



Network Sharing Management SA1/SA5/NGMN Gap Analysis

3GPP SA5
Orange / Huawei / Alcatel-Lucent

Documentation



3GPP SA1

- TR 22.852: Study on RAN Sharing Enhancements (Release 12)
- TS 22.101: Service aspects; Service principles (Release 13)
- S1-134180 CR to 22.101 introducing RSE requirements

3GPP SA5

- TR 32.851: Study on OAM aspects of Network Sharing (Release 12)
- *TS 32. 130: OAM aspects of network sharing (Release 12)*

NGMN Alliance -

Next Generation Converged Operations Requirements
Stream « Business Scenarios for Network Sharing »

3GPP SA5 TR 32.851 / SA1 TR 22.852



High-level Gap Analysis

	NGCOR	3GPP SA5 TR 32.851	3GPP SA1 TR 22.852
Scope	3G, LTE	3G, LTE	LTE
Scenarios / Use Cases	MOCN MORAN GWCN OSS Sharing OSS+NE Sharing	MOCN GWCN OSS Sharing (partial) DeNB Sharing	RAN Sharing (Neither MOCN nor MORAN specified) MVNO
Management Architecture	2 management architectures, one of which not compliant with 3GPP reference management architecture	SA5 selected the NGCOR management architecture (out of the 2) which conforms to 3GPP reference management architecture	Out of scope
Operational Requirements	Provisioning FM PM (incl. MDT)	Provisioning FM PM (incl. MDT)	Provisioning FM PM (incl. MDT) Accounting

Answer LS to SA5 on OAM for Network Sharing

S1-134181 / S5-131542 (1/2)



A GLOBAL INITIATIVE

Possible mapping	SA1	SA5
SA5 Sharing Operator = SA1 Participating Operator 	Participating Operator: Authorized operator that is sharing E-UTRAN resources provided by a Hosting E-UTRAN Operator.	Sharing Operator (SO): Sharing Operators (SO) are service providers who share, alongside other Sharing Operators (SO), the network (RAN/Core network) facilities provided by the Master Operator. According to 3GPP TS 36.300[4] up to 6 operators can share a RAN
SA5 Shared RAN >= SA1 Hosting E-UTRAN 	Hosting E-UTRAN: E-UTRAN that is shared among a number of operators	Shared RAN: A set of Radio Access Network elements shared among Operators.
SA5 Master Operator ≠ SA1 Hosting E-UTRAN Operator? 	Hosting E-UTRAN Operator: The Operator that has operational control of a Hosting E-UTRAN.	Master Operator (MO): In RAN/Core Sharing scenarios, deployment and daily operation of shared network elements are entrusted to a single Actor, called the Master Operator. The Master Operator provides network and OA&M services to other Operators, called Sharing Operators. The Master Operator is the only one to have a direct OA&M connection from his DM to the shared network elements.

Answer LS to SA5 on OAM for Network Sharing

S1-134181 / S5-131542 (2/2)



- We conclude that while for SA1's "**Participating Operator**" SA5 terminology ("**Sharing Operator**") can be used without problems the "**Hosting E-UTRAN**" is restricted to E-UTRAN while "**Shared RAN**" seems to include UTRAN as well. Therefore we propose to keep "**Hosting E-UTRAN**".

→ Agreed.

- The definitions of "**Hosting E-UTRAN Operator**" and "**Master Operator**" seem to differ:

1. SA1's "Hosting E-UTRAN Operator" does not necessarily own a core network and core NW sharing is out of SA1's WI scope. This distinction is important for the service definition but may or may not have OAM architectural impacts for SA5.

→ Agreed. SA5 defines not only RAN Sharing, but also RAN + CORE Network Sharing. If we focus on EUTRA RAN-only Sharing, "**Hosting E-UTRAN Operator**" and "**Master Operator**" are similar.

2. SA1's "Hosting E-UTRAN Operator" also sets various shared E-UTRAN business and operational policies such as allocation, etc, which is important for the service definition, but not contained in the SA5 "Master Operator" and may not be important to the OAM architecture.

→ SA5 upcoming WID will produce a Stage 1 TS capturing business and operational requirements, based on NGCOR Phase 2 requirements, but not only.

3. SA5's "Master Operator" is the only one to have a direct OA&M connection from his DM to the shared network elements. This is an issue to bring up in the joint meeting.

→ Network Elements, whether they are shared or not, cannot be connected to multiple Domain Managers (a.k.a. EMS – Element Management Systems) simultaneously.

S1-134180 CR to 22.101 introducing RSE requirements

28 E-UTRA RAN Sharing Enhancements

28.1 General

E-UTRA RAN Sharing Enhancements allows multiple Participating Operators to share the resources of a single E-UTRA RAN - the Hosting E-UTRAN - according to agreed allocation schemes.

→ Agreed. « Agreed allocation schemes » to be captured in the RAN Sharing contract clauses.

The Hosting E-UTRAN is provided by a Hosting E-UTRAN Operator who can coincide with one of the Participating Operators.

→ Agreed. See the definition of roles in SA5 TR and in NGMN deliverable.

All the following requirements shall be subject to Hosting E-UTRAN Operator configuration.

