FINOS Common Cloud Controls

The need for an Open Source in Financial Services Public Cloud Standard

Simon Zhang and Naseer Mohammed

BMO Title and Google Title

FINOS

THE LINUX FOUNDATION

Public Cloud Adoption by Financial Services

Public Cloud Placement offers *significant* benefits to Financial Services... as well as some *unique challenges*

Benefits

- Agility & Scalability
- Cost Optimization
- Codified Controls
- Accelerated Innovation
- Geographic Availability
- Resilience

Challenges

- Shared Responsibility
- Scarcity of Skills
- Regulatory Environment

Cloud Risks Highlighted by US Department of the Treasury

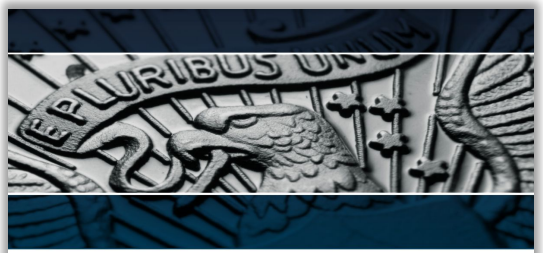
"...commonly held view among many U.S. financial institutions as well as industry stakeholders and academics that existing CSPs' efforts did not fully satisfy financial institution risk management needs."

"Concentration could expose many financial services clients to the same set of physical or cyber risks (e.g., from a region-wide outage)."

"Unbalanced contractual terms could limit individual financial institutions' ability to measure and mitigate risks from cloud services, which could result in unwarranted risk across the sector."

US Treasury: CSPs lack transparency and documentation

February 2023



The Financial Services Sector's Adoption of Cloud Services

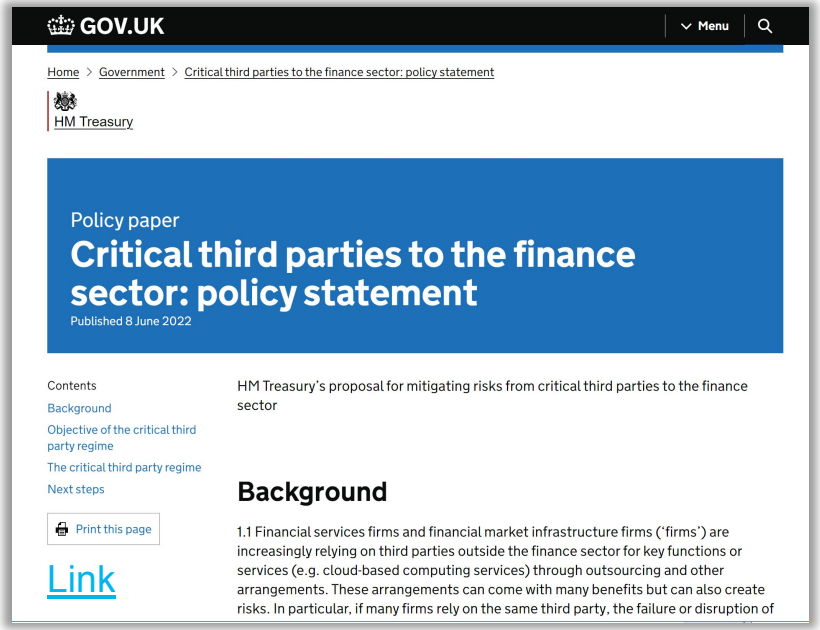
U.S. Department of the Treasury

Link

Cloud Risks Highlighted by United Kingdom HM Treasury

UK: Hard for FIs to obtain resiliency guarantees from "critical third parties" such as CSPs

June 2022



GOV.UK

Menu

Home > Government > Critical third parties to the finance sector: policy statement

HM Treasury

Policy paper

Critical third parties to the finance sector: policy statement

Published 8 June 2022

Contents

Background

Objective of the critical third party regime

The critical third party regime

Next steps

Print this page

HM Treasury's proposal for mitigating risks from critical third parties to the finance sector

Background

1.1 Financial services firms and financial market infrastructure firms ('firms') are increasingly relying on third parties outside the finance sector for key functions or services (e.g. cloud-based computing services) through outsourcing and other arrangements. These arrangements can come with many benefits but can also create risks. In particular, if many firms rely on the same third party, the failure or disruption of

