4CaaSt - Building the PaaS Cloud of the Future

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4CaaSt

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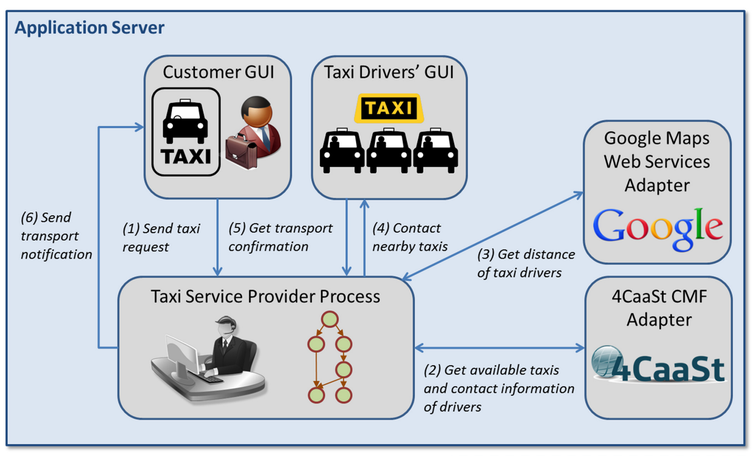
ESB^{MT}: Developing a Multi-tenant ESB Solution as a Building Block for the 4CaaSt Platform

Multi-tenancy, ***the sharing of the whole technological stack by different consumers at the same time***, allows service providers to maximize resource utilization and reduce servicing costs per customer. Essential components of the contemporary enterprise environment like the *Enterprise Service Bus (ESB)* are therefore required to raise to the challenge of supporting and enabling multi-tenancy.

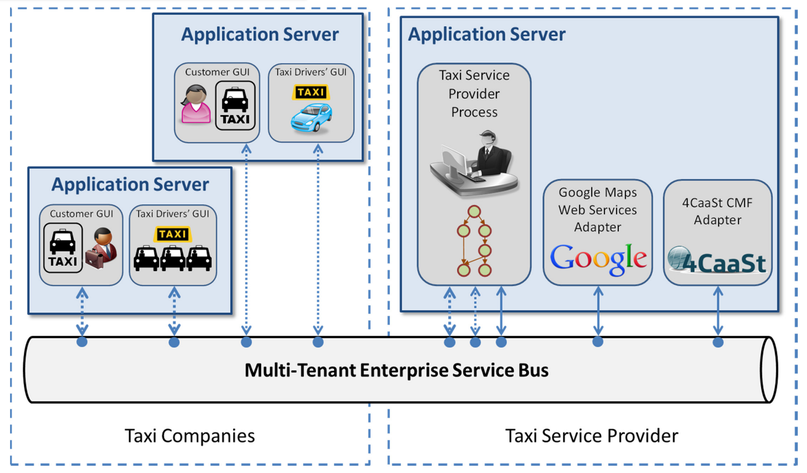
Addressing the requirements for multi-tenant ESB solutions as fundamental building blocks in the Platform as a Service (PaaS) Cloud delivery model, we propose **ESB^{MT}**, a solution for dealing with multiple tenant contexts on the level of middleware. ESB^{MT} is an implementation-agnostic multi-tenant aware ESB architecture that we instantiate based on the Apache ServiceMix ESB open source solution.

