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Introduction to IEEE 802.1CF

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Objectives

- **Present the scope and access network reference architecture of IEEE 802.1CF**
- **Discuss how IEEE 1904.2 proposed General architecture fits into IEEE 802.1CF reference architecture.**
- **Define a plan to work with IEEE 802.1CF TG.**
- **Discuss how to map UMT General Architecture to IEEE 802.1CF Reference Architecture.**

Agenda

- **Scope of IEEE 802.1CF PAR.**
- **IEEE 802.1CF Access Network Reference Architecture**
- **Access Network backhaul**
 - Backhaul Characteristics
- **Use Case for IEEE 802.1CF Reference Architecture.**
- **IEEE 802.1CF Achievements So far.**
- **Discuss how to map UMT General Architecture to IEEE 802.1CF Reference Architecture.**
- **IEEE 802.1CF plans for the next Meeting in Berlin**
- **Discuss how to work with IEEE 802.1CF.**

Scope of IEEE 802.1CF PAR

- **Title: Recommended Practice for Network Reference Model and Functional Description of IEEE 802 Access Network**
- **This Recommended Practice specifies an access network, which connects terminals to their access routers, utilizing technologies based on the family of IEEE 802 Standards by providing an access network reference model, including entities and reference points along with behavioral and functional descriptions of communications among those entities.**
- **IEEE 802.1CF scope is limited to access networks that use devices that use IEEE 802 MAC and PHY**
- **This project will help to unify the support of different interfaces, enabling shared network control and use of software defined network (SDN) principles, thereby lowering the barriers to new network technologies, to new network operators, and to new service providers.**

IEEE 802.1 OmniRAN TG Resources

- **OmniRAN TG maintains a Wiki page on mentor to reflect its status and achievements**
 - <https://mentor.ieee.org/omniran/bp/StartPage>
 - Also showing meeting announcements and conference call dial-in information
- **OmniRAN filespace on mentor is used for contributions and meeting documents**
 - <https://mentor.ieee.org/omniran/documents>
- **FYI: OmniRAN P802.1 PAR**
 - <https://development.standards.ieee.org/get-file/P802.1CF.pdf?t=81644900003>

IEEE 802.1CF Reference Architecture

Reference Points

R1: represents the PHY and MAC layer functions between terminal and access network. These are completely covered by the IEEE 802 specifications.

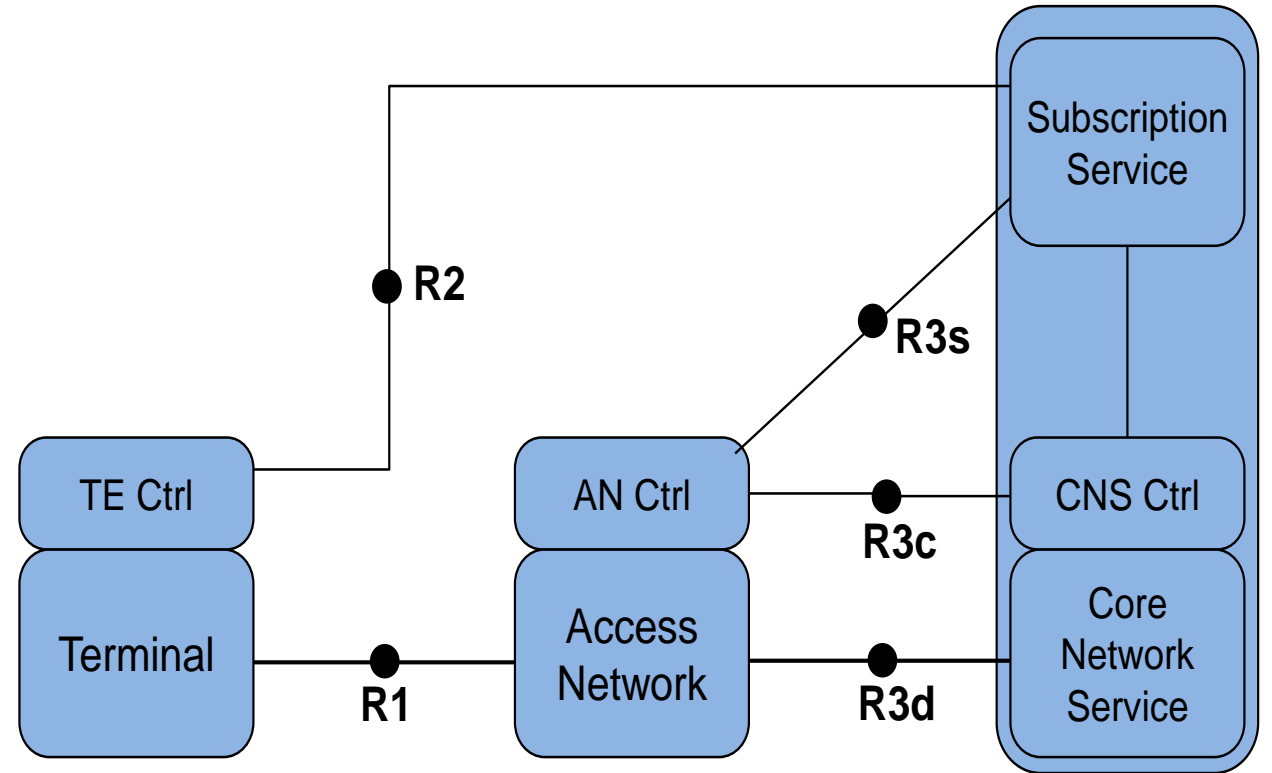
R2: represents a control interface between terminal and the subscription service, e.g. for authentication.