Link

"(Financial) firms are required to ensure their contractual arrangements with third parties allow them to comply with this **operational resilience framework,** which includes **requirements on areas such as data security, business continuity and exit planning**

...no single firm can manage risks originating from a concentration in the provision of critical services by one third party to multiple firms

...significant information and power asymmetries between certain third parties and firms, which may prevent firms from obtaining **adequate assurances that their contractual arrangements achieve an appropriate level of operational resilience"**

Cloud Risks Highlighted by the European Union

"DORA sets **uniform requirements for the security of network and information systems** of companies and organisations operating in the financial sector as well as critical third parties which provide ICT (Information Communication Technologies)-related services to them, **such as cloud platforms**

European supervisory authorities … **will develop technical standards for all financial services institutions to abide by"**

EU: Resiliency rules set for FIs and CSPs with "uniform requirements"

European Council
Council of the European Union

Search

Home > Press > Press releases

Council of the EU Press release 28 November 2022 14:30

Digital finance: Council adopts Digital Operational Resilience Act

Given the ever-increasing risks of cyber attacks, the EU is strengthening the IT security of financial entities such as banks, insurance companies and investment firms. Today the Council adopted the Digital Operational Resilience Act (DORA) which will make sure the financial sector in Europe is able to **stay resilient through a severe operational disruption**.

We live in uncertain times. Banks and other companies which provide financial services in Europe already have plans in place for their IT security, but we need to go one step further. Thanks to the harmonised legal requirements which we adopted today, our financial sector will be better able to continue to function at all times. If a large-scale attack on the European financial sector is launched, we will be prepared for it.

— Zbyněk Stanjura, Minister of Finance of Czechia

DORA sets uniform requirements for the security of network and information systems of companies and organisations operating in the financial sector as well as critical third parties which provide ICT (Information Communication Technologies)-related services to them, such as cloud platforms or data analytics services. DORA creates a regulatory framework on digital operational resilience whereby all firms need to make sure they can

Link

Risks Highlighted by the Monetary Authority of Singapore

Singapore: Focus on poor cyber hygiene… and lock-in/concentration

June 2021

Monetary Authority of Singapore

Monetary Authority of Singapore
10 Shenton Way MAS Building Singapore 079117 Telephone: (65) 6225 5577 Facsimile: (65) 6229 9229

Circular No. MAS/TCRS/2021/03

1 June 2021

To Chief Executive Officers of All Financial Institutions

Dear Sir / Madam

ADVISORY ON ADDRESSING THE TECHNOLOGY AND CYBER SECURITY RISKS ASSOCIATED WITH PUBLIC CLOUD ADOPTION

Public cloud services[1] are adopted by a growing number of financial institutions ("FIs") to meet their business and operational needs, especially with the accelerated pace of digital

Link

"…Common key risks and control measures that FIs should consider before adopting public cloud services:

- Implementing **strong controls in areas such as Identity and Access Management (IAM), cyber security, data protection and cryptographic key management (…)**
- Misconfigurations or poor cyber hygiene could result in unauthorized access to the cloud metastructure (…)
- **Managing cloud resilience, outsourcing, vendor lock-in and concentration risks (…)"**

FINOS Addressing Some of these Challenges

Regulators have identified some consistent thematic challenges as an industry we can help to address through FINOS Common Cloud Controls

Vendor Lock-in

The inability to move workloads between Cloud Service Providers.

Inconsistency of cyber controls

Missing or misconfigured controls results in increased cyber risk.

Scarcity of skilled workforce

CSP implementations vary greatly; competition for talent is intense; complex skill set requirements.

And ultimately, we could help address...

Fragmentation & Complexity of Regulatory Landscape

Focus by multiple regulatory agencies simultaneously creates risk to Financial Services firms.

The need for a Financial Services Public Cloud Standard

Why is this important?

- CSP differentiation makes regulatory, operational and cyber resilience complicated, bespoke and costly.
- Our regulators are increasingly moving towards establishing and enforcing technical standards.

Why is this important to FINOS members?

- The buck stops with the banks! CSPs are not responsible for institutional risk management, we are!
- FINOS banking members have the institutional knowledge to develop an *appropriate* Cloud standard, and the critical mass to work with CSPs to drive adoption.

