CLOUD THREAT HUNTING

Jim Reavis
CEO and Founder
Cloud Security Alliance
December 2017

ABOUT THE CLOUD SECURITY ALLIANCE

"To promote the use of best practices for providing security assurance within Cloud Computing, and provide education on the uses of Cloud Computing to help secure all other forms of computing."

□ BUILDING SECURITY BEST PRACTICES FOR NEXT GENERATION IT

□ GLOBAL, NOT-FOR-PROFIT ORGANIZATION

□ RESEARCH AND EDUCATIONAL PROGRAMS

□ CLOUD PROVIDER CERTIFICATION – CSA STAR

□ USER CERTIFICATION – CCSK

□ THE GLOBALLY AUTHORITATIVE SOURCE FOR TRUST IN THE CLOUD

OUR COMMUNITY

88,000+

INDIVIDUAL MEMBERS

80+

CHAPTERS

400+

CORPORATE MEMBERS

35+

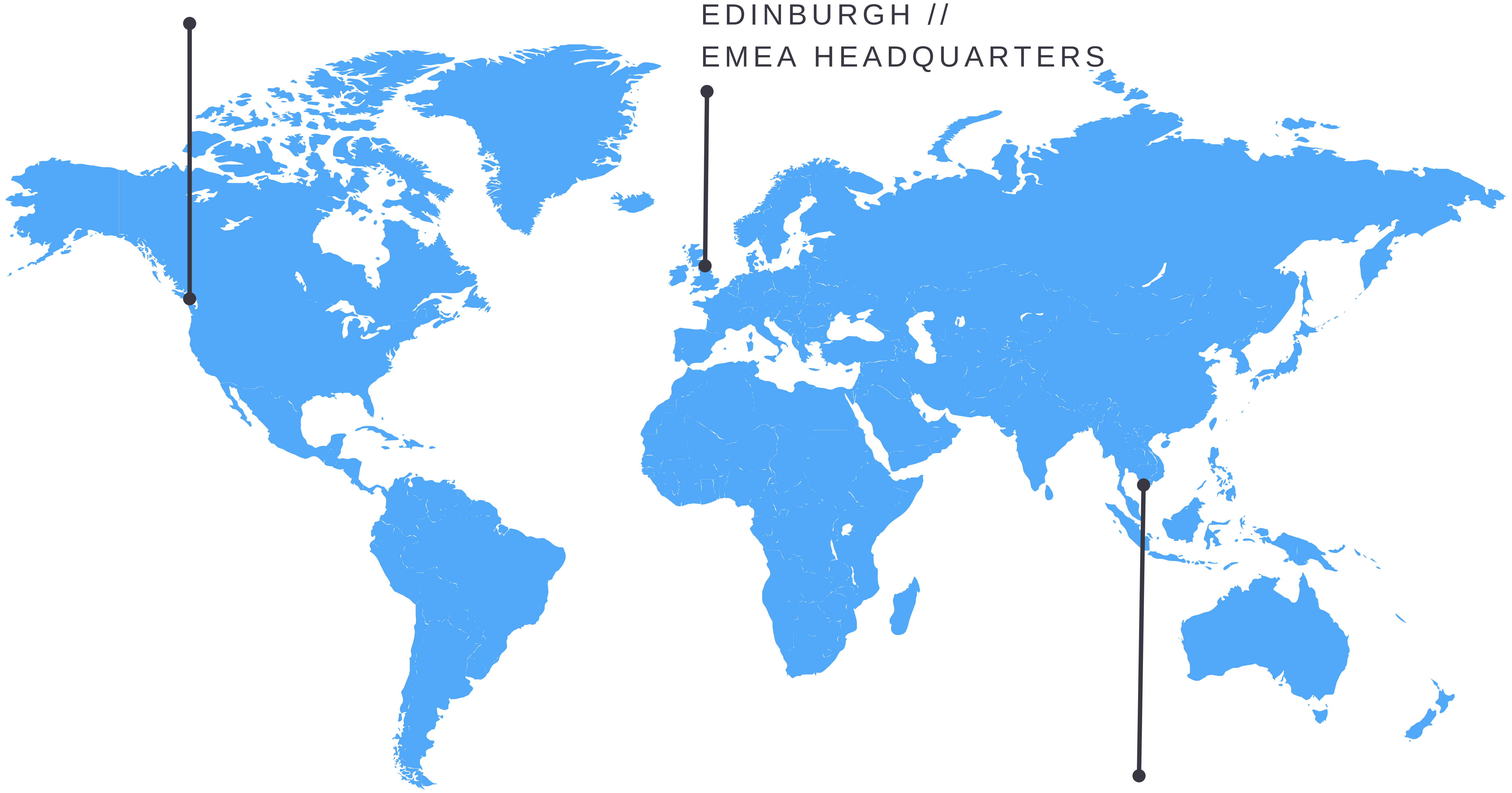
ACTIVE WORKING GROUPS

Strategic partnerships with governments, research institutions, professional associations and industry

CSA research is FREE!

2009

CSA FOUNDED

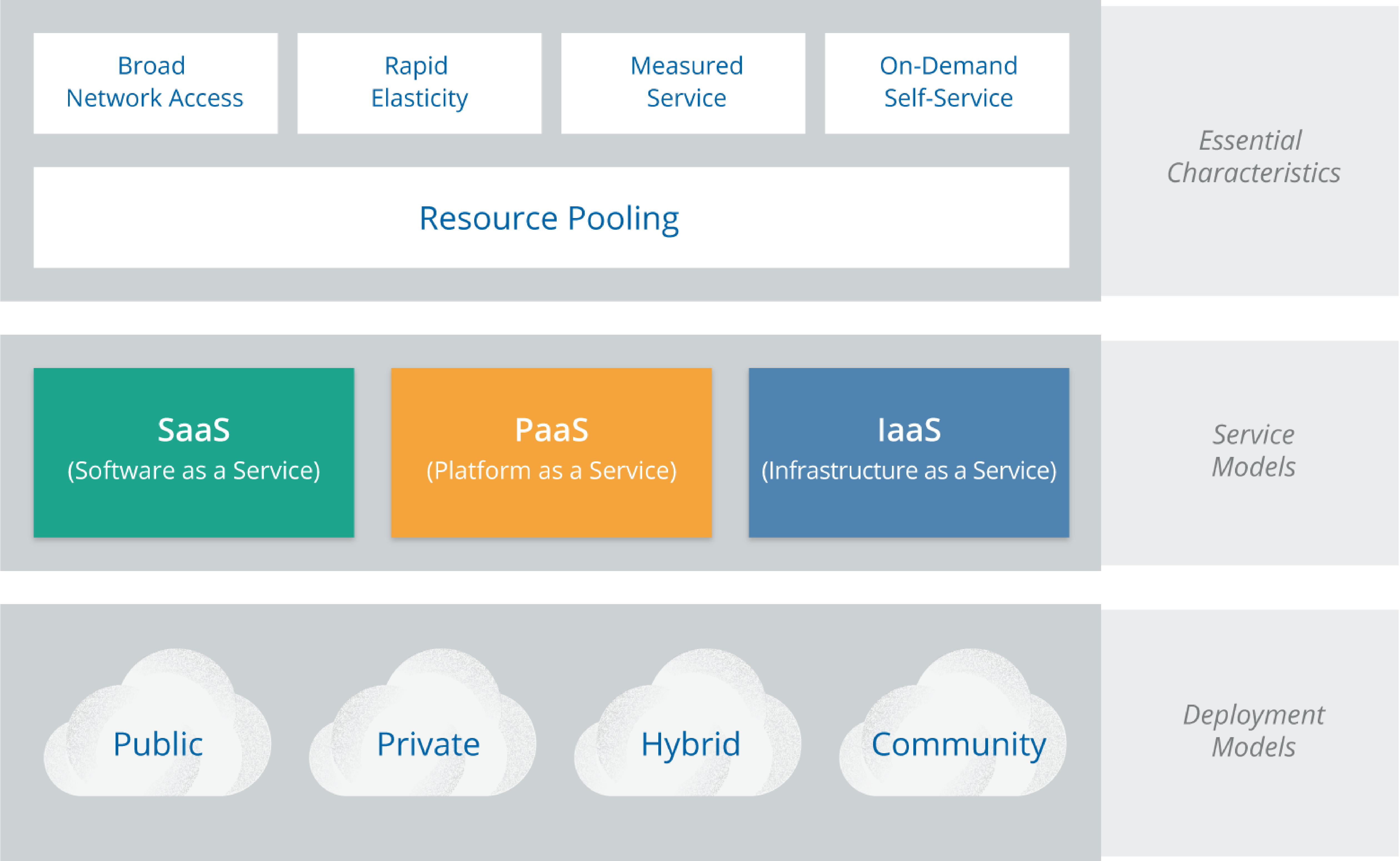


SEATTLE/BELLINGHAM, WA // US HEADQUARTERS

EDINBURGH // EMEA HEADQUARTERS

SINGAPORE // ASIA PACIFIC HEADQUARTERS

Cloud Definitions



Broad Network Access

Rapid Elasticity

Measured Service

On-Demand Self-Service

Resource Pooling

Essential Characteristics

SaaS (Software as a Service)

PaaS (Platform as a Service)

IaaS (Infrastructure as a Service)