R3: represents the reference points for the communication between the access network and the core network, up to the interface between L2 and L3 in the first L3 router.

R3d: represents the IEEE 802 data path interface between access network and the first hop router of the Core Network Service.

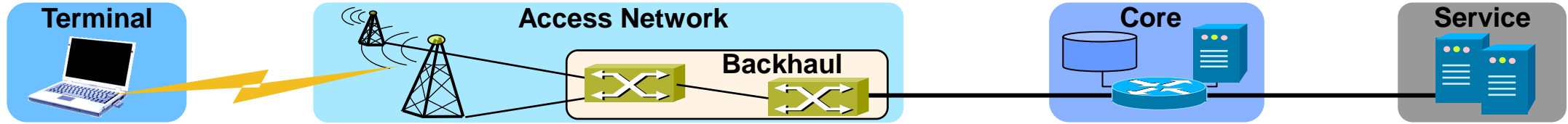
R3c: represents a control interface between the access network controller and core network controller.

R3s: represents a control interface communicating subscription-specific information elements between the access network controller and the subscription service.

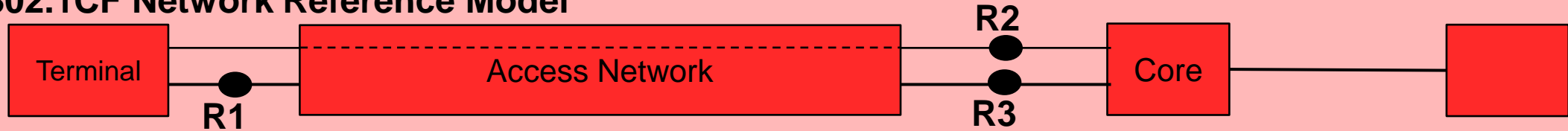


SDN Can be used to establish R3d Data Path
IEEE 802.1Qca can also be used to establish this data path

