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Implemented Testbed: Subsystems & Modules

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Editor: Antoni Gelonch and Ramón Ferrus (UPC)

Author(s): see list

Participant(s): UPC, KCL, PTIN, TID, TEL

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Abstract:

This deliverable provides the complete description of the Everest Testbed architecture and the details of the subsystems and modules implemented. The aspects that the EVEREST testbed will try to address are all them related with the provision of the E2E QoS. Basically, two main blocs has been considered, one related with the QoS emulation introduced in the Radio Access part and the other one related with QoS management performed in the Core Network. In the EVEREST Tesbed up to three different access technologies (UTRA, GERAN and WLAN) has been considered and all the elements related with the Common Radio Resource Management has been included. The Core Network side has been driven by an implementation based in Policy Based Management of a Diffserv domain where the Bandwith Broker (BB) module is the main element.

In addition some extension related with the architecture of the QoS management, like Wireless QoS Broker, has been incorporated coming from discussion performed in WP3.

Keyword list: Emulation, Testbed, UMTS, GERAN, WLAN, Diffserv Domain, BB, Policy Based Management.

DISCLAIMER

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Authors List

APARICIO PEÑA, Maria Teresa (TID)
CABRAL PINTO, Filipe (PTIN)
CASADEVALL PALACIO, Fernando (UPC)
FERRÚS FERRER, Ramón (UPC)
GELONCH BOSCH, Antoni (UPC)
GONZÁLEZ SANCHÍS, Hector (TID)
NAFISI, Nima (KCL)
REBELO, João (PTIN)
REVES BALLESTER, Xavier (UPC)
VEGA NOVELLA, Avelina (TID)

EXECUTIVE SUMMARY

This deliverable aims at providing a detailed description of the implemented Everest testbed, starting from its architecture and going down to the details of the implementation and/or configuration of the different modules and tools. In addition it has been included in this document the progress in the definition of the procedures to be shown and managed by the EVEREST testbed at the end of the project. This must be understood as a powerful tool to progress in the complete EVEREST testbed definition.

Due to the nature of the EVEREST testbed and its high requirements in terms of flexibility and management features some of the currently developed modules still present some inconsistency that will be properly corrected during the integration phase and along the progress in the procedures definition.

Therefore, this document describes the actual status of the EVEREST implemented testbed. It initiates its description starting with the EVEREST testbed architecture, as already introduced in D06, and including the description of the Software Environment as the framework that gives support to the complete testbed. Related to the emulation of the radio access part, the document describes how the multiple heterogeneous access networks emulators considered in EVEREST (UTRAN, GERAN, WLAN) are integrated in a common framework. This integration imposes a set of design constraints to be followed in the implementation of each emulator. In particular, switching functions needed for the integration of the emulators, and that constitute the basis of what in the document is referred to as the RAN skeleton, are deployed so that that from real applications can be directed to the proper emulator. Then, the description of each RAN emulator is addressed, showing the implementation details of the correspondent modules and also the emulation approach followed in each one of the different RATs. We should not forget the description of the Wireless QoS Broker element as a QoS manager of the Radio Access part. Later on it is addressed the implementation issues related with the CN sided specially in reference to the Diffserv implementation approach followed, the use of the Bandwidth Broker as a CN QoS manager and the Mobility aspects. Next point has been the description of the solution adopted for the Network and UE QoS managers that has been based in the solution adopted for the BB. At this point has been included the current description of the Procedures to be managed in the complete testbed under the proof of concept approach that can provide a better understanding of the complete EVEREST testbed framework. And finally the installation and configuration details of the Applications included in the EVEREST testbed have been addressed as well as the Testbed Management Capabilities, as a tool to configure properly the testbed and obtain results from it, and the Remote Tesbed Capabilities, as an extension of the previous one tool.

In summary, the document defines the EVEREST complete testbed framework just before starting its integration process, its architecture, the approach followed to solve the different issues and the progress in the definition of the procedures that must be available in the final EVEREST testbed. Nevertheless, some refinements in the current implementation of the QoS management entities and CRRM functions may be required according to expected results coming from the progress in WP3 activities.

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