

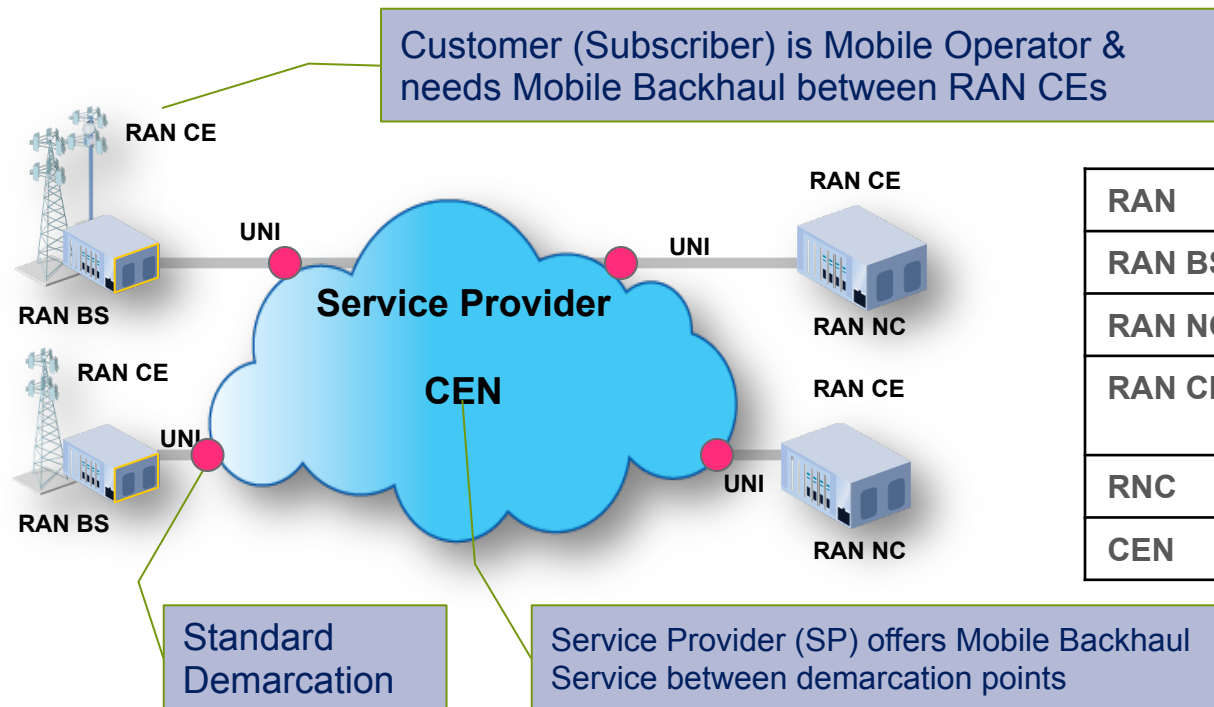


MEF survey

sync for Mobile backhaul

Glenn Parsons

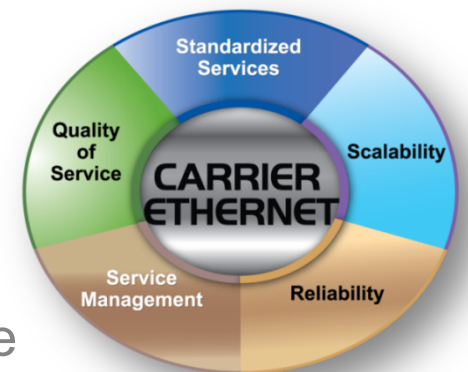
Mef 22.2 concepts



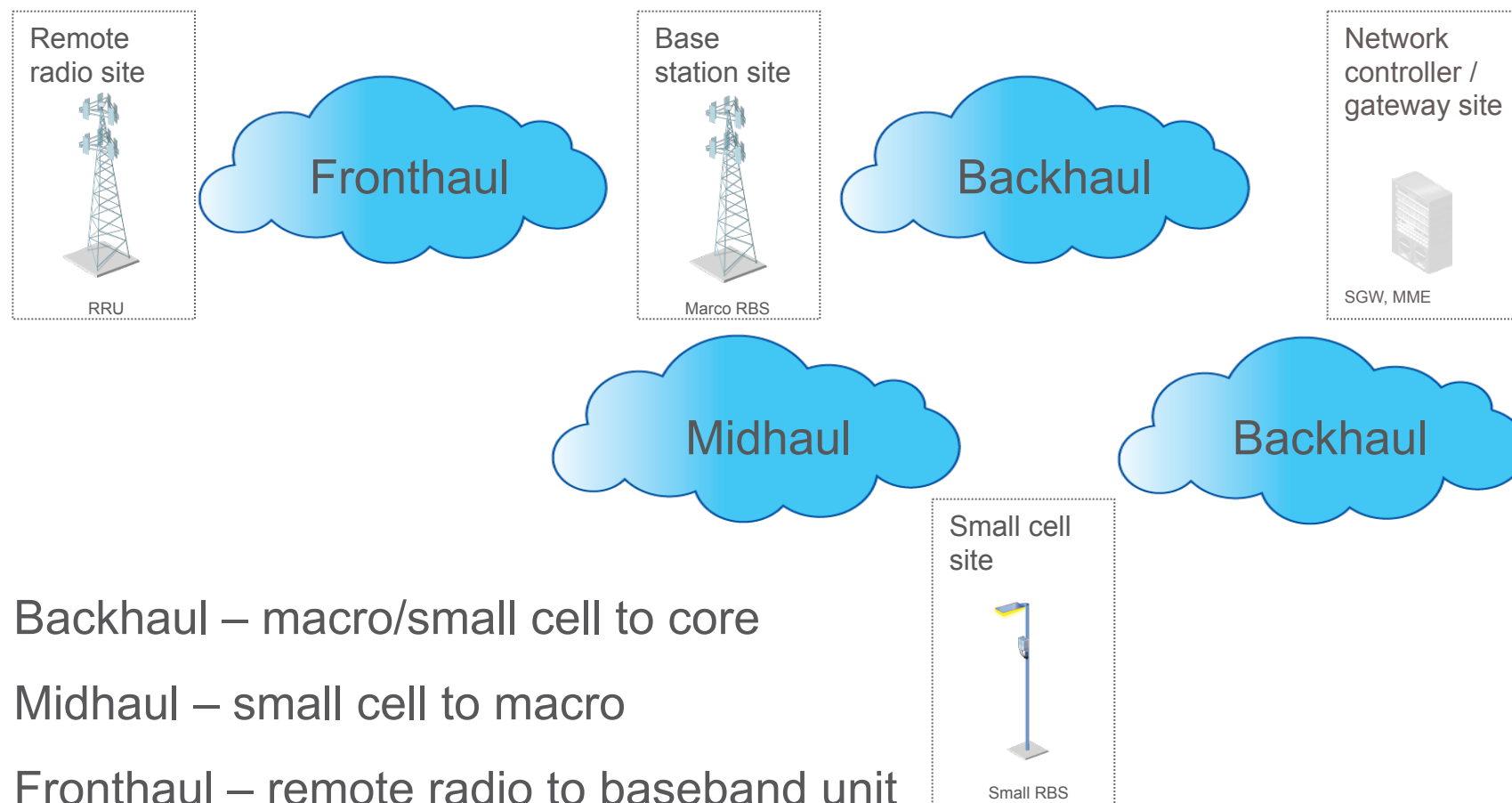
RAN	Radio Access Network
RAN BS	RAN Base Station
RAN NC	RAN Network Controller
RAN CE	RAN Customer Edge –Mobile network node/site
RNC	Radio Network Controller
CEN	Carrier Ethernet Network

Carrier Ethernet Mobile Backhaul Service

- Standard Demarcation
- Standard & Scalable Services with Quality of Service
- Service Management & Reliability



MEF 22.2 Terminology



Backhaul – macro/small cell to core