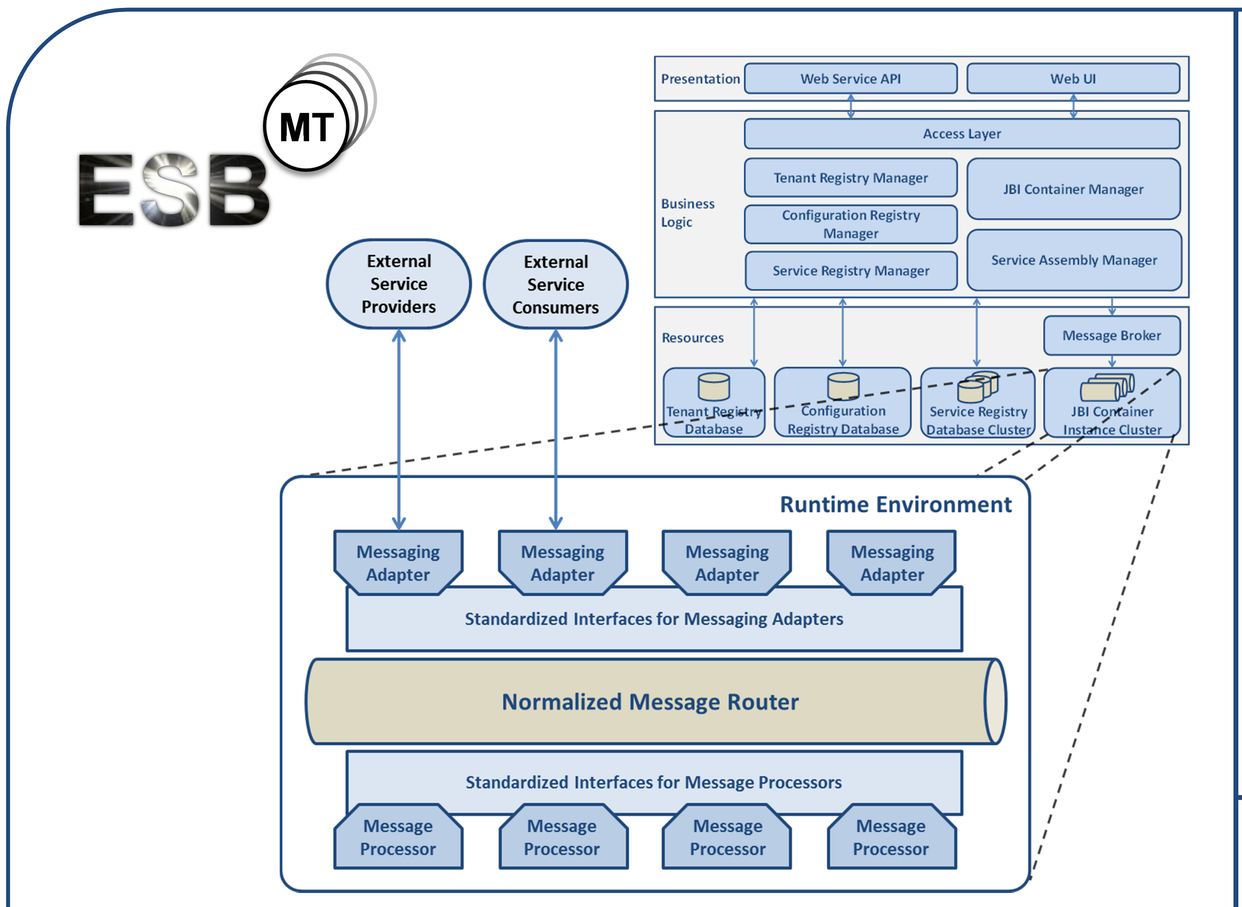
In the scope of 4CaaSt, the **Taxi Scenario** use case has been defined, where a service provider offers a *taxi management software as a service* to different taxi companies, i.e., ***tenants***. Taxi company customers, who are the ***users*** of the tenant, submit their taxi transportation requests to the company they are registered with. The taxi company uses the taxi management software to contact nearby taxi drivers. Once one of the contacted taxi drivers has confirmed the transportation request, the taxi management software sends a transport notification containing the estimated arrival time to the customer.