Service Models

Public

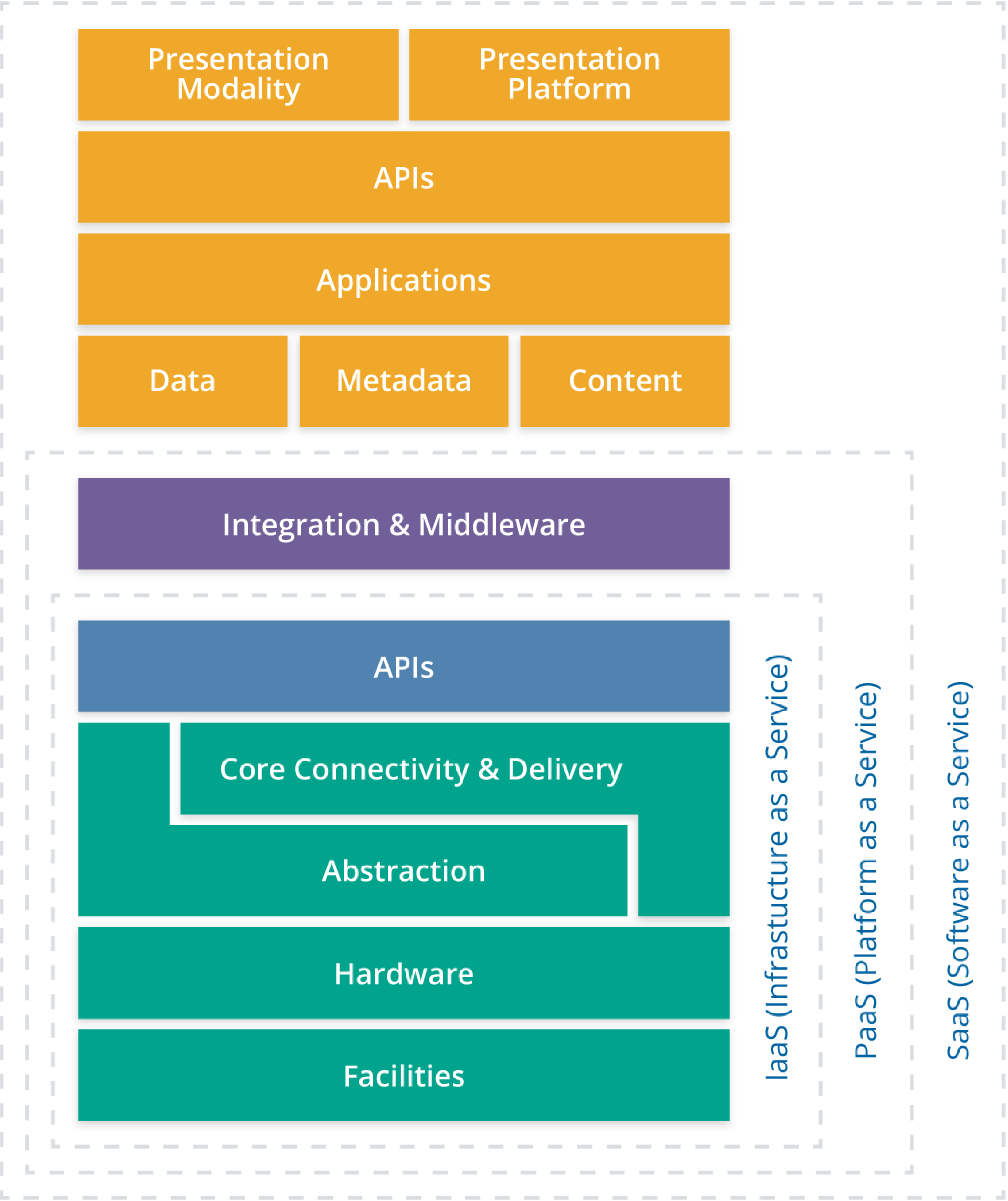
Private

Hybrid

Community

Deployment Models

NIST



Presentation Modality

Presentation Platform

APIs

Applications

Data

Metadata

Content

Integration & Middleware

APIs

Core Connectivity & Delivery

Abstraction

Hardware

Facilities

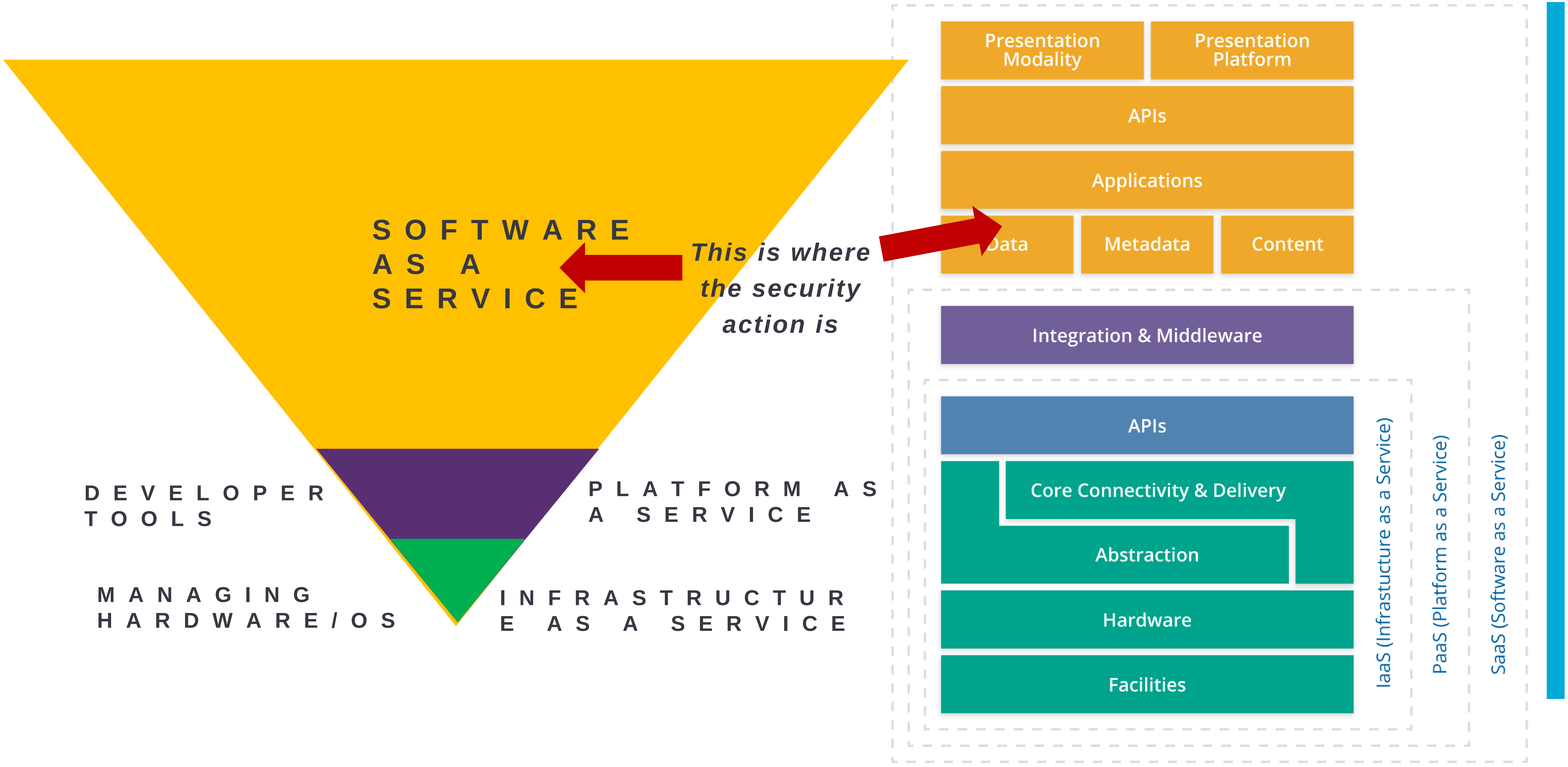
IaaS (Infrastructure as a Service)

PaaS (Platform as a Service)

SaaS (Software as a Service)

CSA Cloud Reference Model

Cloud Security Focus



SOFTWARE AS A SERVICE

This is where the security action is

DEVELOPER TOOLS

PLATFORM AS A SERVICE

MANAGING HARDWARE/OS

INFRASTRUCTURE AS A SERVICE

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CSA Cloud Reference Model

Stakes are high for Data Protection

CLOUD SECURITY ALLIANCE

CODE OF CONDUCT
FOR GDPR COMPLIANCE

PRIVACY LEVEL AGREEMENT WORKING GROUP, NOVEMBER 2017

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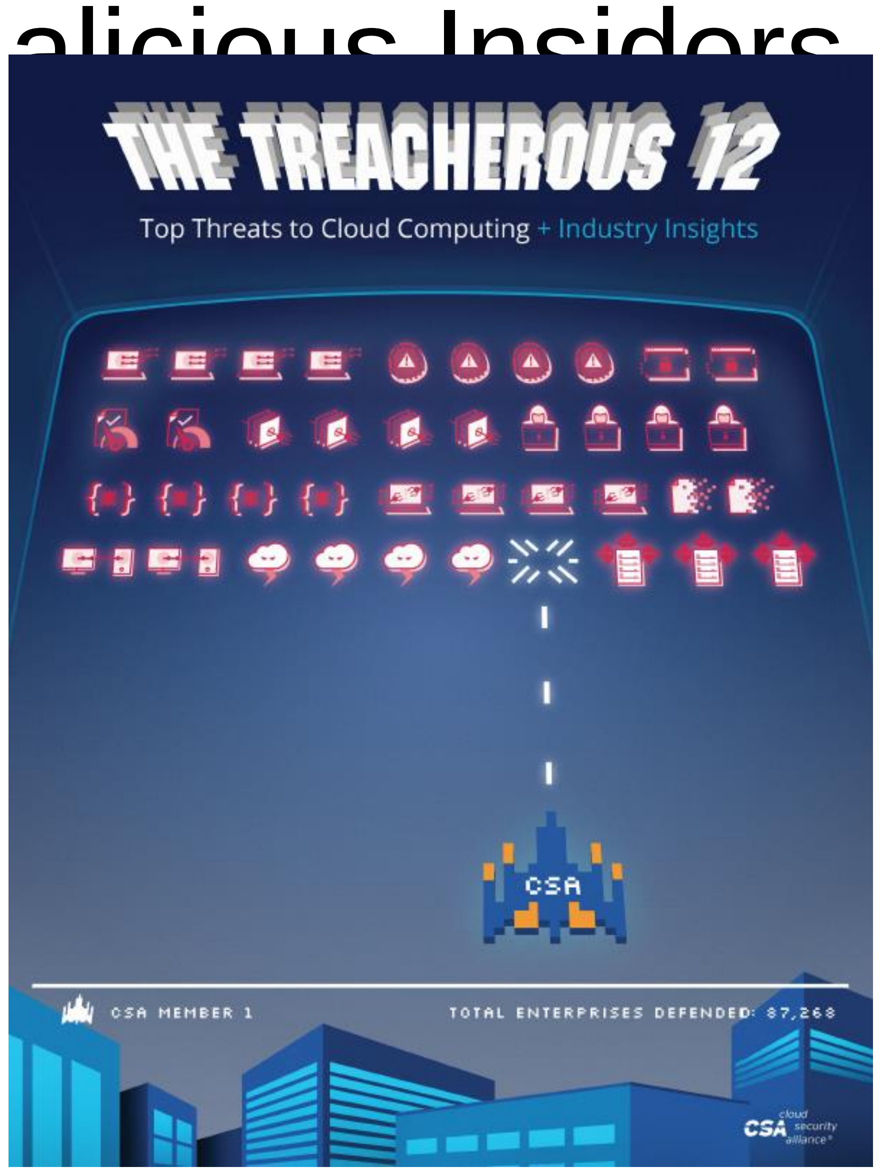
- General Data Protection Requirements (GDPR)
  - 4% of annual global turnover or €20 Million (whichever is greater)
- I will spare you a logo wall of shame listing of breached companies, fired CEOs, etc

https://gdpr.cloudsecurityalliance.org/

CSA Top Threats Report

1. Data Breaches
2. Compromised Credentials and IAM
3. Insecure APIs
4. System and App Vulnerabilities
5. Account Hijacking
6. Malicious Insiders



