

Clareti³ Integration

Technical Overview 4.0

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Clareti Integration - Business Integrated

This document describes how Clareti Integration, Gresham's fresh approach to integration, helps any organisation meet its business objectives on a small or enterprise-wide scale. Unencumbered by traditional integration methodologies, Clareti Integration(r) can integrate all resources and all customers and partners within a single framework, leaving an organisation truly Business Integrated.

Business is increasingly recognising the need for common, continuously available processes that span disparate systems landscapes and which can support global 24x7 operations. Clareti Integration incorporates the functions of any mainstream EAI tool, and is underpinned by an architecture that enables true enterprise-wide integration.

Traditional product design is predicated on the need for short range interoperability of systems so focus was put on function; specifically:

- Connection to the resources and applications within an environment
- Differing data formats produced and consumed by applications
- Rules Definition for both process construction and data validation

With these accepted as common requirements, all vendors addressed them by converging on the following components:

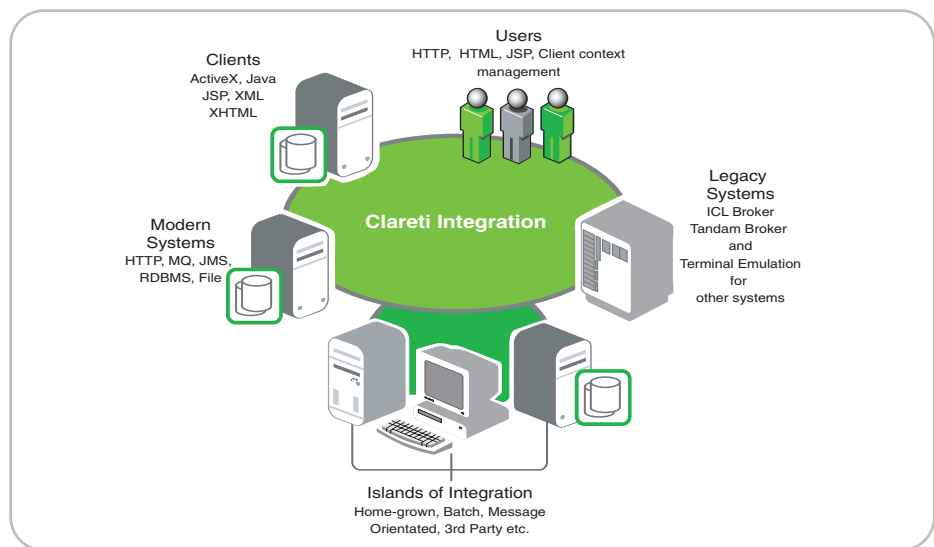
- Adapters to resolve connectivity issues
- Metadata repositories to store and manage differing messaging formats
- A graphical approach to designing the rules of data movement

In localised environments this attention to function was appropriate. However, in order to enable organisations to address the broader systems landscape, a more advanced solution is required. A solution that provides an architecture and design philosophy that allows integration to scale beyond the constraints of the hub and spoke.

Clareti Integration - Built for Business

Clareti Integration provides the functionality expected of any mainstream EAI tool, and super-imposes a state-of-the-art framework. The result: a single integration product that can embrace the entire systems landscape. Clareti Integration is able to address equally all of the integration participants; modern and legacy systems, users and existing islands of integration.

