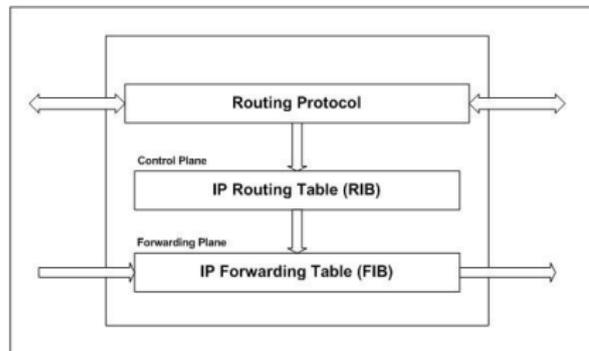


Concept

A *simplified* anatomy of a layer 3 router...



(<http://aftabsiddiqui.com/index.php/ip-routing-table-rib-and-forwarding-table-fib/>)

Routing table

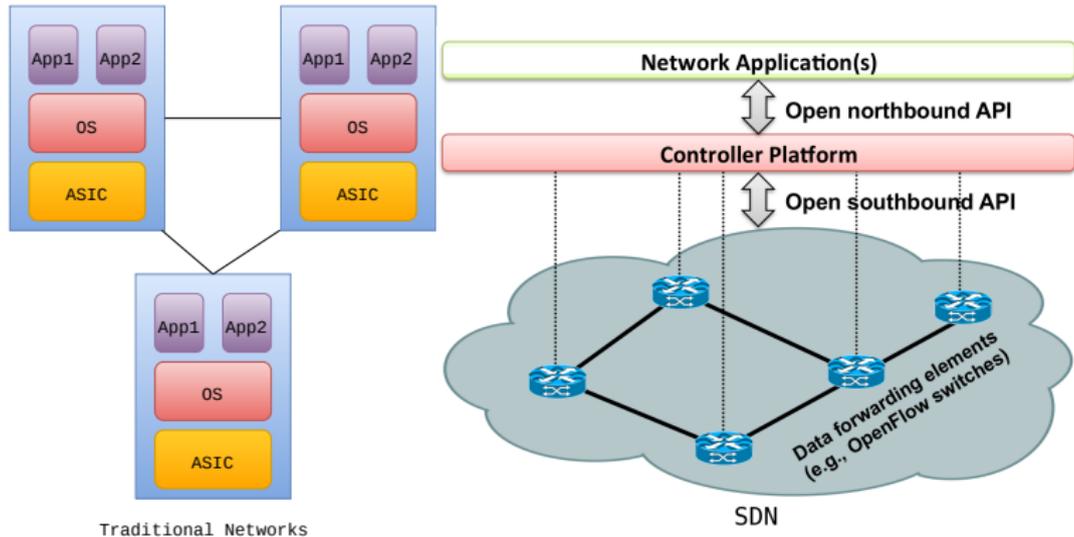
Dest	Next hop	Cost
192.168.0.0/16	192.168.1.1	3
10.0.0.0/8	10.1.0.0	2
192.168.2.0/28	0.0.0.0	0

Forwarding table

Dest	Out iface
192.168.0.0/16	eth1
10.0.0.0/8	eth2
192.168.2.0/28	eth3

Concept

A Network operating system.
Separate the *control plane* from the *data plane*



[1]



- If one of the red links is congested, apply rate-limiting to the authentication service
- If all red links are congested, migrate the authentication service to edge server 3
- Notification service -> ANY : BLOCK;
- Ticket Booking service <-> Authentication service : ALLOW;

