Cloud Networking
Multi-Tenant Data Centers: The Challenges

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Key Needs

Agility

Strength

Constitution

Dexterity

Charisma

Key Needs

Agility

Location independent addressing

Performance uniformity

Security

Network semantics

Agility

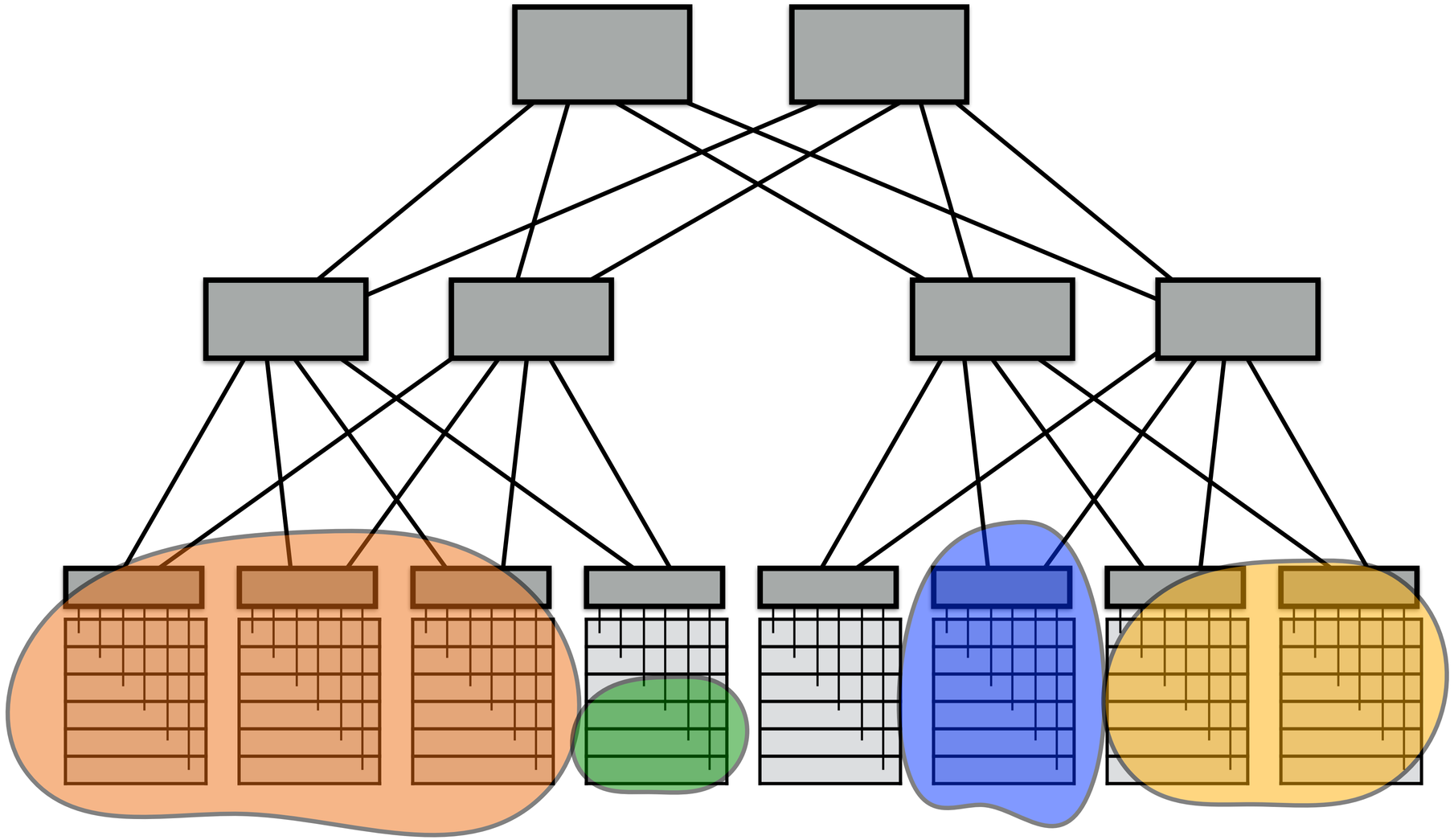
Agility: Use any server for any service at any time