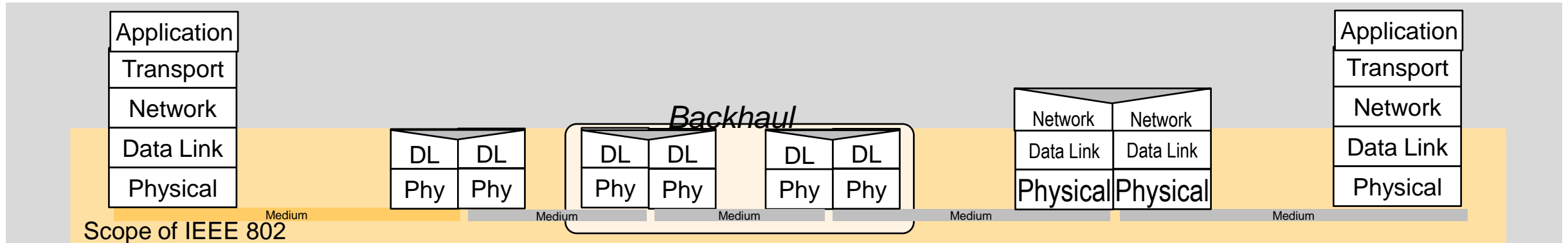
Access Network Backhaul



IEEE 802.1CF Network Reference Model



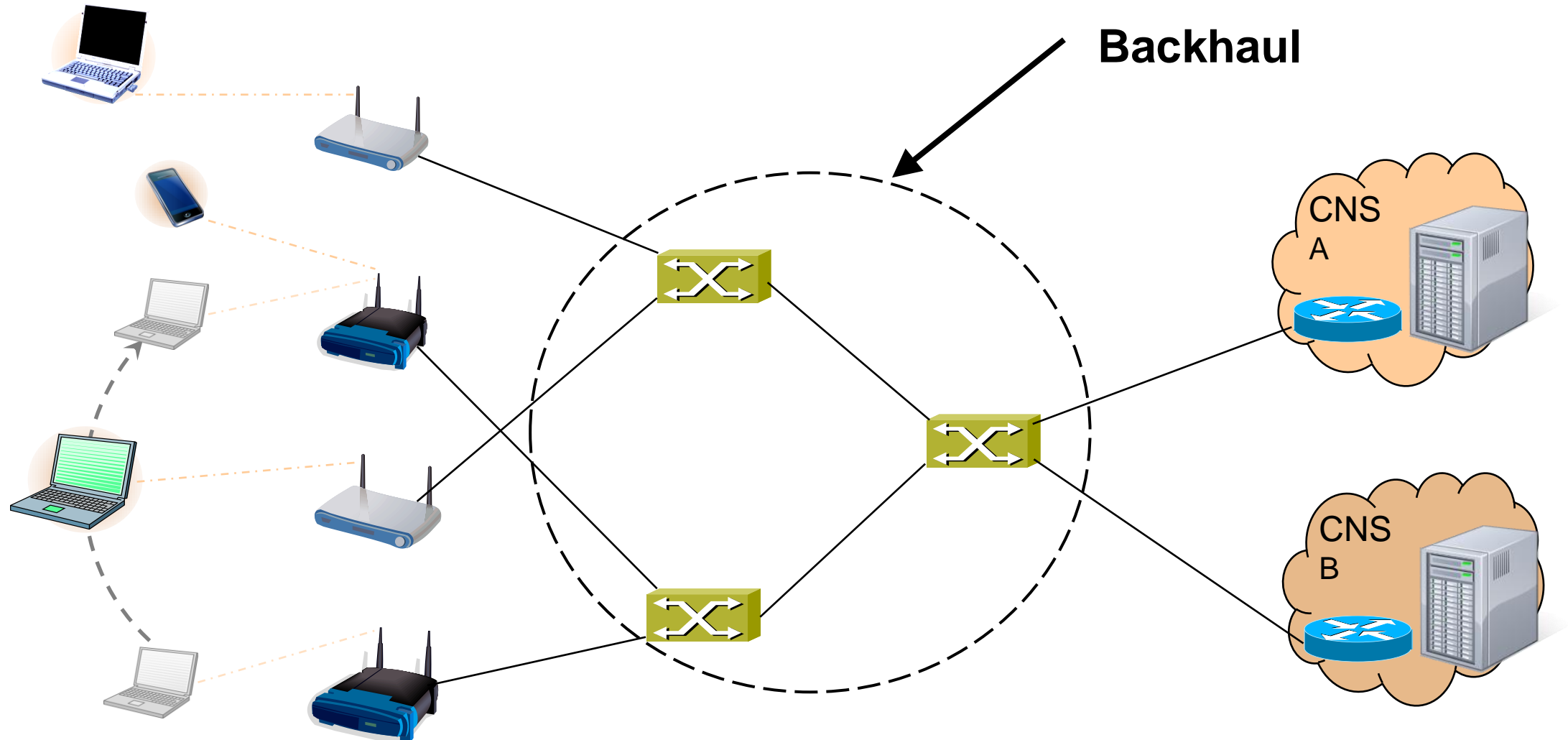
IEEE 802.1CF provides a generic model of an access network based on IEEE 802 technologies



Backhaul Characteristics

- **Part of the Access Network**
- **Transport of the user plane between PoA and CNS**
- **Consists of bridges and links between bridges**
- **Mix of wired or wireless medium possible within a backhaul**
- **Isolation of user plane from transport network through VLANs**
 - Backhaul does not modify payload
- **Multiple operational domains possible within backhaul**
 - Bridges and links may belong to multiple operators.
 - It can use virtual Network.

