



SaaS CTRM offering: Cloud CTRM



We recognise that many of our clients today want to concentrate on their business and not concern themselves too much with IT infrastructure and application management.

Amphora is pleased to launch its Software as a Service (SaaS) for its Symphony CTRM product suite called Cloud CTRM that will take the burden of day-to-day managing the infrastructure, application management, user and access management, security , availability, monitoring as well as handling infrastructure changes when application architecture change. We will take care of all these while you can focus on using the platform to run the business.



What our SaaS offering provides

We provide a fully managed SaaS offering focusing on **seven key pillars**:

- 1 Fully managed Infrastructure and application**
- 2 Seamless application roadmap adoption**
- 3 Comprehensive security**
- 4 Highly available 'application aware' IT support team**
- 5 Client and resource isolation**
- 6 Access and user management**
- 7 Monitoring and maintenance**

We will take care of all these while you can focus on using the platform to run the business.

The following pages outline the key features and benefits of the offering.

1

Fully managed infrastructure and application

Cloud CTRM provides a fully managed cloud deployment covering infrastructure, security, networking, user management, application deployment and maintenance.

As client you would not have to manage any infrastructure procurement, management or maintenance. Our team will design and procure the infrastructure, network and deployment footprint required to run Amphora applications to support the required load, user and volume. Further our team will manage all infrastructure upgrades, patching on time. As all clients will align to similar infrastructure set up and designs, the overall management will be simplified providing a more reliable and assured environment for clients.

Further, procurement and renewal of all the licenses for infrastructure software spanning remote access, security, databases, security certificates and MS Office required for CTRM deployment will be managed by our SaaS team for you.

On demand UAT/TEST environments

An on-demand test environment will be provided for the client to test new features offered in a new release. Amphora will spin up this environment using client production DB and expose test environment to the selected test users. When the testing scope is complete and release gone live, the QA environment can be used as a “on demand” UAT environment as well.



Types of resiliency offered

While different public cloud providers will have varied resilience features, the Cloud CTRM offering tries to normalise and provide a consistent solution offering. This will cover;

Production database recovery

- Point in time recovery of production database to 1) one of the EoD snapshots for last 30 days 2) one of the EoM snapshots for last 12 months.
- Redundancy and high availability for the database storage across the primary region and DR (Disaster recovery) region.
- This database snapshot and recovery is available in both our Silver and Gold offerings.

Business Continuity (BC) and Disaster Recovery (DR)

- This is critical if a whole region is unavailable (not just the data centre) due to natural or man-made disasters.
- Our silver offering provides cross region disaster recovery for your valuable data stored in the production database. The data will be replicated across regions in encrypted format and in a DR event

the data can be restored in a fresh Symphony environment created in the DR region. Due to cross region latency there will be a 10-15 min data lag when data is replicated between primary and secondary site. Hence there can be a maximum 15 min data loss if a DR event happens. In the Silver offering manual intervention is required to bring up the DR environment.

- Our Gold offering provides the full “belt and braces” DR solution where data and server state will be continuously real time replicated from primary to secondary site. In a DR situation the fail over mechanism will automatically spin up the DR environment including full network stack fail over as well. This will ensure only a down time of minutes (<30 mins) and less than 1 minute data loss. The Gold offering provides automated fail over and starting the DR site with minimal human intervention.