THE TREACHEROUS 12

Top Threats to Cloud Computing + Industry Insights

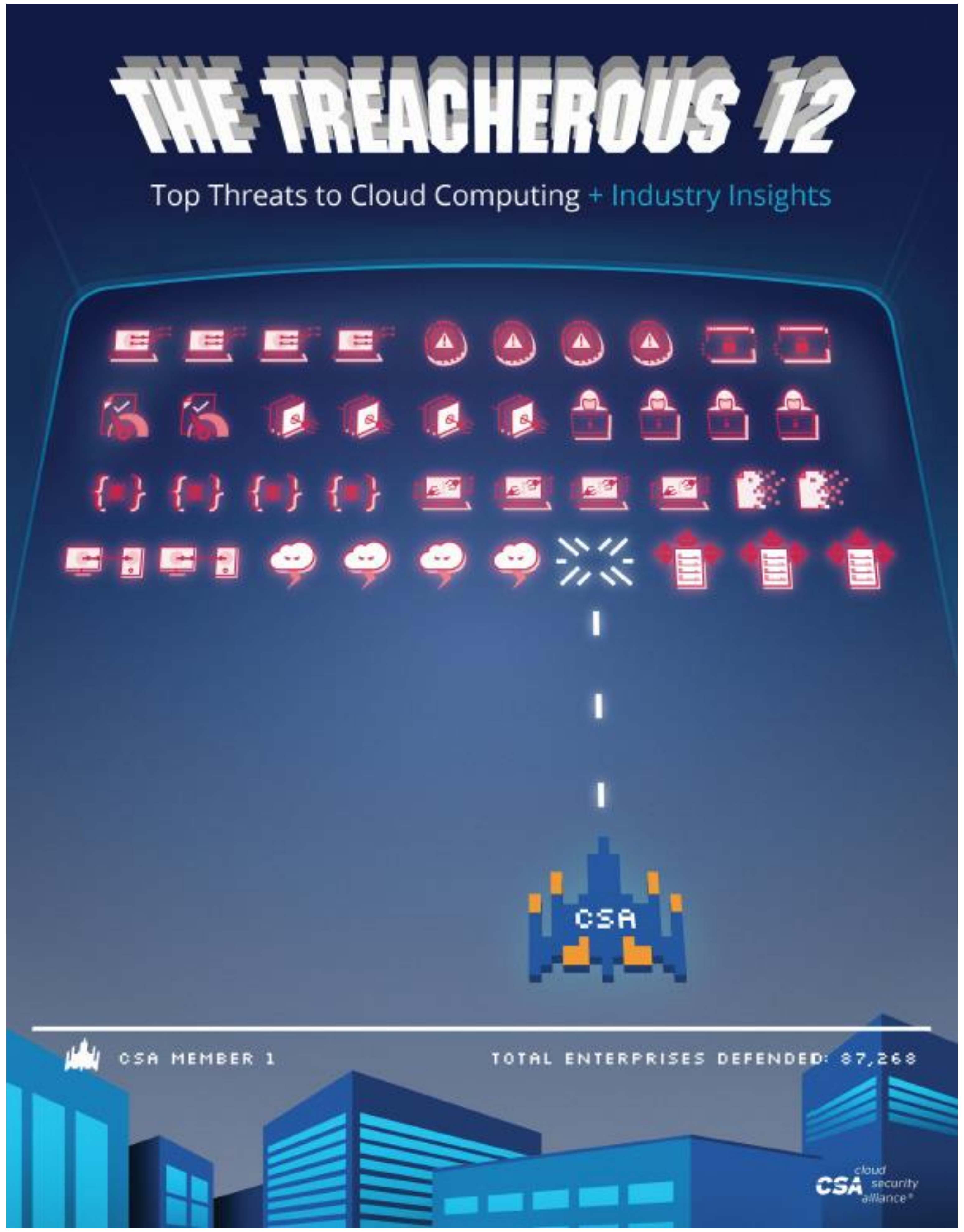
CSA
CSA MEMBER 1
TOTAL ENTERPRISES DEFENDED: 87,268
CSA cloud security alliance

7. APTs
8. Data Loss
9. Insufficient Due Diligence
10. Nefarious Use and Abuse
11. Denial of Service
12. Shared Technology Vulnerabilities

Top Threats™ To Cloud Computing

Only threat IaaS-specific

https://cloudsecurityalliance.org/group/top-threats/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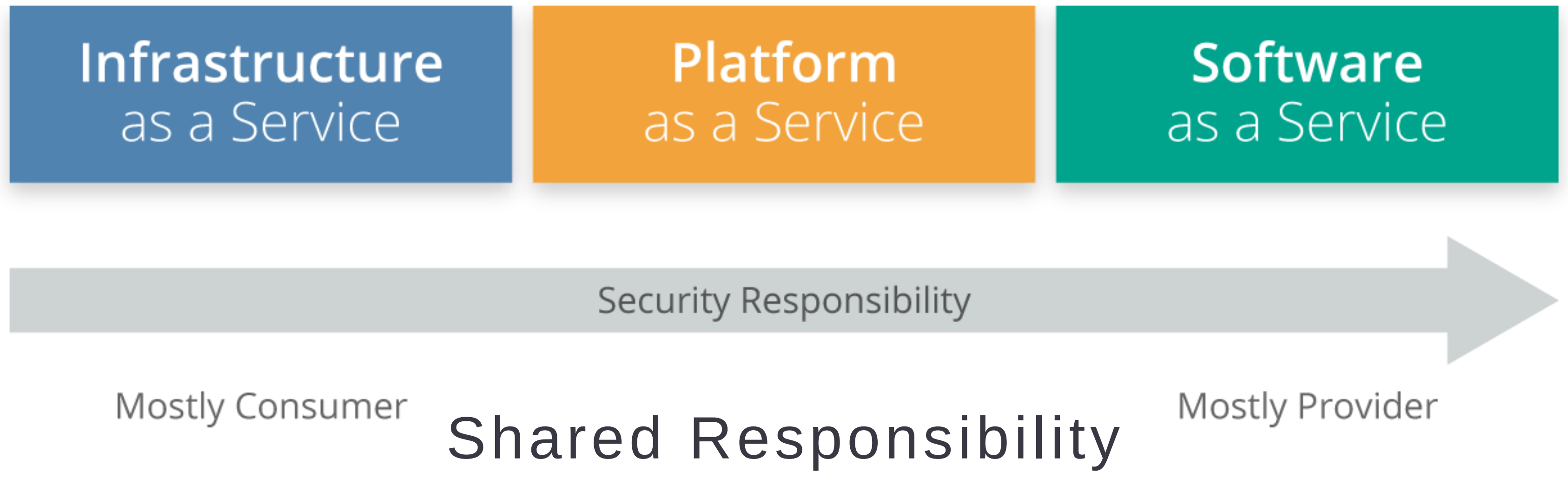
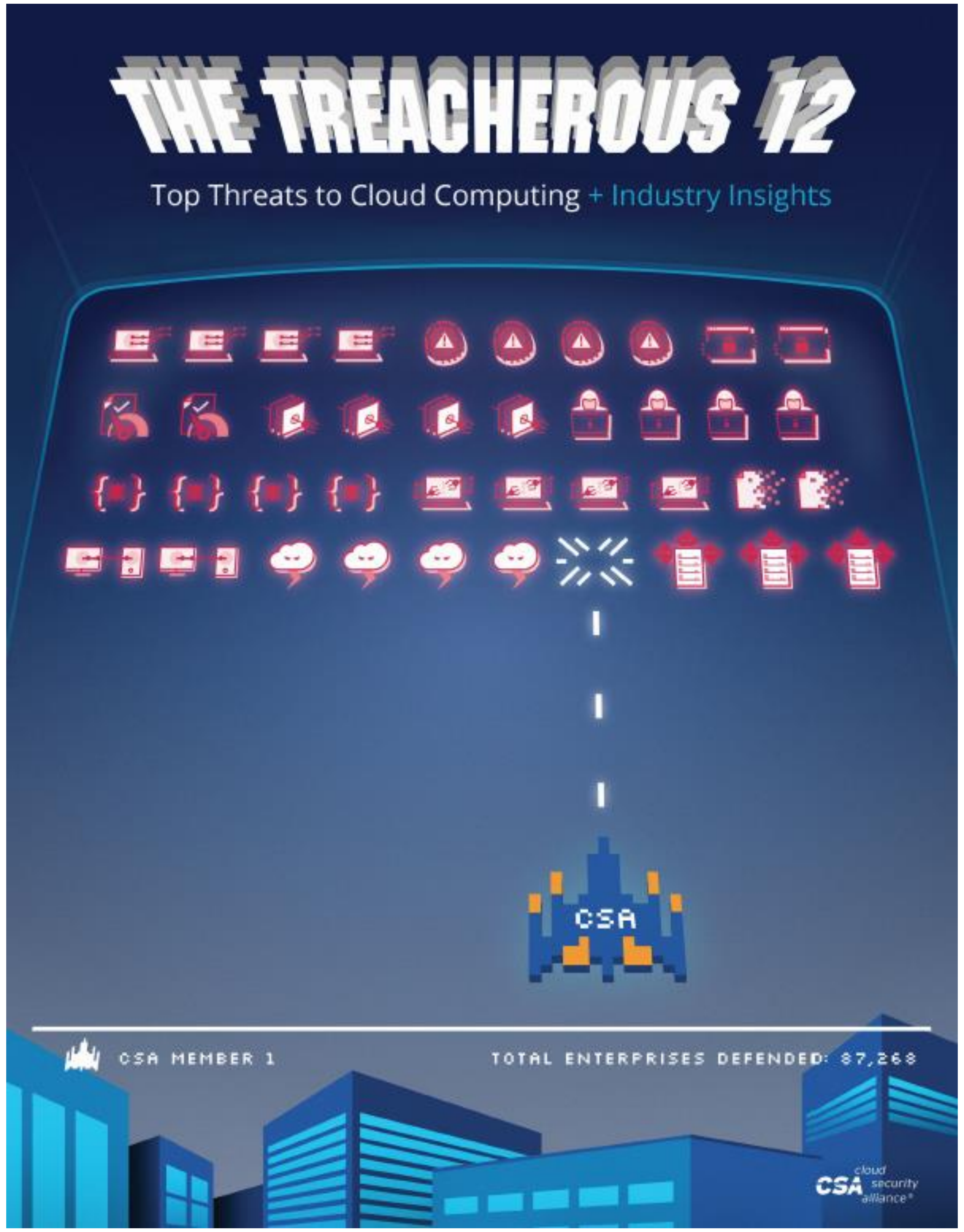
Threat 1: Data Breach