Midhaul – small cell to macro

Fronthaul – remote radio to baseband unit

MBH IA Timeline



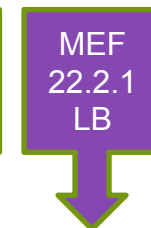
Phase 1 – 2G/3G



Phase 3 – Small cells



Phase 3 - Time/Phase Synchronization



Phase 2 – LTE (frequency synchronization)



Phase 3 – multi-CEN



Optional Roll-up

MEF survey 2015



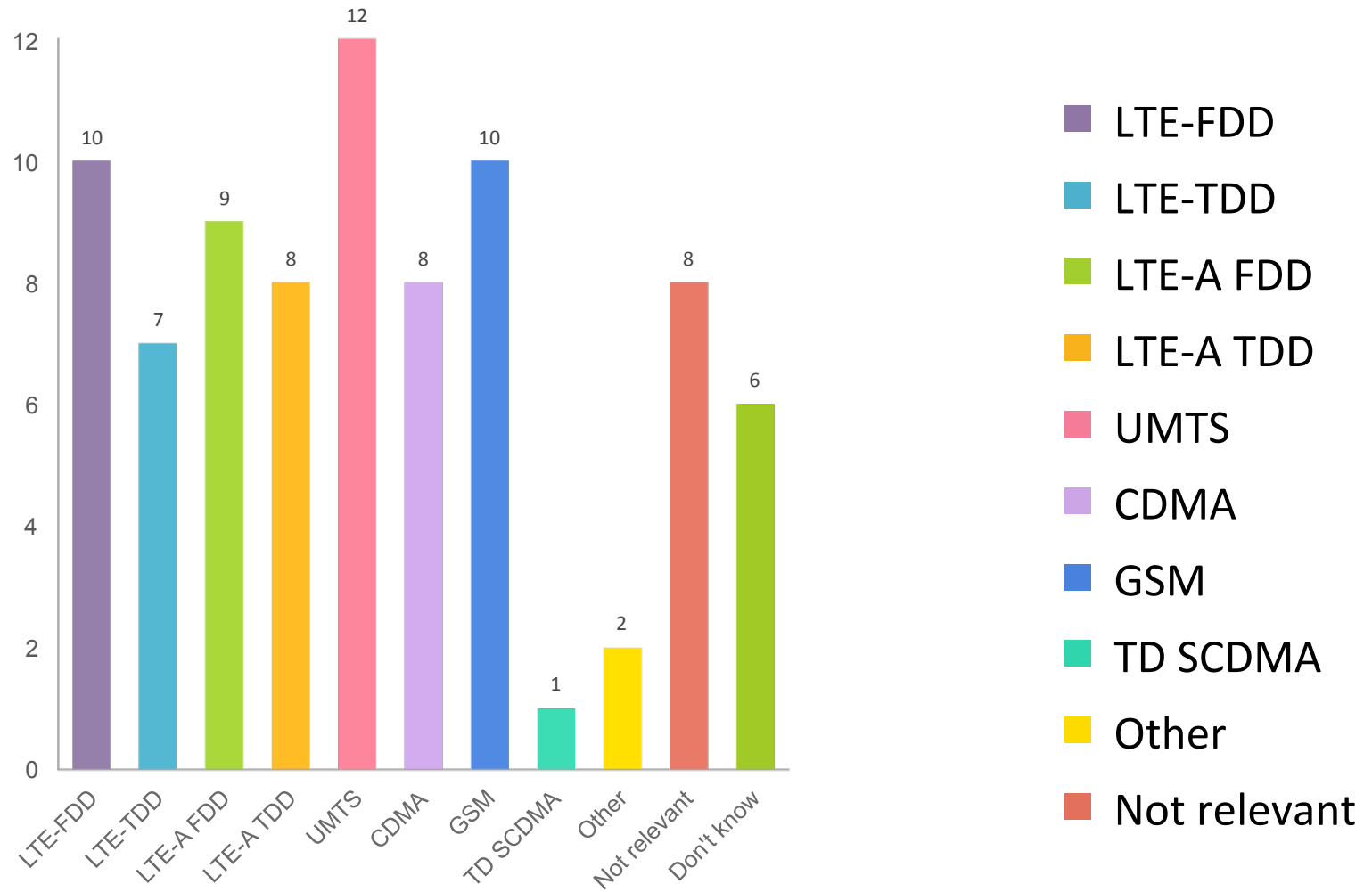
- › After the publication of MEF 22.1.1, MEF conducted a MBH survey of its members
 - Over 75% of respondents regularly worked on MBH
 - Nearly 60% of respondents were from operators
- › 15 questions were asked
 - Several were focused on synchronization

