



MMP



Milestone MS2

Milestone: Communication test from master node to all simulation tools at remote locations

Responsible Partner: Czech Technical University in Prague

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Project partners: TNO, TU/e, CTU, Access, VTT, CelSian, Philips, Abengoa

1. Ping test

This milestone served to verify that remote, encrypted communication between selected master node and application instances running on remote computers can be established. The ping test application has been developed for this purpose to demonstrate remote communication. For each configured application, it establishes a secure connection to the application instance, invokes remotely the *giveApplicationSignature* service and prints the received signature. The additional objective of the test was identification of possible bottlenecks which may prevent to establish and maintain secure communication over TCP/IP. All network transmission happened via ssh private/public keys exchanged between involved partners in advance, allowing for automatic logins, so no user interaction was required at the end to establish.

The ping test not only served as internal test for remote, secure communication, but also educated the involved partners how to modify their firewalls rules. In many cases, the local IT support had to be contacted to allow remote secure connections to intranet servers running MMP application servers. The most difficult situation arose with CelSian, whose server runs behind a firewall on a local network and the server has no public IP address. Hence, port forwarding from a firewall had to be set up. Figure 1 shows the ping test set-up between master node and remote servers with corresponding port details. The master node was located at CTU, the remote servers were located at partner's locations.

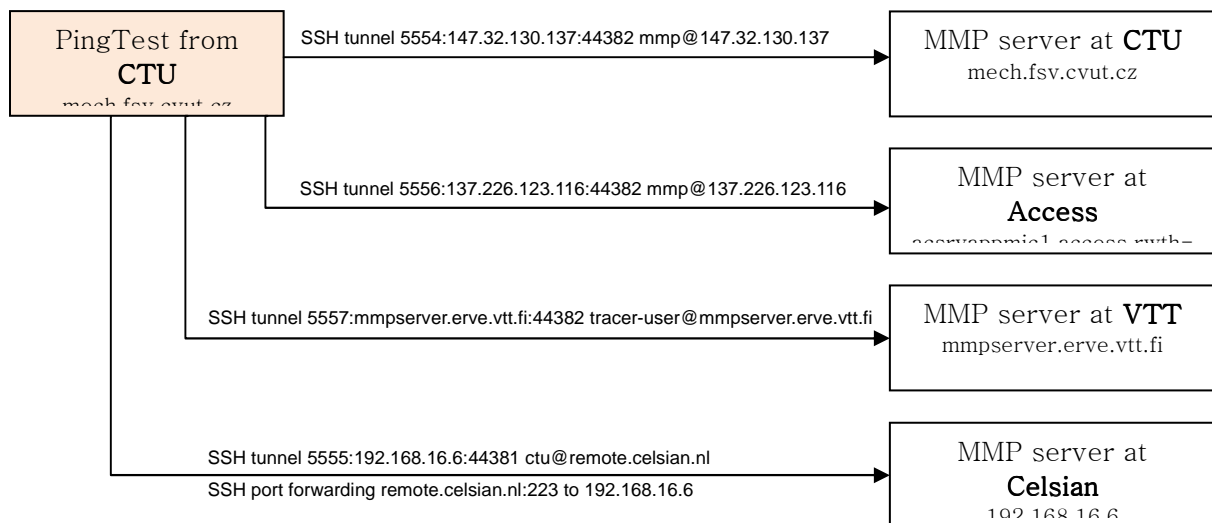


Figure 1: Ping test set-up between master node and remote servers.

Each partner had to run its application instance implementing the API. We used only a function `getApplicationSignature()` for host identification without further data transfer. The following output summarizes connections to servers at CTU, Access, VTT, and CelSian. Delay for 1 s is artificially introduced to allow the proper setup of an SSH tunnel. However, the overall connection time is excellent, as is shown in Figure 2.

```
=====SUMMARY=====
Successfully connected to CTU-server@mech.fsv.cvut.cz version 1.0 (1.12 s)
Successfully connected to Micress@acsrvappmic1 version 6.250 (1.24 s)
Successfully connected to MMP-Raytracer@MMPServer version 1.0 (1.41 s)
Successfully connected to Celsian@Grafeen.celsian.local version 1.0 (1.12 s)
Total time consumed 5.201307 s
Ping test finished
```

Figure 2. Results from the ping test.

2. Conclusion

The design of the MMP platform was adjusted before the final ping test execution to ensure smooth operation on different OS. Functions for setting up ssh tunnels were enhanced, allowing a third-party firewall with port forwarding.

The communication test (ping test) from master node to all simulation tools at remote locations was performed successfully.

The ping test was described also in deliverables D4.8 (Internal Workshop 2) and D6.2 (Intermediary Progress Report 2).