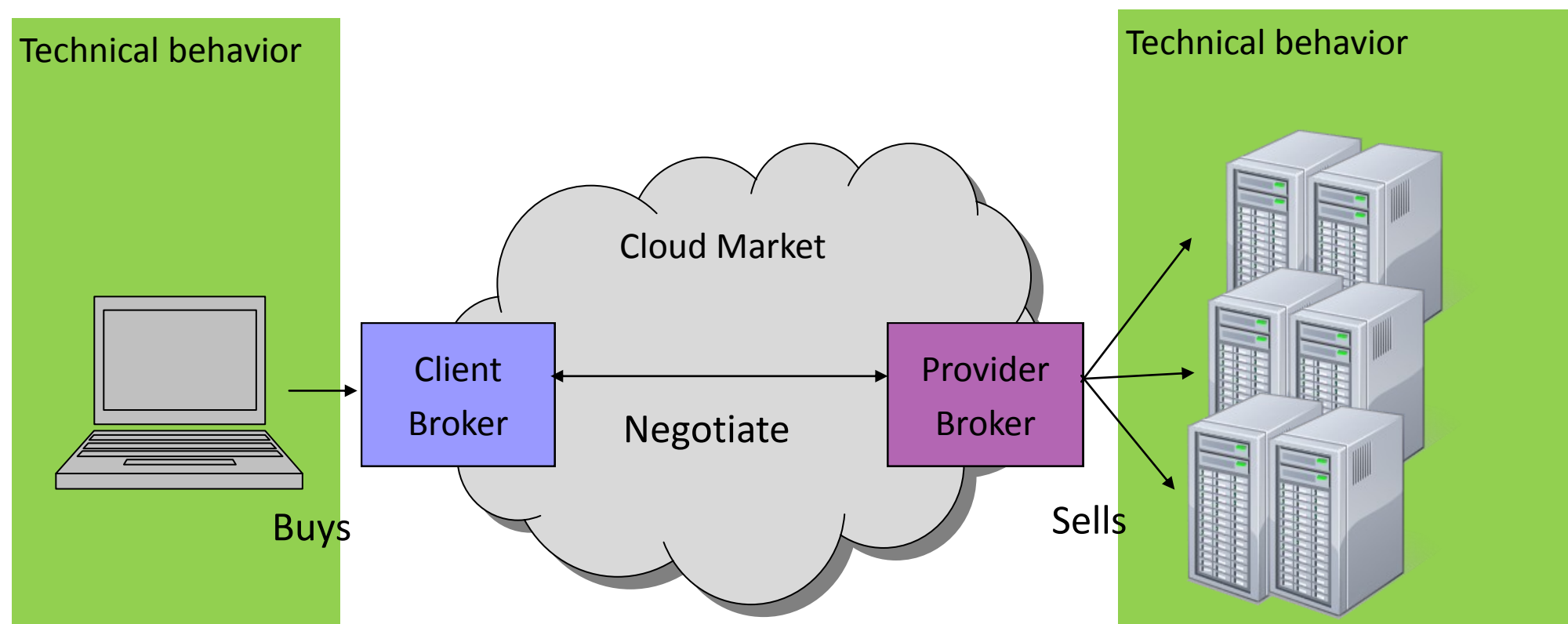


Rule-based SLA Management for Revenue Maximisation in Cloud Computing Markets

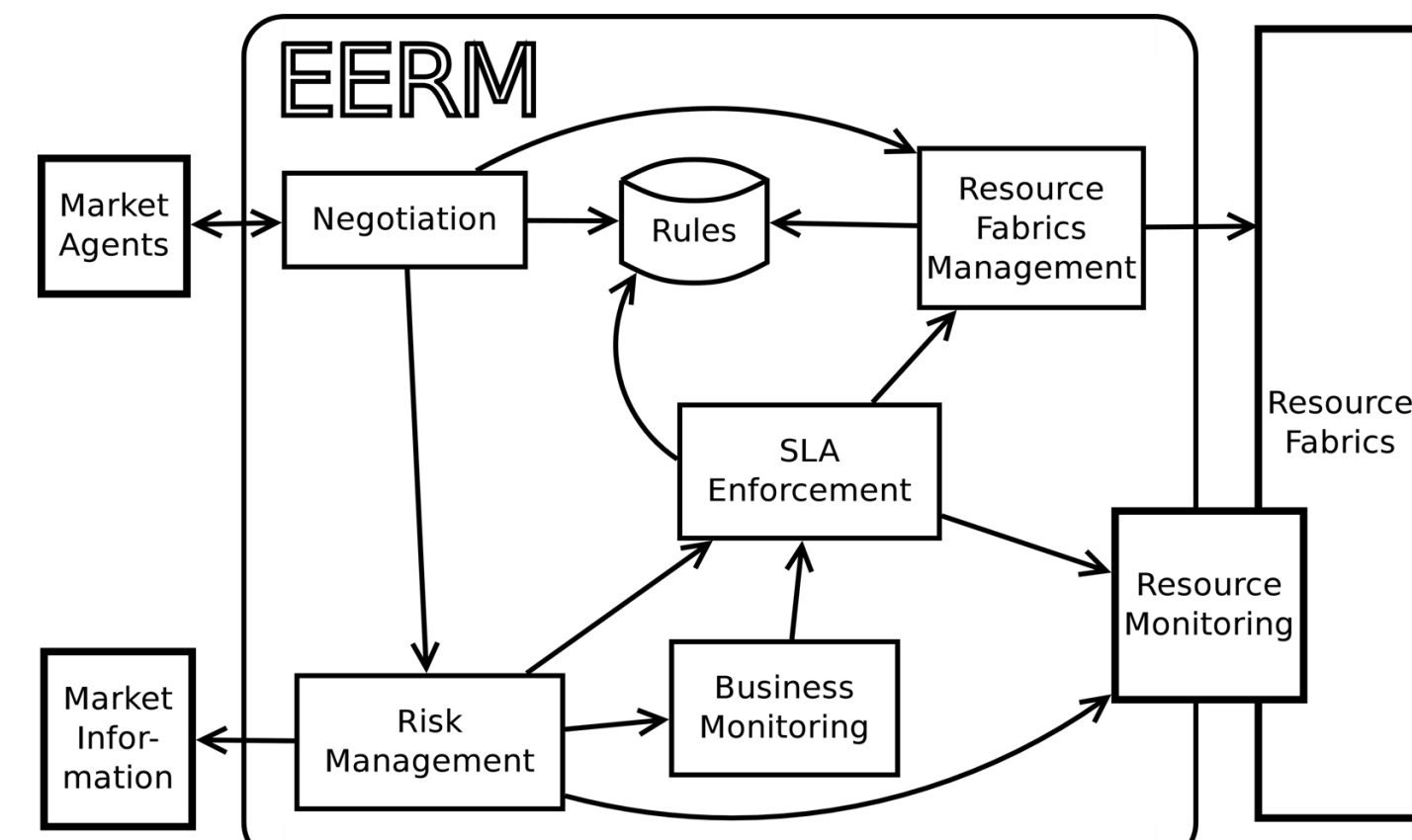
Mario Macías, J. Oriol Fitó and Jordi Guitart

Classical Utility Computing Markets



In current Market Implementations, brokers that sell resources make negotiations only consider economic decisions, without having any technical knowledge.

