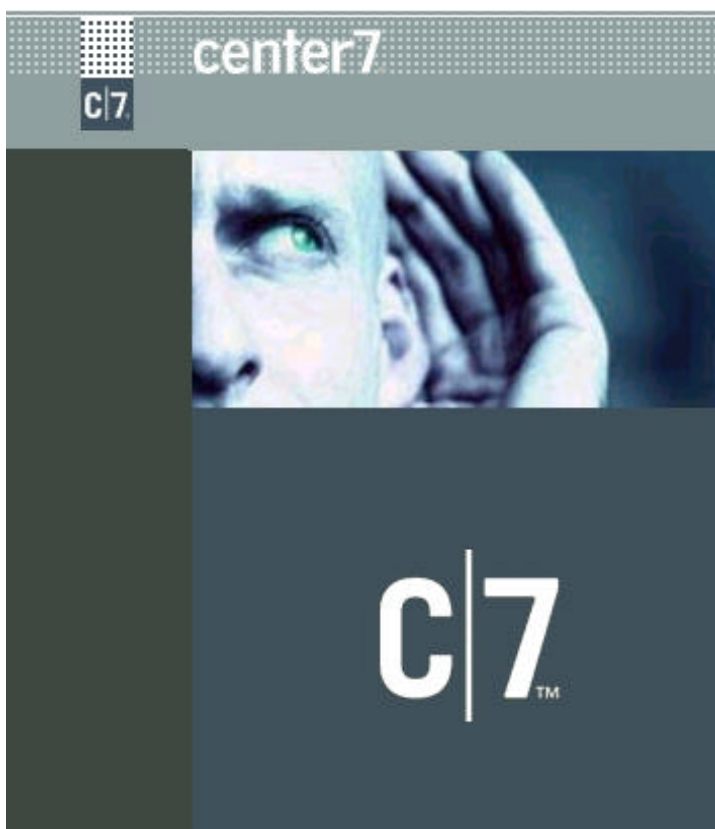




Center 7™

Business in Motion



White Paper

HotFramework Technology



Overview

In the fast and sometimes rough and tumble Internet market, several significant needs have emerged in the areas of development, integration, timing, scalability and reliability. The ability to meet these needs will significantly alter and could dramatically accelerate the adoption and use of Internet applications and services.

Center 7 (C7) is a new class of business partner that enables any organization to quickly design, develop, deploy and manage comprehensive Internet solutions that are accessible, scalable and reliable. Using advanced technology, Center 7 has aggregated a collection of standard Internet services and applications and made them available for easy access and integration. These services and applications are hosted and available anywhere on the Internet through C7's world class network operations center and an innovative virtual network of storage and management services. Using Center 7, any new dotcom company can be designed, deployed and operational for heavy and sustained use in a matter of weeks.

The heart of the Center 7 solution is HotFramework technology. HotFramework provides a comprehensive set of standard Internet services that are accessible and operational through a few lines of HTML, C or Java code. These services include e-commerce storefronts, shopping carts, payment processing, storage, database, shipping, tax, management and up to 200 individual services that are used in all facets of business to business and business to consumer e-commerce. Dotcom companies and Application Service Providers (ASPs) will be able to quickly and easily create a world class e-commerce site by assembling 'Lego-like' HotFramework services into a real solution that is scalable and reliable.

Organizations using C7's HotFramework services will enjoy the benefits of stress tested solutions, high scalability, and 99.999% up-time. Using an innovative application of Computer Associates' neural agent (Neugent) technology, a comprehensive management interface and a distributed network of data centers, C7 provides a scalable Internet application infrastructure that guarantees availability and up-time--no matter the application or volume of traffic.

This paper outlines Center7's HotFramework technology and the infrastructure and management services available to organizations of any type that are rolling out Internet sites and online services. The C7 solution will be of primary interest to new dot.com companies that require rapid implementation and significant scaling.

Current Situation

The steps from Internet idea to successful dot.com IPO can be fraught with peril--most of it attributed to the difficulty and time involved in development. The steps involved in creating a successful e-business site usually include the following:

- Design - the definition of business processes and overlaying them with Web pages that collect, store, manipulate, and distribute business information.
- Development - the coding of the design phase which usually involves HTML, Java, XML, database, PERL, CGI, Active Server Pages, VB and many other development tools.
- Integration - the connecting of a new Web application with existing processes, databases or applications; this often involves connectors, translators, shims, bridges, etc.
- Physical Infrastructure - the installation and setup of physical Internet servers and services including Web servers, database servers, routers, caching, firewall, backup systems, redundant/fail over systems, load balancing, etc.
- Testing – stress and load testing to determine limits and constraints (not often accomplished with most implementations)
- Management Processes - a broad category including the implementation management and security mechanisms as well as physical management and security resources all to ensure the ongoing safety and viability of a growing online entity.

Internet startups can experience unanticipated problems at any of the above stages. Common problems include the inability to attract or find qualified development talent, the unavailability of connection or infrastructure resources to a site, the expense of custom legacy integrations, and the 'spaghetti' nature of an evolving infrastructure under high growth conditions. Failure at any stage often dictates permanent failure for companies that are in a 'first to market' race to stake out online real estate.