MEF

Radio Technology



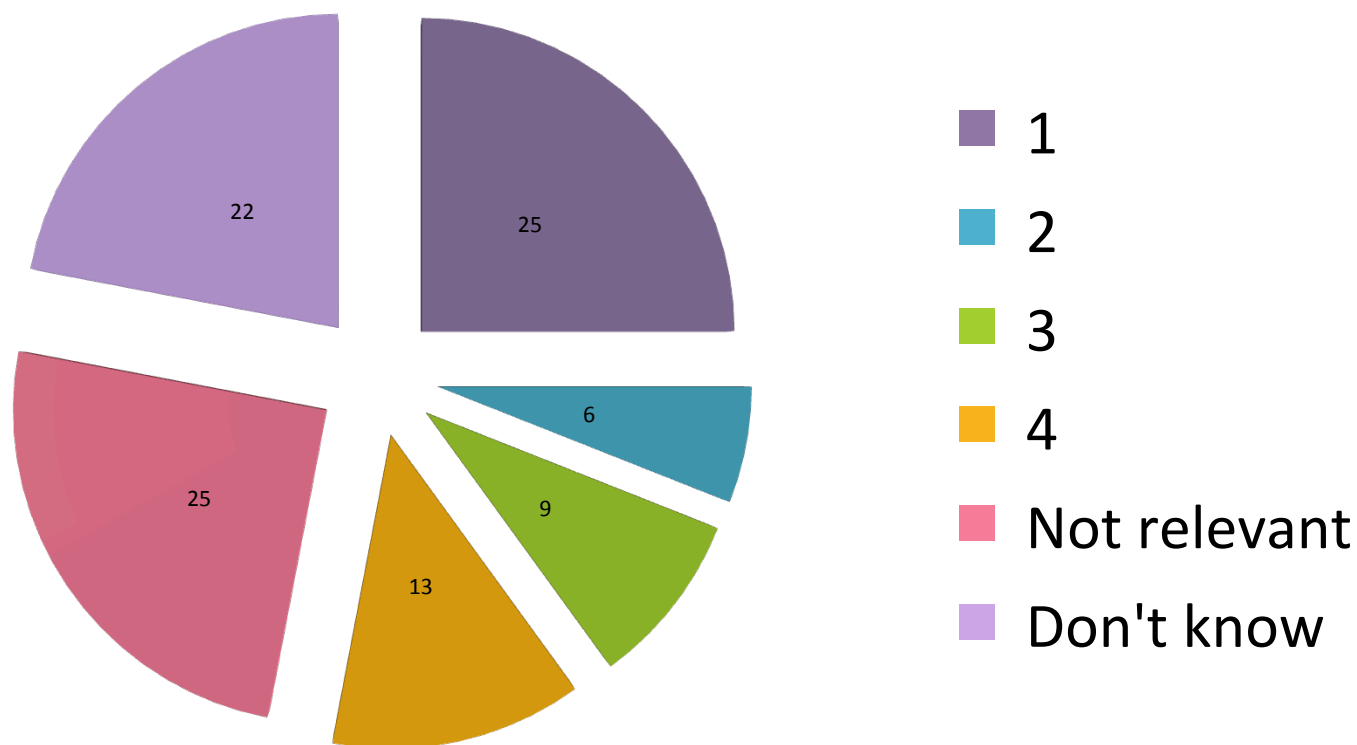
Which of the following radio technologies are being used for the mobile backhaul networks that you are working on?