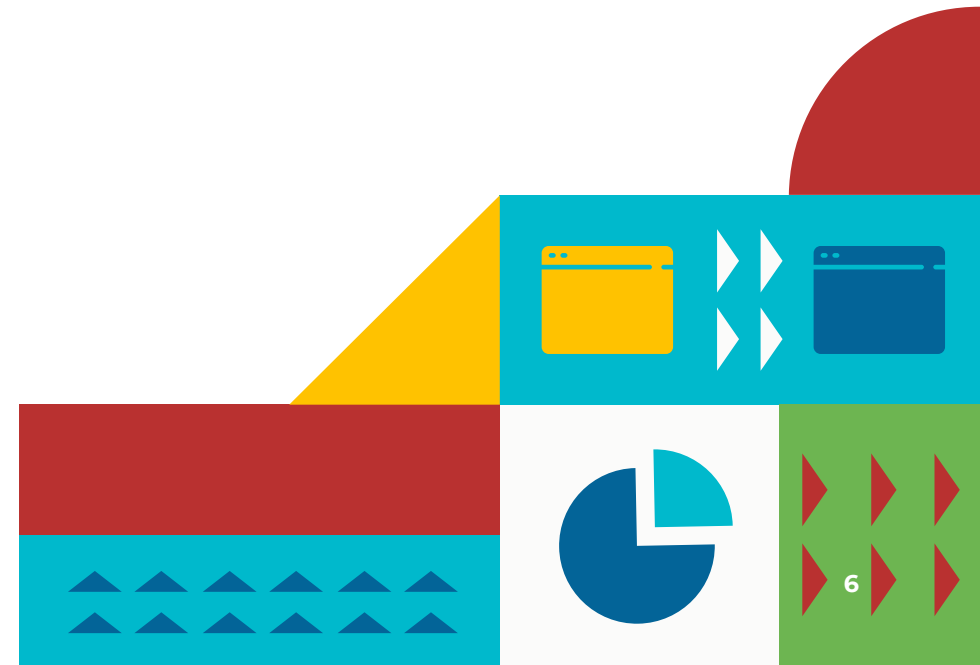
2

Seamless application roadmap adoption

One of the biggest overheads the clients will have with any vendor product is to support changes in its software architecture, security architecture, deployment architecture and adoption of new technologies.

With the fully managed offering this overhead is fully remediated. When the client is comfortable with the functional features offered by a new version they can seamlessly migrate to a newer version of the application. Amphora DevOps and DatabaseOps will manage the migration on behalf of the client.

Especially when the current Symphony application suite will be migrating to newer CommVM architecture step by step, the major changes to application, deployment and infrastructure architecture will be transparent to the client in the SaaS offering.



3

Comprehensive security

Amphora will manage all the security for the client and ensure security vulnerabilities of Amphora deployment in cloud offering are addressed on time and aligned with compliant security standards.

Security provisioning will cover areas spanning:

- Virtual Private Cloud (VPC) encompassing network access control (NACL) and granular access management for individual client deployments.
- Perimeter security covering firewall, proxy servers and additional perimeter protection using Intrusion detection and intrusion prevention systems.
- Encrypting data in transit by using TLS/SSL for all communication between users and the VPC. Industry compliant key lengths, algorithms and standards will be adopted.
- The deployment will support encrypting data at rest for production Database (database layer sensitive data encryption) ensuring confidentiality and assurance.
- If needed working with client's corporate IT team, we will create point to point (P2P) VPN between the Cloud CTRM deployment and client's core IT network to facilitate integration with client's other IT systems like CRM, ERP, Treasury, business intelligence and reporting systems.
- Additional security between users and the Cloud CTRM can be provided using VPN clients as well as multi factor authentication (MFA) based on client's requirements.



4

Highly available, 'application aware' IT support team

A client would not need their own IT team to manage the Amphora deployment as our team will fully manage it.

A highly available multi-disciplinary team comprising of infrastructure, DevOps, Database Ops, Level 1 support staff pool will be provided compared to possible single person risk a client will have in their organisation.

This team will provide all level 1 support including user management and addressing application issues. Each client will get dedicated service desk channel to raise their requests as issues (i.e. JIRA service desk).

The added advantage a client has with us compared to another Cloud provider is that our team knows about Amphora application stack and quickly triage and resolve issues.



5

Client and resource isolation

A client's Cloud CTRM deployment will be completely segregated from other clients. Network and application level segregation will ensure there is no inter-client access, resource sharing and information leakage.

In addition to infrastructure, network and application isolation, each client environment will be accessed using different credentials and keys. The operational staff will have segregated responsibilities and client accounts to manage with every action logged and audited.

Further, a client's deployment will not spill over to other clients' resource space as resource constraints and monitoring will be in place to isolate such incidents.



6

Access and user management

Client's authentication and entitlements management will be offered using industry accepted Identity and access management (IAM) solutions like Windows Active Directory services.