Economically Enhanced Resource Manager

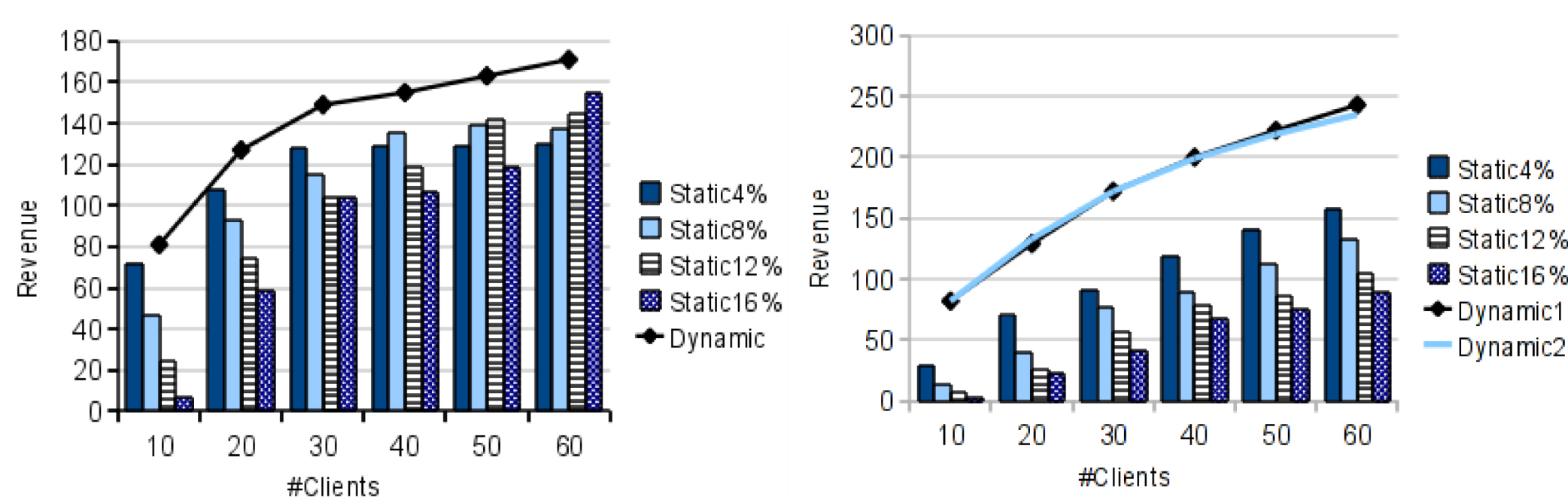


Our proposal is to add an intermediate layer between provider's broker and Resource fabrics to enable bidirectional communication: SLA negotiations are more accurate by considering the status of the Resource Fabrics; SLAs are managed by considering Business-Level Objectives. Every provider can customize its own SLA negotiation and management policies by means of a Rule engine.

