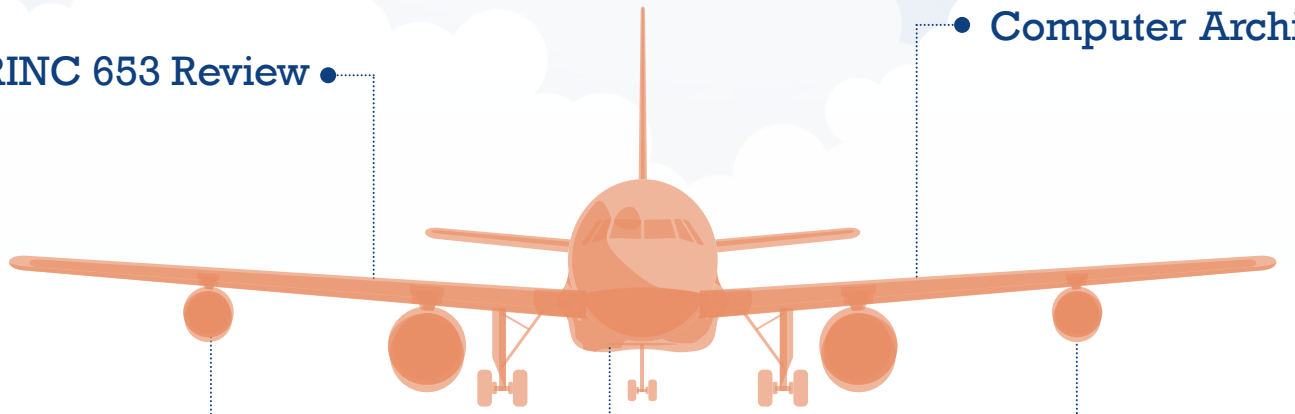
Fault Tolerant Technology

MULTI DOMAIN ARINC 653

AGENDA



- ARINC 653 Review
- Computer Architecture
- Malware
- Fault Tolerance
- Performance

ARINC 653

Operating System for the IMA

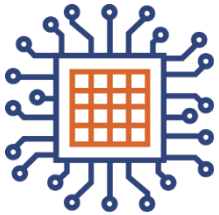
APplication EXecutive (APEX)

Spatial and Temporal Partitions

Health Monitor & Recovery

DRAWBACKS ARINC 653

CPU overhead



Complete partition failures

Malware vulnerabilities

Virtual systems are not immune to malware, despite what some people may believe.