Each client will receive their own IAM domain completely segregated from others. The Level 1 support pool will manage a client's user on-boarding, access and entitlements provisioning.

A full audit trail will be provided to identify "who did what when".

7

Monitoring and maintenance

One of the biggest overheads of client's IT team is to maintain the platform spanning database health management, housekeeping/purging and archiving, back up, recovery and restoration, performance monitoring as well as monitoring the overall platform health from resource usage to exceptions.

When the application and infrastructure architecture changes client IT teams will lag adopting the new technologies. With the Cloud CTRM offering, Amphora will manage, report, triage and remediate all such issues for the client.

Also, based on the client's requirements, we can provide multiple availability zones, full stack or database redundancy to meet the required Return Time Objectives (RTO) and Return Point Objectives (RPO).



Supporting compliance & jurisdiction requirements

As we use major cloud providers like Amazon AWS and Microsoft Azure, we will discuss with the client to ensure the right jurisdictions are selected that meet their data locality and compliance requirements. All major cloud providers are certified by many global and regional compliance certifications.

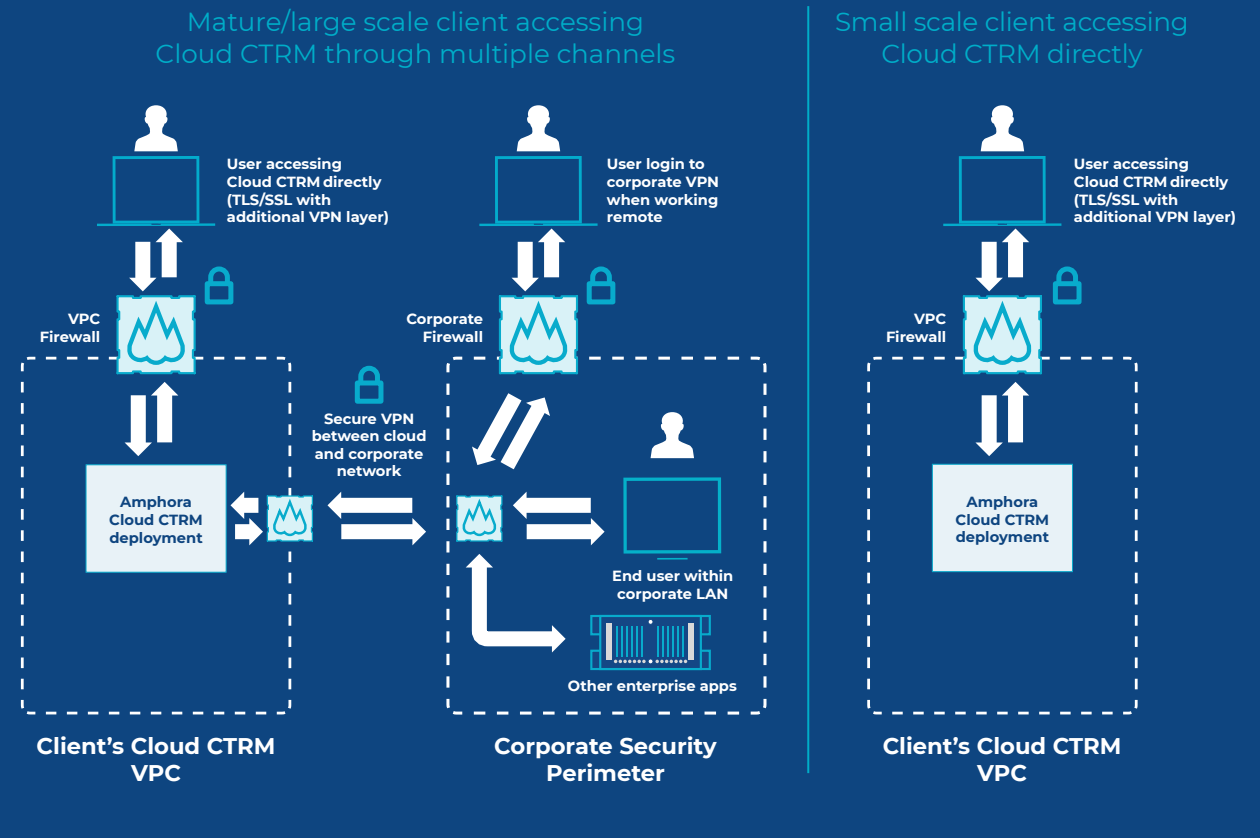
Major public cloud providers we use like Amazon AWS, Microsoft Azure are certified by many international standards like PCI, ISO, CSA, SOC as well as many regional standards.