Multi CoS



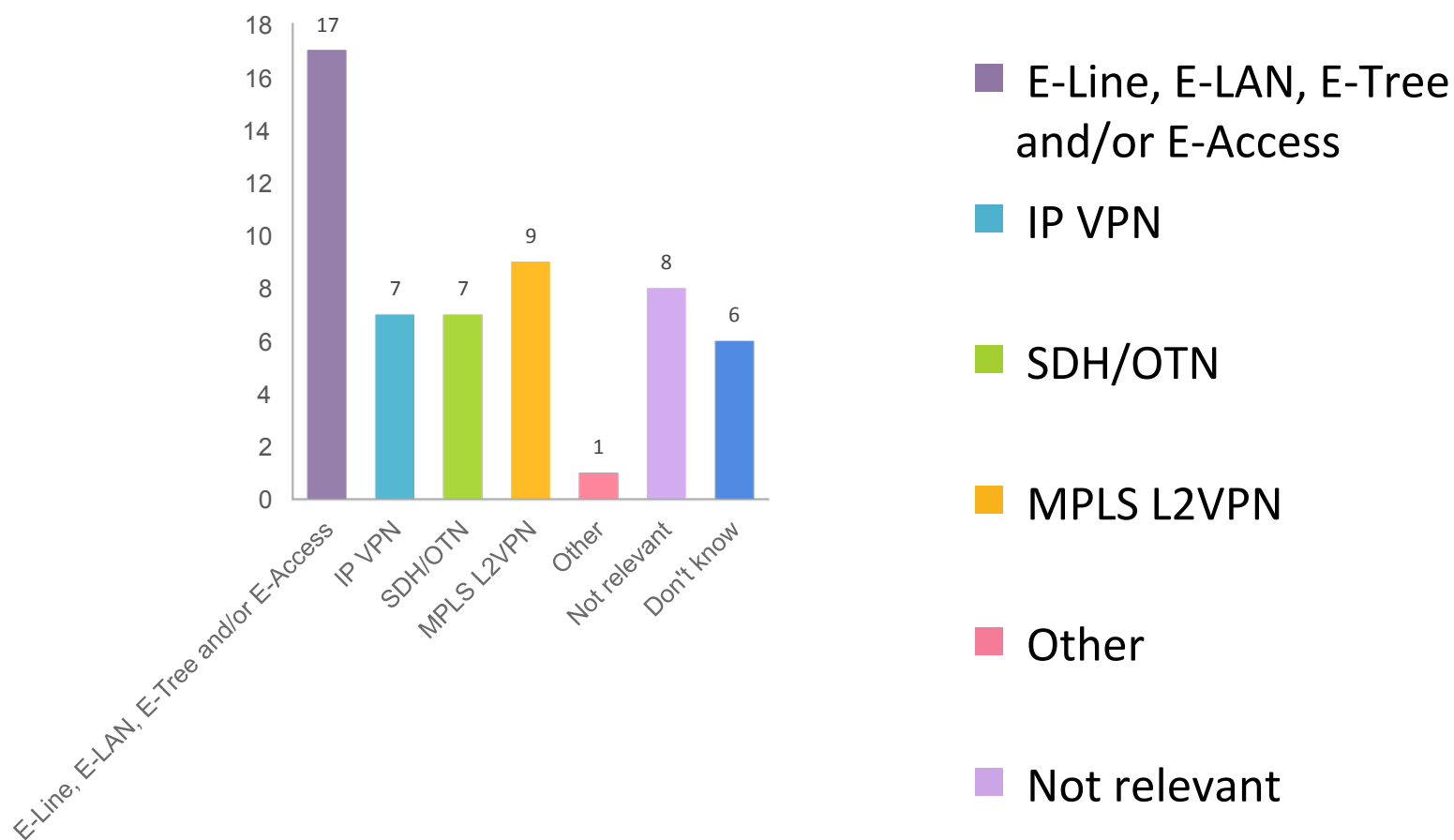
How many Ethernet classes of service (MEF 23.1, MEF 22.1) does your company offer/use in mobile backhaul networks?



Service Type



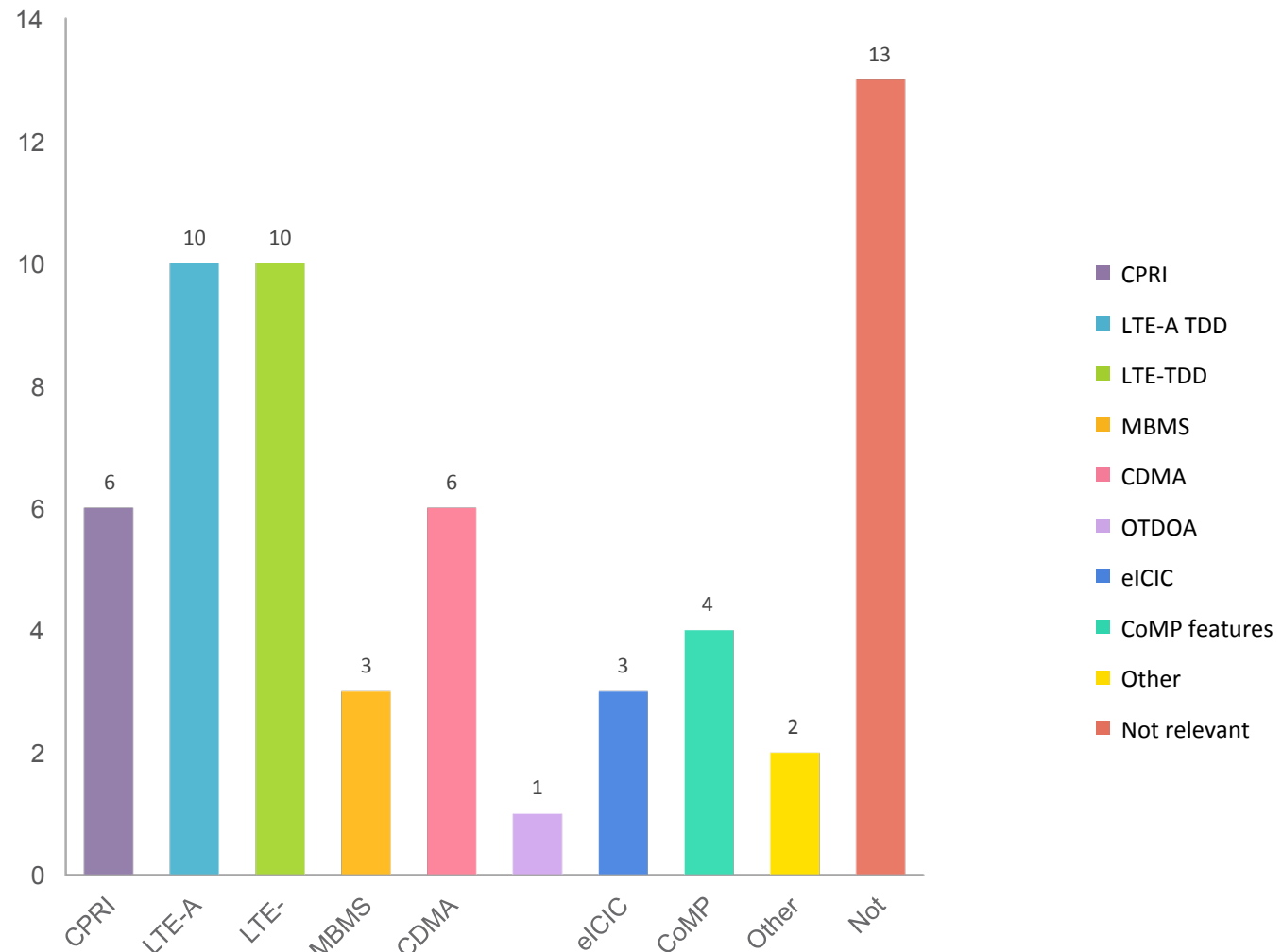
Where there are two or more backhaul providers for a mobile backhaul service, what is the service provided between the RAN base station site (macro or small cell) and the RAN core?



