

Design and Status of the SuperKEKB Accelerator Control Network

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1. SuperKEKB project

SuperKEKB : Upgrade plan of the KEKB B-factory project

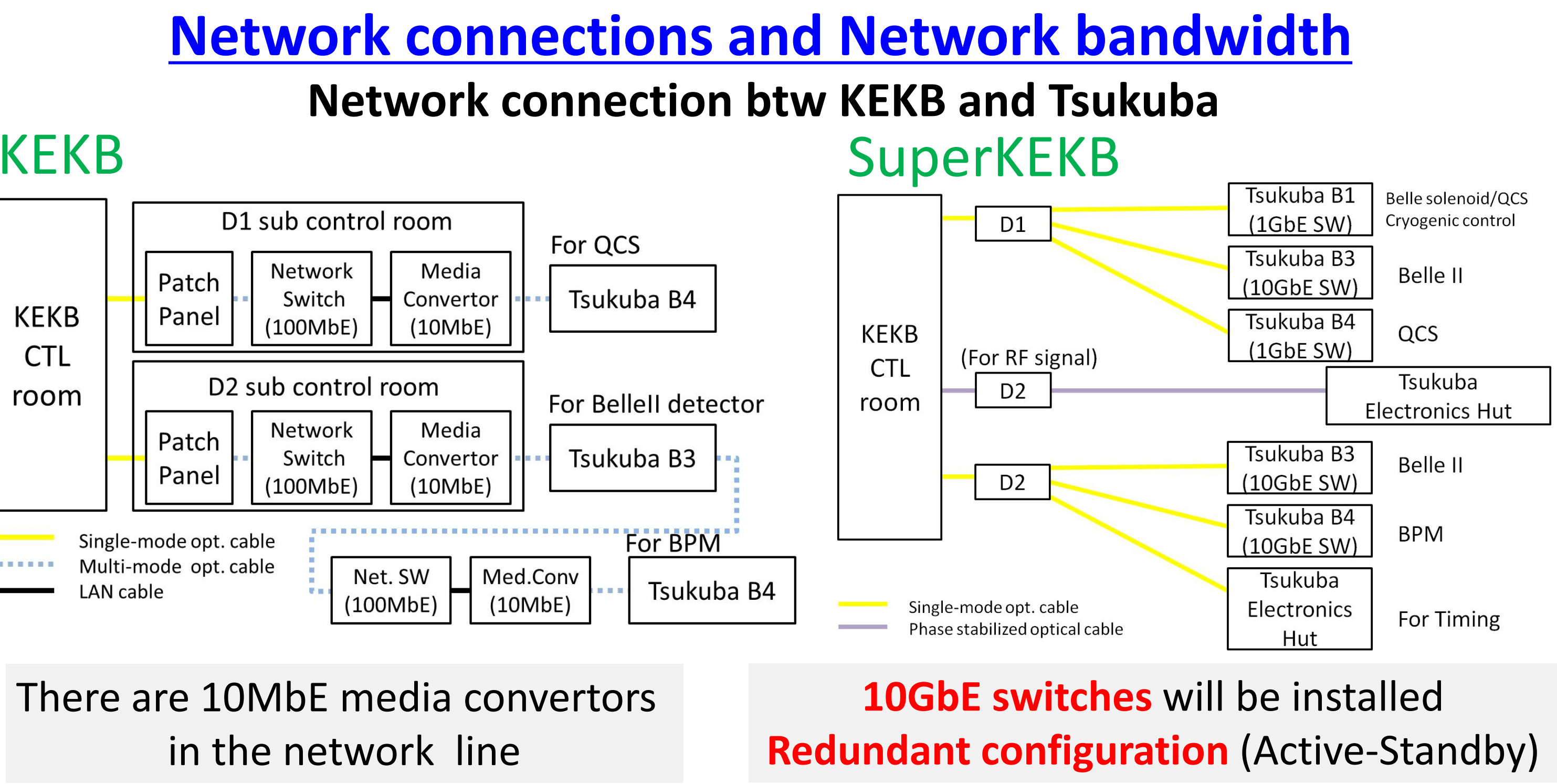
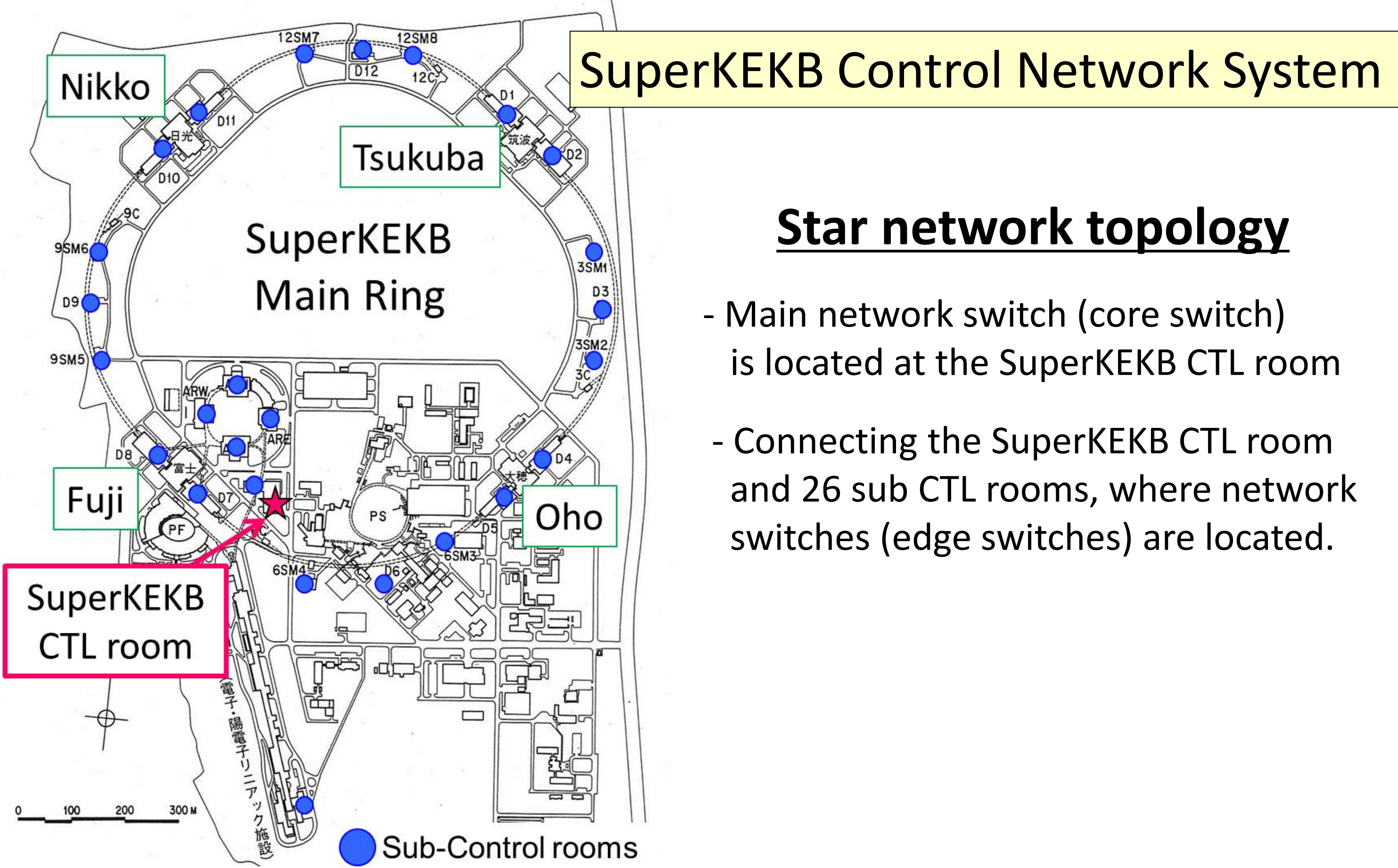
Target luminosity
8x10³⁵ cm⁻²s⁻¹ **x40 of KEKB**

- KEKB operation finished in 2010 June.
- SuperKEKB operation starts from 2015 Jan.