Symantec

ANDROID APP GAINS CONTROL INSIDE AN AIRPLANE

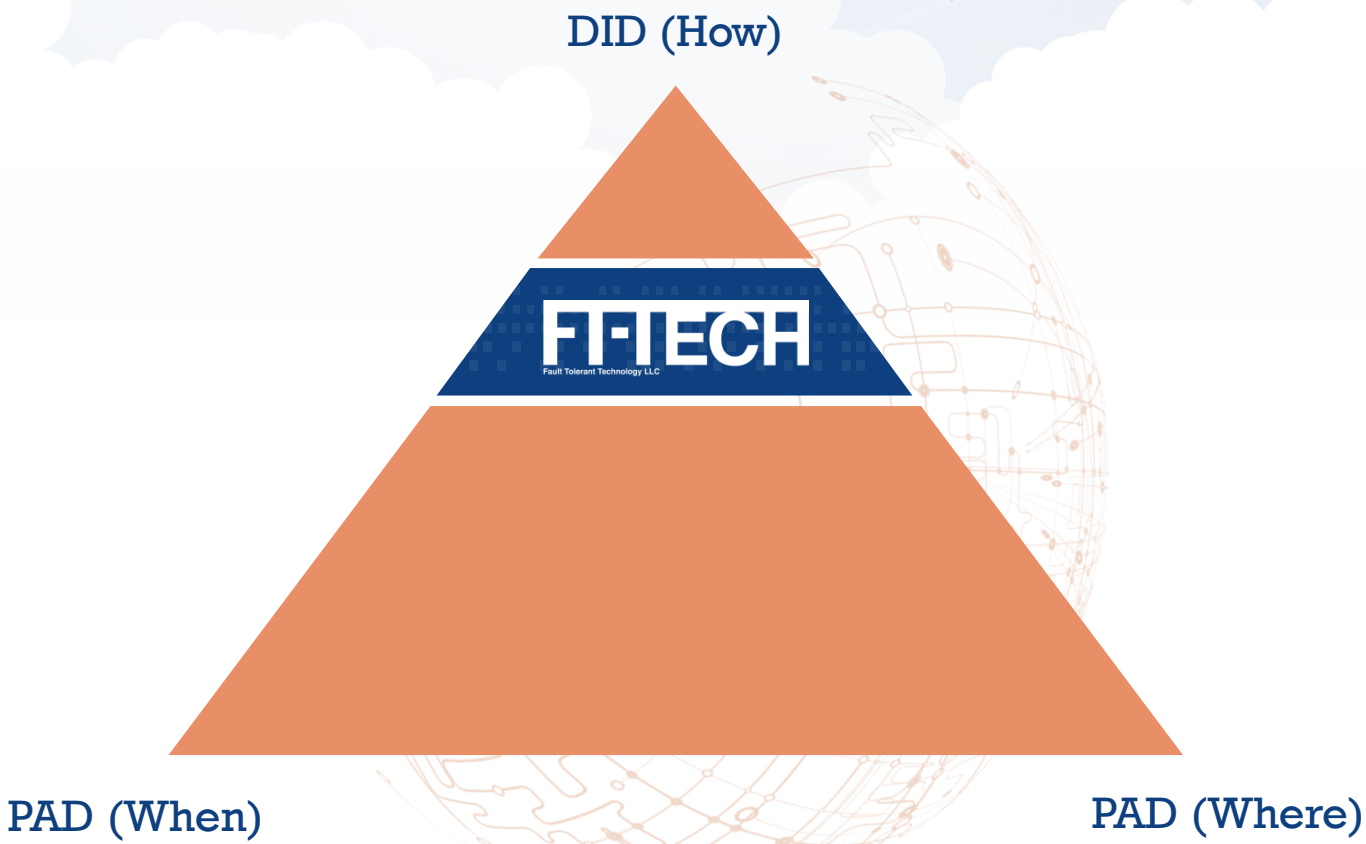
"It does not work on certified flight hardware"
FAA & EASA

Android malware spread to the planes only because employees were charging their phones with the USB port in the cockpit.

