Concept: Indoor Private Cellular for Office Buildings

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Akraino TSC Meeting

RAEDEN

Concept

Private Cellular Network for Daily Office Use

- Use B48/N48 (CBRS GAA in US)
- Usability like an Enterprise Wi-Fi 6/6E network
- Use Enterprise networking solutions where practical
- Commercial multi-story, multi-tenant, office buildings
- Usable coverage in office space, common areas, vehicle parking facilities, storage rooms/closets, mechanical/electrical rooms, etc.

High-Level Design

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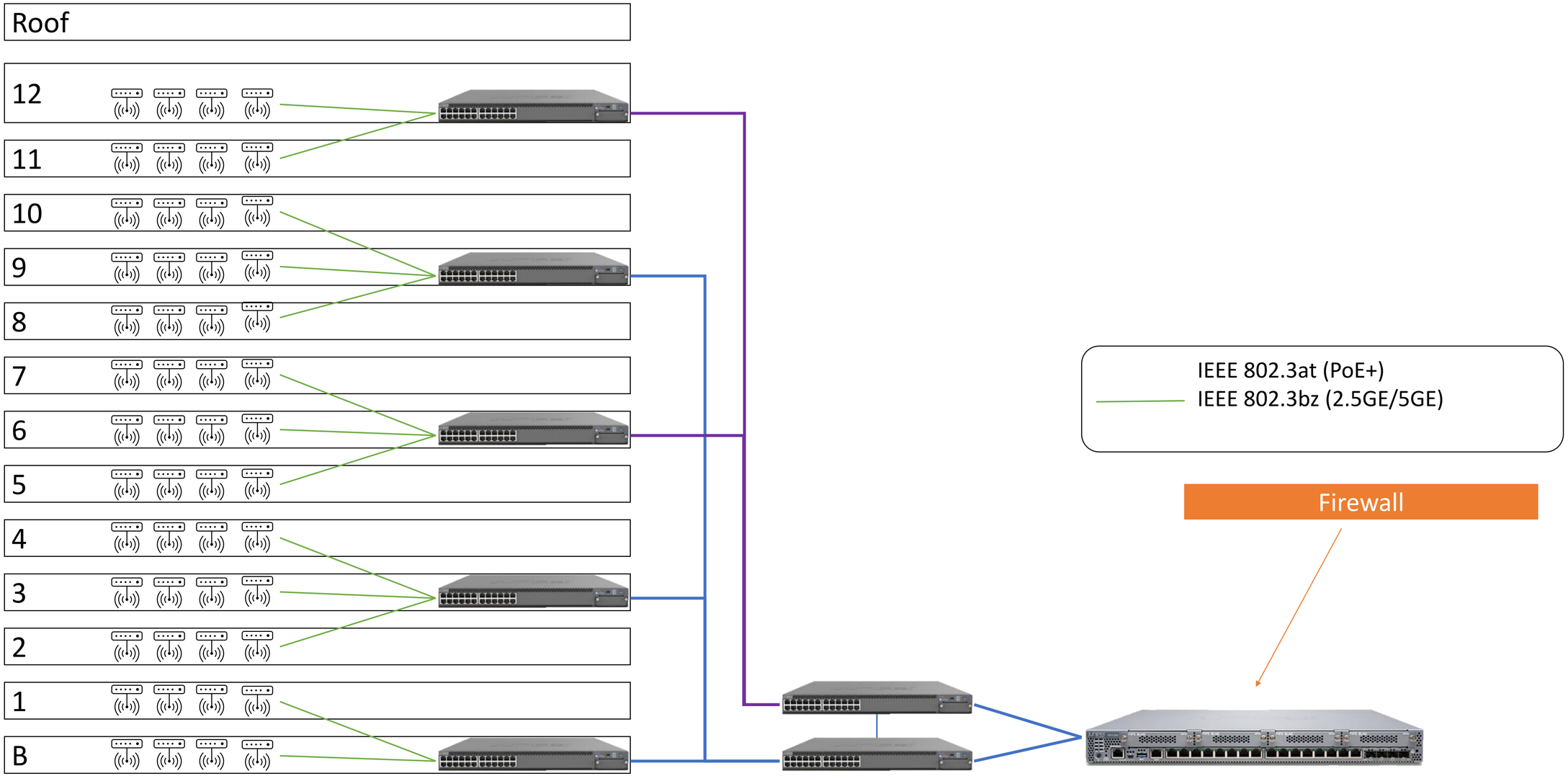

Challenges

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ITU G.8275.2 (ITU PTPv2 profile) for synchronization

- GPS may not be available

Integrated “AP style” Integrated eNB/gNB

- Option 7.2, Option 6, and Option 2 splits adds too much complexity and cost
- Ceiling and wall mounted Integrated eNB/gNB
- Like Wi-Fi AP