Currently under construction

We have upgraded the accelerator control network system for SuperKEKB

2. SuperKEKB Control Network Design



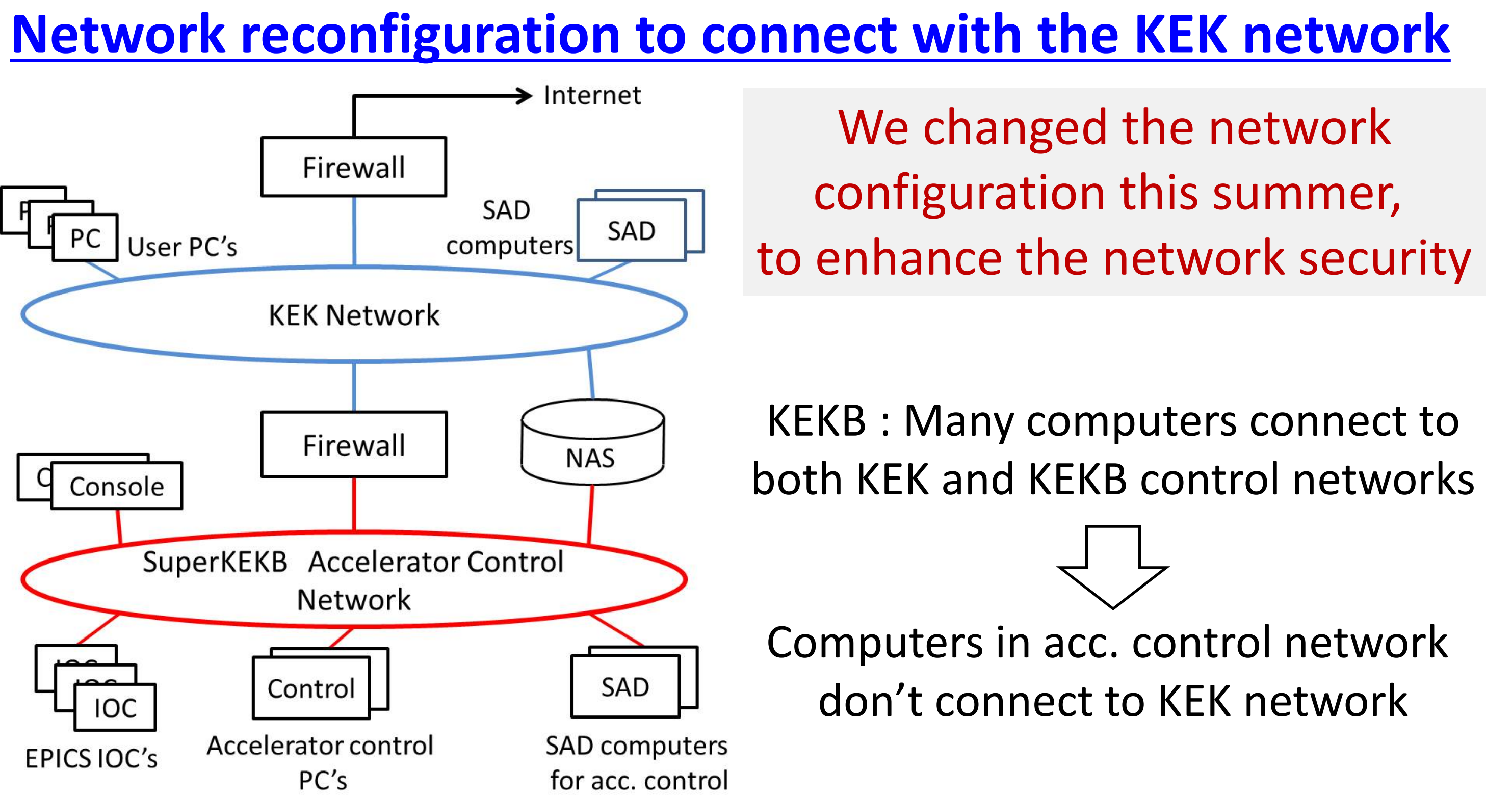
VLAN segmentation for the SuperKEKB Control Network

