

# Updated OmniRAN Network Reference Model with Backhaul

Date: 2014-11-02

**Authors:**

<i>Name</i>	<i>Affiliation</i>	<i>Phone</i>	<i>Email</i>
Roger B. Marks	EthAirNet Associates; ETRI	+1 802 capable	roger@ethair.net

**Notice:**

This document does not represent the agreed view of the IEEE 802.1 OmniRAN TG. It represents only the views of the participants listed in the 'Authors:' field above. It is offered as a basis for discussion. It is not binding on the contributor, who reserve the right to add, amend or withdraw material contained herein.

**Copyright policy:**

The contributor is familiar with the IEEE-SA Copyright Policy <<http://standards.ieee.org/IPR/copyrightpolicy.html>>.

**Patent policy:**

The contributor is familiar with the IEEE-SA Patent Policy and Procedures:  
<<http://standards.ieee.org/guides/bylaws/sect6-7.html#6>> and <<http://standards.ieee.org/guides/opman/sect6.html#6.3>>.

## Abstract

The presentation updates omniran-14-0051-01-CF00 (“OmniRAN Network Reference Model with Backhaul”) recognizing the outcome of the September 2014 meeting of the IEEE 802.1 OmniRAN Task Group.

# Updated OmniRAN Network Reference Model with Backhaul

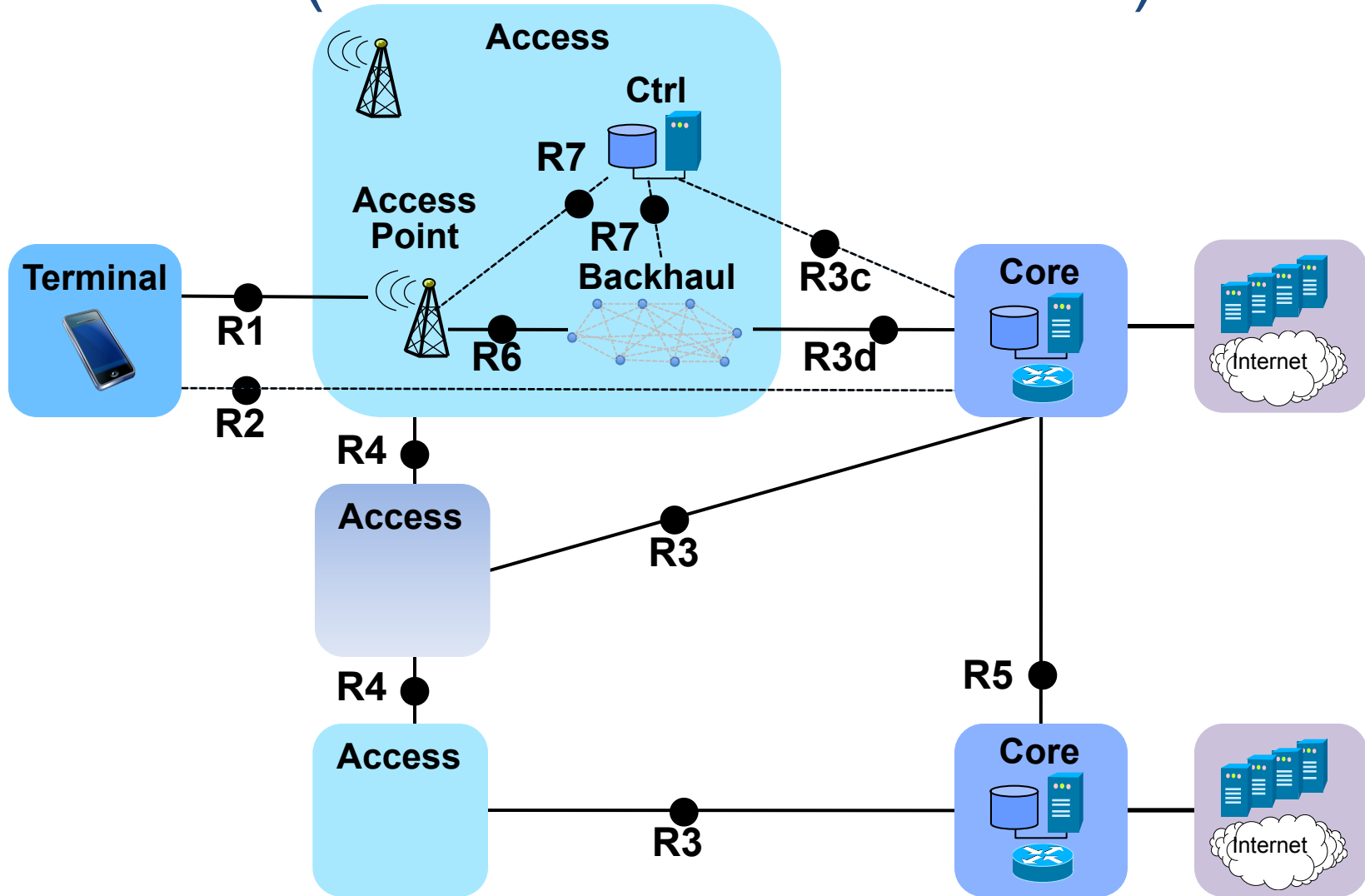
Roger Marks  
(EthAirNet Associates; ETRI)