Time synchronization



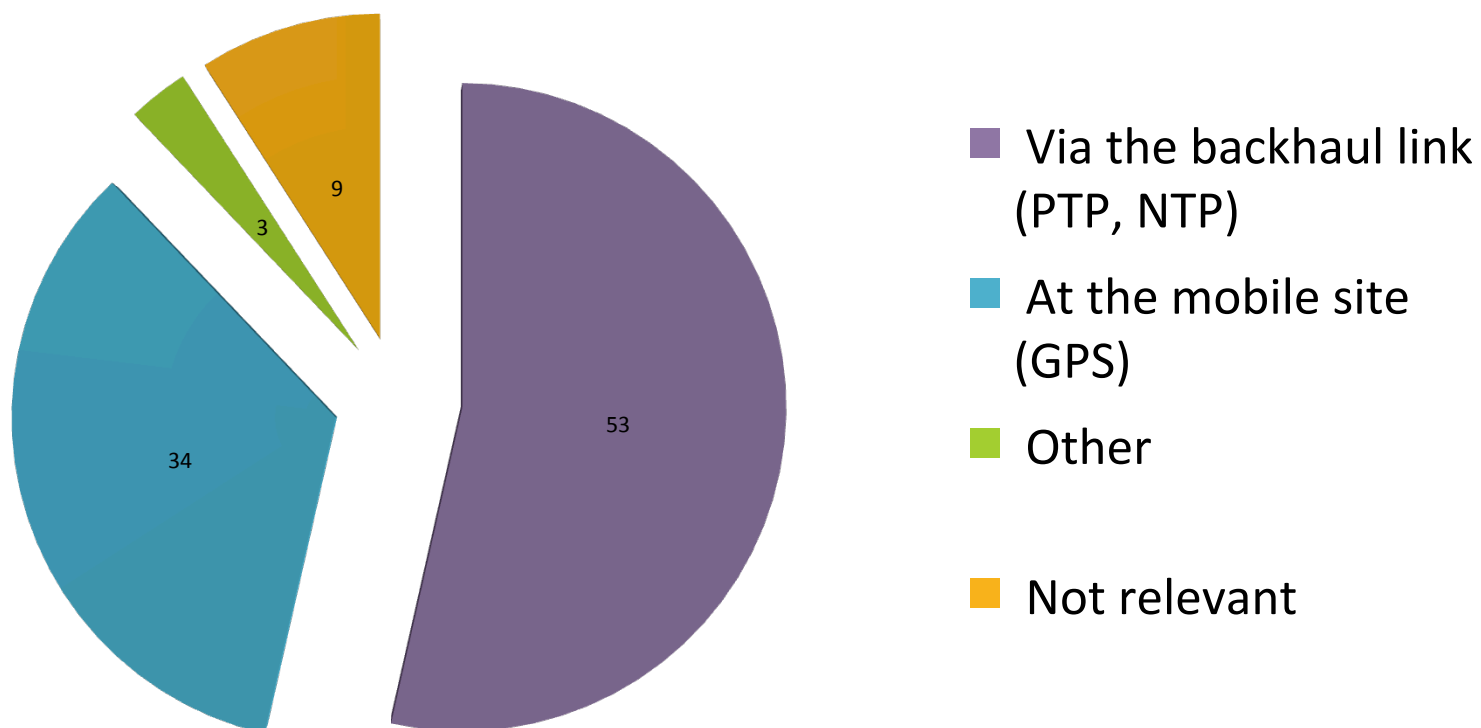
What applications will drive the accuracy requirement for time of day synchronization at the RAN base station site?