EPICS : Main software tools to control SuperKEKB

EPICS uses UDP broadcast → **Many UDP broadcast packets in the network.**

Accelerator components with Ethernet interface also receive these.

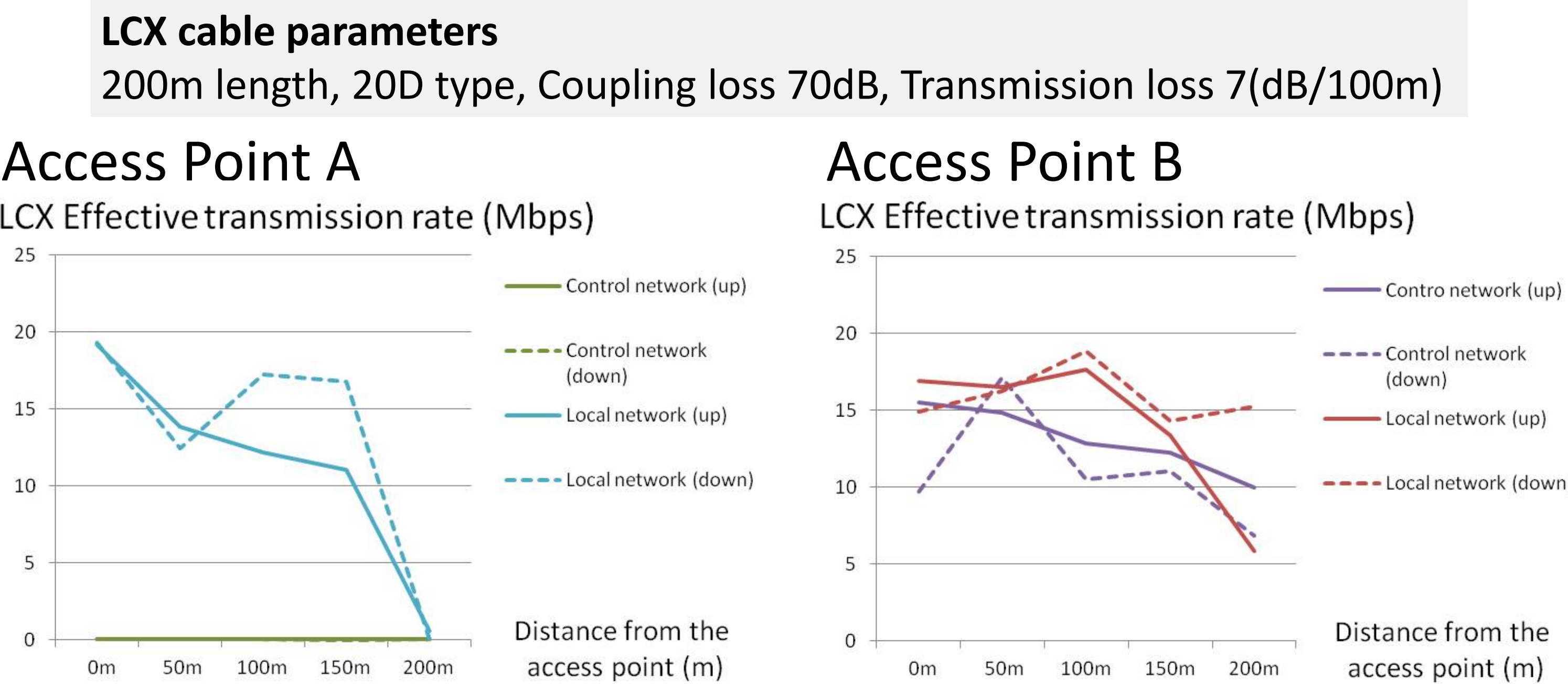
We prepare VLANs for the accelerator components.