# Background

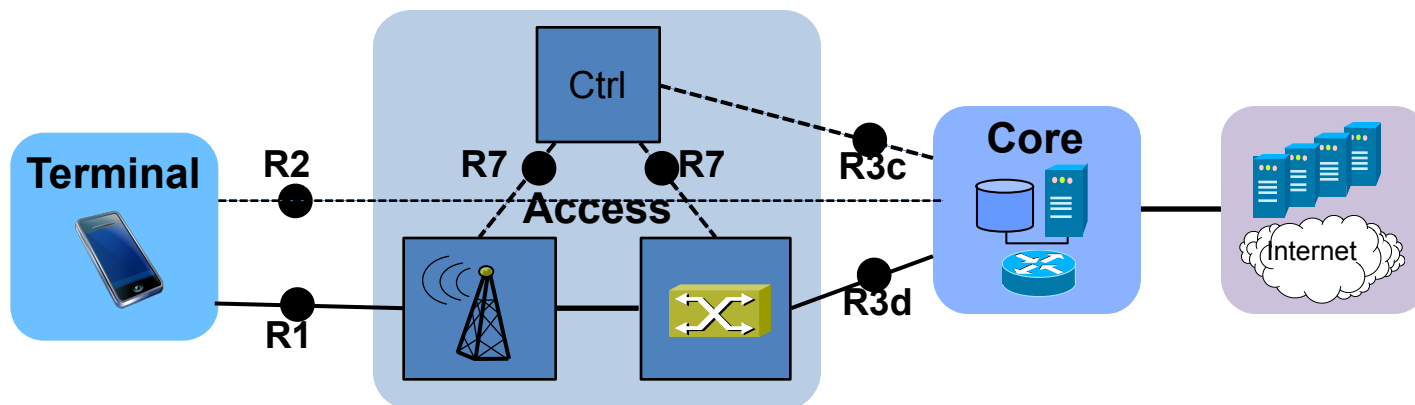
- Contribution omniran-14-0051-01 (“OmniRAN Network Reference Model with Backhaul,” 2014-07-15) reviewed prior contributions with respect to the tentative P802.1CF Network Reference Model (NRM) and recommending dividing the Access block into individual Access Point and Backhaul elements.
- The September OmniRAN TG session concluded with updates to the NRM (omniran-14-0069-01).
- Contribution omniran-14-0066-00 at the September session addressed backhaul in the NRM, particularly in terms of VLANs.