Clareti Integration gives equal consideration to all integration participants



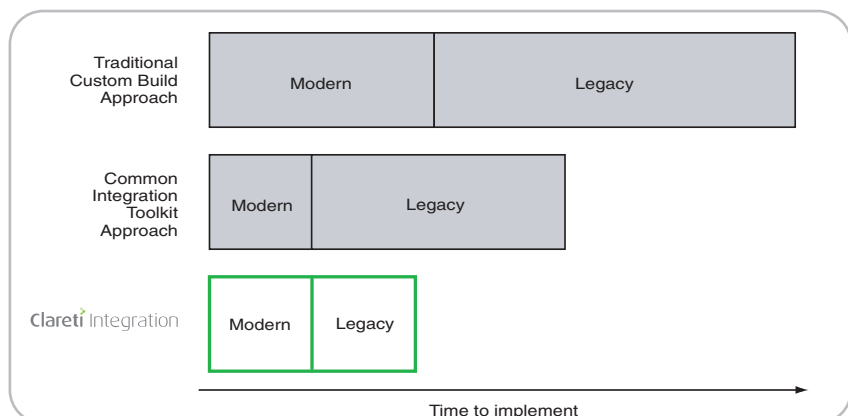
Modern systems

These are integrated with pre-built Java components, ensuring a rapid and consistent mechanism for integrating messaging systems, databases, the internet, e-mail and other technologies.

Legacy system

Here integration is managed in two ways. The first is through screen adapters providing cost effective, non-intrusive and robust access to applications. Common screen types plus VT, ICL7561, TA6530 and others can be handled. Alternatively, Dataserve or Tandem Message Broker can be used to make direct calls either to an application or operating system.

Clareti Integration's packaged legacy adapters ensure that solutions can be rapidly delivered, in a matter of weeks not years



Users

Users are addressed through the provision of an integral web server and presentation layer or via existing presentation layers. Most importantly, Clareti Integration supports client session management throughout an integrated process.

Existing Islands of Integration

These can be exposed and expanded through a distributed Clareti Integration deployment. Third party and proprietary components may be utilised across the enterprise as services. As a result of Clareti Integration's lightweight footprint, business processes may span integrated islands without impacting performance or requiring additional resources.

In addition, Clareti Integration provides API's for ActiveX, Java and JSP via Session Beans that return either XML or XHTML.

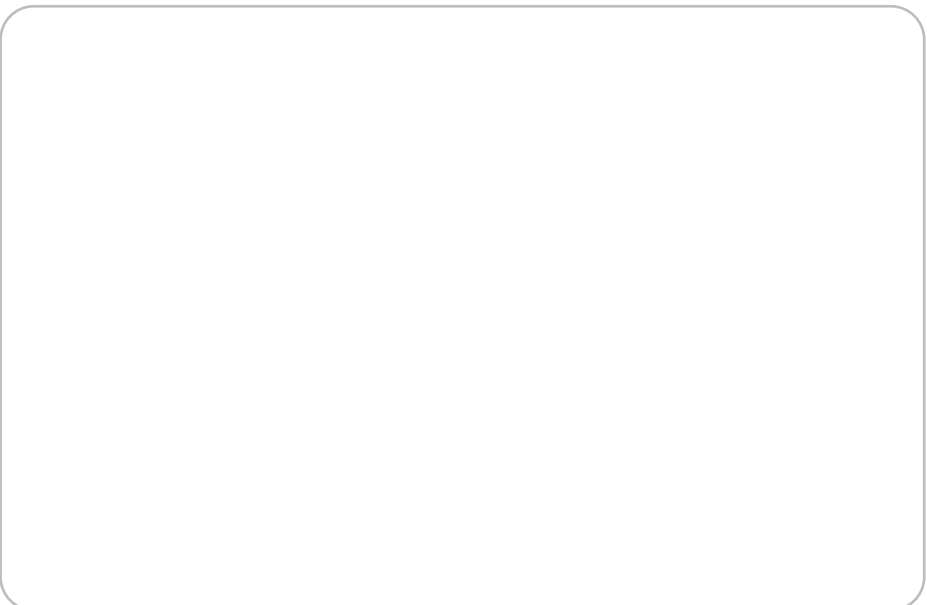
Clareti Integration may be considered the "integrator's integrator" consuming and publishing information between architectures and exposing third party components, making them available across the enterprise.

