

A **Integrasoft** White Paper



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**CEP Service Cloud
Virtualized CEP Services
Integrated with GigaSpaces XAP
(White Paper Synopsis)**

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C o n f i d e n t i a l

Introduction

Complex Event Processing (CEP) is gaining ground in corporations across industry verticals. The first generation of business applications leveraging CEP have proven the advantages the technology offers beyond those that initially drew us to CEP in the first place. As a result a second wave, much broader in business requirements, are leveraging CEP as a core technology component.

Its rapid expansion across the enterprise means that CEP technology must dovetail with the direction many IT organizations are moving towards, distributed computing and virtualization e.g. Cloud Computing.

This paper focuses on how the limitations of today's CEP engines are eliminated; creating "CEP Service Clouds" that natively take advantage of all that Cloud Computing offers. The name may not be a marketing first choice but it is a technically accurate description.

We will cover the fundamental architecture of CEP Service Clouds and how Integrasoft is working with other industry leading companies to be the first to offer this technology in a Cloud environment.

The Challenge

Event processing technology has been around for years and is leveraged by many firms. What is different today is how the technology is evolving into a family of CEP engines offered by vendors and through open source; the choices of which engine(s) to leverage are wide. For anyone considering to or using a CEP Engine one key consideration is the consumption of and correlation of events in a way that is out-of-the-box scalable to meet the business demand. With a greater push into Cloud infrastructure, many firms are finding the need to offer CEP Services across multiple CEP engines regardless of the nature of the Cloud.

Today's commercial CEP engines are just that, a single engine or a "cluster" of engines forming a single large CEP hub. This is traditional client/server topology. As seen with other traditional sever based technologies, enabling a true cloud deployment is not a simple task.

What are the alternatives, live with a server based deployment and let the business developer figure out how to scale as demand increases? We must look to the industry to address distributed CEP and Cloud Computing. This is what Integrasoft and its partners have done.

Distributed CEP Services

We are seeing the convergence of the three most pervasive technologies in recent years, Service Architecture, Distributed Computing in the form of Grids and Clouds, and Complex Event Processing (CEP). Putting aside the vocabulary debate of what is a Cloud and is it really Complex Events; each of these technologies offer new and better ways to operate data centers, develop applications that scale to business demand, operational responsiveness and improve time to market.

The Cloud runs business services, ideally in a virtual environment and depending on the service characteristics, be partitioned to scale in the cloud's natural distributed infrastructure. How services are implemented are completely up to the service architect and developer including among them:

- definition: public interfaces, tight or loose couplings, etc.
- implementation: single server or distributed sub services, languages, tools, etc.

Distributed CEP Services are just that, using a services oriented architecture leverage the power and benefit of a CEP engine in its implementation. A natural progression as services are built with CEP engines is how can these services better scale, perform, and be run and managed in the enterprise Cloud. Exactly how to do this is not straightforward. How to transform a single CEP engine into a collection of CEP instances that communicate and interact with each other and can support one or multiple business services, how to integrate a distributed CEP environment into a cloud, and so on.

One of the characteristics of Cloud Computing is to leverage many CPUs to scale up and down as the business requirement demands.

Functional Components

Distributed Intelligent Services

Services across the cloud - Distributed CEP Cloud(s)

Simplified Service Definition

Development and deployment are simplified to common definitions of

- Rules acting on Event Streams
- Events Streams
- Custom Actions

Heterogeneous CEP Clouds

Events and Actions are defined once and used across any CEP Engine that the CEP Service Cloud has bindings to. This results in a heterogeneous CEP Service Cloud where services can be deployed and interact on multiple CEP vendor offerings.

CEP Engine

Widely know CEP Engine, ESPER, is used for ease and familiarity. Additional bindings can be made available for true heterogeneous environments.

Service Packaging Options

- Services can be deployed with pre-defined behavior
- Application developers can extend the pre-defined behavior or create their own behavior

Transparency

Applications do not need to care about where Services are defined and run in the cloud

Scalability

Cloud(s) of services and extends as needed

Eliminate Barrier to Entry

- Simplified creation, deployment and using of virtual CEP services
- Faster development time
- Faster time to market

Low Cost

- Lower software cost
- Less maintenance costs
- Less maintenance time

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