# NRM with Backhaul

(from omniran-14-0051-01)

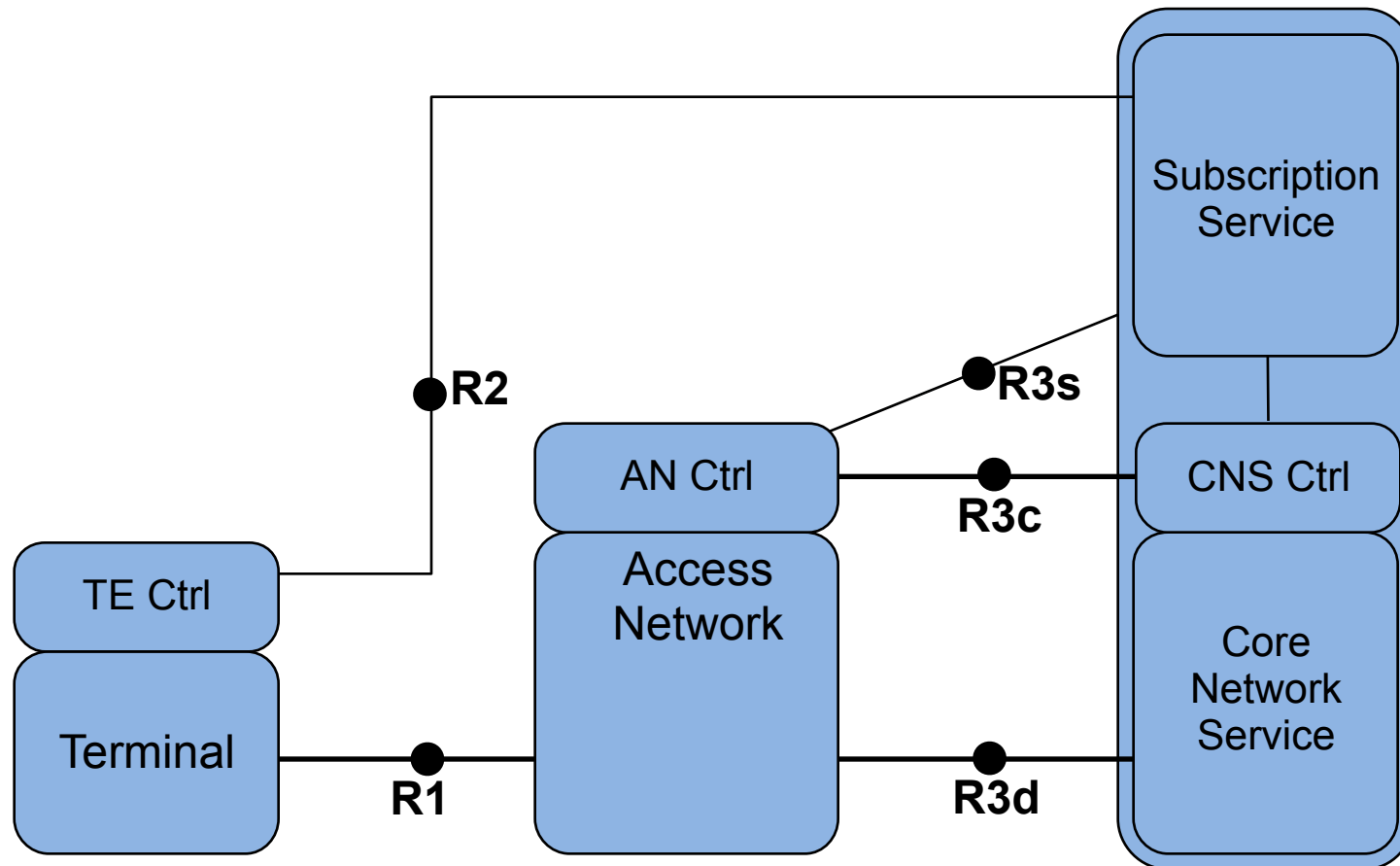


# NRM with further details inside Access (from omniran-14-0066-00)