Clareti Integration Architecture - The Key to True Enterprise-wide Integration

The Evolution of EAI

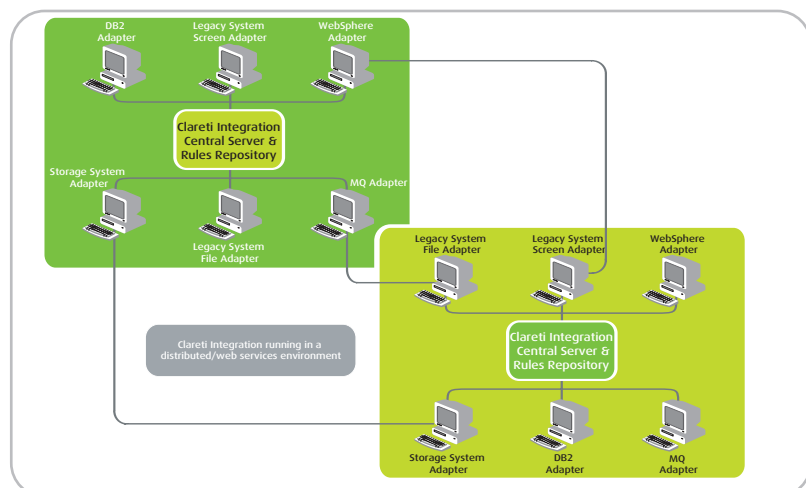
Addressing any integration need within a single integration architecture, is fundamental to rapid and economic delivery in complex environments. Key to orchestrating an expansive and complex environment is the ability to deploy seamlessly across a network. This means distributed computing. Until now, tools have not been built with "reusability", "service based architectures", "channel architectures" and "distribution" in mind.

Evolution of EAI



Clareti Integration is different. It can be deployed across the entire organisation in a manageable way. For example, Clareti Integration can publish host systems as services and go on to clone and load balance those services globally.

Clareti Integration Operations in a Distributed Environment

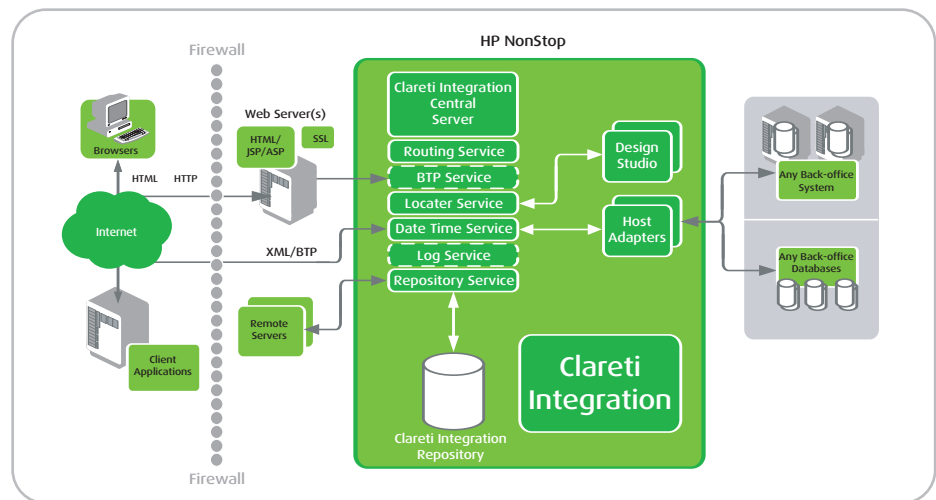


High Availability and Scalability by Design

Clareti Integration is architected to avoid inherent limitations in processing capacity. Engineered as a high availability, high throughput product, Clareti Integration applies concepts of neural network processing and resource management within a distributed Java framework.

Two key architectural factors enable Clareti Integration to offer near limitless scaling and high availability: stateless operation and distribution.

Clareti Integration 4.0 Enterprise Integration Server Architecture



Stateless Operation

Clareti Integration is stateless; a design consideration fundamental to any high throughput computing system. It ensures minimum system resources are used to perform a given task as it avoids unnecessary interaction with physical devices. Stateless operation ensures the highest possible degree of vertical scaling, i.e. within a single machine.

