4G Router requirements for LVM ethernet connectivity

Document Number: **NT0362**

Issue: II

Date: 17/03/2020

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AMENDMENT REGISTER

Description of changes	NAME	ISSUE	DATE
First Version	S.D.	I	11-03-2020
Second Version, added the passive FTP management	S.D.	II	17-03-2020
Third Version, English translation	N.G.B.	III	29-10-2020

Summary

1. Aims

This document aims at defining the minimum requirements which must be satisfied by a 4G router in order to implement an ethernet communication between LVM and management system and implement the minimum parametrization allowing the access to all the functionalities provided by the LVM.

This document does not cover any LVM configuration because it does not require any specific setting for ethernet connection (IP address is an exception, will be covered later).

2. LVM-system connection through a 4G router

The 4G router is equipped with a SIM which allows its connection to a Radius server which must assign a single IP address (on the WAN side) for each 4G router (this will identify the LVM to the management system).

During the authentication, the Radius server will also pass to the router the DNS address in order to map the server names used by the LVM to the numeric address.

As the connection is made through static IP address, both LVM and router must not implement a DHCP so that they will both have a static IP address such as 192.168.1.1 for the router to the ethernet port and 192.168.1.2 for the LVM. In this way the LVM will have an address belonging to the same sub-network of the router.

The LVM's default gateway address will be the address of the router where it is connected to (in the previous example 192.168.1.1); in this way the router will resolve the name of the servers coming from the LVM by the DNS address received from the Radius server during the authentication.

3. 4G Router settings

The services of the LVM will be managed by ports forwarding on the router by means that it would have to be able to forward on the defined LVM's ports, the services coming from the management system, having the LVM as destination.

The following table shows an example of the services required by the LVM:

Services to the LVM	WAN Port	Destination IP (LVM)	Destination Port
operative	50000	192.168.1.2	50000
operative	50001	192.168.1.2	50001
operative	50002	192.168.1.2	50002
operative	50003	192.168.1.2	50003
FTP	21	192.168.1.2	21
SSH	22	192.168.1.2	22

In this way any request from the management system to the router on the 50000 port, will be forwarded to the port 50000 of the LVM and so on.

In order to allow the remote management of the router, the configuration of the standard ports usually configured for administration service by the router itself, must be allowed.

In the case of the LVM those ports are the 22 which is usually used by SSH service (secure shell) and SFTP (SSH file transfer protocol). On the e-distribuzione routers SSH service is mapped to the port 10022 so that any request coming to the port 22 is forwarded to the LVM and those SSH coming to the 10022 are used for the router configuration purpose (such as firmware update and so on..).

In order to the FTP service to and from the LVM works properly, is required that the routed is configured to use any ports needed by the server for data channel, when the passive transfer mode is active. The enabled ports on the LVM for the passive transfer mode are in the range 1024 – 65535.

The router must guarantee the forwarding on these ports or have a dynamic mode to enable them whenever it recognizes a passive FTP transfer, with a request of port changing.