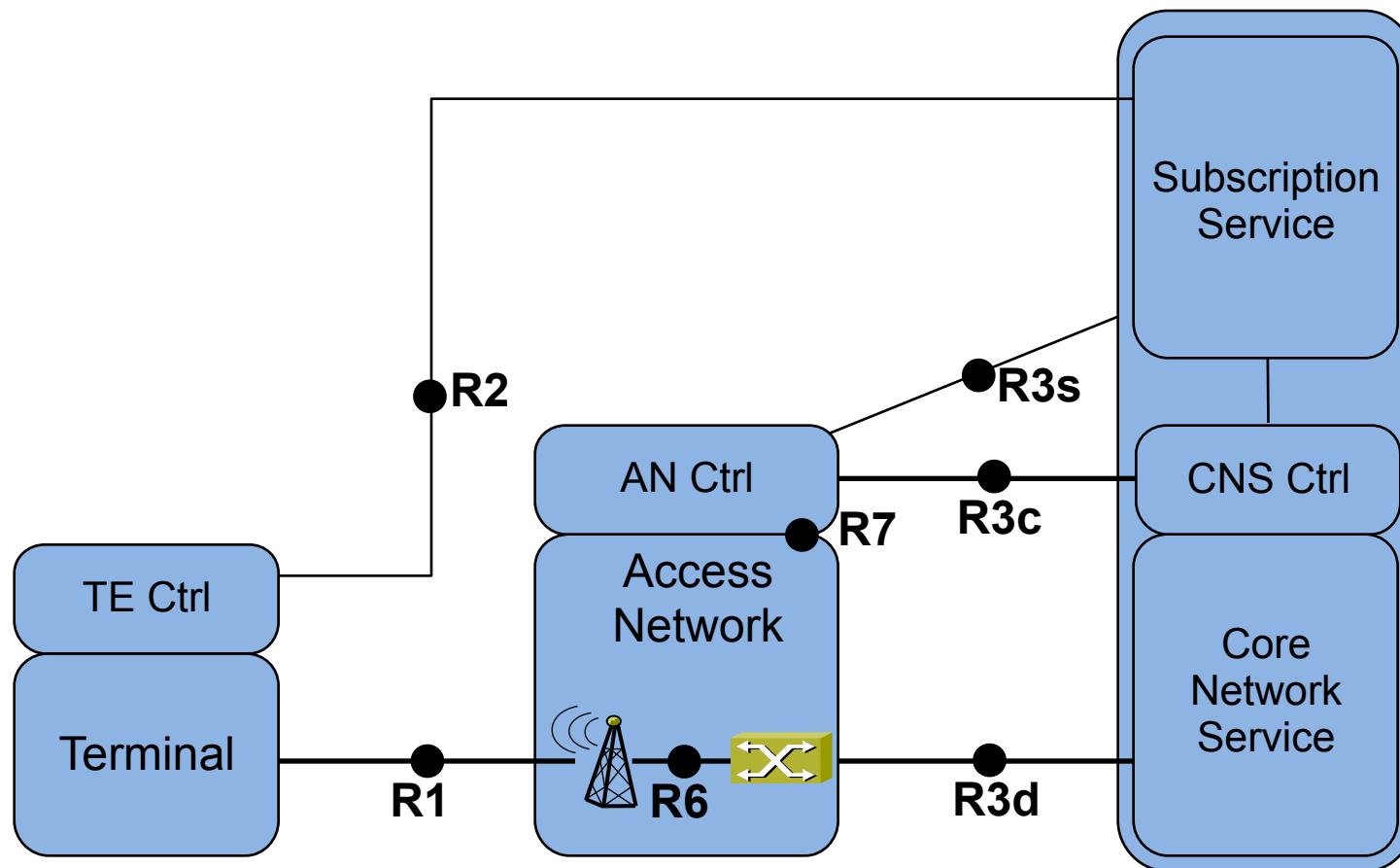
Note: Compatible with model from omniran-14-0051-01;  
no reference point between backhaul and access point.