3. WiressLAN installation into the beamline

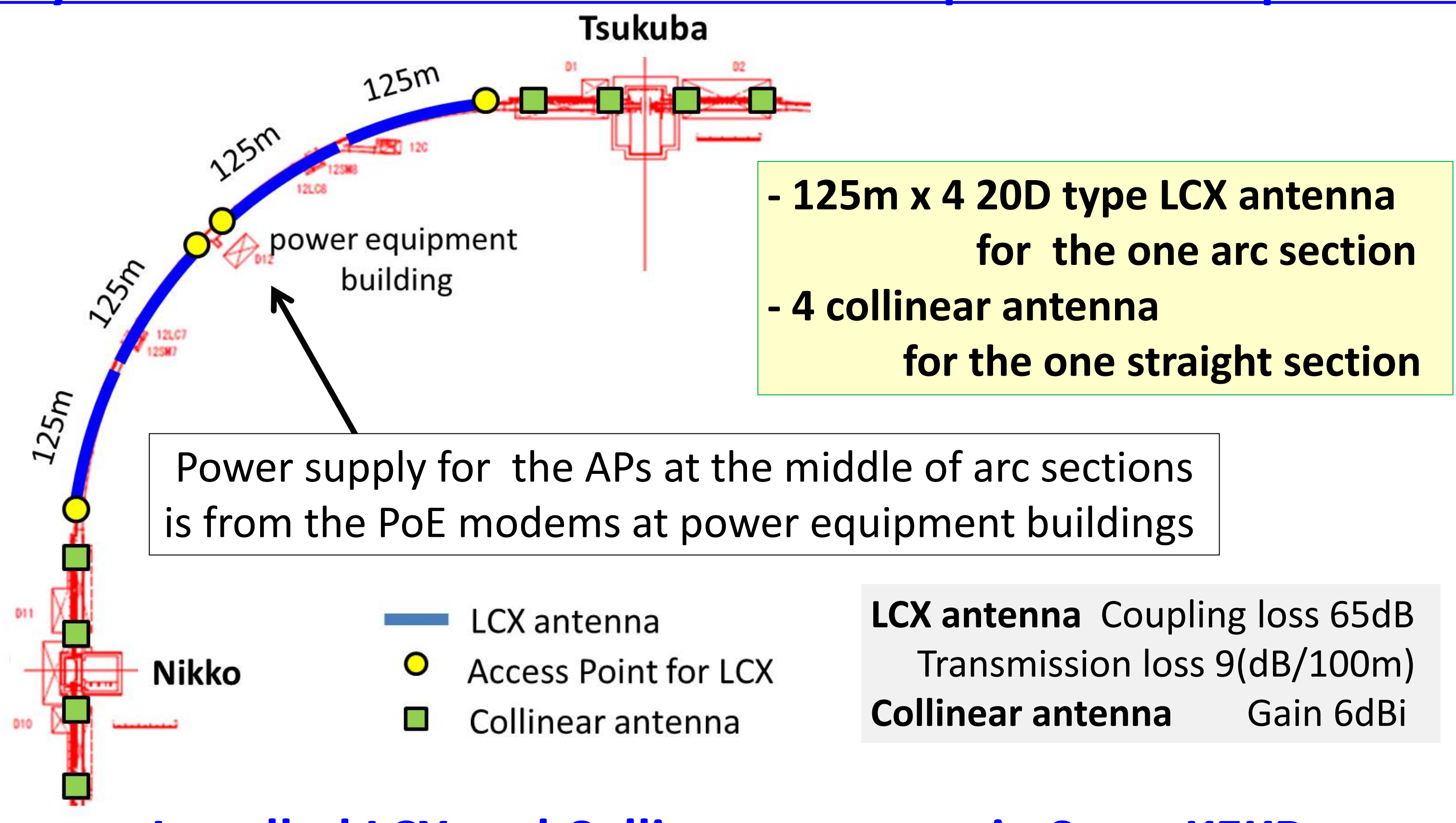
For SuperKEKB beamline construction, we install the Wiress LAN system into the whole tunnel area

