

Cyclone

Complete Dynamic Multi-cloud Application Management

Network-as-a-Service, application deployment, service access management and end-to-end security solutions for Multi-Cloud environments

AT GLANCE

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Interoute Spa (IT)

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Cnrs- Centre National De La Recherche Scientifique (FR)

CYCLONE

integrates and improves mature, open-source components, such as StratusLab, OpennNaaS, SlipStream and TCT

Main Objectives

Application service providers (ASPs) develop, deploy, and maintain complex computing platforms within multiple cloud infrastructures to improve resilience, responsiveness and elasticity of their applications. CYCLONE project targets ASPs, providing them with software and tools that:

- » facilitate the deployment, management, and use of their complex, multi-cloud applications;
- » enhance the end-to-end security and network management of those applications.

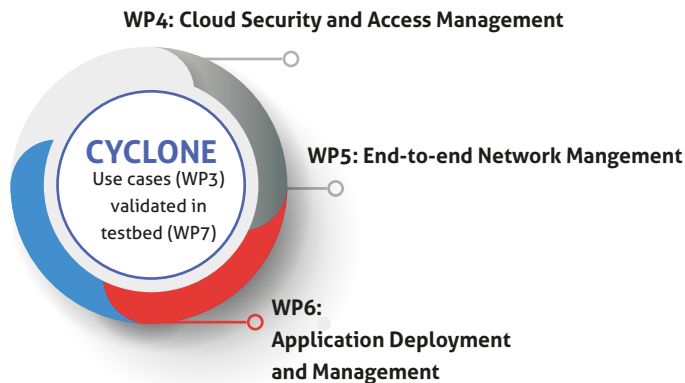
Concretely, CYCLONE will:

- » improve cloud services in the Infrastructure-as-a-Service (IaaS) layer by integrating network services into the cloud offering for a direct control over virtual machine network accessibility, intra-site data access, and inter-site data transfers;
- » develop tools that provide enhanced functionality for cloud providers that agree to federate their resources, such as dynamic allocation of bandwidth between cloud providers and common authentication mechanisms;
- » provide tools for application developers to automate the placement of service components, scale resources toward a full-featured Platform-as-a-Service (PaaS) offering;
- » develop mechanisms to more easily deploy and manage applications and, thus, maintain Software-as-a-Service (SaaS) systems;
- » provide software that allows developers to ensure the end-to-end, secure use of data within their application as well as secured access to remote data sources;
- » demonstrate that the CYCLONE software meets the needs of concrete academic and commercial use cases, while providing frequent, production-quality releases of that software.



The project's primary goal is to provide the software for a production-quality platform that facilitates the deployment and management of complex, cloud-based applications.

CYCLONE will integrate partner's established cloud solutions for managing software-defined networking, application deployment, cloud security and access management into a holistic cloud action and resource model. These integrated models create a holistic cloud management platform, which empowers platform users to deploy their services on any cloud of their choosing and still be able to manage it uniformly.



CYCLONE will work on:

- » Federated identity management and end-to-end secure data management
- » Deployment and management of complex services with resource tuning that permits real-time response of the system
- » Dynamic allocation of high-bandwidth, inter-site connections
- » Ability to provide high-level, generalized features to applications that can be easily incorporated into application deployments



Initial development- Applications areas:

Two flagship applications areas have been selected to guide the initial development of the CYCLONE tools: an academic cloud platform and associated services for bioinformatics research and a commercial deployment for smart grids in the energy sector.



High Performance Heterogeneous Cloud Infrastructures.

CYCLONE software allows users to aggregate cloud resources from both private and public providers to build a cloud platform that is tailored to their application's needs.



Federated Cloud Networking

CYCLONE will extend SlipStream to allow the selection and provisioning of resources based on user-defined algorithms.



Automated Discovery and Service Composition

CYCLONE will enhance mechanisms for discovery of applications and services in SlipStream to enable application-level monitoring, identity-management, and end-to-end security



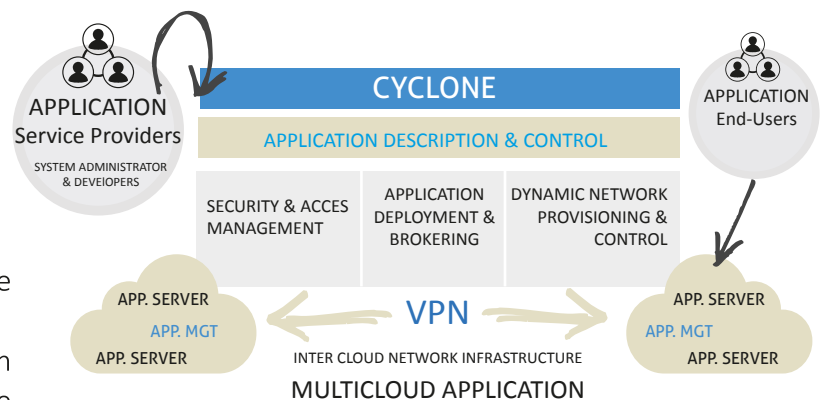
Cloud Security

End-to-end security will allow ASPs to minimize the exposure of their applications and enhance their security.



Dynamic Configuration, Provisioning, and Orchestration of Cloud Resources

CYCLONE will extend SlipStream to allow the selection and provisioning of resources based on user-defined algorithms.



Easier multi-cloud deployment



Inclusion of networking as a first-class cloud resource



Ease of deploying (and customizing) the optimal level of security, placement algorithms, scaling algorithms, and monitoring

With CYCLONE, users can flawlessly use a variety of public and private cloud resources, and cloud providers can provide advanced services and get a competitive advantage in the IaaS, PaaS and SaaS market.