Sync delivery



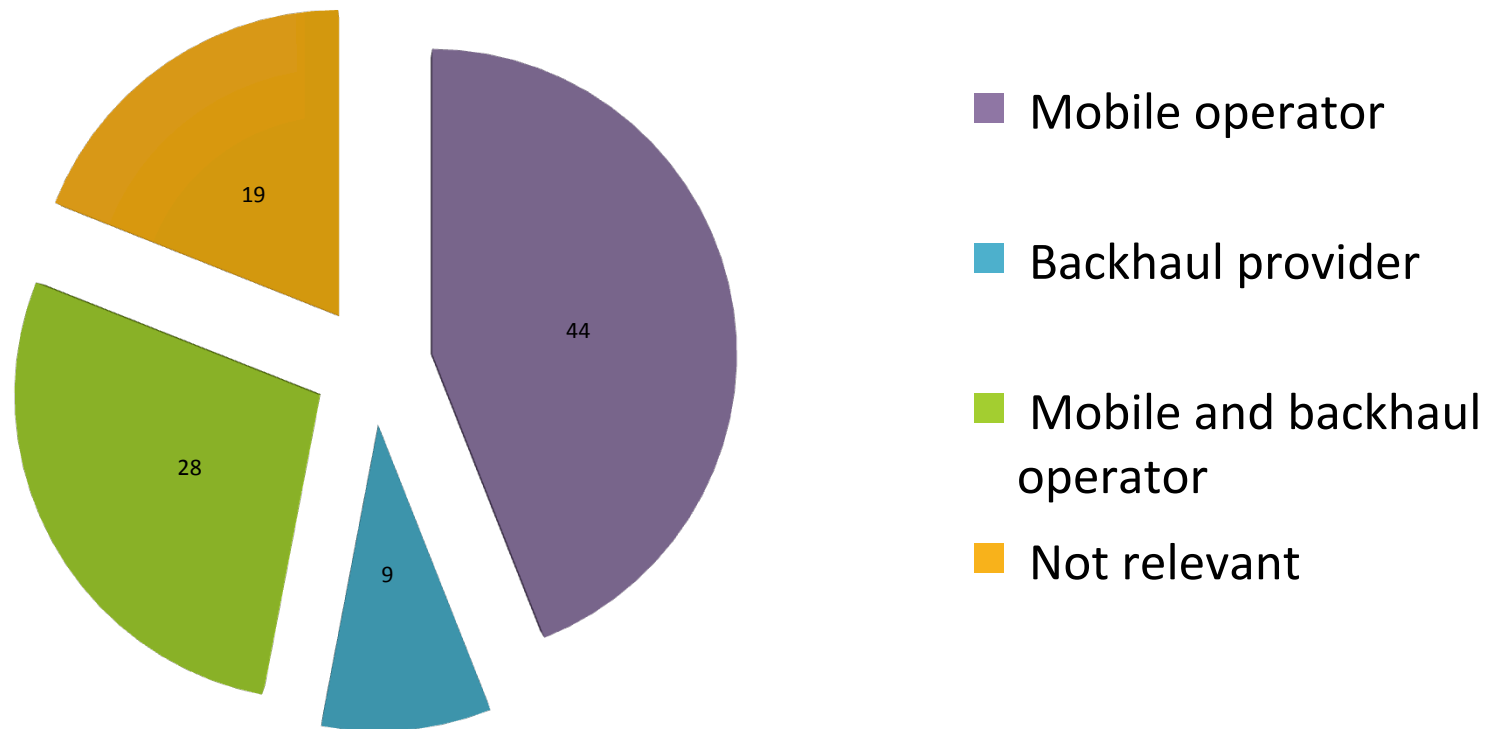
How is primary time synchronization typically expected to be delivered?