- Ranking based upon impact rather than prevalence
- Compromised credentials, sloppy admin & poor programming practices loom large
- Incidents primarily have a root cause in cloud user mistakes, e.g., “AWS bucket slosh” (S3)


Infrastructure as a Service
Platform as a Service
Software as a Service
Security Responsibility
Mostly Consumer
Mostly Provider
Shared Responsibility

Threat 2: Insufficient Identity, Credential and Access Management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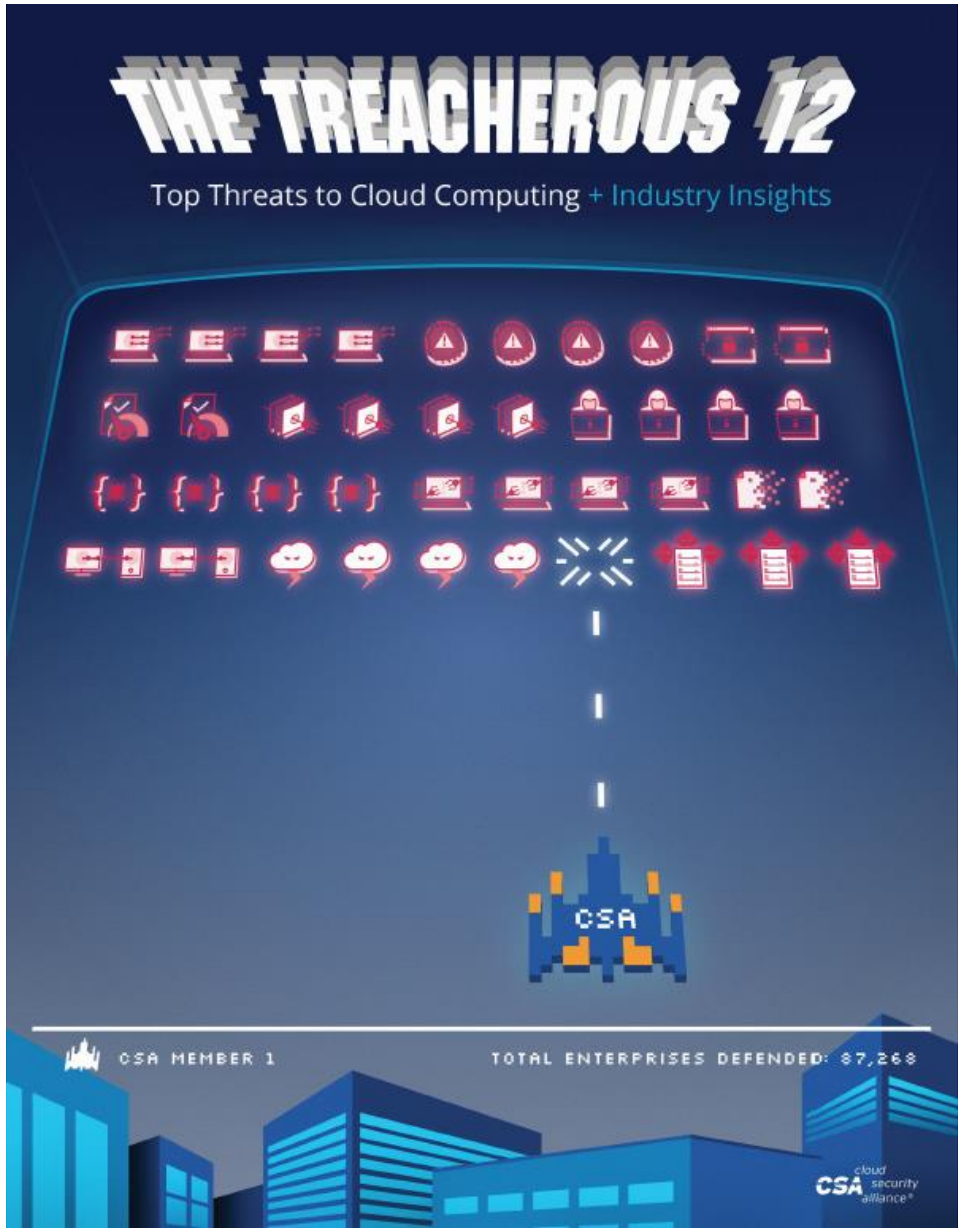
- Compromised credentials a path of least resistance
- Multi-factor authentication recommended – mandatory for privileged accounts
- Identity federation to prevent credential sprawl
- See also Threat 5: Account Hijacking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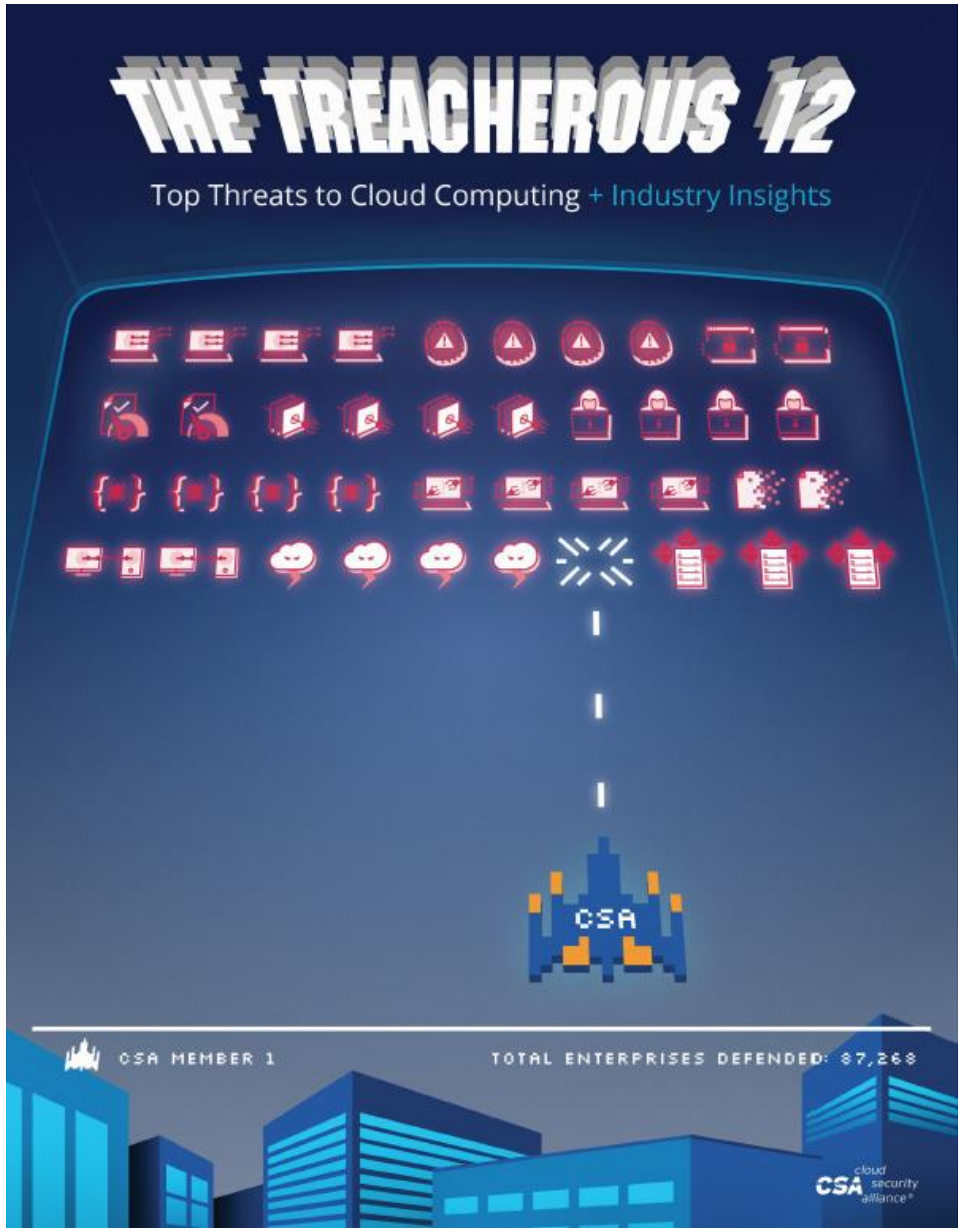
Threat 3: Insecure APIs and Interfaces