- Better economy of scale through increased utilization
- Improved reliability

Service / tenant

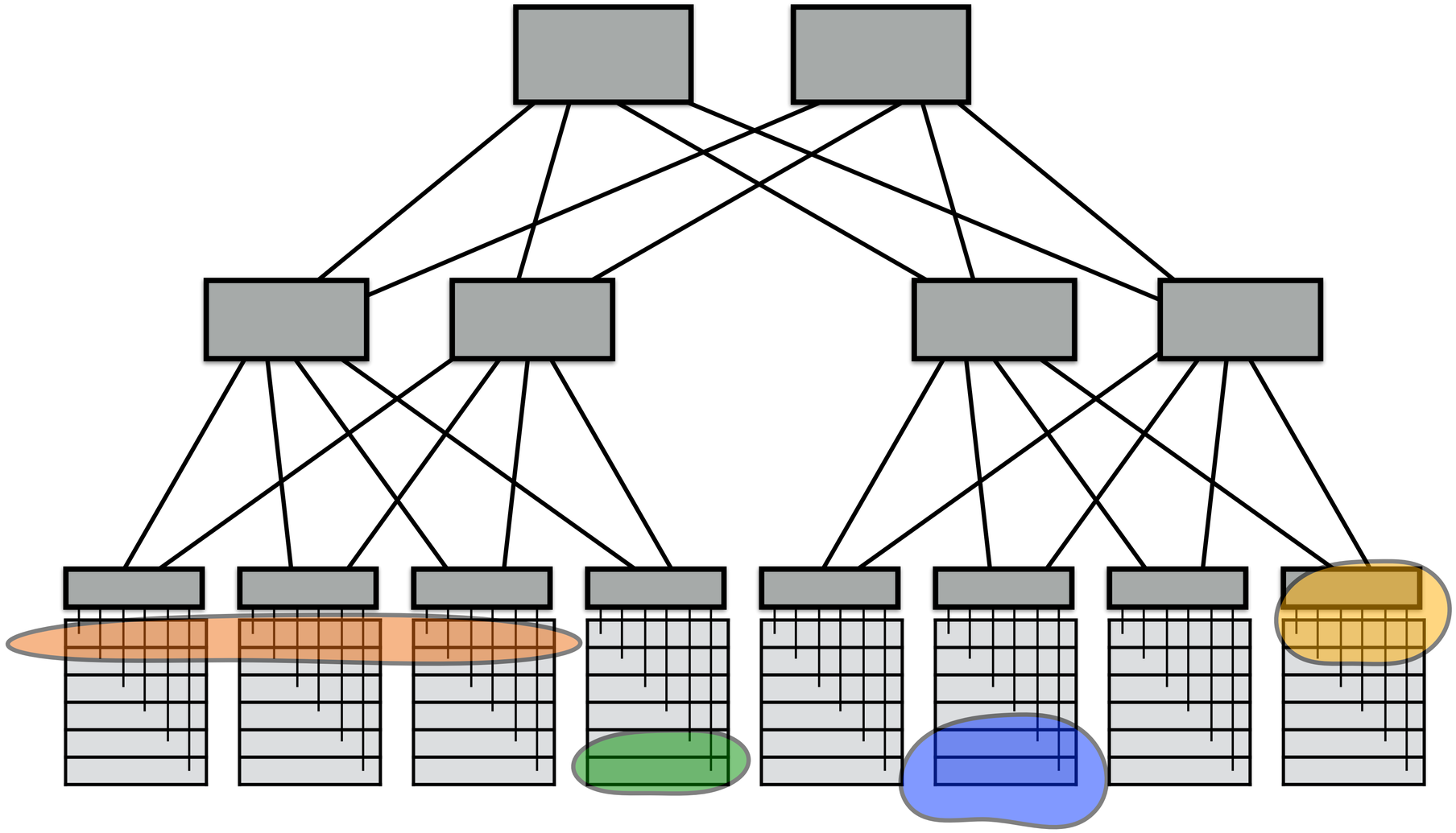
- Customer renting space in a public cloud
- Application or service in a private cloud (internal customer)