Improvements of Rule-based SLA Management

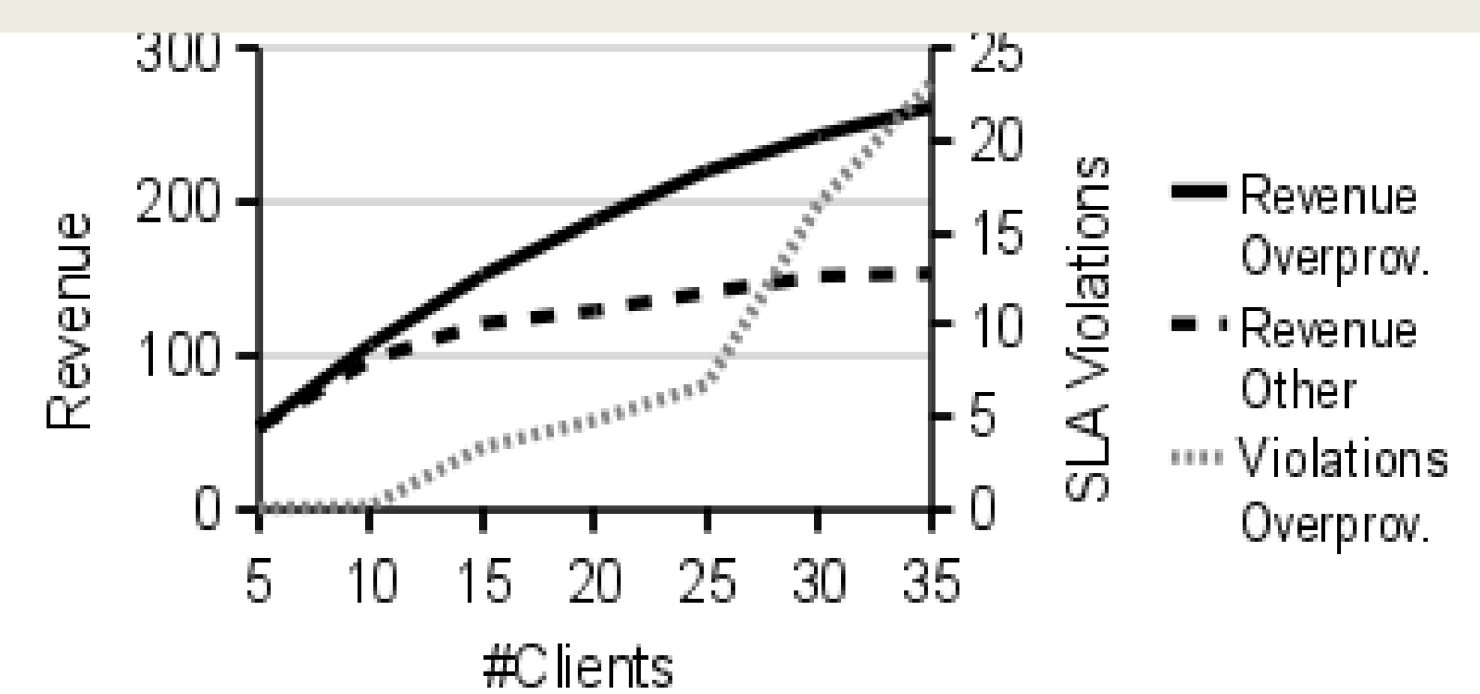
Dynamic Pricing

Brokers ask for variable prices in function of the status of the resources, and workload predictions for the SLAs under negotiation.



