

Service Combinators for Farming Virtual Machines

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Abstract. Management is one of the main expenses of running the server farms that implement enterprise services, and operator errors can be costly. Our goal is to develop type-safe programming mechanisms for combining and managing enterprise services, and we achieve this goal in the particular setting of farms of virtual machines. We assume each server is service-oriented, in the sense that the services it provides, and the external services it depends upon, are explicitly described in metadata. We describe the design, implementation, and formal semantics of a library of combinators whose types record and respect server metadata. We describe a series of programming examples run on our implementation, based on existing server code for order processing, a typical data centre workload.