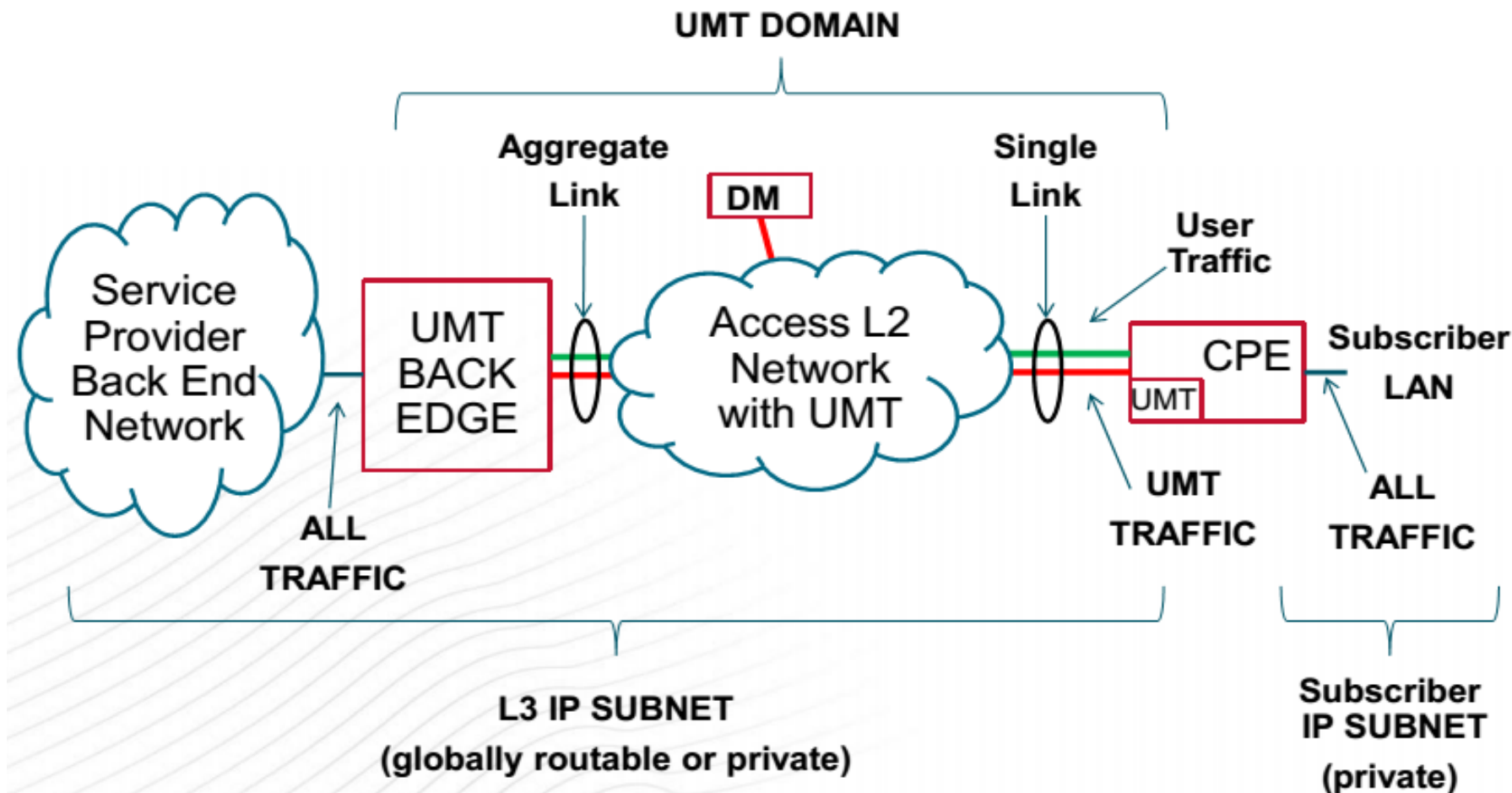
Use Case – Shared Wireless Access Network



OmniRAN TG Achievements

- **Meeting in Atlanta, GA on January 11th-15th**
 - Establishment and refinement of Wiki page on mentor on ongoing SDN related standardization outside IEEE 802
 - https://mentor.ieee.org/omniran/bp/SDN_Wiki
 - Discussions on P802.1CF based on contributions:
 - Network reference model
 - Revision of normative text in omniran-14-0083
 - Refinement of terminology and clarifications regarding usage of reference points
 - Backhaul representation
 - New technical approaches based on structure in MAC addresses
 - Functional decomposition and design
 - Review of revision of text for Dynamic spectrum access
 - Review of initial text proposal for Network Discovery and Selection
 - Discussion of key concepts for text on Data path
 - Discussion on common structure for all sections of Functional decomposition and design
 - Project plan: **Initial draft after Mar 2015, WG LB Mar 2016, SB Mar 2017**

General UMT Architecture – A SCENARIO



How to map this architecture to IEEE 802.1CF Reference Architecture ?

Next session in Berlin, March 8-13, 2015

- **Envisioned topics:**
 - Review new revisions of text on NRM, dynamic spectrum access, datapath establishment and NDS
 - SDN abstraction
 - IEEE 802 Backhaul representation
 - Mapping to IEEE 802 technologies
- **Conference call on Februar 10th, 10:00 AM ET**
 - Dial-in details on OmniRAN TG Wiki page on mentor
<https://mentor.ieee.org/omniran/bp/StartPage>

THANK YOU