The Center 7 Solution

Center 7 is a new class of solution provider that enables dotcom companies and e-business solutions to be rapidly deployed and easily maintained, even under the harshest rapid growth and high volume conditions. ASPs, dot.com companies, and e-business solutions can be quickly assembled using Center 7's collection of premier online services and applications. In many cases, Center 7 can take an e-business idea from concept completely through the stages of development, integration, testing and high volume deployment within a matter of weeks. Organizations also have the option of selecting from a cafeteria style menu of services that can be partially or fully hosted through C7.

Center 7 has emerged as a new member of the Utah based Canopy Group which includes companies such as Caldera Systems (open Linux), Lineo (embedded Linux), Key Labs (Exodus data center), Helius (satellite Internet), Altiris (software management and deployment)—all with roots in advanced technology and Internet infrastructure. The complete C7 solution is possible through arrangements with key technology partners such as Computer Associates, Sun Microsystems, Netscape, Alliare, Oracle, MTI, Evergreen, CyberCash, Vignette, and data center partners including Broadwing Communications, Qwest, and Level 3.

The mission of Center 7 is to help businesses succeed on the Internet. Center 7 enables quickly implemented, reliable and secure e-business solutions through the application service provider (ASP) model. Unparalleled experts using the latest creative, technology and development models build solutions, then, each project is tested, operated and monitored on an infrastructure specifically built to optimize the Internet. Center 7 provides the tools, infrastructure, expertise, and applications to make these premier services a reality.

Center 7 Technology

At the heart of the Center 7 solution is HotFramework technology. HotFramework is a comprehensive solution that provides hosted applications and services, management, and widespread accessibility—all through a state-of-the-art infrastructure.

The uniqueness of HotFramework is in the methods used to provide applications and services. Where most Internet services such as payment processing or tax calculation require a server that is dedicated to a particular business or organization, Center 7 employs an advanced implementation that allows multiple entities to securely share a hosted application or service. This multiplexing of services is called 'code-in-use' as opposed to software reuse where multiple instances of a service or application must be running. Using a sophisticated



management and monitoring system, Center 7 can optimize service loads and automatically spawn new services or distribute loads based on traffic and use. The result is that ample bandwidth and applications and services are always available, no matter what the load.

Developers using Center 7 only need to map out the flow of Web/HTML pages with calls to the underlying services. In simple terms, rather than implementing a complete service, a developer only captures information variables in name value pairs and then passes them to the C7 service for processing. With a payment processing service for example, the developer would capture credit card number, name, address and expiration date in a *client interface* and then pass that information to C7's payment processing service where fraud detection, address verification, authorization, and funds transfer would be facilitated. There is no need to implement a payment processing server on the customer premises with security, backup, or dedicated lines to financial institutions.

Applications and Services

All e-commerce applications can generally be resolved down to several common applications or services that are uniquely combined to create an e-business site. A short list of these services includes: catalog, shopping cart, customer profile, tax calculation, shipping, payment processing, order tracking and sometimes database. Using Center 7, developers or e-commerce providers will be able to create a complete e-business site by laying out a few web pages and accessing these C7 services by embedding a few lines of HTML, C++ or Java code. The client interface will identify the desired service and pass the required parameters. All processing, storage, monitoring and management is provided or 'hosted' by Center 7.

The list of services that Center 7 provides is comprehensive and will number over 200. The initial set of hosted applications and services includes:

- Shopping Cart – online collection of merchandise and mechanism for aggregating selections and totaling cost.
- Membership – system for profiling subscribers, customers, members, etc. with ability to collect demographics, preferences, passwords, and interests.
- Tax Calculation – ability to calculate local, state, and municipal taxes based on geographic location or zip code.
- Shipping – ability to initiate fulfillment and track order status with purchase.
- Payment processing – accommodates accepting of credit cards, debit cards, electronic checks, and other forms of electronic payment and facilitates processing and funds transfer.
- Database – includes the relational or hierarchical storage, retrieval and management of any type of data.
- Storage – online storage and backup for any type of information or media such as images, text, data, video, audio, etc.



- Management – the monitoring and tracking of service information including traffic, click through, service status, etc.

Other services available through Center 7 will include trade exchange components such as auctions, discussion forums, e-mail applications, mailing lists, directory services, online publications, job postings, project planning, business analysis, human resources, workflow, as well as security services such as firewall, digital certificates, intrusion detection, etc. C7 is also providing services for access to legacy ERP, CRM, accounting and mainframe information with data translators, channel adapters, connectors, etc.

The Center 7 service concept also appeals to organizations that wish to implement intranets or private networks that are not necessarily e-commerce based. Many organizations can benefit from online database, storage and enterprise management services for internal or inter-company applications and information flows.

Management

Center 7's distributed implementation of Computer Associates' neural agent (Neugent) technology allows them to provide services and applications that are guaranteed 99.999% up time. Neugents are CA's application of neural network technology within an IT infrastructure. Neugents analyze tremendous amounts of information, learning relationships and patterns that enable them to detect subtle changes and predict results.