Distribution

Clareti Integration has been engineered to an advanced peer to peer model, in order to provide all of the accepted performance and resiliency benefits, whilst avoiding the overheads of inter-process communication.

Clareti Integration's Design Studio allows processing components to be deployed in a number of ways that ensure high throughput and/or high availability:

- **Distributed** - Machines may be dedicated to run one or more deployment units. This allows a machine to be dedicated and tuned to a particular function within an integrated solution. For example this could be a particular Transformation or access to Message Orientated Middleware.
- **Cloned** - Cloned copies of Clareti Integration deployment units can run on many machines enabling load balancing and parallel execution of integration processes. Any routing paradigm may be employed to ensure constant transaction throughput.

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- Any routing paradigm may be employed to ensure constant transaction throughput. For example, this could be route based upon connection threshold, or route based upon machine utilisation. Cloned processes allow for the automated failover of services in the event of unexpected loss.

Clareti Integration's distributed architecture delivers true peer to peer communication and parallel computing. This ensures maximum throughput, optimal utilisation of hardware resources and high availability.

Design and Deployment Components

Clareti Integration's design components include:

Clareti Integration's design components include connectors, data management and rules application.

Connecting to the integration domain

Clareti Integration provides an "adapter" interface to the applications and resources that exist within the integration domain. The adapter model allows interfaces, tested against host systems and resources, to be created in a matter of minutes. It achieves this by utilising a library of predefined adapter types and an open interface for the use of custom or third party connectors.

For any particular application or resource, Clareti Integration adapters encapsulate the following:

- **Bi-Directional Connectivity** - Clareti Integration adapters provide for bi-directional communication with resources i.e. "Put" and "Get". Synchronous or asynchronous calls can be used. Dependent upon the resource type additional specific properties are exposed to the designer for dynamic and static reference. Two categories of adapter exist: client and server. A client adapter provides event notification facilities to Clareti Integration (for example message arrival notification), whilst a server adapter provides Get and Put functions on request.
- **Resource Management** (session/connection). Fundamental to high volume, high throughput integration is Clareti Integration's intelligent resource management and policies. Many resource connections and adapters may be active at any one time in a distributed environment. Clareti Integration ensures that maximum throughput is achieved through any external interface, for example a database adapter. Adapters and routing may be dynamically altered during operation to ensure peak business processing requirements are handled seamlessly.
- **Physical to Logical Data Translation** - Clareti Integration operates on a logical data representation of the physical format handled by the adapter. This logical or canonical format is known as "Metadata" within Clareti Integration. In order to present a Metadata representation of a physical format, the adapter performs a mapping operation defined by a "Layout" or "Buffer".

Understanding the Data

Understanding and validating data is founded on Clareti Integration's Metadata model. The Clareti Integration Studio allows physical formats to be described with ease. This includes the ability to import definitions should they exist. For example, in XML Schema, DTD, WSDL, RDBMS, or Screen, any physical structure can be described and Metadata generated using the tools provided.

Clareti Integration performs a structural validation of the data to be consumed or produced. All data processing within the framework occurs upon this well formed and validated XML Metadata model of the physical environment. This simplifies the application of rules and processes significantly.

Applying Rules

Once a resource is connected and its data is understood, Clareti Integration provides an easy to use, graphical toolset for the definition of complex processing rules. Two components support rule definition:

- **Transformation** - Clareti Integration Transformations allow the mapping of one Metadata definition to another and the application of data level rules to the information being parsed. Transformations are constructed of one or more "Transforms", each describing a discrete function. Over one hundred Transforms are supplied including aggregate, arithmetic, string manipulations and conversions. Transforms are entirely user-extensible using Java code.