Lack of Agility in Traditional DCs



Tenants in “silos”

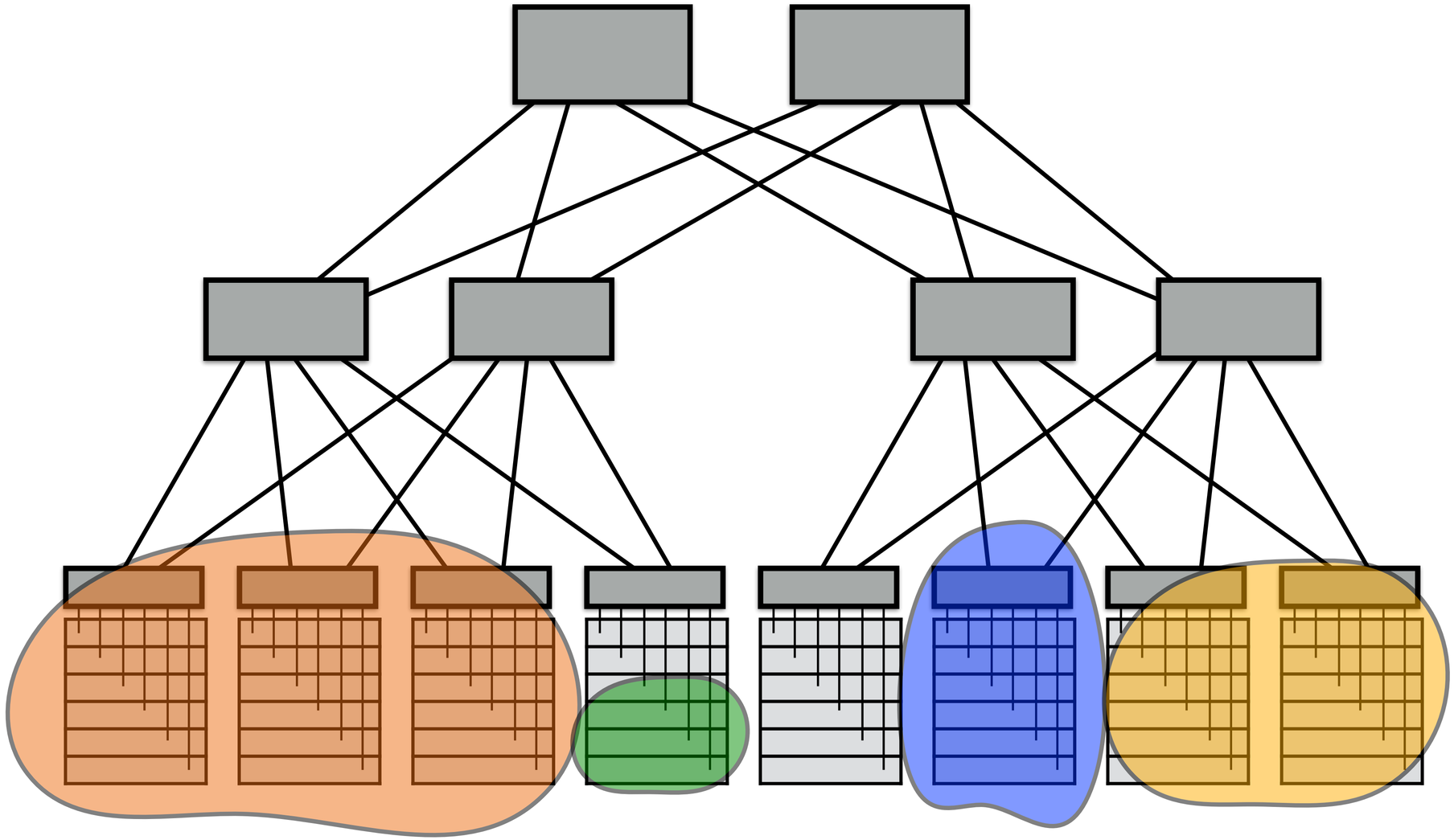
Lack of Agility in Traditional DCs



Tenants in “silos”