C7 builds Neugents into Internet services and applications and then stress/load tests these services using methods and technology developed at Key Labs. Through tests using real Internet sampled traffic, Neugents learn patterns of predictive failure. Load balancing, caching, failover, and distributed systems are then keyed to Neugent status indicators and additional resources are automatically initiated long before a process becomes critical.

By combining testing and monitoring services, Center 7 is able to provide TrueSLA™ service level agreements that guarantee up time and availability. C7 clients will also be able to create their own comprehensive management applications, again using simple client interface development tied to the rich back-end management services and applications provided by Center 7.

Management Infrastructure

Using CA Neugents and Unicenter TNG technology plus the data services of partners like Broadwing and Level 3, Center 7 provides a comprehensive management infrastructure that not only monitors individual services but provides a dynamic, geographically distributed infrastructure.



C7 enables load balancing and failover by providing multiple physical data center locations that are aggregated into a comprehensive, virtual management infrastructure. Applications and services may be located at the C7 network operations center (NOC) in Lindon, Utah or they may be distributed throughout data centers available from Broadwing, Level 3, Qwest or any other provider. The embedding of Neugents in applications written by C7, no matter where they reside, allows the application to be managed as part of a complete virtual system. The complete 'management console' allows the C7 infrastructure and services to be managed from a virtual command center, anywhere in the world.

Center 7 has pioneered the development of CyberStack, a portable collection of hardware and software applications, services and management components that is located in partner data centers. C7's management application not only ties all CyberStacks together in a single virtual network for management but also allows other applications and services in the remote data centers which are C7/Neugent enabled to be remotely managed as well.

The Center 7 management infrastructure provides several unique benefits including the ability to automatically spawn new instances of a service or application, route around problem or high traffic areas, and provide clients with comprehensive management information and premium service levels. C7 traffic engineering policies allow for peak bandwidth availability of thirty to forty percent before allocating new resources so overloading never becomes an issue. The C7 MMT bus (management, monitoring and testing) is a live component that provides predictive failure services and corrects problems that arise before they become critical.

Accessibility

The distributed nature of C7's CyberStacks in data centers around the world, also enables excellent accessibility. Web users are routed to the service that is accessible in the shortest number of hops; corporate e-commerce sites or intranets can be located in data centers that are geographically close; and, applications and services can be pushed to where the traffic is coming from. Center 7 utilizes security solutions from CheckPoint, SecureID, ISS, and Axent to prevent intrusion and DDoS attacks against hosted sites.



Summary

For companies looking to get solutions online quickly with minimum effort and maximum reliability and scalability, Center 7 is the answer. Center 7's HotFramework services, comprehensive management, and distributed infrastructure combined with a network operations center built from the ground up as a state-of-the-art ASP for ASPs provides everything an organization requires for world class Internet services.

New dotcom companies, ASPs, organizations expanding or enhancing existing Internet services, or companies looking to provide/implement any Internet hosted service such as e-commerce, storage, or management can benefit from Center 7's offerings.

The advantages of using Center 7 include:

- **Time to Market** – with Center 7 client interfaces to services and applications, an Internet business can go from idea to full deployment in a matter of weeks instead of months.
- **Simple and Efficient Development** – with HotFramework services, Web developers can create complex solutions with simple 'Lego-like' assembly, connecting client interfaces to established, already running, Center 7 services and applications.
- **Established Expertise** – C7 services consist of the industry's best which have evolved through time-tested deployments. C7 clients benefit from partner expertise as well as from the seasoned staff at Center 7.
- **Redundant Systems** – Many new Internet installations fail (at least initially) to implement adequate fail-over systems. Right from the start, each C7 service is protected by triple redundancy with fail-over systems, multi-homing sites, redundant power and generator backup.
- **Ample Bandwidth** – C7 uses Class A data center facilities beginning with a minimum of 622 MB/s bandwidth at each location. Traffic to the end users is delivered from the closest location to optimize speed and efficiency.
- **Continuous Update** – Unlike self managed software solutions where updates and new versions must be done manually, C7 pretests and then updates new versions behind the scenes. Updates and new services are automatically available.



- **Data Center Security** – C7 data sites are physically secure with 24x7x365 security personnel and protection from fire, seismic, and water disasters.
- **Extensive Testing** – C7 provides the most comprehensive stress testing and load simulation services in the industry. Clients benefit from pre-tested solutions and automatic load balancing as a result of heavy loads.
- **Certified Service Level Agreements** – With pre-testing and C7's MMT bus, clients can receive guaranteed levels of service, even for complex and distributed applications.
- **Lower Costs** – A hosted service eliminates the need for initial cash outlays for hardware, software, backup systems, and implementation costs. Companies using C7 services are able to 'pay as they go', paying only for the services that they use.
- **Scalability** – Rarely do dotcom companies accurately predict growth. C7 services allow companies to start at any volume of traffic and scale to any level without the need to re-engineer infrastructure. C7 can handle high growth models and peak holiday traffic.