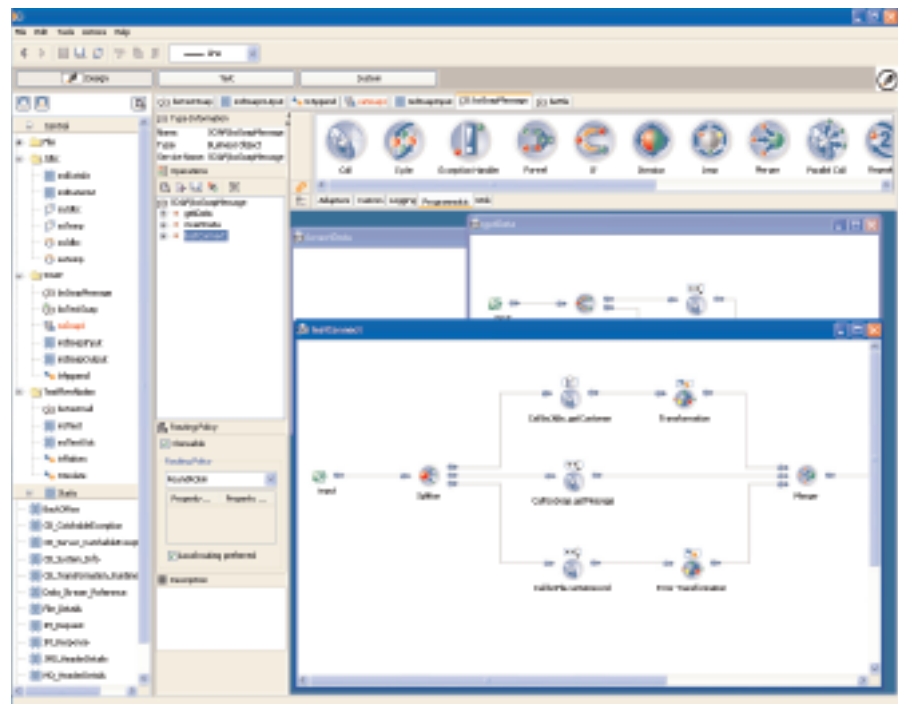
Clareti Integration Transformation provides a clear and simple mechanism for data transformation that hides no logic in scripting or expressions.

- **Business Object** - Constructed from a palette of "flow nodes", a Business Object may describe any integration workflow logic that is required to form a composite process across resources and applications. Flow Nodes encapsulate:
 - A logical operation - If, switch, iterate, loop
 - A data operation - Merge, split, transform
 - An external "call" - To an adapter or other business object.

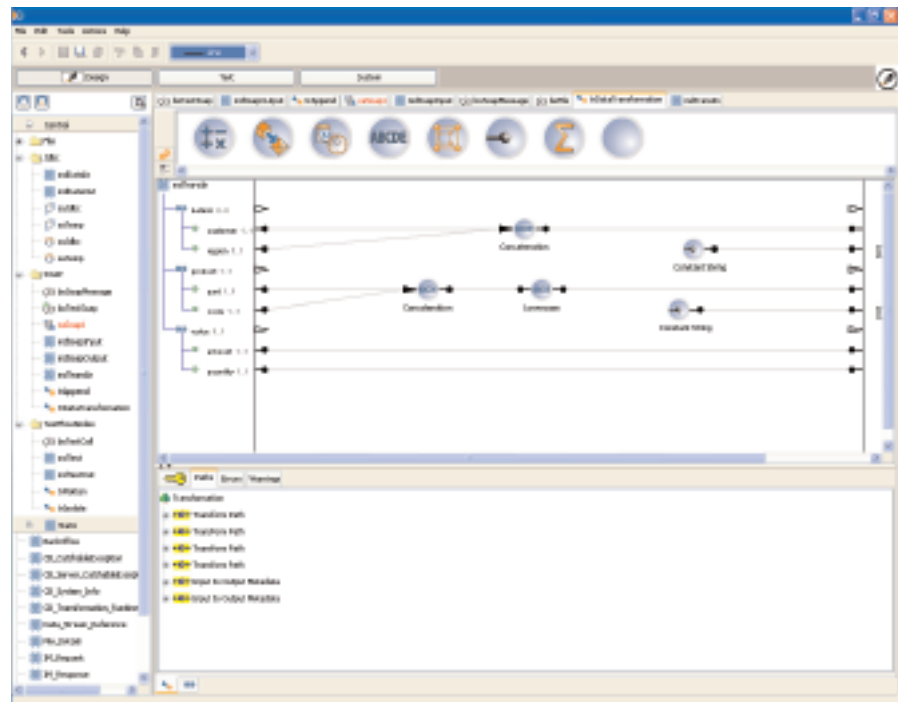
Business Objects provide the integrator with a graphical definition of integration and business logic. Any logic can be described. For example, it could describe dummy user interactions with a legacy application. Alternatively it could be used to construct a distributed, high volume, message-based process. Flow nodes are designed to take the complexity out of accommodation parallel, heterogeneous computing environments, by enabling many objects to be run concurrently across multiple machines and the results to be easily aggregated and transformed.