What is being done?

- *FINOS Common Cloud Controls (FINOS CCC)* is an industry standard that describes consistent controls for a *subset of CSP services* that are common across CSPs and are fundamental to most solutions.
- CSPs would certify themselves against the standard in a machine-verifiable way.
- Various regulators can map their requirements to a single consistent standard, a public cloud regulatory "Rosetta Stone".

FINOS Common Cloud Controls – What is it?

The FINOS Common Cloud Controls standard consists of the following:

1. Cloud Services Taxonomy : a consistent taxonomy for **common critical services** provided by a specific CSP to facilitate identification and classification of similar services across CSPs.

2. Service Specific Data Flow Diagram : a high-level data flow of a generic service, providing sufficient details to understand common attack vectors in the service. This will necessitate the creation of a consistent nomenclature and iconography for cloud services and their dependent components

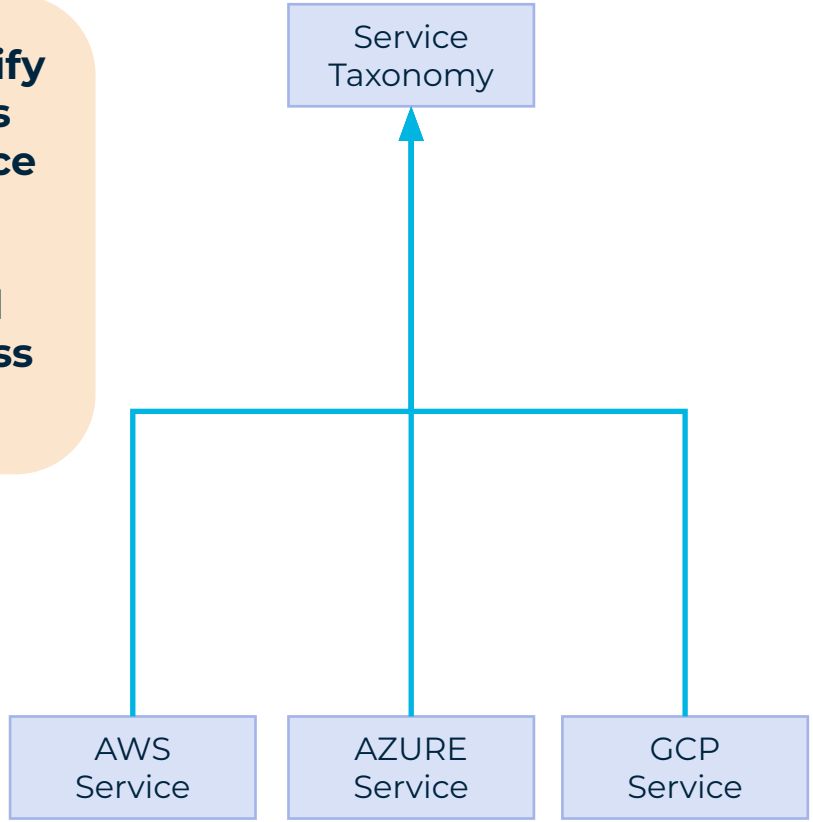
3. Threat Catalogue : a consistent taxonomy of common threat techniques, and associated mitigations, that may occur across services exploiting potential weaknesses. The MITRE Adversarial Tactics, Techniques, and Common Knowledge (ATT&CK®) is leveraged and extended where necessary.

4. Logical Controls Description : a logical control that provides a mitigation to a specific threat that a service has to address. The **Open Security Controls Assessment Language** (OSCAL) is a machine-readable data format used to define a control policy. This is a NIST standard that is maturing with controls now available to define the NIST 800-153 cloud standard.

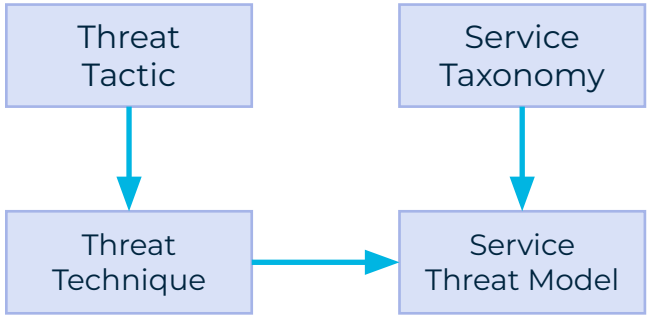
FINOS Common Cloud Controls – Putting it all Together

Each CSP must first classify their applicable services against a Common Service Taxonomy.