Poor utilization

Lack of Agility in Traditional DCs

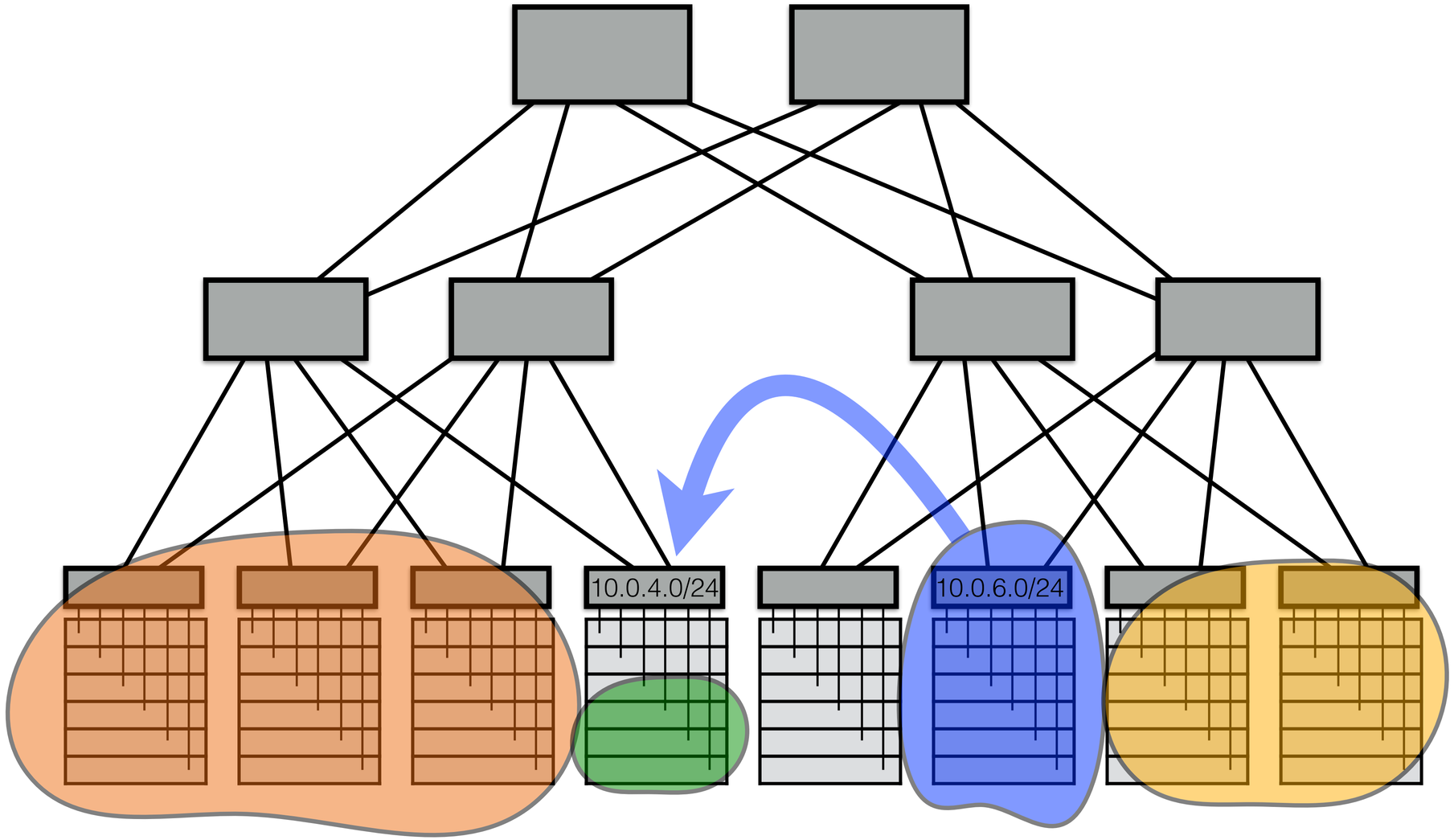


Tenants in “silos”

Poor utilization

Inability to expand

Lack of Agility in Traditional DCs



IP addresses locked to topological location!

