

ISITEP

D4.1.21 – GATEWAY PROTOTYPE MOTOROLA NETWORK

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V1.1	28/01/2016	6, 9	2.1 new 2.2 (former 2.1 updated) 3 new	Updated after comments from the commission

Publishable extended abstract

This Document is describing the completion of Task 4.1.2 “Gateway Development”.

The objective of WP4.1 is to allow TETRA networks to be interconnected using ISI over IP. As part of the Motorola contribution, a gateway shall be delivered.



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1 INTRODUCTION

1.1 Introduction

One of the goals for the ISITEP program is to define how Inter System Interface (ISI) signaling between TETRA SwMIs can be conveyed in an SIP/IP network. The current ISI specifications describe how ISI signaling is conveyed in a QSIG/E1 network where the ISI signaling is included in Facility information elements. In order for the systems complying to the current standard to interconnect with the systems complying with the future standard a converter is to be introduced.

In task 4.1.1 a definition of ISI over IP was performed. In this protocol definition the ETSI ISI QSIG ROSE / E1 layer will be translated into SIP / IP protocol suite. The Motorola ISI GW has implemented a preliminary version of the ISI over IP protocol. The standardization of the ISI over IP protocol is ongoing.

2 DESCRIPTION

2.1 Feature List

The Motorola ISI Gateway supports the feature described in TeTRA Implementation Proposals for ISI phase 3. This includes:

- Migration of MSs in and out of the Motorola TETRA network
- Authentication of visiting and migrating MSs
- Group calls on statically linked groups across the ISI boundary
- Individual calls across the ISI boundary
- Short data and status communication across the ISI boundary

2.2 ISI Gateway Development

The ISI gateway prototype has been created according to the ISI requirements specified in the current ETSI ISI standards and the principles for using SIP instead of QSIG as described in the document “Realization of ISI over IP” [Ref.2], which has been delivered as part of Task 4.1.1.

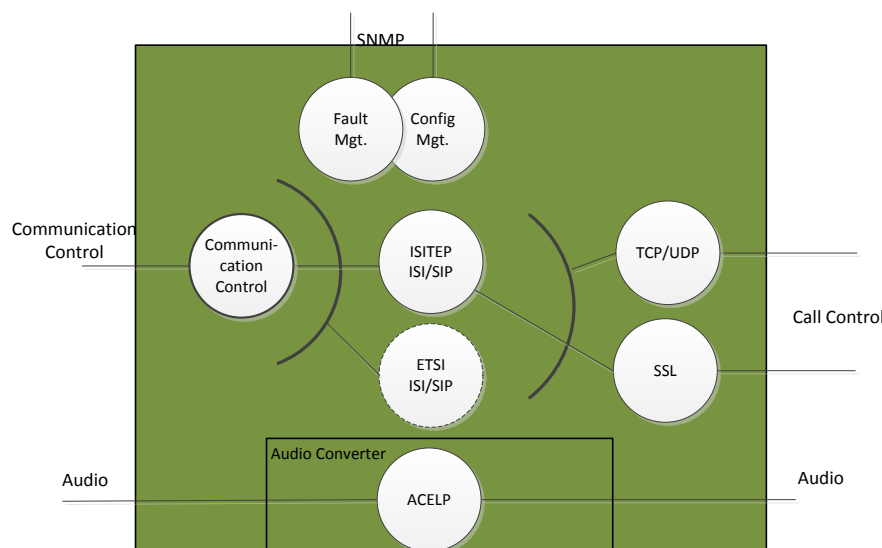


Figure 1 ISI Gateway Architecture

The prototype software is developed in modules, which makes it possible to replace protocol layers with new version as the ISI over IP protocol evolves or new transport or security requirements appear.

The **Communication Control** entity handles the interface between the Motorola TETRA SwMI and the ISI communication.

The **ISI/IP** entity handles the formatting of the SIP messages to transport the ISI PDUs. As the ISI over IP protocol is not yet approved in the ETSI standardization body the Motorola design is prepared for several versions of ISI/IP; hence the ISITEP ISI/IP and the ETSI ISI/IP entity.

The **Audio Converter** entity is responsible for the necessary conversion of the internal audio format to the ISI audio format and vice versa.

The **Fault Management** entity reports the status of the servers and interfaces to an external event manager.

The **Configuration Manager** handles the interface to an external system management GUI.

The ISI GW can communicate via TCP, UDP or secure links via the entities TCP/UDP and SSL.

2.3 Testing and Validation

Test of the prototype software has been performed using two Motorola systems back to back. The Motorola Factory test is performed as described in D4.7.2.

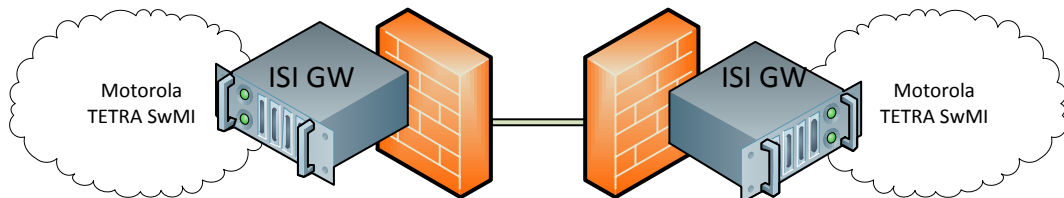


Figure 2 ISI TETRA Gateway Deployment

2.4 ISI GW Realization

The realization of the ISI GW is shown in Figure 3.



Figure 3 Motorola ISI GW

3 REFERENCES

- [1] ISITEP D2.3.2 V 1.1 End-User Requirements, November 2014
- [2] TCCE03(14)000015 – Realization of ISI over IP
- [3] ETSI EN 300 392-3-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 2 Additional Network Feature Individual Call (ANF-ISIIC)
- [4] ETSI EN 300 392-3-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 3 Additional Network Feature Group Call (ANF-ISIGC)
- [5] ETSI EN 300 392-3-4: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 4 Short Data Service (ANF-ISISDS)
- [6] ETSI EN 300 392-3-5: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 5: Additional Network Feature for Mobility Management (ANF-ISIMM)".