This identifies potential service alternatives across CSPs



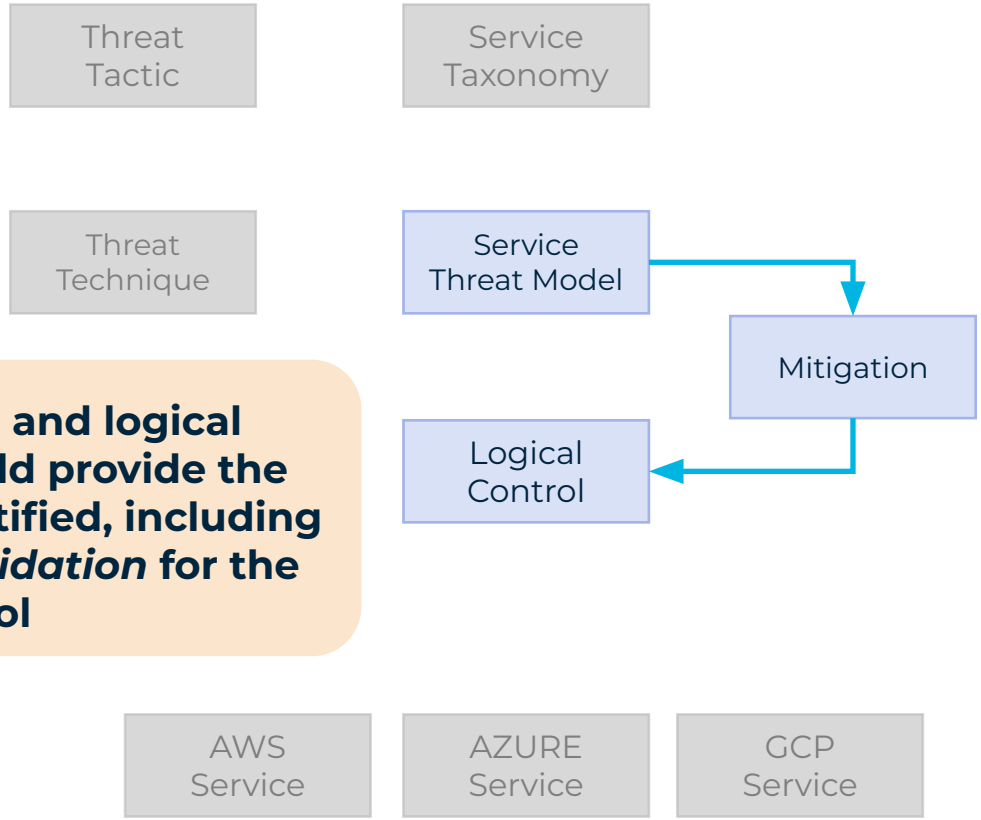
FINOS Common Cloud Controls – Putting it all Together



Leveraging the MITRE ATT&CK Framework and common architecture approach, a Threat Model for the generalized service is created