# Core NRM (omniran-14-0069-01)



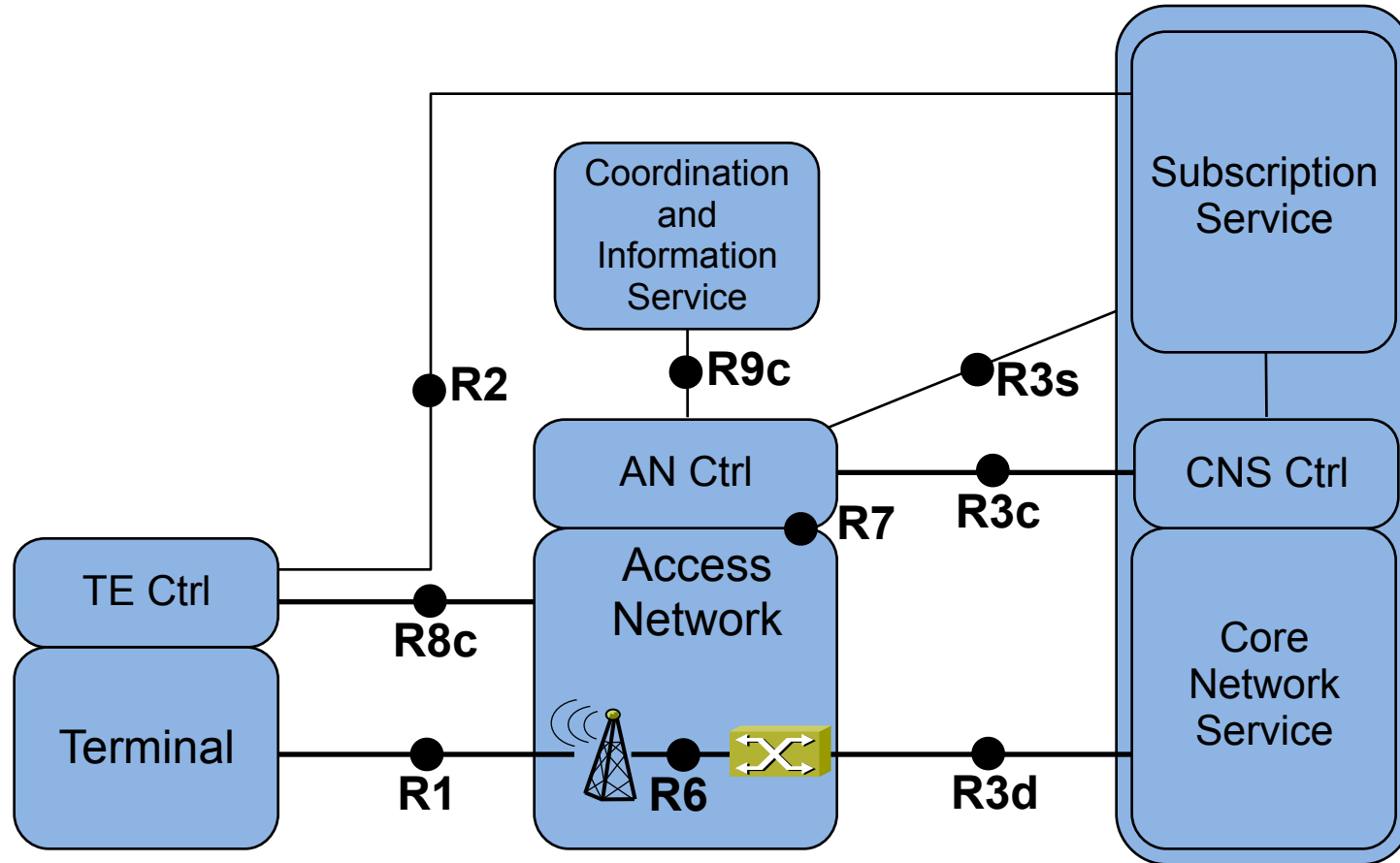
Note: More detailed NRM with R8c and CIS over R9c also provided; added details do not affect Access network.

# Core NRM with backhaul



Note: R7 and R6 added.