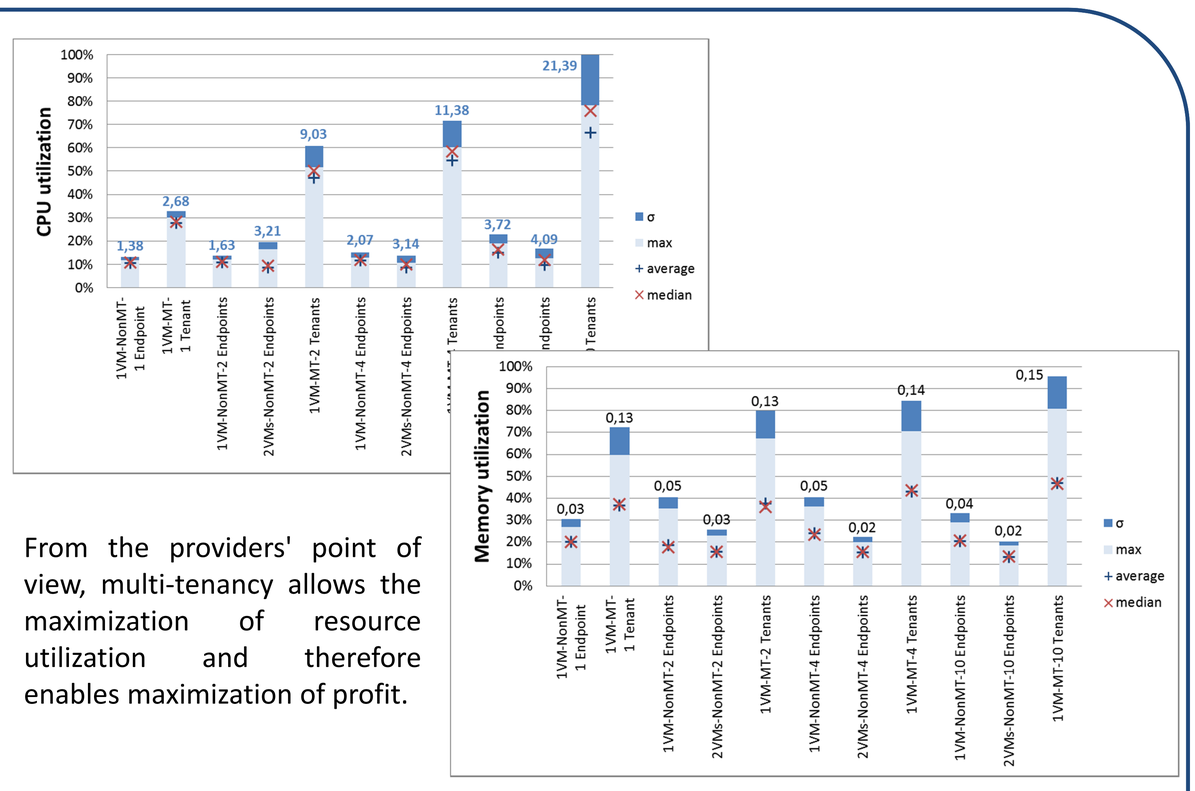


Before the introduction of ESB^{MT}

After the introduction of ESB^{MT}

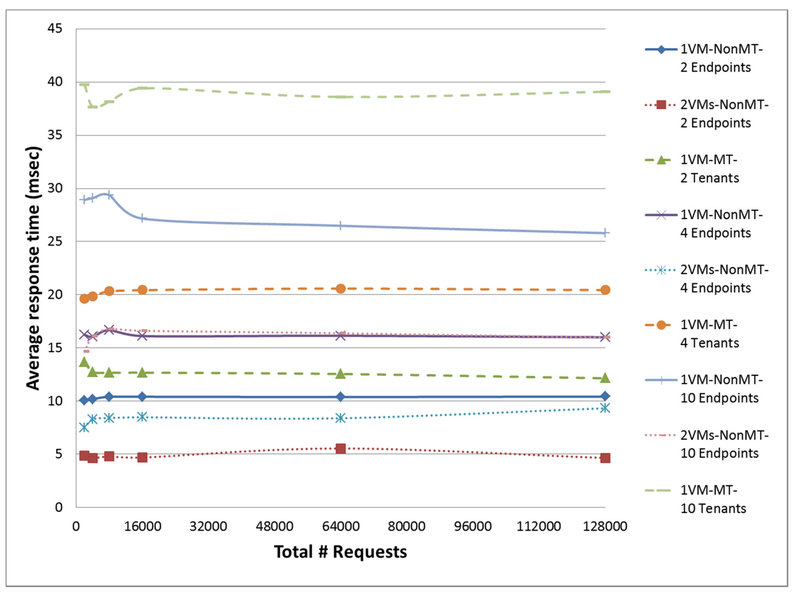


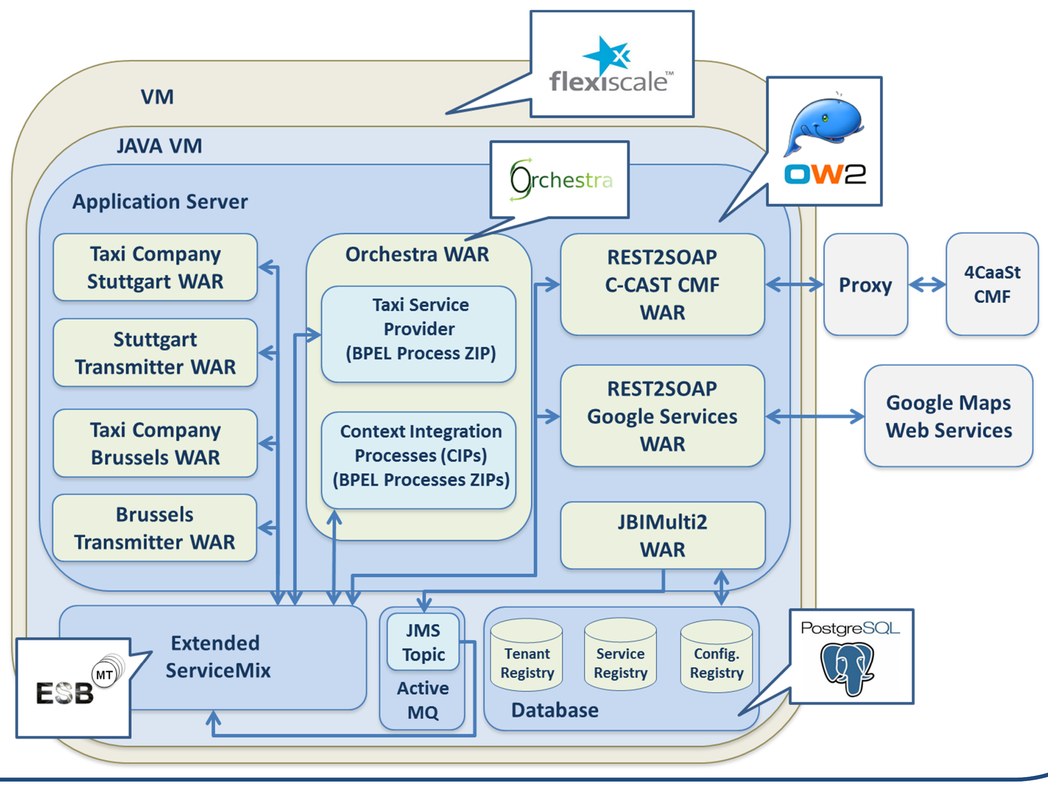




From the providers' point of view, multi-tenancy allows the maximization of resource utilization and therefore enables maximization of profit.

For service consumers, multi-tenancy has to be largely transparent, apart from providing access credentials when using the service or application. More importantly, consumers must have the impression that they are the only ones using the multi-tenant service or application, without suffering from side effects caused by other consumers regarding, e.g., quality of services.





Further Information

Selected Publications

Garcia-Gomez, Sergio, et al. "Challenges for the comprehensive management of Cloud Services in a PaaS framework." *Scalable Computing: Practice and Experience* 13.3, 2012.

Strauch, Steve, Vasilios Andrikopoulos, Santiago Gómez Sáez, and Frank Leymann. " ESB^{MT} : A Multi-tenant Aware Enterprise Service Bus." *International Journal of Next-Generation Computing*, 2013 (to appear).

Strauch, Steve, Vasilios Andrikopoulos, Santiago Gómez Sáez, Frank Leymann, and Dominik Muhler. "Enabling Tenant-Aware Administration and Management for JBI Environments." In *5th IEEE International Conference on Service-Oriented Computing and Applications (SOCA 2012)*, pp. 206-213, IEEE Computer Society, 2012.

Strauch, Steve, Vasilios Andrikopoulos, Frank Leymann, and Dominik Muhler. "ESB^{MT}: Enabling Multi-Tenancy in Enterprise Service Buses." In *4th IEEE International Conference on Cloud Computing Technology and Science (CloudCom 2012),* pp. 456-463, IEEE Computer Society, 2012.

Acknowledgments

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