Data residency

A key requirement for some users will be that their data is only stored within their jurisdiction/country. Based on such requirements Cloud CTRM deployment will be carried out in hosting environments that are within the client's specified geographic boundaries.

Tailoring to client maturity

Cloud CTRM can be tailored to cater the maturity of the client. For mature and large clients that has other IT integrations, a multi-channel access mechanism can be provided whereas for small scale clients who use Amphora CTRM as their key IT system, a simpler direct access channel can be provided. Both offerings will fulfil all the above criteria explained.



Planning & scoping

As this is an additional service offered on top of the Symphony licenses, we will first identify any specific security and compliance requirements the client has and then provide a cost proposal for consideration.

Based on the client requirement we offer different service levels. The table on the right shows scenarios for Silver and Gold offerings.

Key features	Silver offering	Gold offering
Fully managed production environment	✓	✓
¹ On demand fully managed test/UAT environment for max 5 users x 12 hrs x 5 days per week availability	✓	✓
² End user access using MS Remote Desktop Service (RDS)	✓	✓
Encrypted connectivity from client to cloud environment	✓	✓
Secure and isolated virtual environment	✓	✓
Network and perimeter security, encrypted data at rest	✓	✓
Dedicated service desk channel to raise issues	✓	✓
24 x 5 Level 1 support staff	✓	✓
Application health monitoring and alerting to L1	✓	✓
Encrypted & highly redundant production DB backup/snapshots	✓	✓
³ Point in time backup and recovery of production database	✓	✓
High availability of services within a region (e.g. London)	✓	✓
Disaster Recovery restoration (RTO 6-8hrs, RPO 10-15 mins)	✓	NA
⁴ Disaster Recovery restoration (RTO <30 min, RPO near zero)	NA	✓
Automated fail over to Disaster Recovery site	✗	✓
Added VPN layer for client to cloud connectivity	✗	✓
⁵ Cloud to corporate VPN (priced separately as data volumes will vary)	✗	✗

- 1 Depending on the scale and availability, the scope can be increased, and charge adjusted.
- 2 If 'Citrix Virtual apps' is required it can be added separately.
- 3 Back up restore points from 1) one from the last 30 days EoD 2) one from the last 12 months EoM snapshots. Any further requirements for additional snapshots need to be costed separately (e.g. Every 3/6 months).
- 4 Disaster recovery drills and testing needs to be costed, separately based on client's compliance requirements.
- 5 A point to point VPN between Cloud and client's corporate network is not part of the below pricing as it will depend on the bandwidth and client requirement.

Geographies we support

At the moment Cloud CTRM SaaS offerings are delivered using industry leading Amazon AWS and Microsoft Azure cloud hosting. Our SaaS offering can be provided in the following countries while meeting data residency requirements.

North America

USA
Canada

South America

Brazil

Europe

United Kingdom
Switzerland
Germany
France
Italy
Norway
Ireland
Sweden

Asia

India
United Arab Emirates
Singapore
Japan
South Korea
Bahrain
Hongkong

Africa

South Africa

Oceania

Australia



Amphora is the premier software solution provider for energy and commodity trading, risk management and logistics execution.

Businesses turn to Amphora for trading software depth, rapid and reliable delivery, and outstanding customer service. Our software solutions offer risk management as well as transactional strategies for global crude oil, refined products, coal and ore, metals and energy derivatives including gas and power.

We operate in the following markets:

Oil & Products

Petrochemical

LNG and NGL's

Freight

Coal & Ore

Metals & Concentrates