Proposal for Network Structure PAR

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Purpose:

This document is to be presented to 802.16 as a suggestion for new PAR

Proposal for Network Structure PAR

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Network Structure PAR

- Purpose :
  - Allows for fast penetration of 802.16e MAC/PHY technology
- Scope
  - Definitions sufficient for building infrastructure for 802.16e mobile network
- Implementation
  - Must be “Recommended practice” document
    - Because of 802.16 scope restrictions of 802.16
  - Certain items from 802.16e may be removed to new document
    - Like BS-to-BS communication

Network Structure PAR

- Network Structure PAR Purpose
  - Provide 802.16e equipment with procedures to enable creation of interoperable network infrastructure, management of network resources, mobility and spectrum
- Network Structure PAR Scope
  - This document provides complimentary enhancements to the IEEE 802.16 standard, as amended by 802.16e, by specifications of network, including internetworking, management of network resources, mobility and spectrum

Scope of the project - details

- Similar to scope of network structure documents for GSM/GPRS/3GPP/3GPP2
- Open or proprietary architecture?
- New or already existing
- Topology
  - Hierarchy
  - Which functional elements (nodes) are present at the picture, like BS, RNC, PDSN, GGSN etc.
  - Points for integration to other networks (fixed or mobile)
- Reference model of each node
  - protocol stack, for example at BS: PHY, MAC, MA
- Protocols for communication between nodes
  - For example, BS-to-BS, BS-to-ASA server etc.
- How HO and other mobility procedures are supported (e.g. roaming between networks of different operators)
  - Scenarios, signals, primitives, flow diagrams

Scope of the project – Cont.

- Additional specifications at BS/MSS to support the picture
  - For example, primitives like I_AM_HOST_OF from MAC(CS) to MA
- Provisioning
  - Mostly at ASA servers
- Security support
  - Authentication
  - Authorization of services

Requirements from the Network Structure

- Enable gradual penetration, scalability and backward compatibility (same arch must support initial and advanced stages of 16e technology penetration)
  - Same arch must support “local” (hot spots, hot zone – downtown) and “global” (countrywide) deployments
  - Network structure must allow easy and cost-effective network expandability (capacity and coverage enlarge)

Requirements from the Network Structure

- Support terminals that are not equipped with MoIP
- Support interoperation of multiple networks of different operators
- Support of special services/applications amendments (Multicast/Broadcast video/messaging, …)

Relationships to 802.16e

- Certain parts of 802.16e may be removed to new spec
  - BS-to-BS communication
  - Service profile spec
- 802.16e spec may need additional elements
  - E.g. Primitives CS ⇔MA

Relationships to Other Standards

- Network interfaces should preferably be based on existing standards
  - e.g. IETF or 3G
- Some part of network must be subject to 802.16 standardization
  - BS-to-BS, BS-to-”RNC”, BS-to-ASA

Hierarchy

- At least 2 levels of hierarchy should be specified in 802.16 + horizontal relations in the hierarchy to optimize 802.16e HO
  - Geographical reasons
  - Experience of GSM/3G

Equipment Availability

- Ideally, most or all of functionalities must be implemented in readily available, standard based, massively deployed equipment from leading vendors