

SLIM

Secure Logical Isolation for Multi-Tenancy in Cloud Storage

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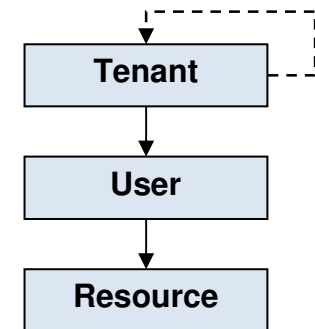
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Goal

Enable safe application level multi-tenancy for cloud storage systems

What is a tenant?

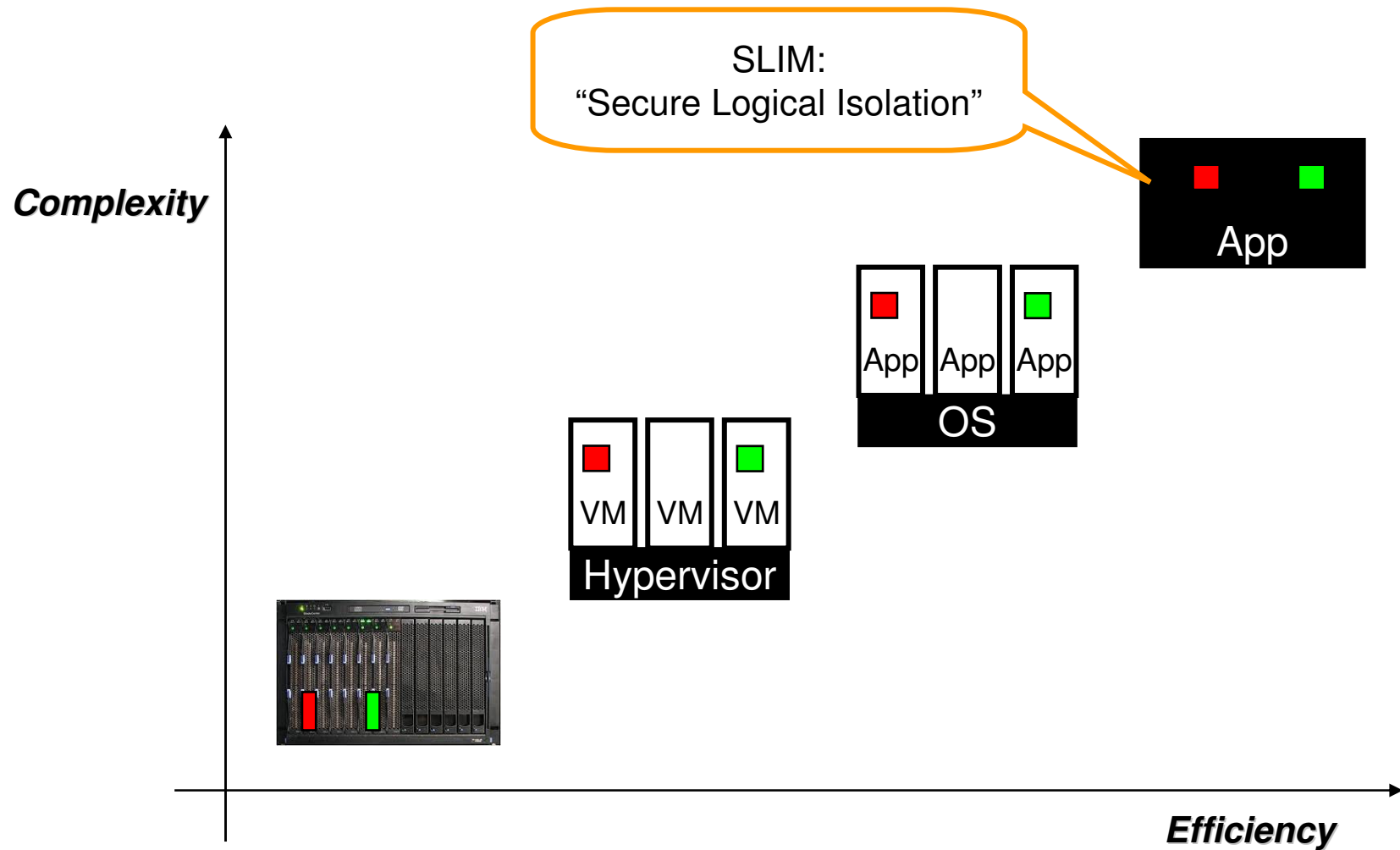
An entity that owns a set of resources and has a set users. Users of a tenant can access its resources subject to authorization constraints.