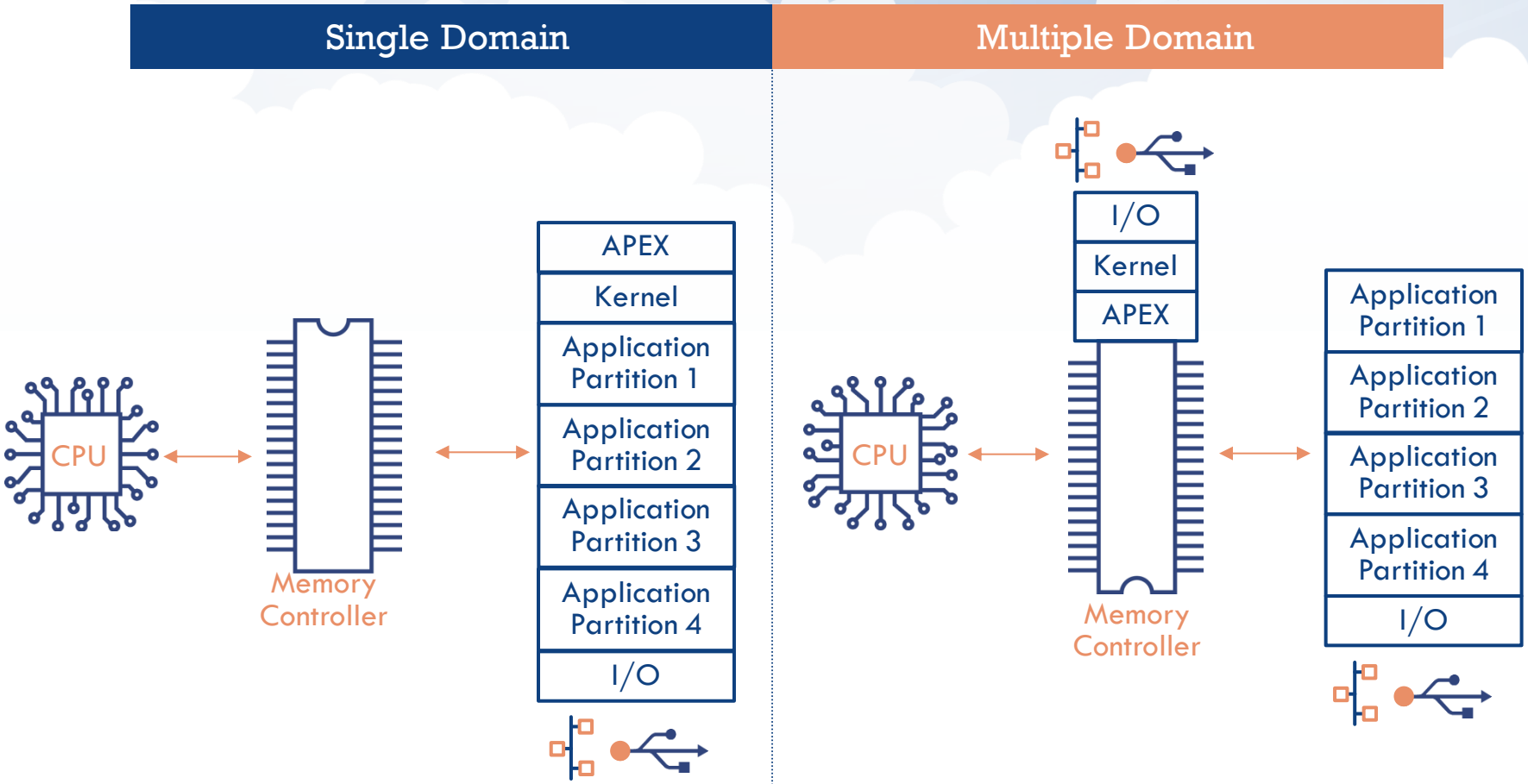
Mikko Hypponen

UNITED 737/800 HACKED

MULTI DOMAIN ARCHITECTURE



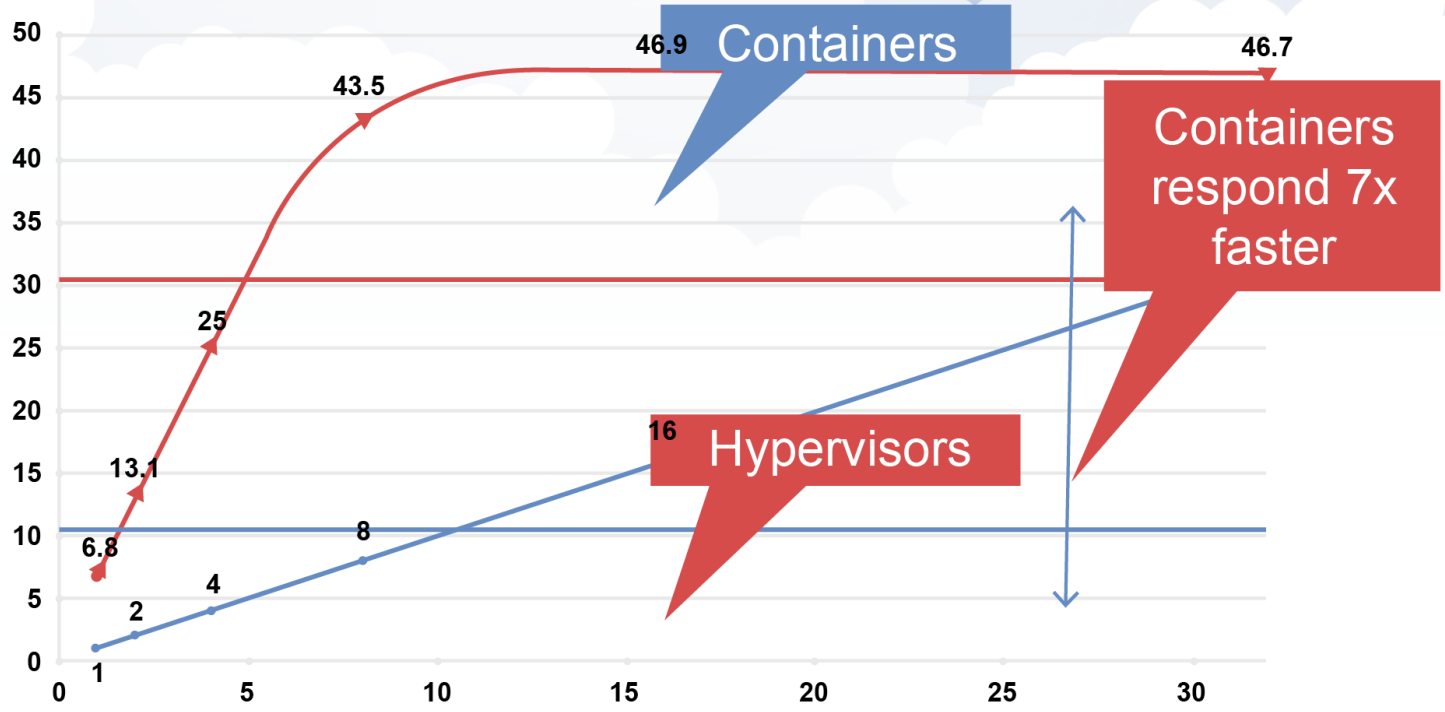
HARDWARE VIEW