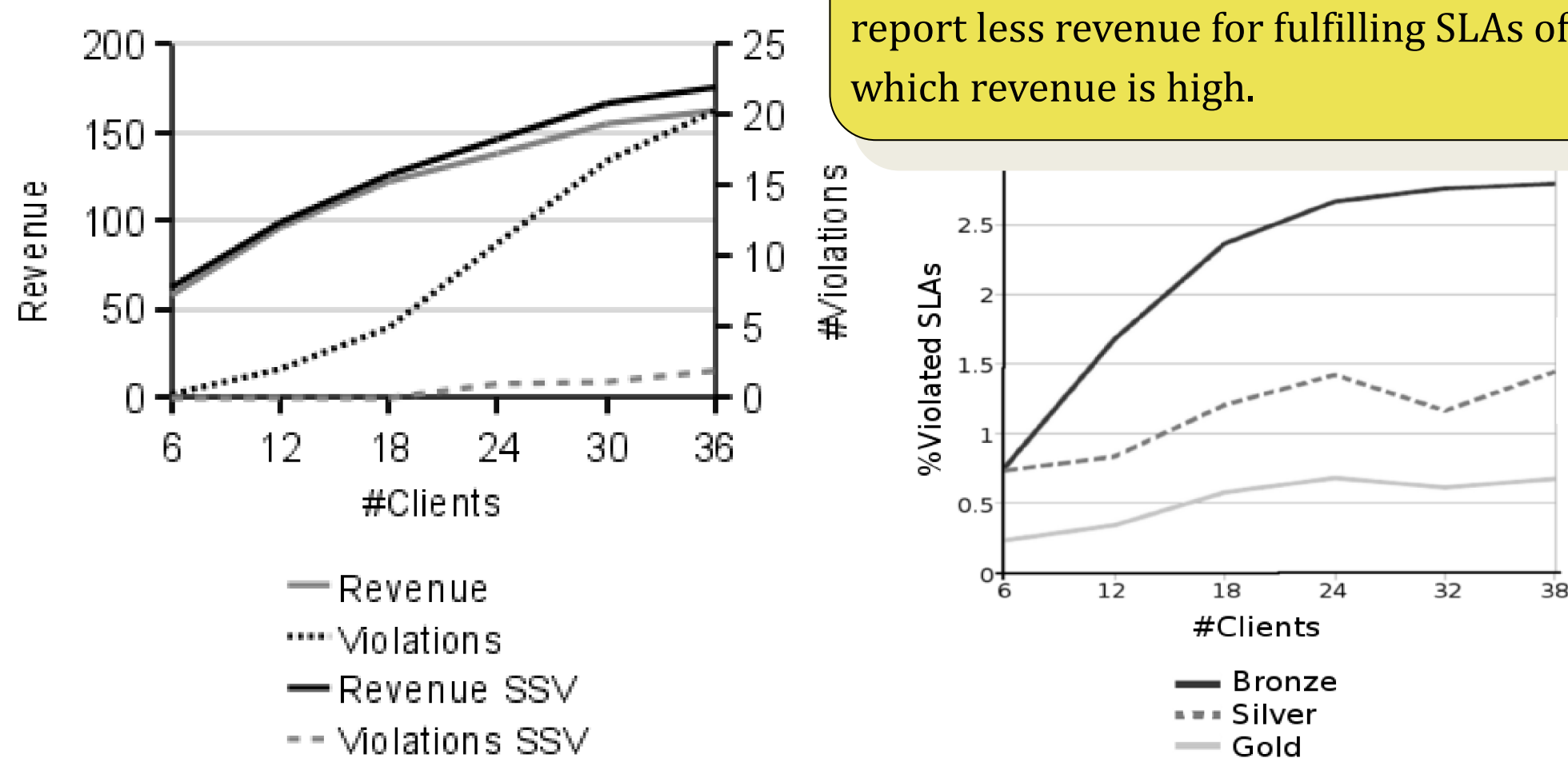
Resources OverProvisioning

Often, the clients does not use completely the resources that they purchase. Based on usage estimations, the broker could sell more resources than it actually has.



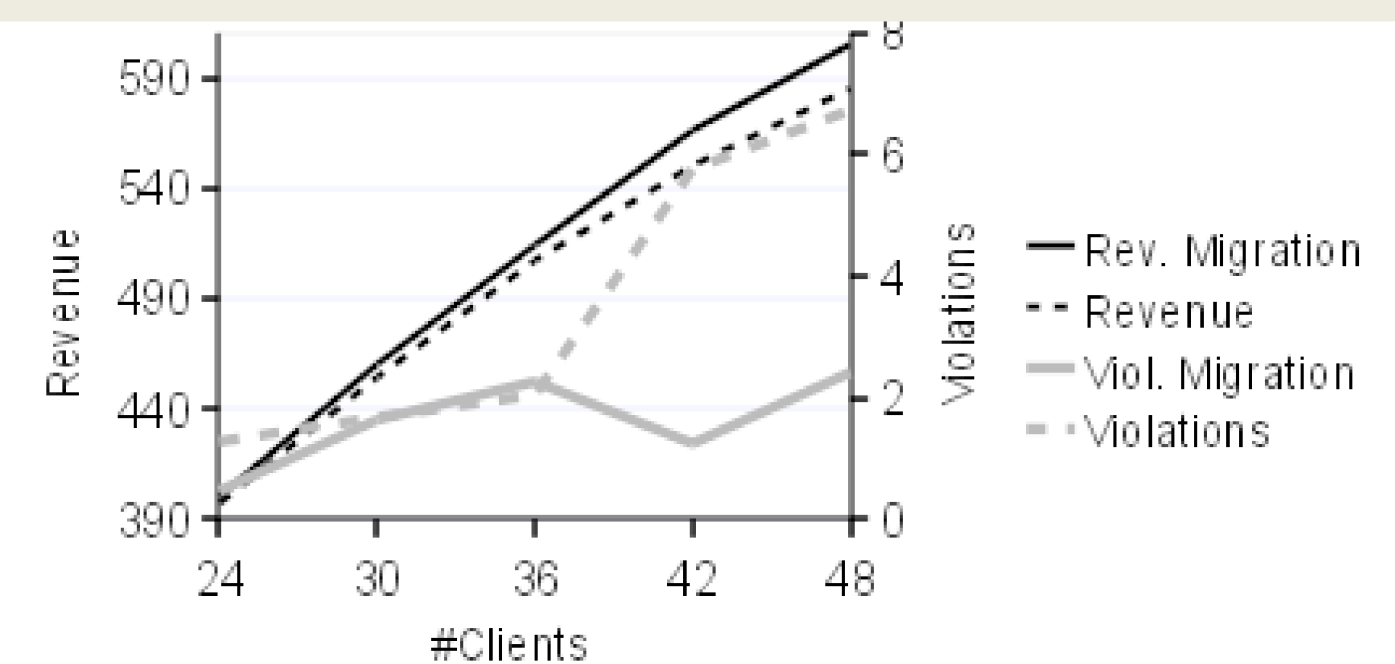
Selective SLA Violation

When the provider can not fulfil all the agreed SLAs, it selectively violates those that report less revenue for fulfilling SLAs of which revenue is high.



