAC gateways

- 1) After this project, we are now sure that **devices of local manufacturer's can be connected to the KNX bus by gateways.**
- 2) Although using many gateways is not very good solution for an automation system, but **this shows that KNX system can expand to almost every local protocols in Korean market.**

What makes HANNAM 91 so special?

1. The most massive KNX project in Korea
 - Total 341 Houses with special penthouses and duplexes.
2. The most challenging KNX project ever in Korea
 - To overcome the challenges of Korean standard, many solutions are presented
 - ✓ 3 gateways to control Korean local protocols
 - ✓ 1 totally new queued switch
3. State new standard for the luxury apartment
 - There would be more projects in Korea that follow HANNAM 91 standard.
 - There will be more massive residential KNX projects in future.



Dana Corp.

THANK YOU!