S1-134180 CR to 22.101 introducing RSE requirements

28.2 Specific E-UTRAN Sharing requirements

28.2.1 Allocation of Shared E-UTRAN resources

The Hosting E-UTRAN Operator shall be able to specify the allocation of E-UTRAN resources to each of the Participating Operators by the following:

- a. Static allocation, i.e. guaranteeing a minimum allocation and limiting to a maximum allocation.
- b. Static allocation for a specified period of time and/or specific cells/sectors
- c. First UE come first UE served allocation.

- → NGCOR also identified requirements a and c. Requirement b not identified.

A Hosting RAN shall be capable of differentiating traffic associated with individual Participating Operators.

→ Not an OA&M requirement.

Note: The term « Hosting RAN » is used here and not « Hosting E-UTRAN ». On purpose?

A Hosting RAN shall be able to conduct admission control based on the allocated E-UTRAN resources for each Participating Operator.

→ Not an OA&M requirement.

Note: The term « Hosting RAN » is used here and not « Hosting E-UTRAN ». On purpose?

A Hosting RAN shall be able to control resource usage taking into account the allocated E-UTRAN resources for each Participating Operator.

→ Any difference with previous requirement?

S1-134180 CR to 22.101 introducing RSE requirements

28.2.2 OAM Access to the Hosting E-UTRAN

The Hosting E-UTRAN shall be able to provide and control access to selected OAM functions to each Participating Operator to perform OAM tasks supporting the Participating Operator's use of the Hosting E-UTRAN. E.g. each Participating Operator can only get information about own customers.

This would allow the Participating Operator to do the following:

- Backhaul link test in the base station,
- to obtain fault reports
- retrieve RAN resource usage information (non realtime)



1. Whether Participating Operators may have indirect access to the Hosting E-UTRAN for OA&M purposes must be part of the RAN Sharing contract clauses
2. In case Participating Operators do NOT have indirect OA&M access to the Hosting E-UTRAN resources, it will be up to the Hosting E-UTRAN Operator to provide Participating Operators with OA&M information on a per PLMN ID basis. The type of information that the Hosting E-UTRAN Operator will have to provide shall be mentioned in the RAN Sharing contract clauses.

S1-134180 CR to 22.101 introducing RSE requirements

28.2.3 Generation and retrieval of usage and accounting information

A Hosting E-UTRAN Operator shall be able to collect events supporting the accounting of network resource usage separately for each Participating Operator. Collected events may be delivered to the subscriber's Participating Operator. This includes:

- Start of service in the Hosting E-UTRAN for a UE of the Participating Operator
- End of service in the Hosting E-UTRAN for a UE of the Participating Operator



- 1.Generation and retrieval of usage and accounting information is currently out of scope of SA5 existing TR / upcoming WID.
- 2.This requirement should be further elaborated before any solution be studied. Depending on which type of usage information is required, traditional OA&M Performance Management counters & KPIs might be a solution to meet the requirement.

S1-134180 CR to 22.101 introducing RSE requirements

28.2.4 MDT Collection

When authorized by the Participating Operators the Hosting E-UTRAN Operator shall be able to collect MDT data of the Participating Operator's UEs connected through its E-UTRAN.

Note: This functionality should also allow for the case where the Hosting E-UTRAN Operator that does not have an adjunct core network.

→ Agreed, also part of SA5 and NGCOR requirements.

Note #1: the collection of MDT information of the Participating Operators' UEs by the Hosting E-UTRAN Operator is subject to Participating Operators authorization – This shall be captured in the RAN Sharing contract clauses

Note #2: User consent aspects have to be addressed

S1-134180 CR to 22.101 introducing RSE requirements

28.2.5 PWS support of Shared E-UTRAN

The Hosting E-UTRAN shall be able to broadcast PWS messages originated from the core networks of all Participating Operators.

Note: Rel-11 design requires a shared PWS core. However, some regulatory obligations require a solution in which no common PWS core network entity is involved.

→ Out of scope of SA5 existing TR / upcoming WID

Thank You !



THE Mobile Broadband Standard

Home Site Map Contact

Search
3GPP Website:

Search and download specs, docs, CRs and more from the 3GPP FTP Server:
Advanced FTP Search

RSS Subscription

- 3GPP News
- 3GPP Partners News
- 3GPPlive tweets

Statistics
7638 unique visitors average per day

3GPP Satisfaction Survey

5 minute survey Please help us by completing the new 2012 Survey. Take the Survey

TSG Structure

Project Co-ordination Group (PCG)

TSG GERAN	TSG RAN	TSG SA	TSG CT
GSM (EDGE) Radio Access Networks	Radio-Access Network	Service & Systems Aspects	Core Network & Terminals
GERAN WG1	RAN WG1	SA WG1	CT WG1
Radio Aspects	Radio-Layer 1 spec	Services	MMCCSSM (M)
GERAN WG2	RAN WG2	SA WG2	CT WG3
Protocol Aspects	Radio-Layer 2 spec Radio-Layer 3 RRC spec	Architecture	Interworking with external networks
GERAN WG3	RAN WG3	SA WG3	CT WG4
Terminal Testing	SA spec, for spec, for spec UTRAN QoS requirements	Security	MAP/OTP/BCH/SS
	RAN WG4	SA WG4	CT WG5
	Radio Performance Protocol aspects	Codec	Smart Card Application Aspects
	RAN WG5	SA WG5	
	Mobile Terminal Conformance Testing	Telecom Management	

More Information about 3GPP:

www.3gpp.org

contact@3gpp.org