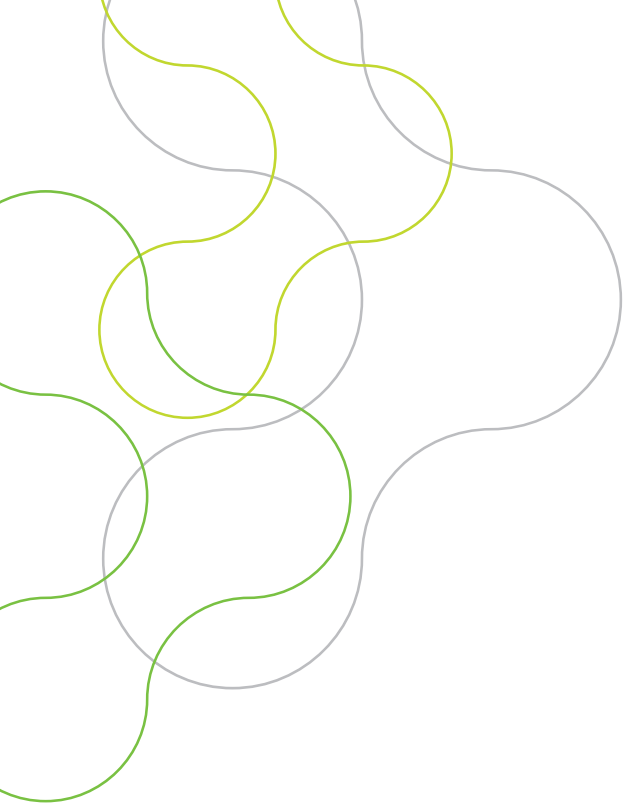
The Business Object provides a consistent graphical palette with which to "paint" process definitions quickly and accurately.

Clareti Integration Studio - Developing Business Objects



Clareti Integration Studio - Developing Transformations





Summary

Clareti Integration uses integration technology that addresses the current and future needs of companies. It integrates modern and legacy systems, existing islands of integration, and users. Its high performance, lightweight footprint and distributed architecture enables Clareti Integration to scale from a departmental deployment to a single, enterprise-wide integration framework. Developed totally in Java, it is hardware and operating system independent, enabling a true, write-once, deploy-many architecture.

Clareti Integration's design philosophy is based on delivering maximum value to today's enterprise at lowest total cost of ownership.

About Gresham

Gresham Computing plc (LSE:GHT) specialises in the provision of real-time financial solutions to banks and corporates, and has a well-deserved reputation for technical excellence, reliability and a strong service culture. Our storage division helps the largest data users better manage unrelenting data growth.

Further information

For more information on how Clareti Integration can help your company visit www.gresham-computing.com or you can email us at info@gresham-computing.com

Alternatively you can contact our offices directly.

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