PoE+, 2.5GE, and ITU G8275 (PTP) for Communications and Power

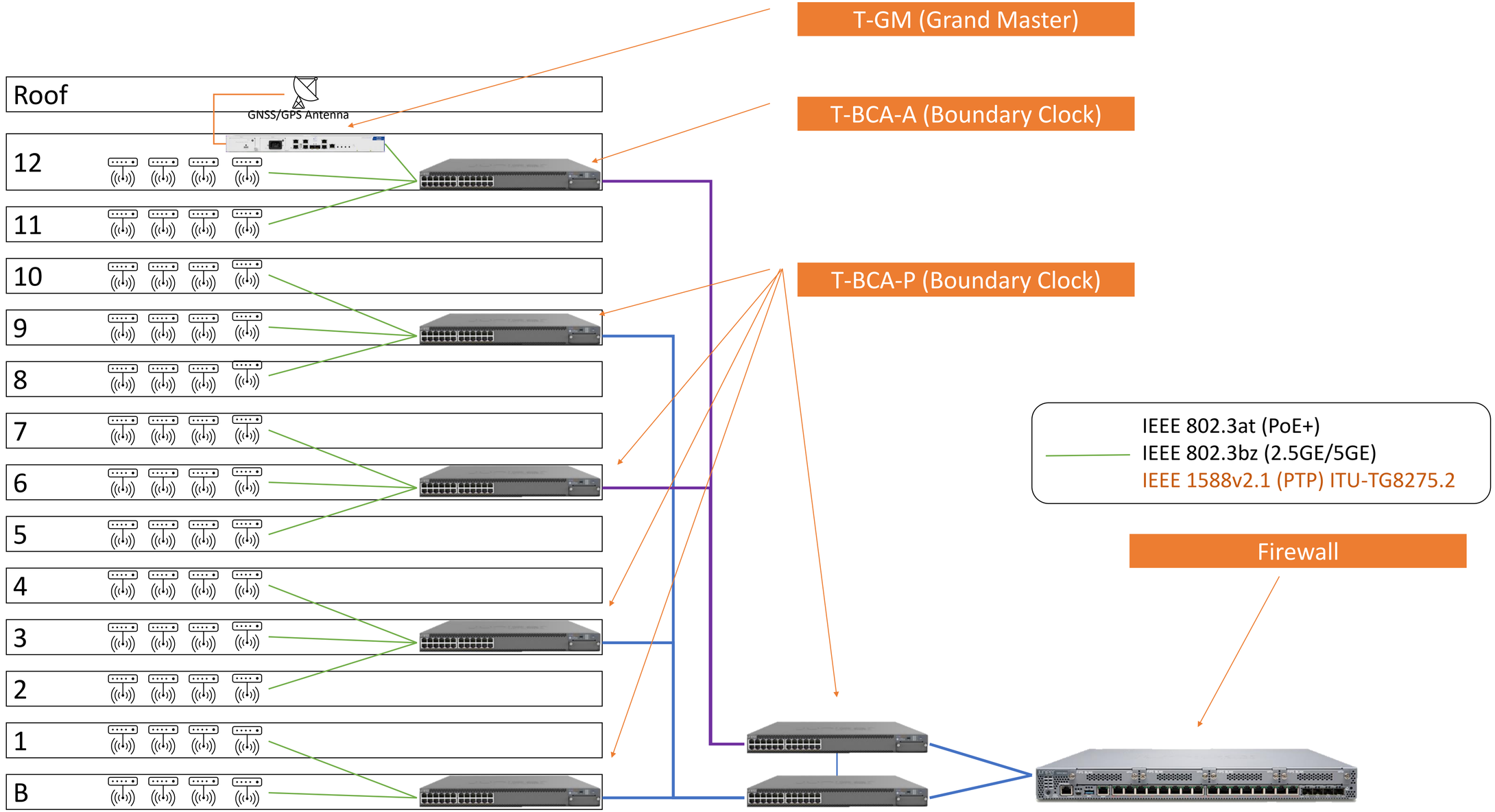
Lack of Single Integrated eNB/gNB support for MBB and NB-IoT

SAS and RF Design

Core network, UE and Use Cases

The Challenge of Network Sync

Distribution of 5G network synchronization within a building



Considerations and Dilemmas

Dilemmas

Product support for 5G on CBRS is almost here

- Do we wait for 5G?

Is indoor cellular worth the effort?

- Wi-Fi 6/6E has more bandwidth, more device support, developed for indoor, available now
- There are many other wireless technologies for IoT which may be more broadly used
  - BLE, Zigbee, Thread

Cloud based Core versus Local versus CUPS

- Support versus Availability versus Complexity

Wrap Up

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- In the US, using CBRS, Indoor 5G private cellular will be an exciting technology
- The question is: Using CBRS indoors is a solution to what problem?
- Challenges will be overcome when the use cases are well defined.

Thank you