Sync as a Service



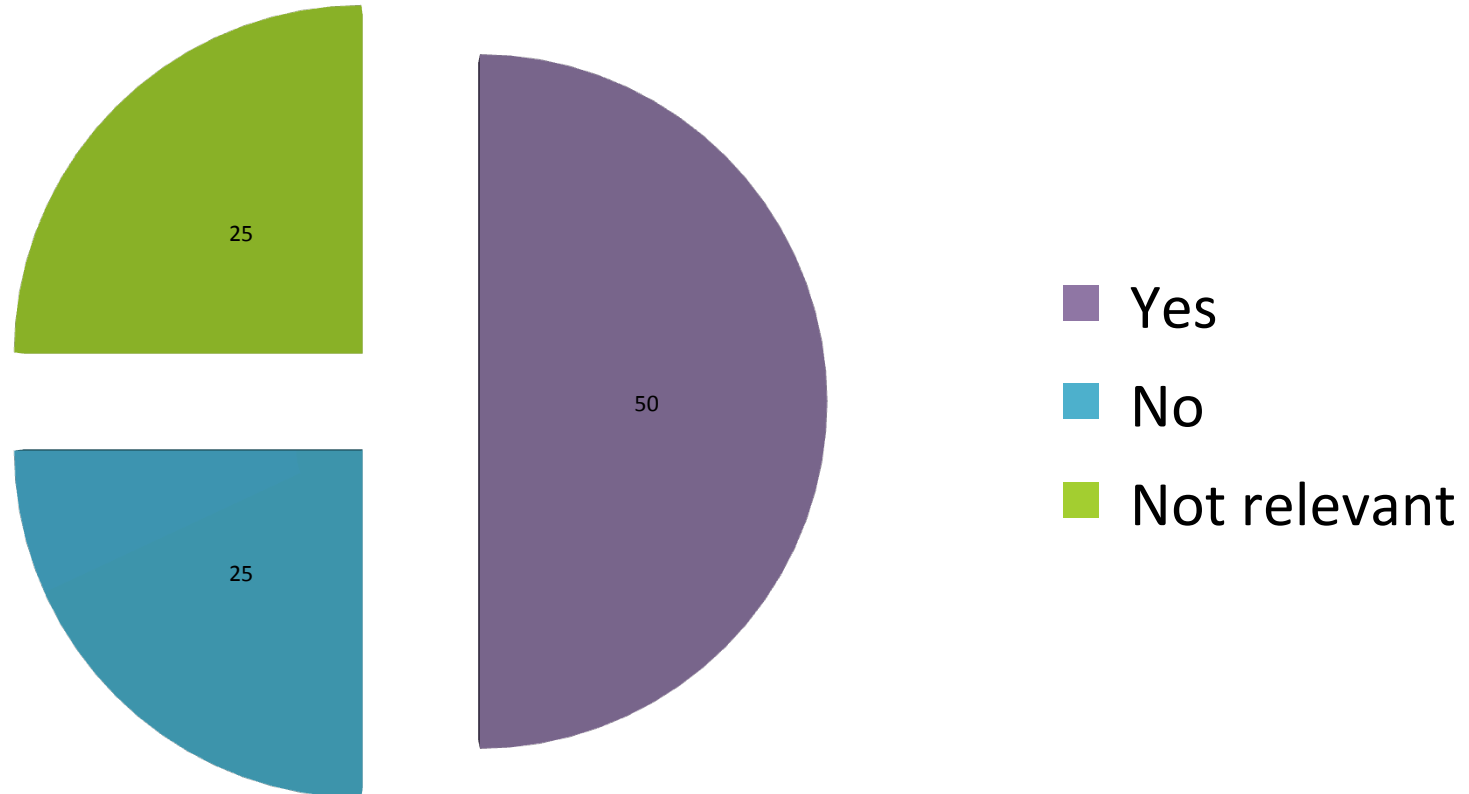
When providing time sync over the backhaul link, do you expect that the backhaul provider or the mobile operator will provide the time service (i.e. Own the grand master)? That is, who will own the grand master?





GPS Backup

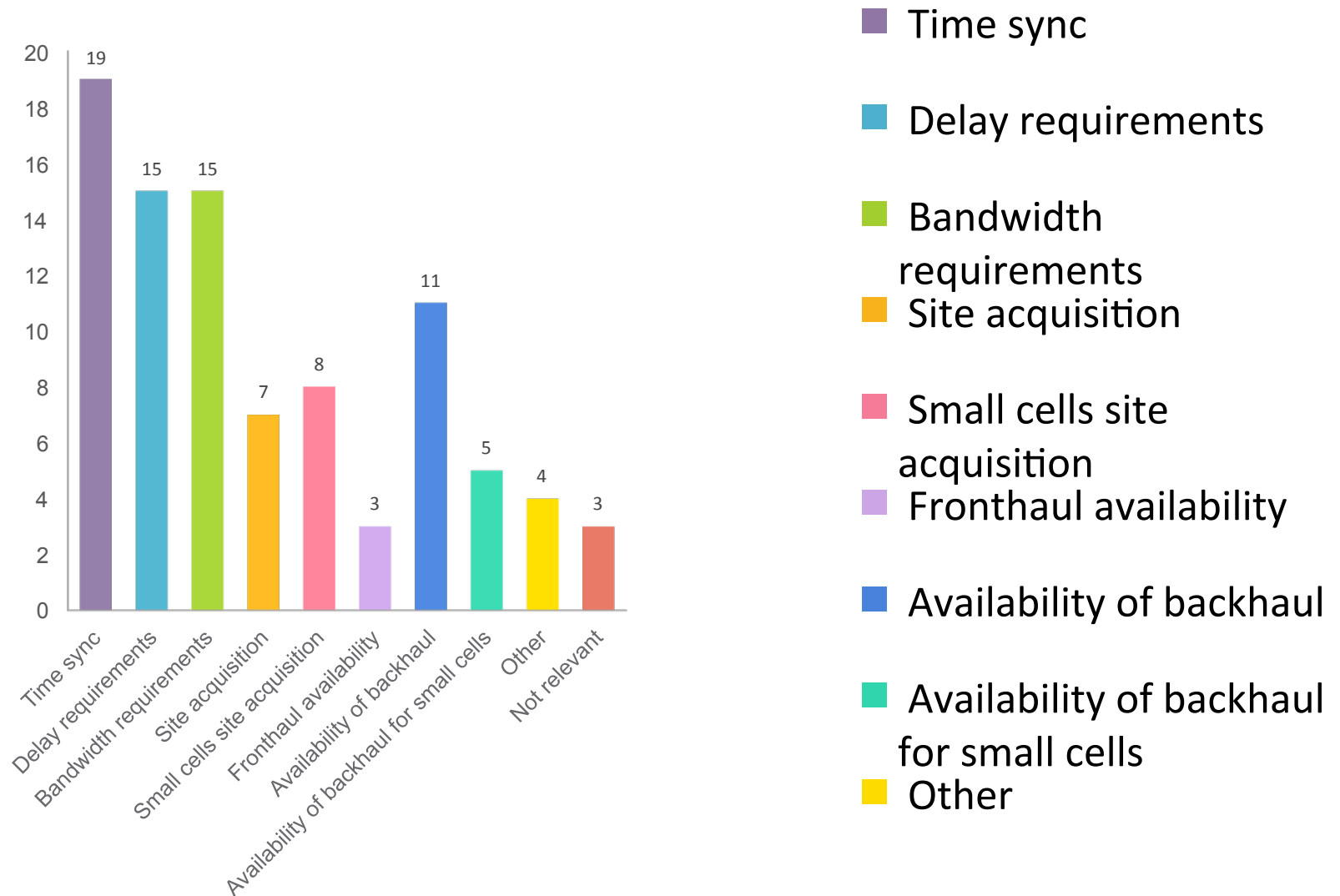
If GPS is the primary source of time sync, do you typically expect to have GPS backup (E.g. with timing support over the backhaul network)?