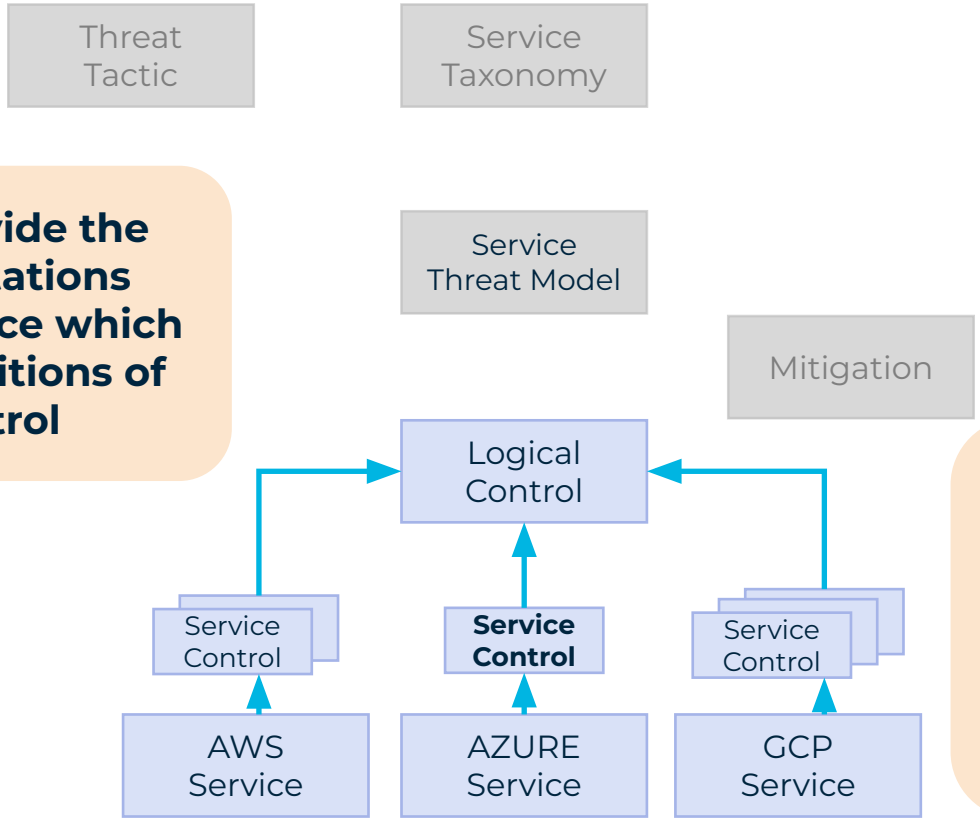
AWS Service | AZURE Service | GCP Service

FINOS Common Cloud Controls – Putting it all Together



The mitigations and logical controls that would provide the mitigation are identified, including an appropriate *validation* for the control

FINOS Common Cloud Controls – Putting it all Together



Each CSPs can provide the control implementations specific to their service which can satisfy the conditions of the logical control

...with these services considered compliant to the FINOS CCC standard for that service

Delivering FINOS Common Cloud Controls

FINOS Common Cloud Controls has been launched within FINOS with the following working groups

Define Cloud Services Taxonomy

- CSP agnostic
- Consistent, hierarchical
- Features/Capabilities
- CSP agnostic iconography to represent Services

Engage with MITRE Threat Catalogue

- Identify gaps in the MITRE ATT&CK® framework
- Engage MITRE to extend the framework
- *Start to develop service-specific mitigations*

OSCAL Description of FINOS Common Cloud Controls

- Define descriptor language (NIST OSCAL)
- Define a test approach for controls
- *Start to describe logical control(s) per mitigation*

Iterate Common Service Modelling

- Map common CSPs Services to the Services Taxonomy and associated Capabilities
- Model each Common Services
  - identifying Threats and Mitigations
  - Define Logical Controls to represent Mitigations

CSP Certification

- Identify CSP service specific controls to meet Logical Control validators
- Identify CSP specific Test execution framework
- Investigate efficacy of consumer certifications

After 3 months of formation FINOS CCC has **133 participants** and is maintained by **Citi, Goldman Sachs, Morgan Stanley, BMO, NIST, Google, Red Hat, Control Plane** and **Compliance Cow**.

Morgan Stanley

citi

BMO

Goldman Sachs

Red Hat

Google Cloud

controlplane

ComplianceCow

NIST

THE LINUX FOUNDATION

Join FINOS to collaborate on
FINOS Common Cloud Controls

Common Cloud Controls solves consistent thematic challenges identified by the regulators through open source

- ✅ **Cloud Concentration**
- ✅ **Inconsistent cyber controls**
- ✅ **Scarcity of skilled workforce**

... and ultimately ...

Fragmentation & complexity of regulatory landscape

THE LINUX FOUNDATION

Read the FINOS Press Release 👉

citi
RBC
NatWest
LSEG
Goldman Sachs
Morgan Stanley
BMO
GitHub
Red Hat
Google Cloud
SCOTT LOGIC
ALTOGETHER SMARTER
Adaptive
GitLab
SYMPHONY
controlplane
Container Solutions

Connect with FINOS to Find Out More