- Agility, “on demand”, continuous deployment creates pressure to develop “too quickly”
- Vetting of all 3rd party API services and the cloud layers lacking
- Secure development lifecycle practices as critical as ever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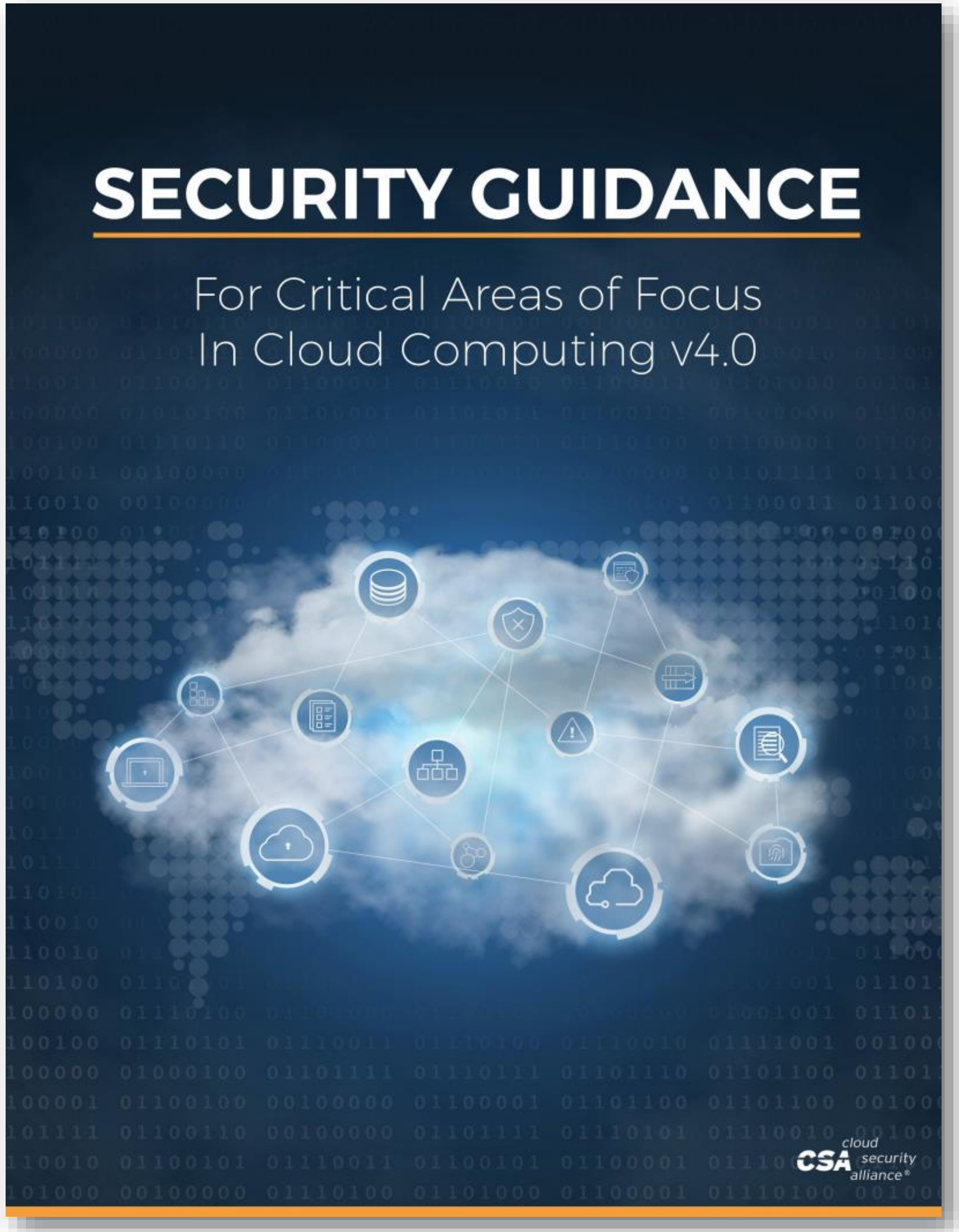
Threat 12: Shared Technology Vulnerabilities

- VM Side channel attacks
- VENOM vulnerability
- Hypervisor??
- Hardware bugs, supply chain



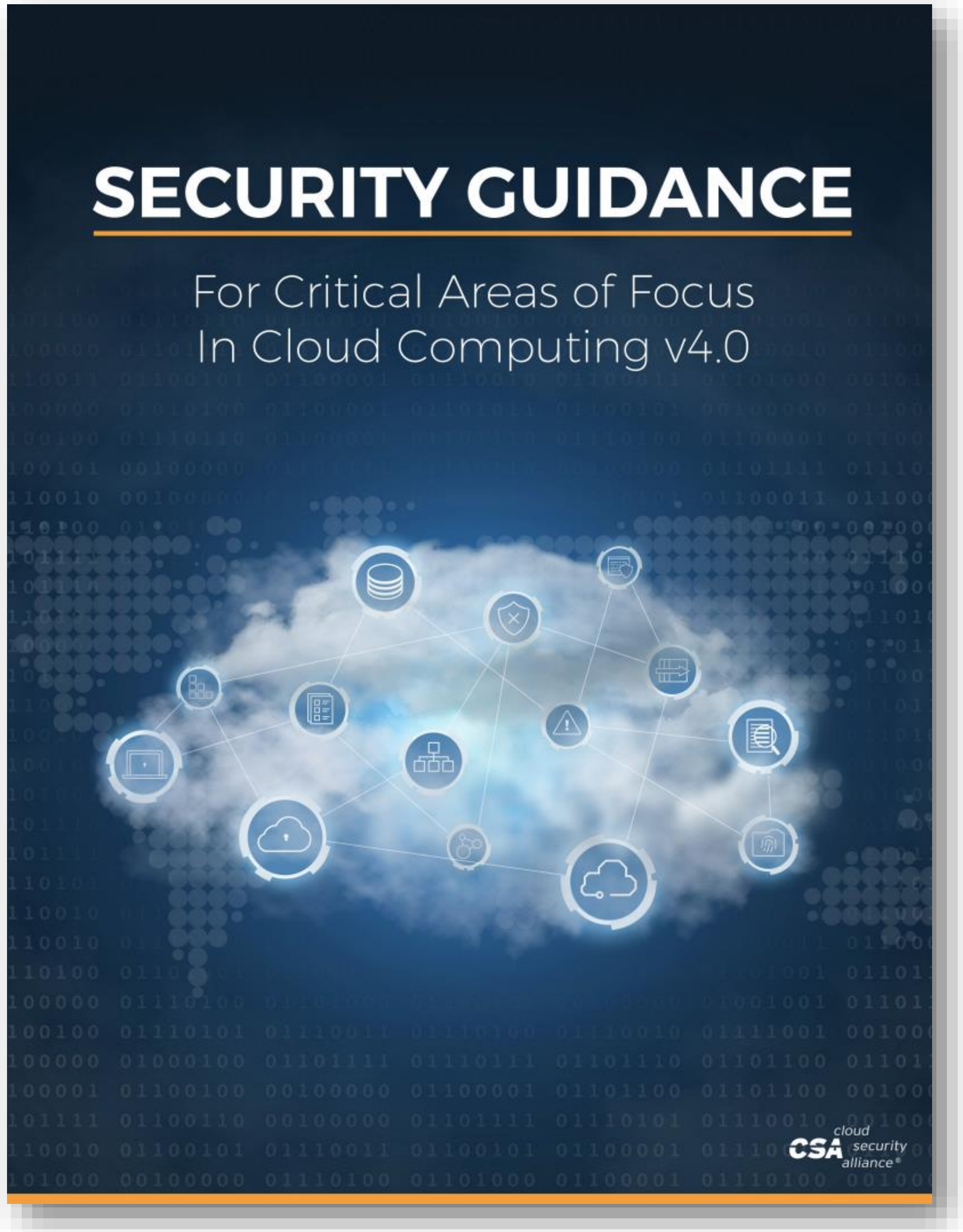
SECURITY GUIDANCE

For Critical Areas of Focus In Cloud Computing v4.0

About Security Guidance V4

- Fundamental cloud security research that started CSA
- 4th version, released July 2017
- Architecture
- Governing in the Cloud
  - Governance and Enterprise Risk Management
  - Legal
  - Compliance & Audit Management
  - Information Governance
- Operating in the Cloud
  - Management Plane & Business Continuity
  - Infrastructure Security
  - Virtualization & Containers
  - Incident Response
  - Application Security
  - Data Security & Encryption
  - Identity Management
  - Security as a Service
  - Related Technologies