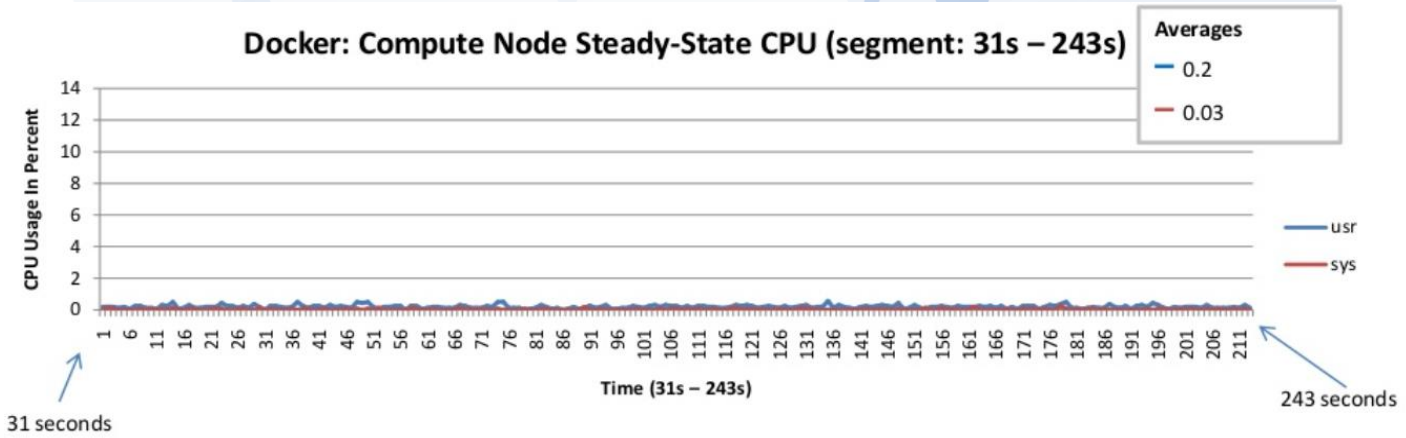
FEATURE COMPARISON

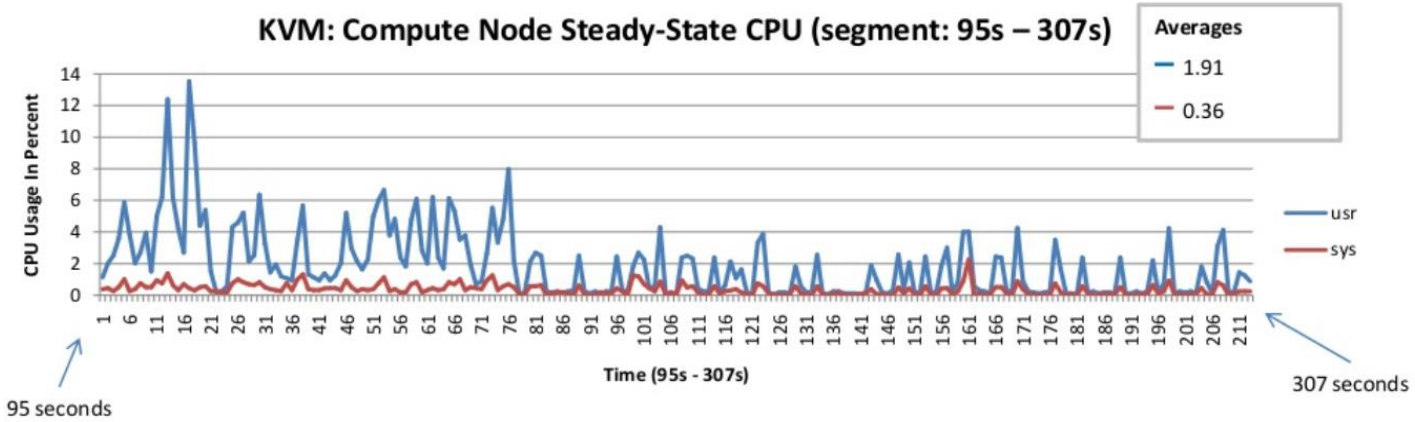
Single Domain	Multiple Domain
1 Detects Viruses	1 Prevents Viruses
2 CPU Overhead	2 No CPU Overhead