Challenges



What are the three biggest challenges in mobile backhaul?



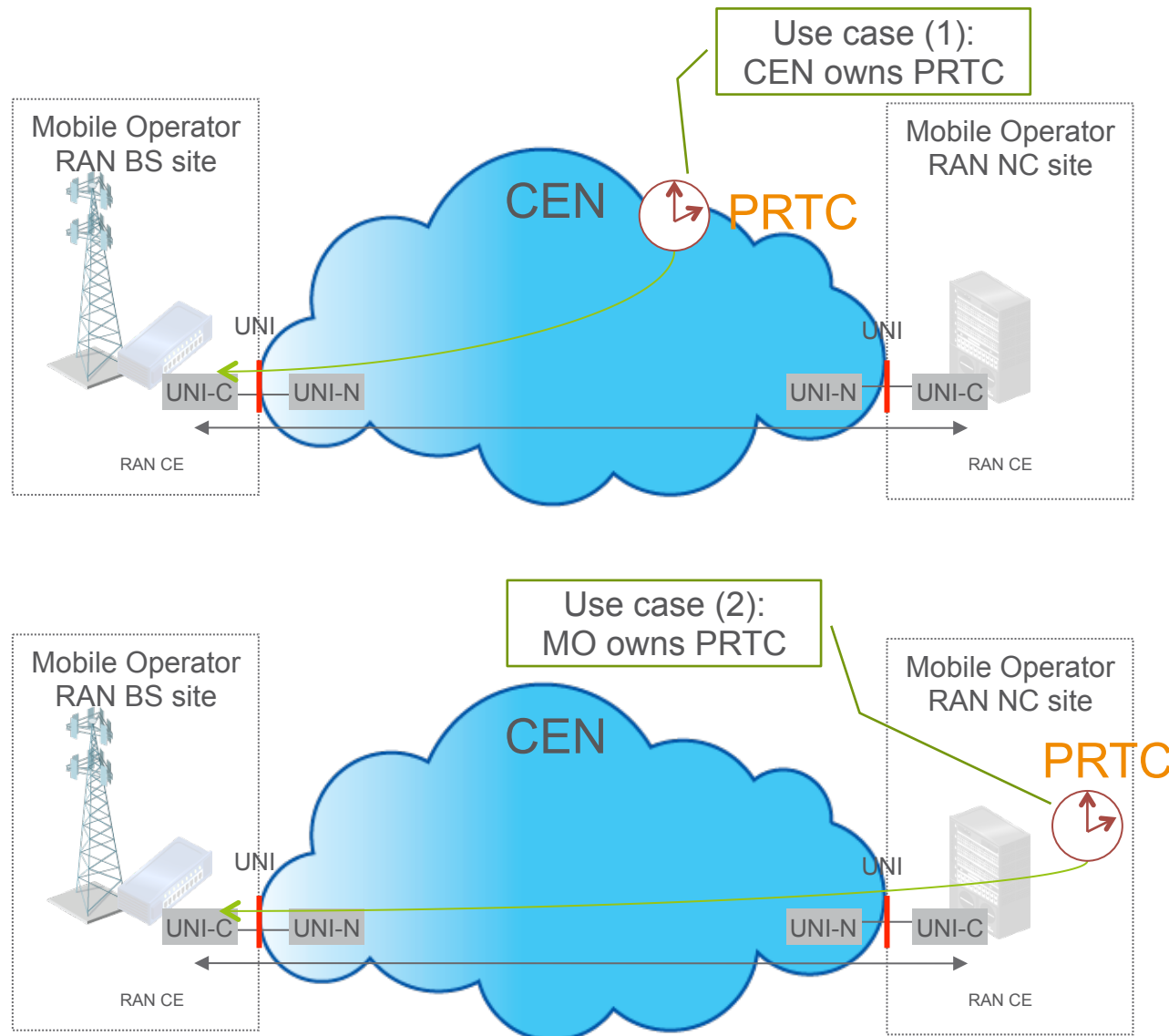


MEF survey 2016

Additional questions for an upcoming survey.

- › If GNSS is the primary source of time sync,
 - a) do you typically expect to have GNSS backup, and
 - b) if yes what solution?
- › Is security (*specifically authentication of the timing master and integrity of the timing signal*) and reliability of timing considered a concern for PTP based solutions?
- › In the case that the mobile operator owns the time sync master:
 - Is timing across a backhaul operator network expected to be handled with full on-path timing support or via partial on-path timing support?
- › Are you interested in partial timing support (some network segments are timing unaware)?

MEF 22.2.1 – time sync





summary

- › Time synchronization has newly increased importance
 - Need to combine different solutions
 - Packet solutions aligning with ITU-T Recommendations
- › MEF moving to define solutions to offer “sync as a service”
 - MEF 22.2.1 will be the enabler
- › Fronthaul:
 - Sync related aspects might be addressed in the future by MEF
 - Work ongoing in other relevant bodies, e.g. IEEE 802.1CM needs to be completed first
- › MEF Survey 2016 questions:
 - Comments and suggestions welcome



ERICSSON