Related advice from CSA Guidance V4



SECURITY GUIDANCE

For Critical Areas of Focus
In Cloud Computing v4.0

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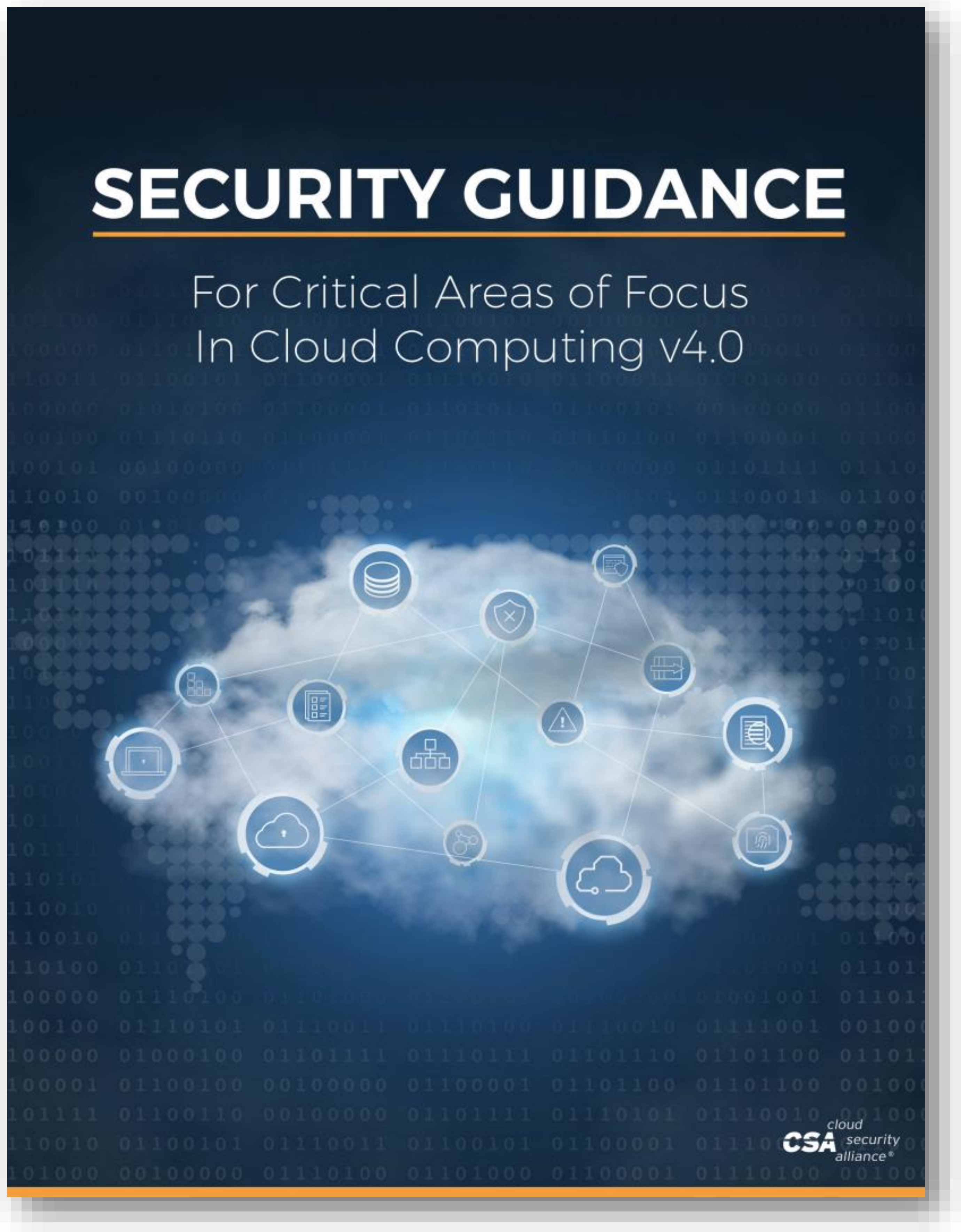
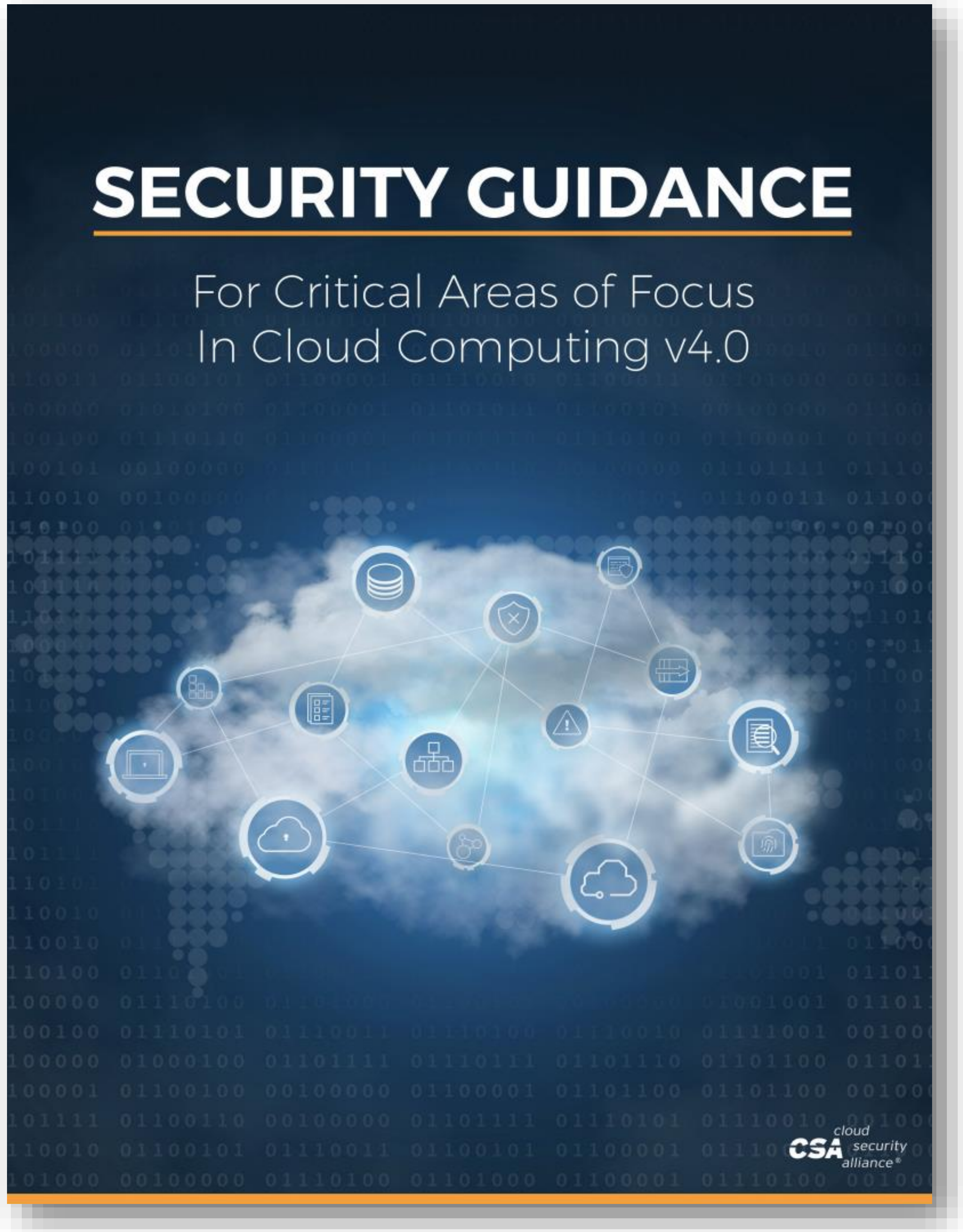
- SLAs and setting expectations between provider and customer responsibilities
- Cloud customers must understand the content and format of data that the cloud provider will supply for analysis purposes and evaluate whether the available forensics data satisfies legal chain of custody requirements.
- Cloud customers should also embrace continuous and serverless monitoring of cloud-based resources to detect potential issues earlier than in traditional data centers.



Related advice from CSA Guidance V4

- Data sources should be stored or copied into locations that maintain availability during incidents.
- Cloud-based applications should leverage automation and orchestration to streamline and accelerate the response, including containment and recovery.
- For each cloud service provider used, the approach to detecting and handling incident involving the resources hosted at that provider must be planned and described in the enterprise incident response plan.

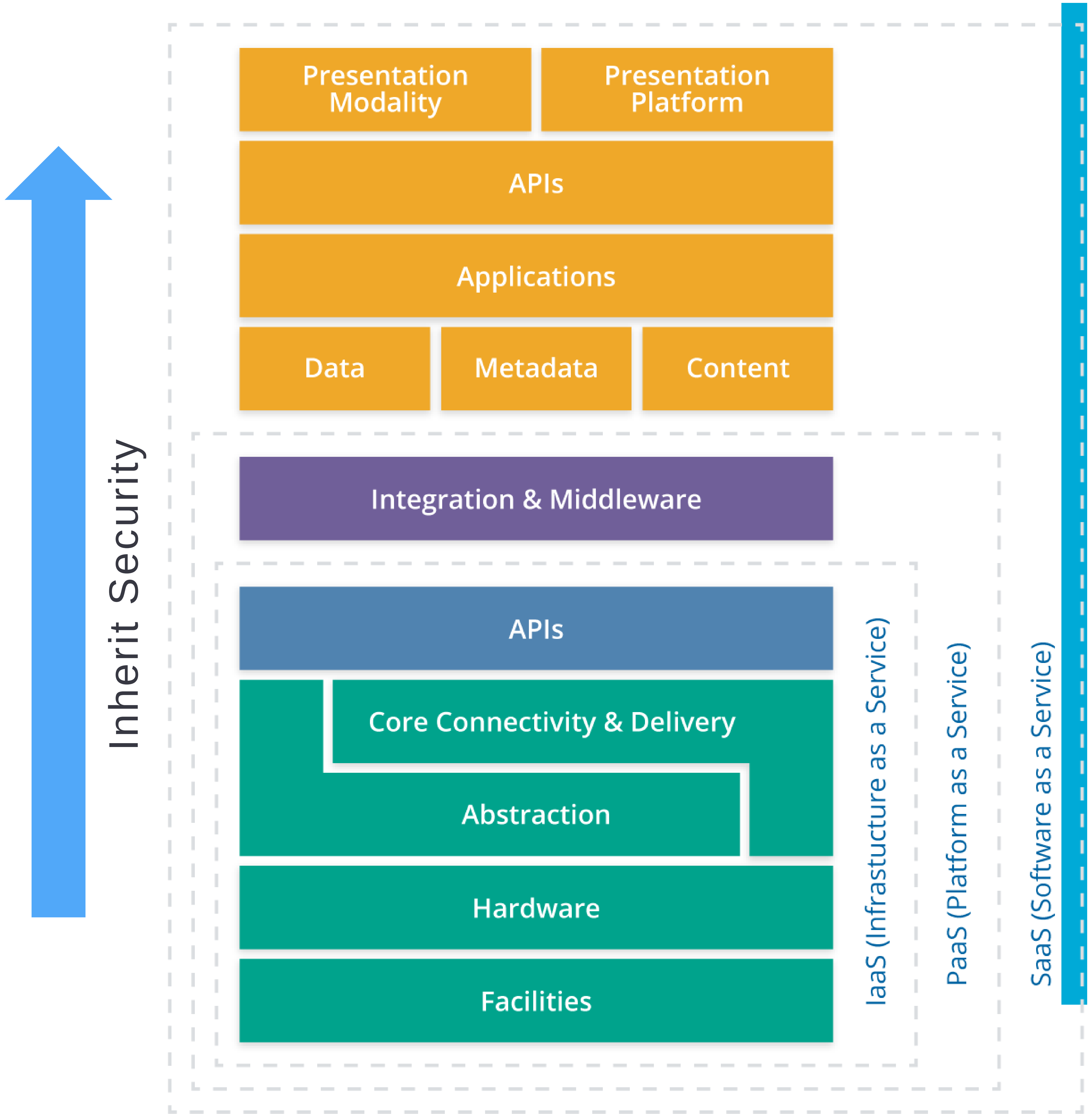


Related advice from CSA Guidance V4

- The SLA with each cloud service provider must guarantee support for the incident handling required for the effective execution of the enterprise incident response plan. This must cover each stage of the incident handling process: detection, analysis, containment, eradication, and recovery.
- Testing will be conducted at least annually or whenever there are significant changes to the application architecture. Customers should seek to integrate their testing procedures with that of their provider (and other partners) to the greatest extent possible.