What is multi-tenancy?

Pooling system resources to serve multiple tenants while providing isolation between them

Increasing multi-tenancy efficiency while preserving equivalent standard of security

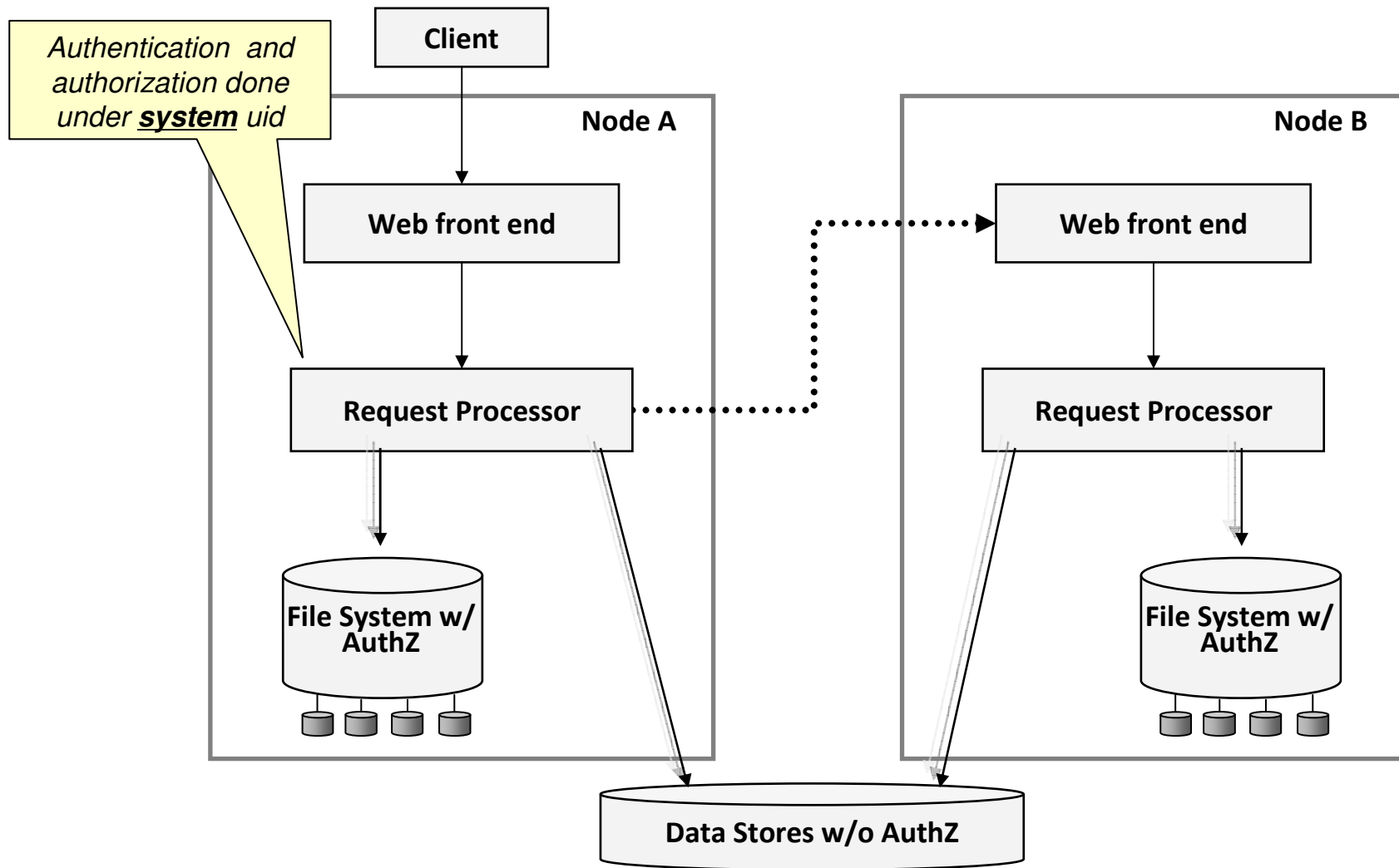


Primary threats we address

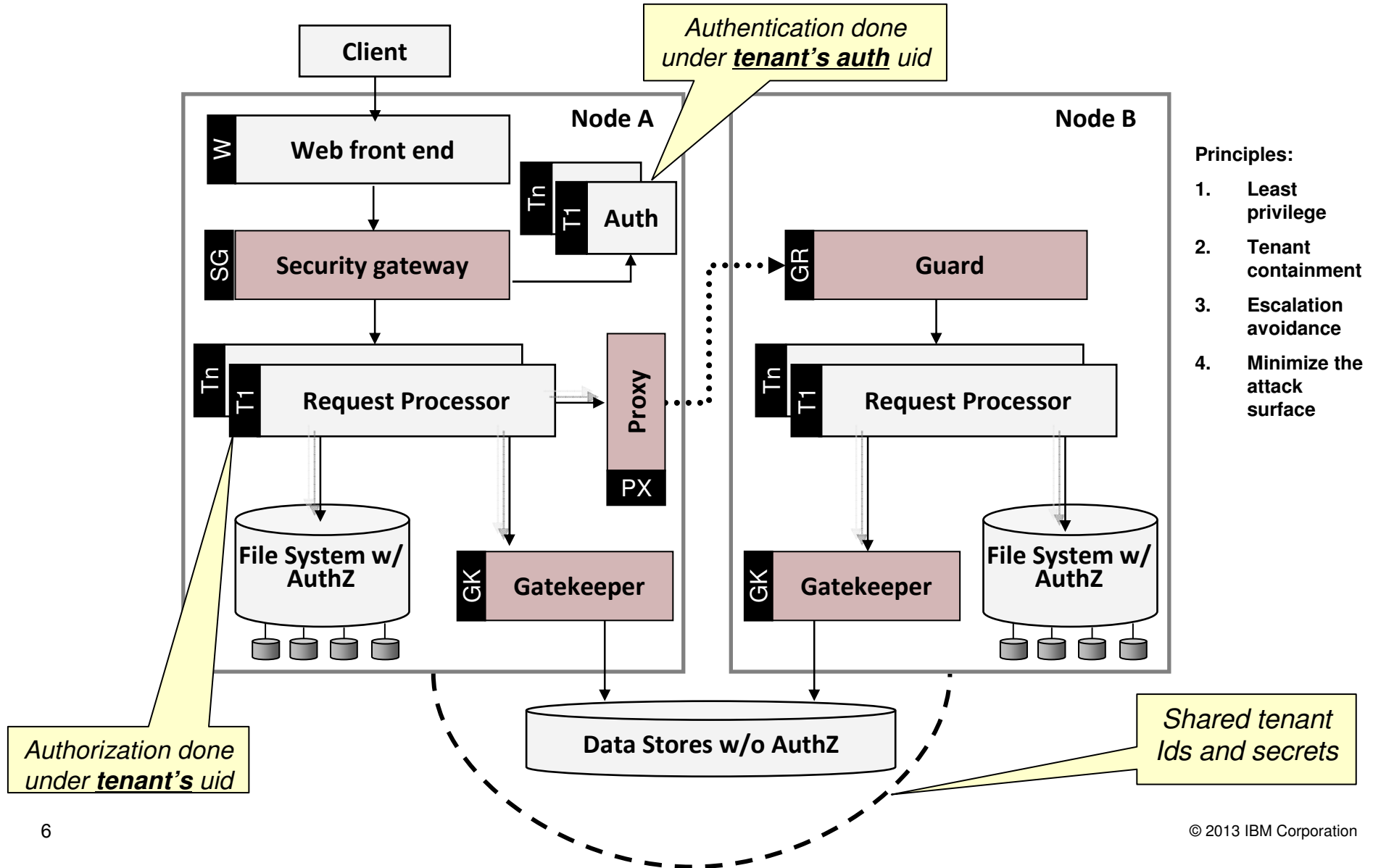


- ***One tenant user reads/writes/creates/deletes/modifies data of a second tenant***
 - A malicious user with access to a tenant attacks the service and/or other tenants

Typical storage cloud architecture



Storage cloud architecture with SLIM



SLIM Summary

- ***Security model and principles for the safe logical isolation of tenant resources***

- ***Developed three new techniques for secure tenant isolation in storage clouds***
 - Establish privilege separation at the service entrance
 - Ensure privilege separation for shared data stores
 - Ensure distributed privilege separation

- ***Implement for OpenStack Swift***
 - Initial performance analysis
 - Security analysis

- ***Future: analyze and address performance issues***