Parallels™ @ LINUXCON EUROPE



CLOUDY PERFORMANCE: STEADY STATE PACKING





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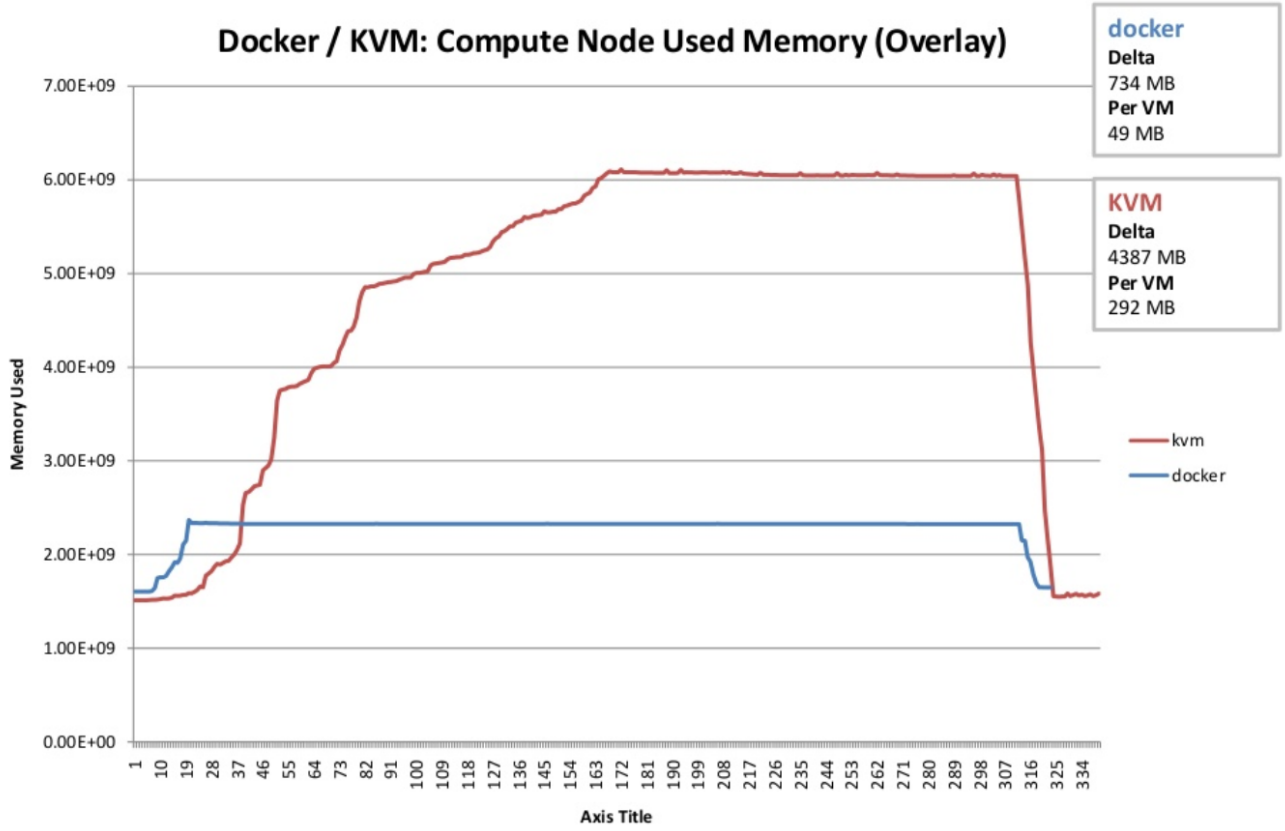