Network security policy



Network controller

Container scheduler

Web API

Node Monitor

Security controller

VNF manager

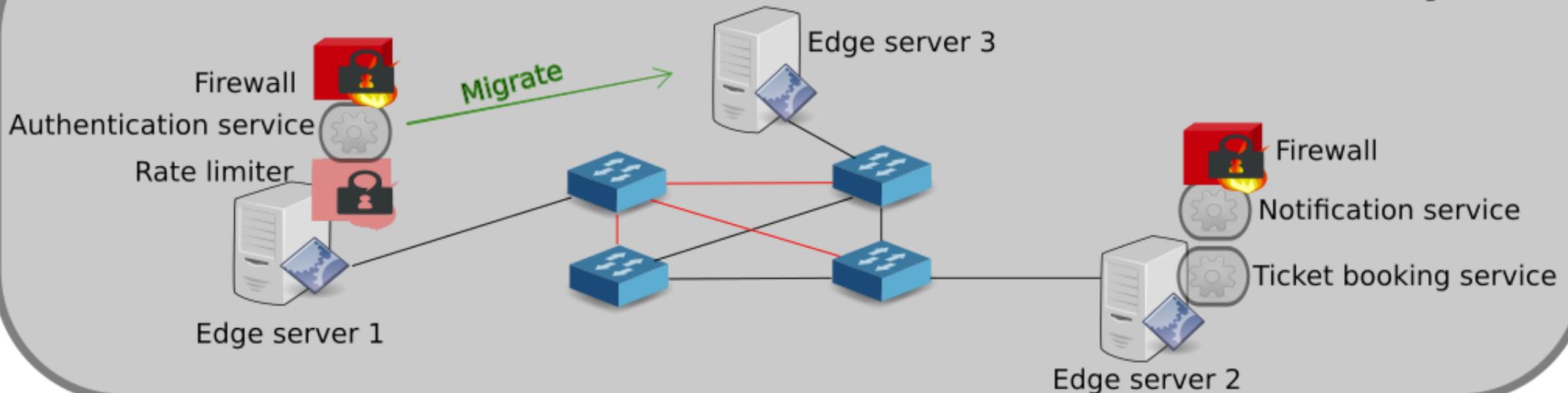
Database

Service monitor

Master orchestrator



Infrastructure layer





Containers and edge services

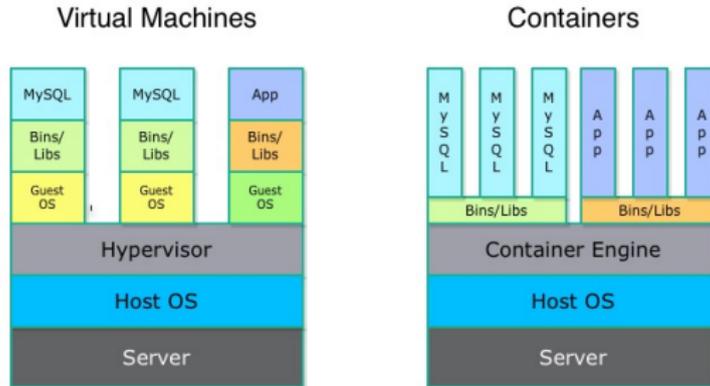


Figure: Containers vs VMs[2]