Key Needs

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- Tenant's IP addresses can be taken anywhere

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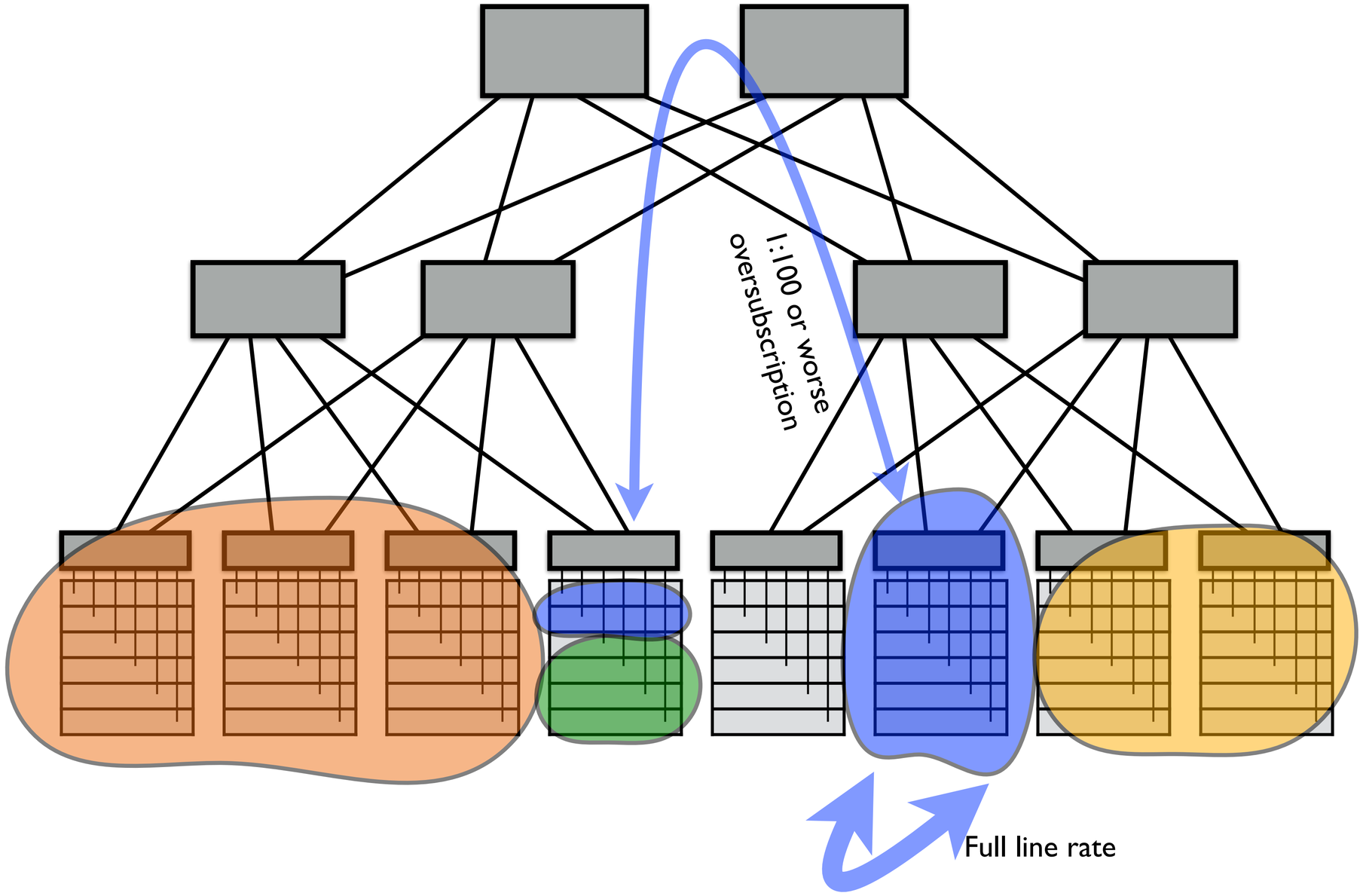