# NRM with R8c and CIS over R9c with backhaul

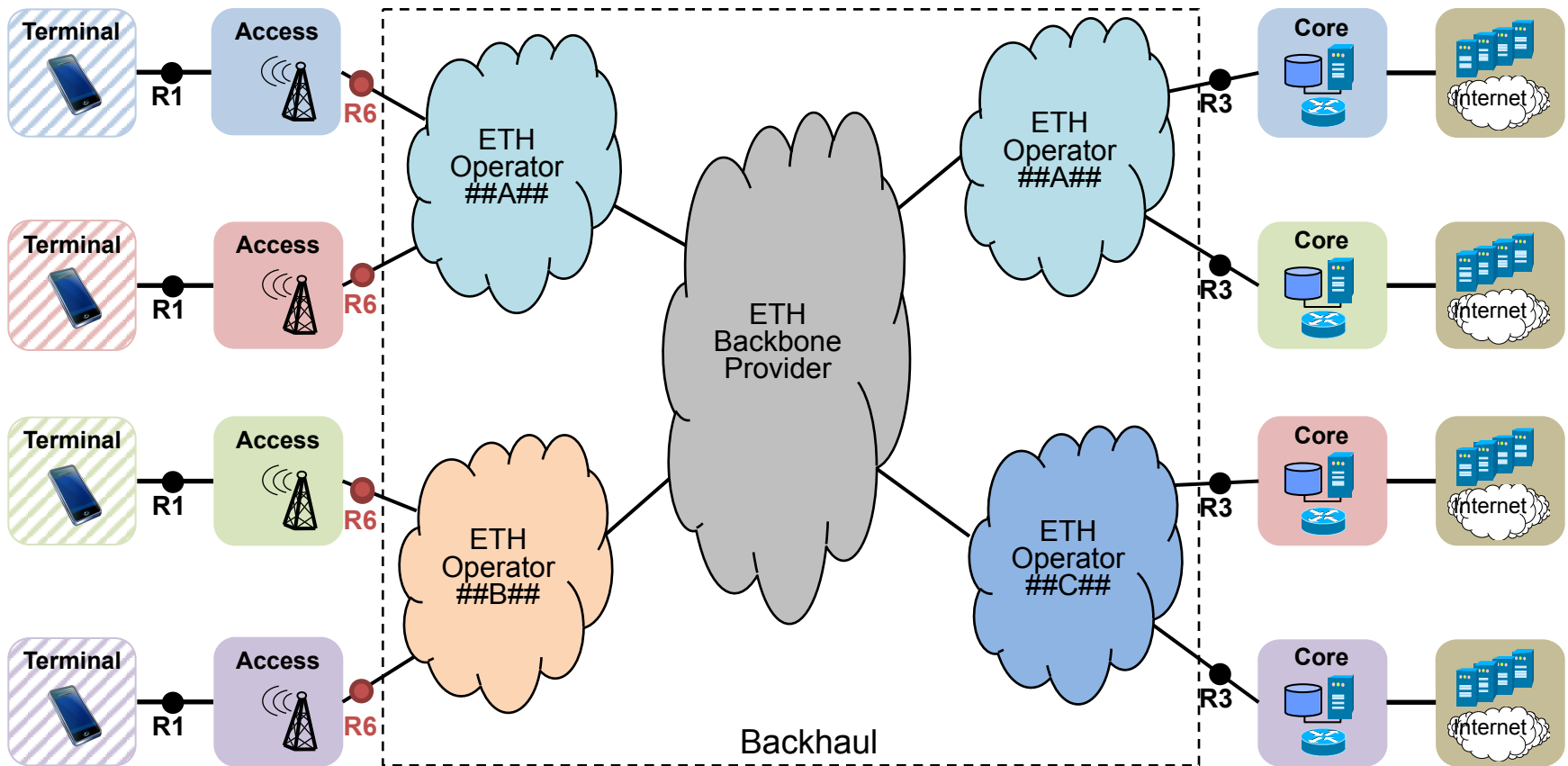




## Need for R6

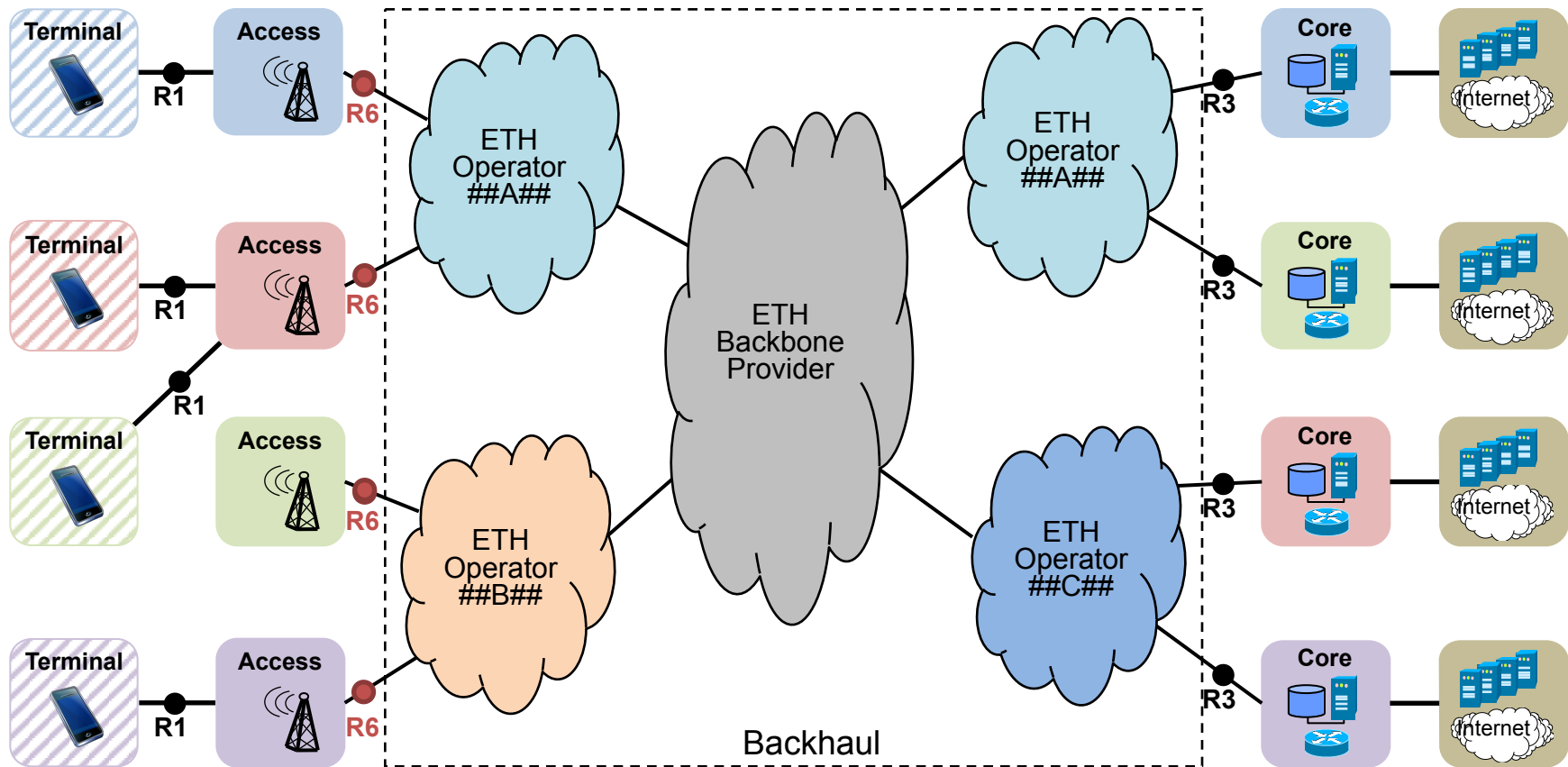
- Reference point R6 is indicated between the access and backhaul.
- Contribution omniran-14-0066-00-CF00 thoughtfully observes that “Backhaul is mostly represented by stacked VLANs.”
- The interfaces to a VLAN-based backhaul are standardized; e.g., Metro Ethernet Forum standardizes Carrier Ethernet so that VLAN tags at the ports are interpreted by the backhaul network in terms of service ID, class of service, and drop eligibility.
- To reflect such usage, reference points R3D and R6 must be specified as part of the NRM.

# VLAN Deployment Example for Backhaul Provisioning (revision based on omniran-14-0066-00)



# VLAN Deployment Example for Backhaul Provisioning

(further modified to show access point sharing)



## Need for R7

- Reference point R7 is indicated between the Access Control and the Access Network (including both backhaul and access point).
- R7 supports SDN control of the elements of the Access network.
- Could consider dividing R7 into separated backhaul control and access point control, considering that the requirements are very different.

## Conclusion

- Backhaul should be represented in the NRM.
- Backhaul can be added to the NRM completed at the September session.
- Backhaul can be incorporated as an element of the Access Network.
- Backhaul should be delimited by reference points at both the Core and Access point ends.
- Reference point should be provided at Access Network control.