Utility models for edge clouds

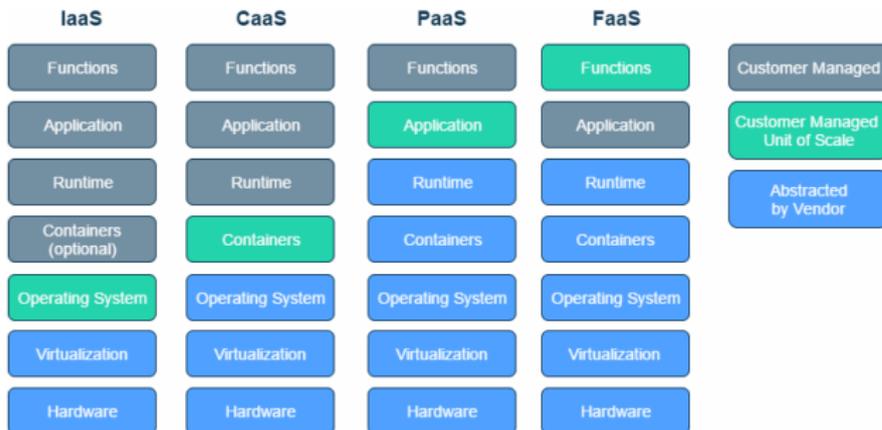
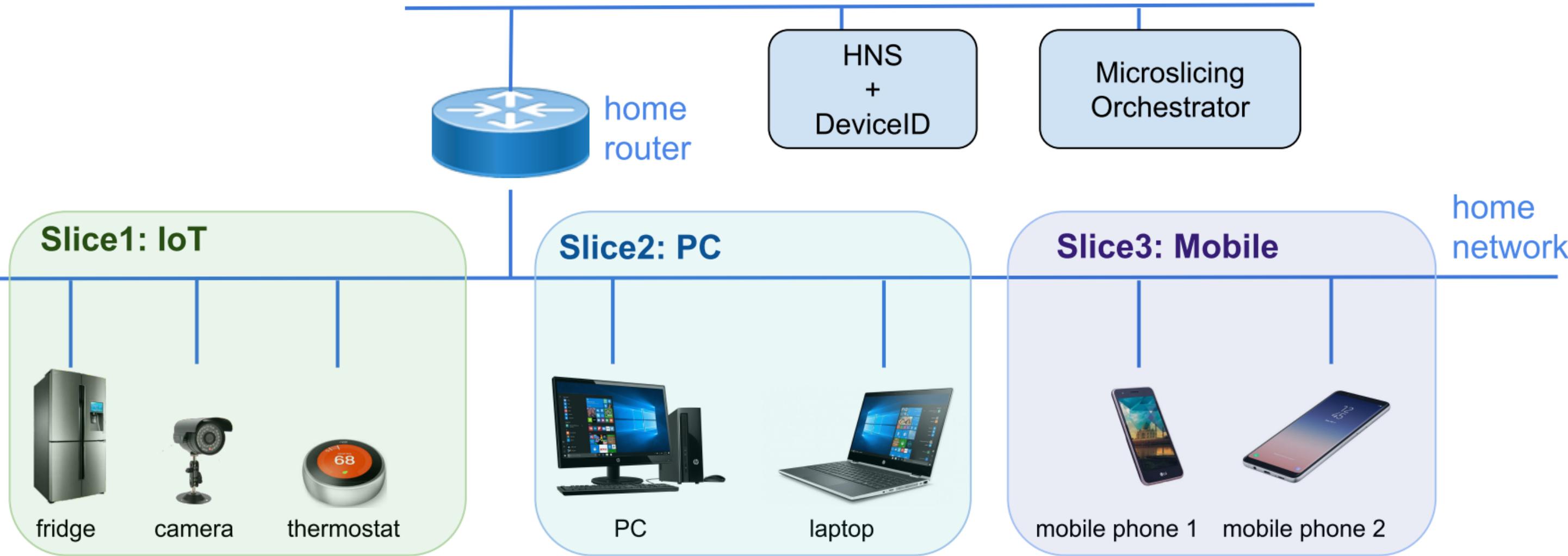
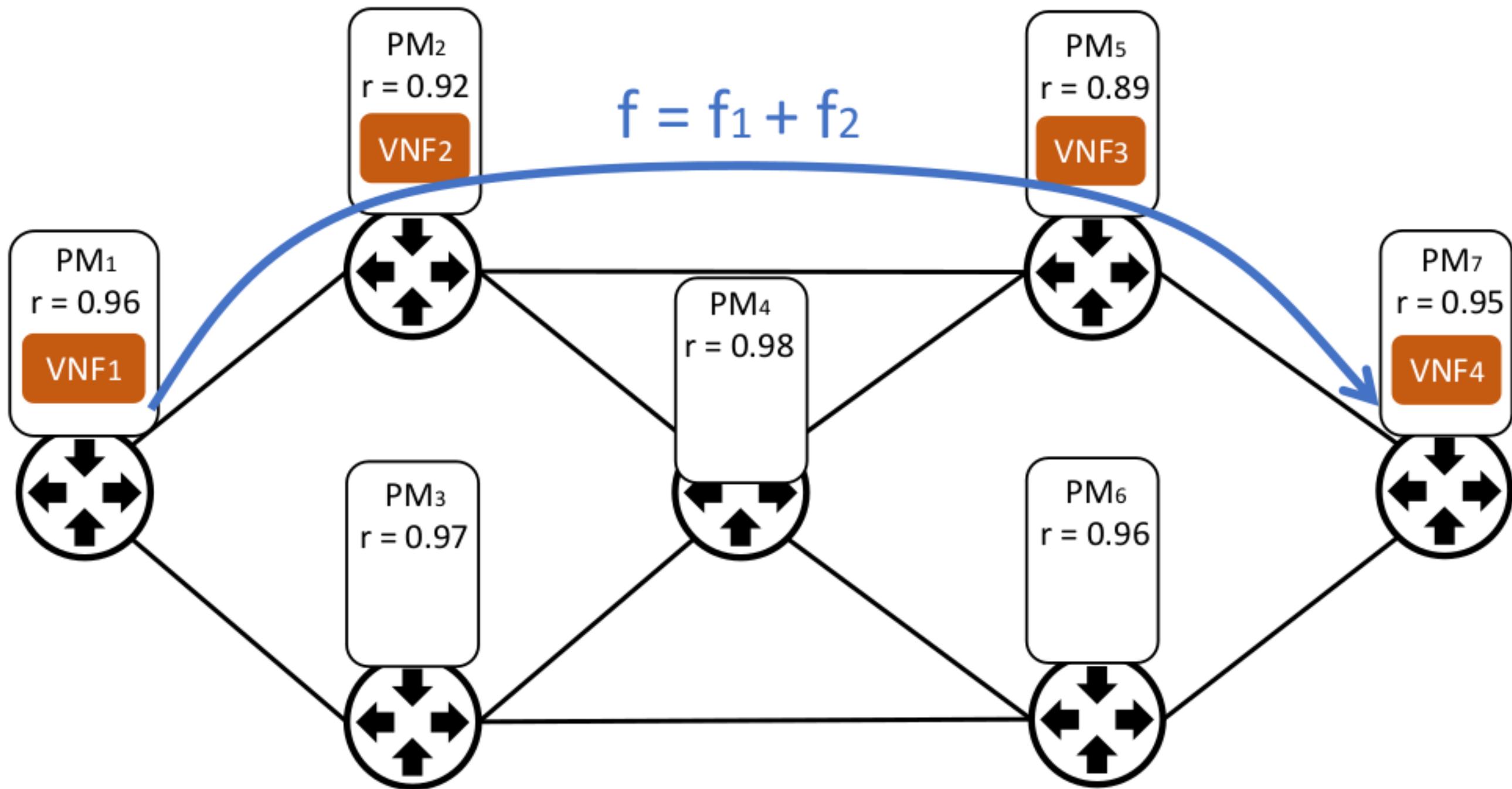


Figure: Containers as a unit of composition[6]



$$f = f_1 + f_2$$



EDGE

GATEWAY API

Middle tier client library doesn't support batching

Middle

Middle Tier Service
Middle Tier Service
Middle Tier Service
Middle Tier Service

Backend

Backend Tier Service
Backend Tier Service

Single request asking for 1,000 objects not in cache

Results in 2 RPC calls per object, or 2,000 RPC calls

Middle tier has to call 3 backend services, or 6,000 calls.