Nonuniform
performance

Key Needs

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Performance uniformity

- VMs receive same throughput regardless of placement

Security

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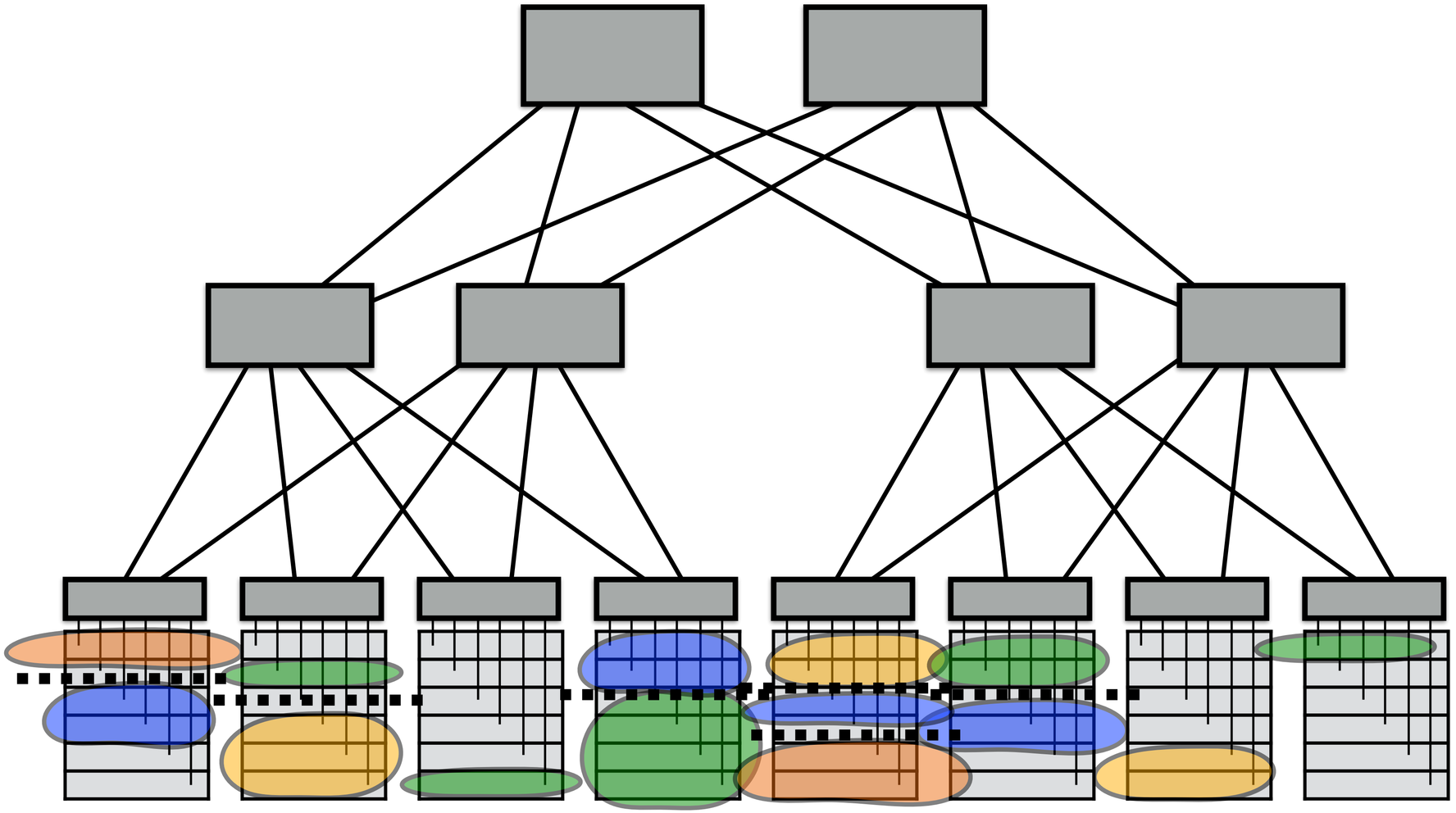