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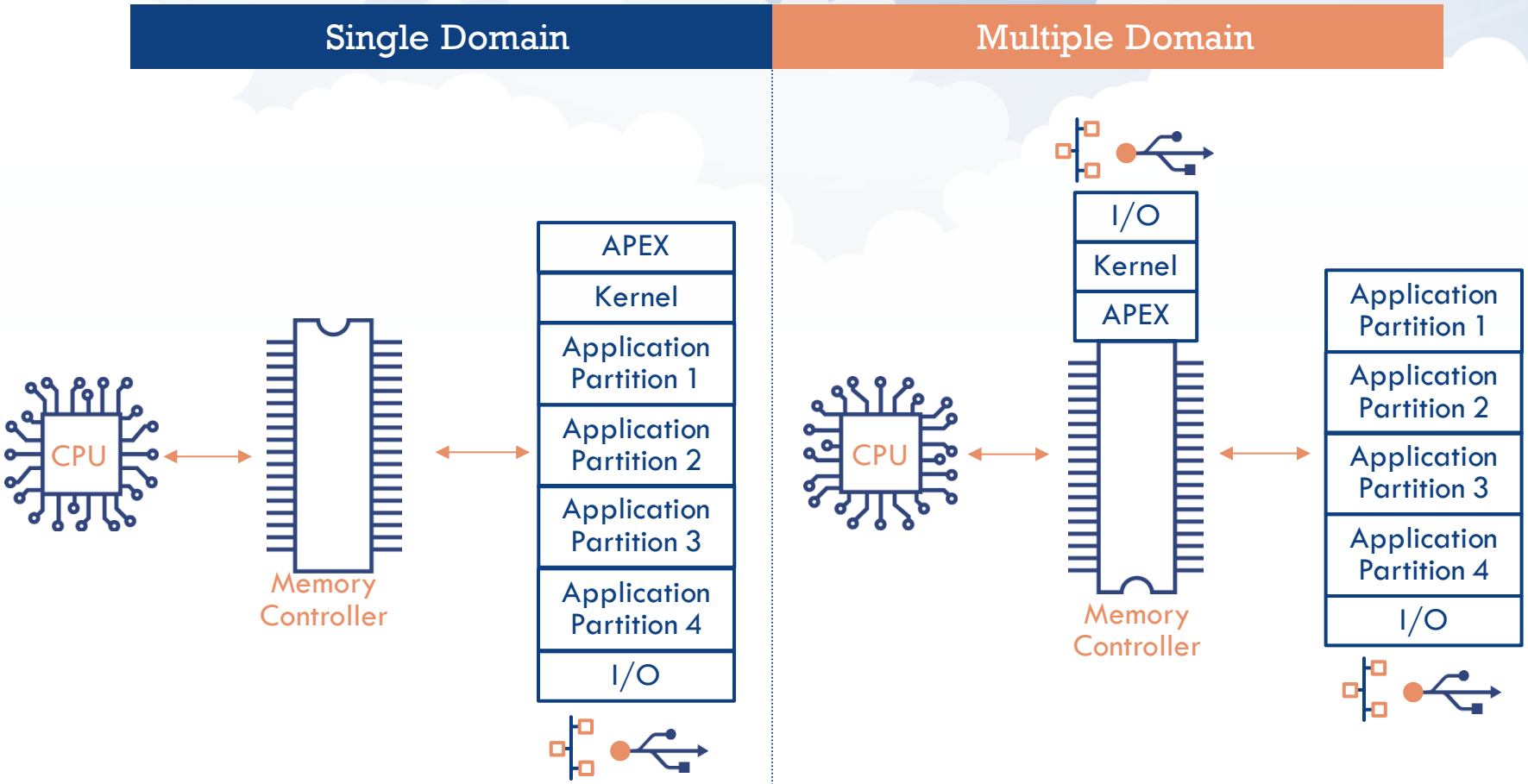

ARINC 653

Multi Domain Architecture

- Near bare metal performance in the guest
- Fast network operation
- Reduced resource consumption (CPU, MEM) on the compute node

FEATURE COMPARISON

Single Domain	Multiple Domain
1 Detects Viruses	1 Prevents Viruses
2 CPU Overhead	2 No CPU Overhead
3 Partition Failure	3 Component Failure

ARINC 653

Single Domain	Multiple Domain
> Hardware *- Partition Level*	> Hardware *- Component Level*
	> CPU
	> Component
> Sensor	> Sensor
> PUF Definition	> Virus Prevention

ARINC 653

Single Domain	Multiple Domain
Software	Software
Partition Level	Thread Level
Stateless Recovery	State Recovery
-	Forensic Analysis
Detects Viruses	Prevents Viruses

MULTI DOMAIN ARCHITECTURE

Meets ARINC 653 APEX standards

Container Performance

VM versatility

Prevents Malware

Fault Tolerant Technology

THANK YOU