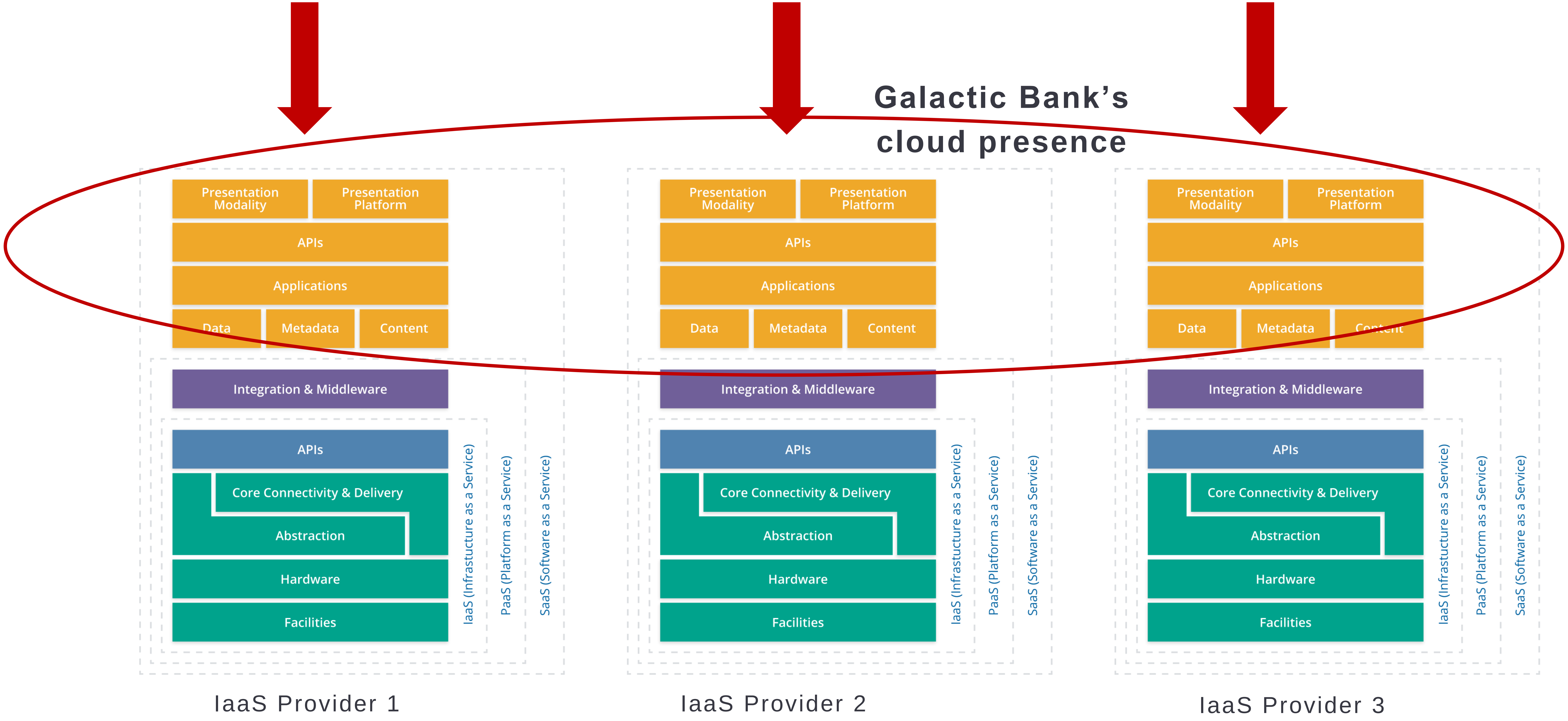
Why IaaS not the primary focus?

- Well funded, mature security teams
- State of the art technology
- Collaboration with competitors could be better, but they do communicate
- We need IaaS cloud providers to enable their customers for threat intelligence sharing & secure-by-default usage of platforms (among many other things)
- Need to solve the "provider within a provider" problem – it's the ecosystem stupid!



The cloud ecosystem threat problem

- Attacks may take on very different meaning in the context of an ecosystem



Cloud Security Industry Summit

- Started by Intel
- Participation from major cloud providers and major tech companies
- Cloud Security Alliance participates
- Strength is a focus on firmware/BIOS issues
- Recent firmware integrity whitepaper

CSA Cloud CISC

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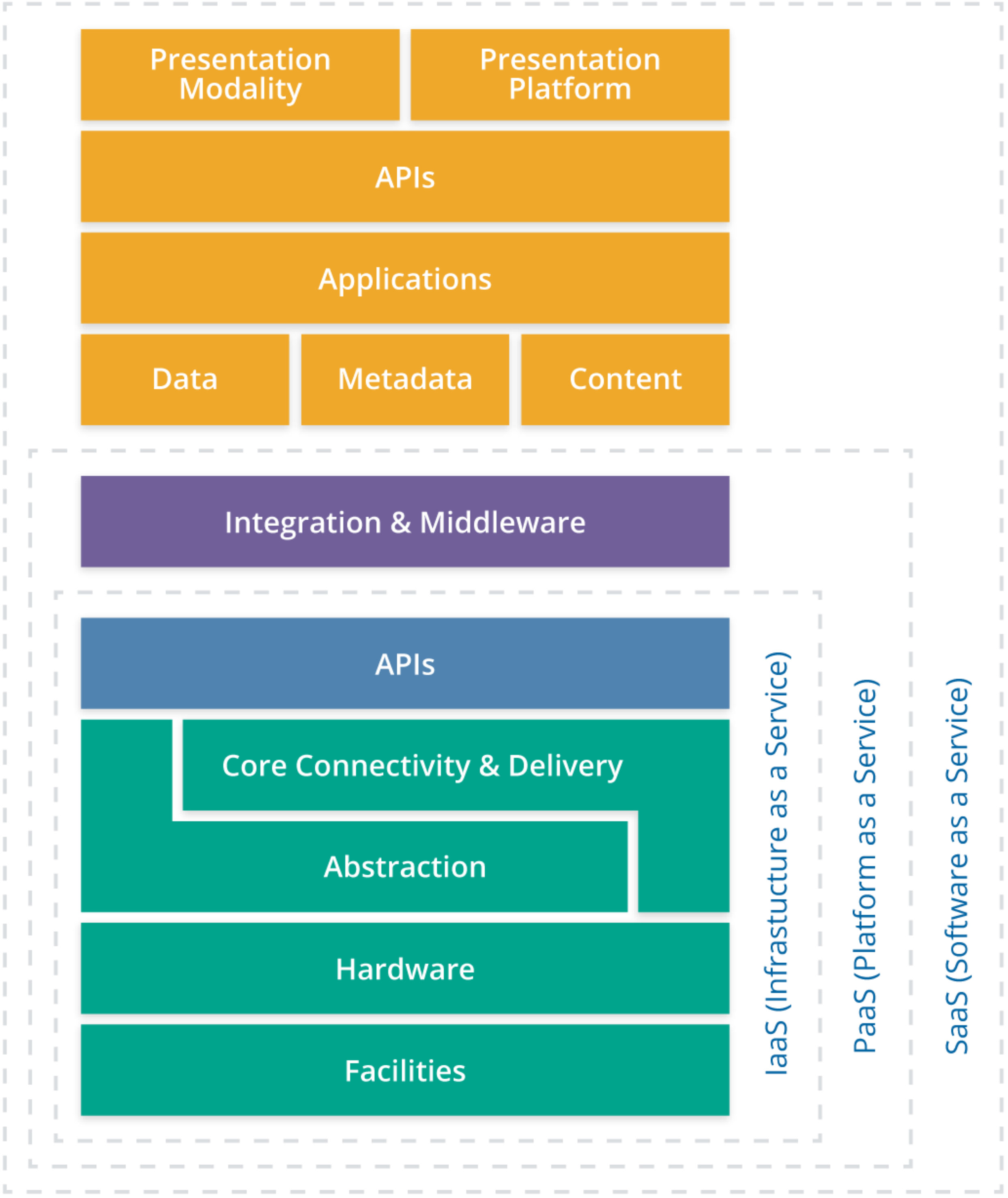