Measured network speed with a Leaky Coaxial (LCX) cable antenna



Based on this measurement, we chose access point B

Layout of the installed wireless LAN components in SuperKEKB



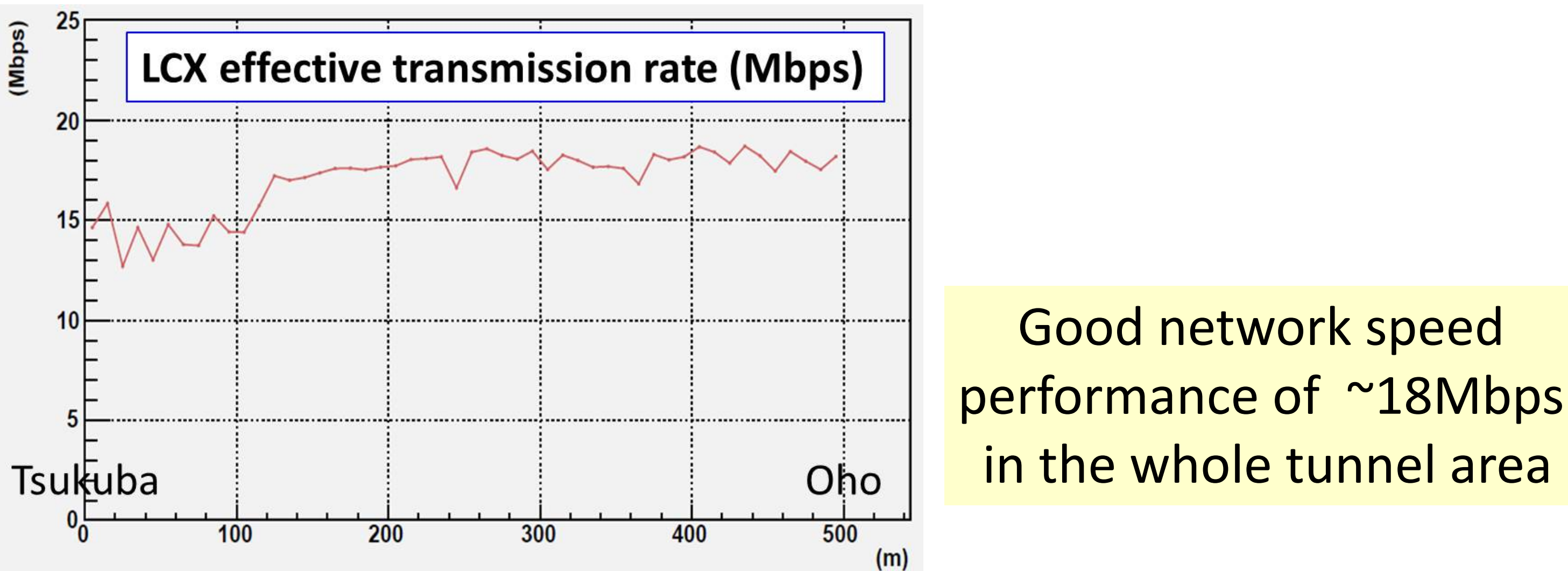
Installed LCX and Collinear antenna in SuperKEKB



We select LCX and Collinear antennas with good radiation hardness >1MGy.

The all AP and PoE in the tunnel are installed within lead boxes.

Measured WiressLAN Network Speed at SuperKEKB tunnel



4. Summary

We have upgraded the accelerator control network system for SuperKEKB.

The designed network system has the higher performance : the wider bandwidth data transfer and redundant configuration.

We have installed the new wireless network system into the 3 km circumference accelerator tunnel.