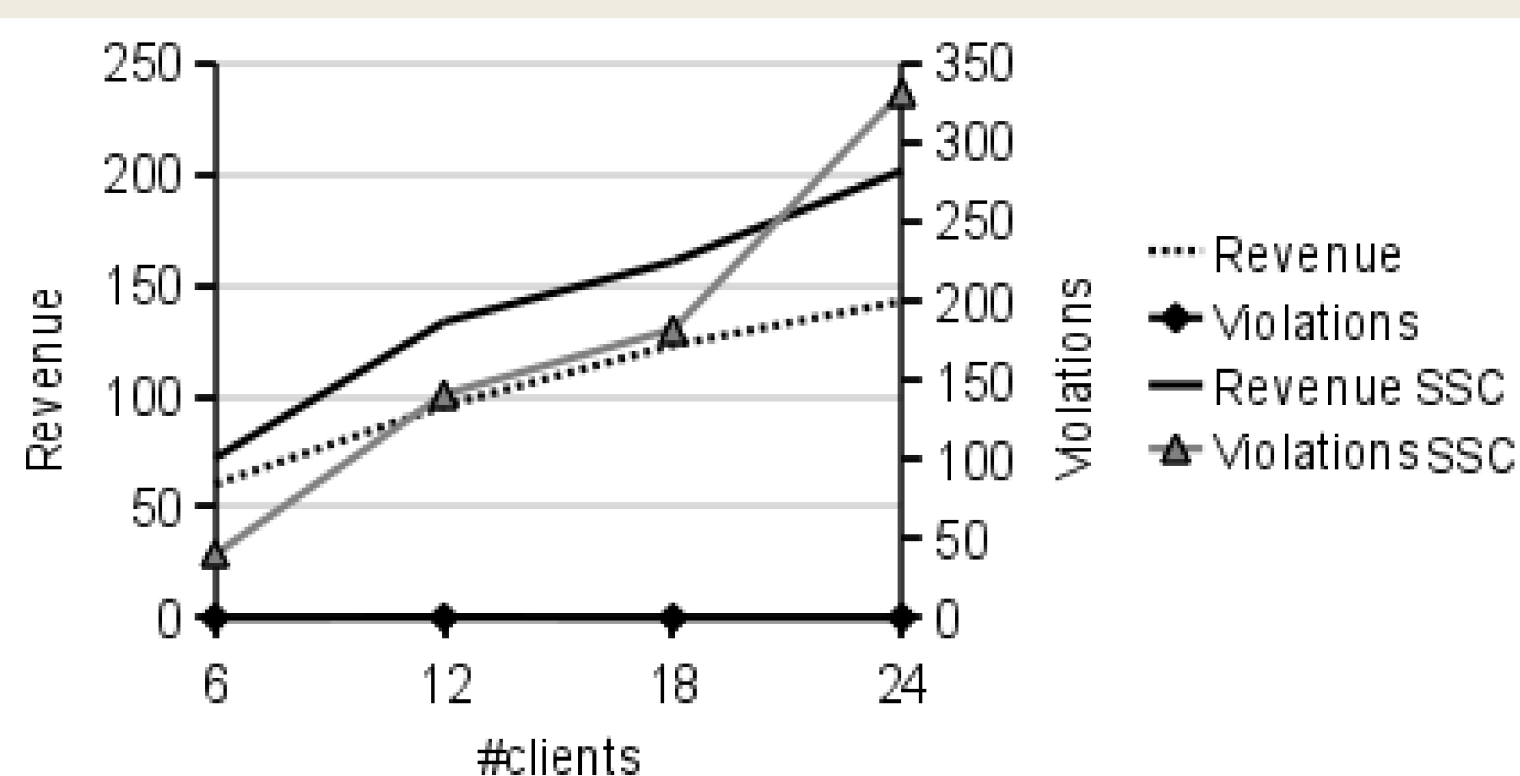
Tasks Reallocation

Virtualization provides the possibility of migrating tasks contained in Virtual Machines to other Physical resources in the testbed. Tasks whose SLA is in risk of violation can be migrated to idle machines.



Selective SLA Cancellation

Under certain situations, such as massive resource failures, the provider can choose which SLAs will be completely cancelled for minimising the economic impact.



Reassignment of allocated resources

Virtualization allows to dynamically scale up and down the resources assigned to a task. Resources that are not being used by a client are temporarily assigned to other tasks whose SLAs are about to be violated.