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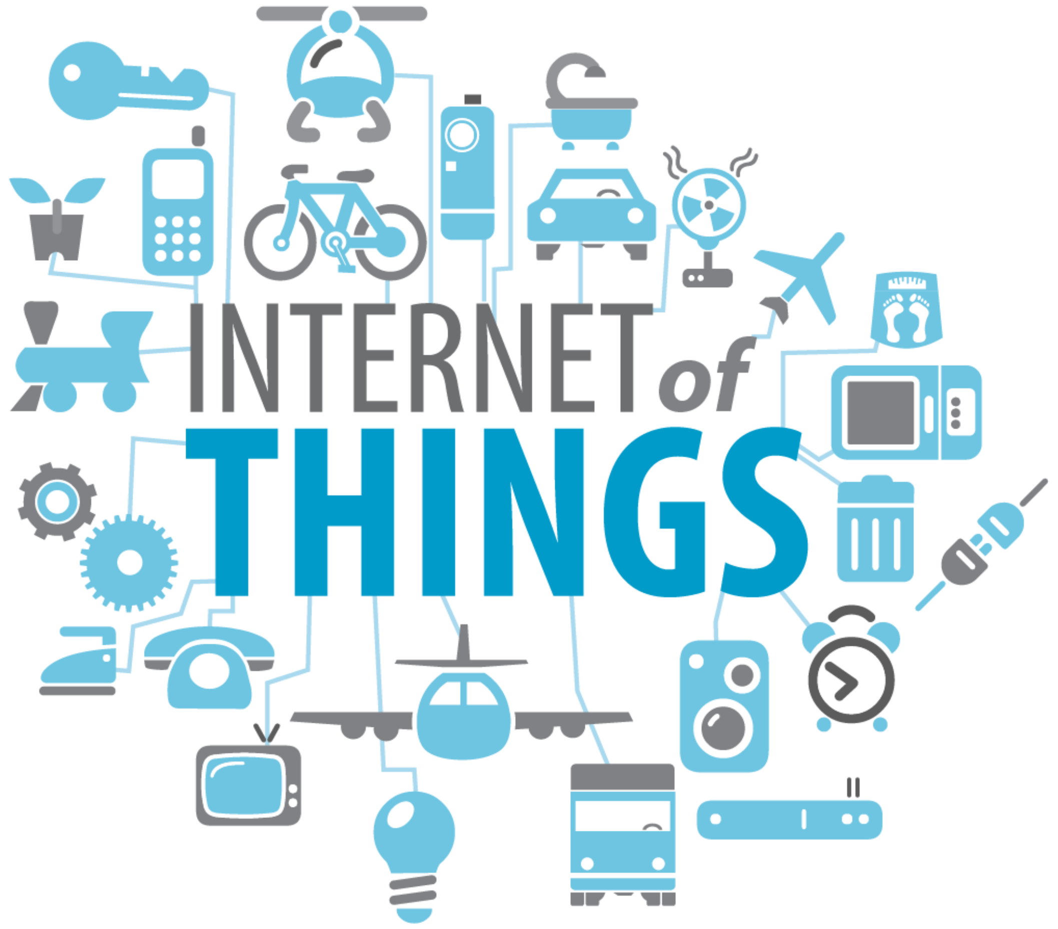
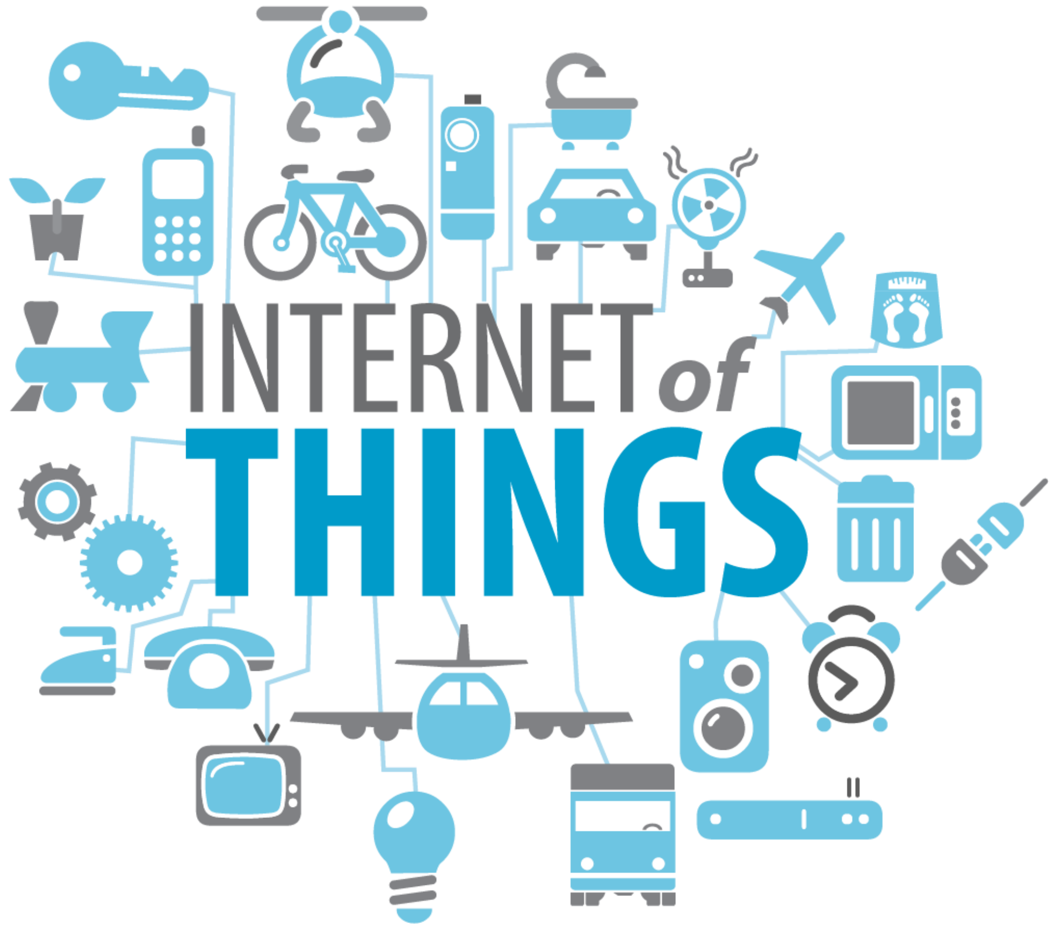
- CSA Cloud Cyber Incident Sharing Center
- Our effort to drive standards in incident response and threat intelligence sharing in the cloud
- Features an operation threat intelligence exchange
    - Initial data indicates a lot of common actors hitting cloud customers separately
- Addressing issues such as anonymization, attribution and legal/SLAs related to the cloud reference model

Looking to the future: Dynamic Digital Enterprise



- Massive increase in compute
- Cloud Computing is the back end
- Internet of Things is the endpoint
- Compute is Everywhere …
- But, you won’t know where Anything is
- Devices, software, network routes continuously modified
- The corporation is a virtual, software-defined construct – the Dynamic Digital Enterprise
- The corporation will have many more software partners than today – but some will exist for only seconds at a time
- Existing security will not scale

Automation for securing the Dynamic Digital Enterprise

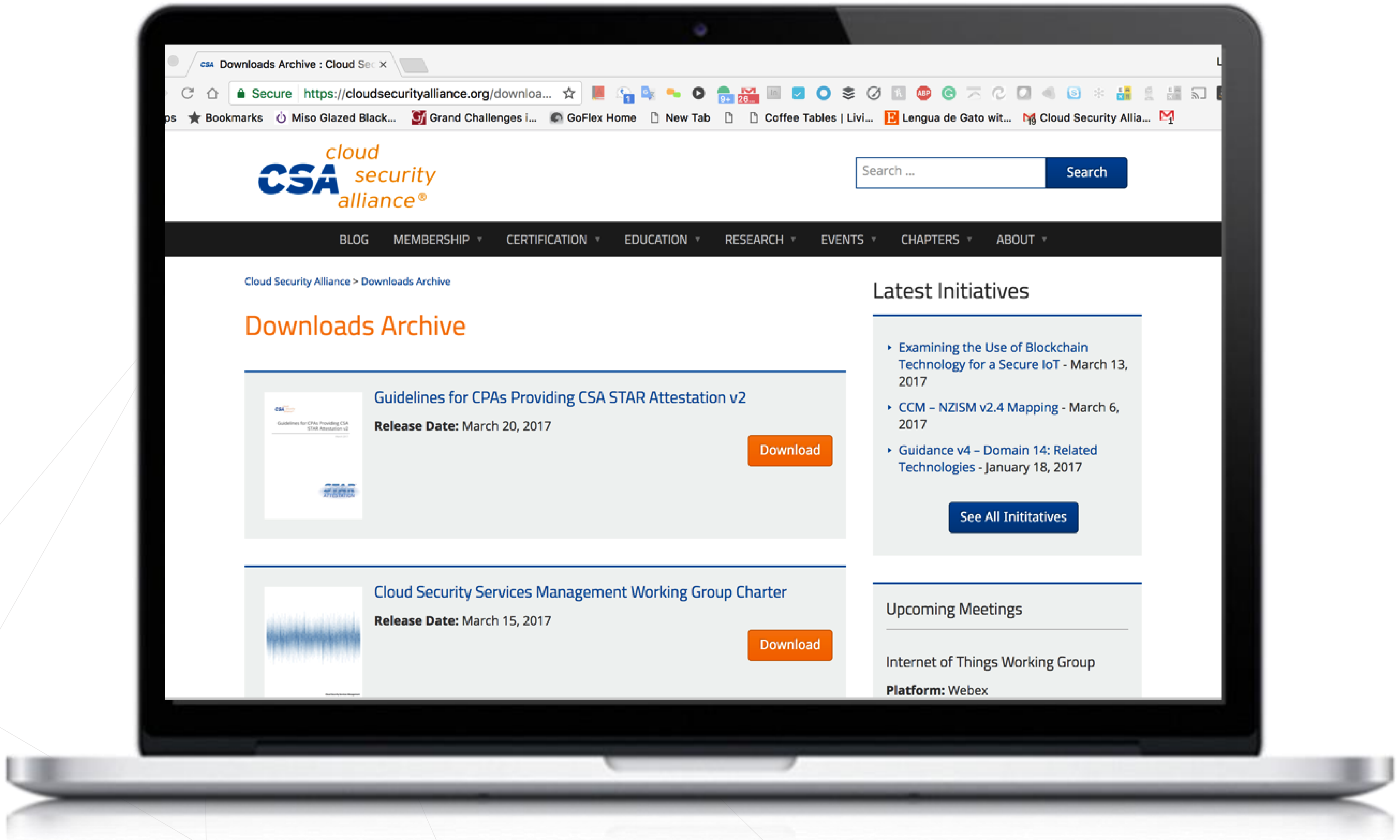


- Artificial Intelligence is the brain managing the digital enterprise
- Blockchain provides the trusted language & rules
- Software Defined Networking dynamically organizes computers
- DevOps automates the Cloud
- Autonomics automates the IoT
- We call this “Self-Driving Information Security”

To sum it up

- Familiar threats exist in cloud, but can take on new dimensions and consequences
- More cloud-specific threats exist as well
- Tier 1 cloud providers have excellent security programs, but the ecosystem does not necessarily benefit as they might
- Enabling the SaaS layer (commercial or end user) essential for threat hunting
- Tricky legal & SLA issues are as big of an impediment as the PR & competitive issues
- Look to the future and understand the scale needed. Automation needed, cannot rely on the historical backchannels
- CSA has a lot of free research and a community to assist

THANK YOU!



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Guidelines for CPAs Providing CSA STAR Attestation v2

Release Date: March 20, 2017

Download

Cloud Security Services Management Working Group Charter

Release Date: March 15, 2017

Download

Latest Initiatives

- Examining the Use of Blockchain Technology for a Secure IoT - March 13, 2017
- CCM – NZISM v2.4 Mapping - March 6, 2017
- Guidance v4 – Domain 14: Related Technologies - January 18, 2017

See All Inititatives

Upcoming Meetings

Internet of Things Working Group

Platform: Webex

Contact CSA

Email: info@cloudsecurityalliance.org

Twitter: @Cloudsa

Site: www.cloudsecurityalliance.org

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