Untrusted environment

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- Micro-segmentation: isolation at tenant granularity

Network semantics

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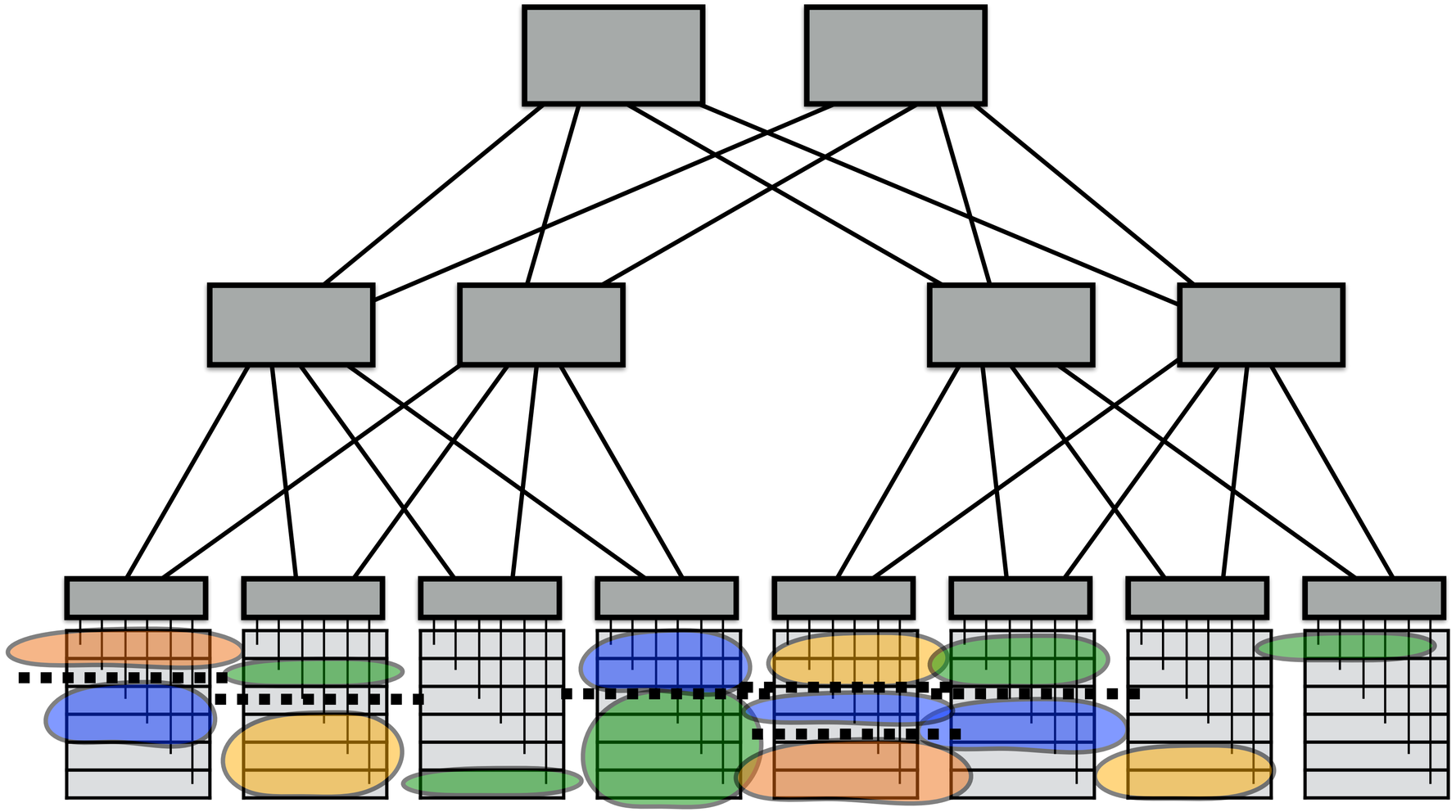

x 1000s of legacy apps in a large enterprise

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Network semantics

- Layer 2 service discovery, multicast, broadcast, …