Multiple server instances using Adobe® ColdFusion® 8 Enterprise Edition

This new version of ColdFusion can be deployed in multiple server instances, delivering high availability, enhanced security, optimized applications, and clustering, without the maintenance challenge of running multiple servers.

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The J2EE configuration of Adobe ColdFusion 8 Enterprise Edition enables you to run multiple ColdFusion server instances on a single physical server. The result is an environment of highly available, more secure, performance-optimized applications. In the past, this would have required multiple copies of ColdFusion running on separate physical servers. ColdFusion 8 Enterprise Edition eliminates the need for and expense of additional hardware and software.

The difference between single server and multiple server instances

In its earlier versions, ColdFusion could be installed only once per server. All applications on that machine executed within a single server process (see Figure 1). All applications shared global settings (mail servers, caching settings, debugging settings, security sandboxes, and so on), and a problem with one application could bring down all the others (if, for example, the server became unresponsive and needed to be restarted).

The only way to avoid this problem was to run each application on a separate machine so that each application could be fully customized and tuned, and would not impact other servers in case of application failures. For example, on a corporate intranet where one would want the human resources application isolated from the business reporting application, the expense of having multiple servers, each with its own ColdFusion license, would be undesirable, and the additional administrative efforts required would be high.

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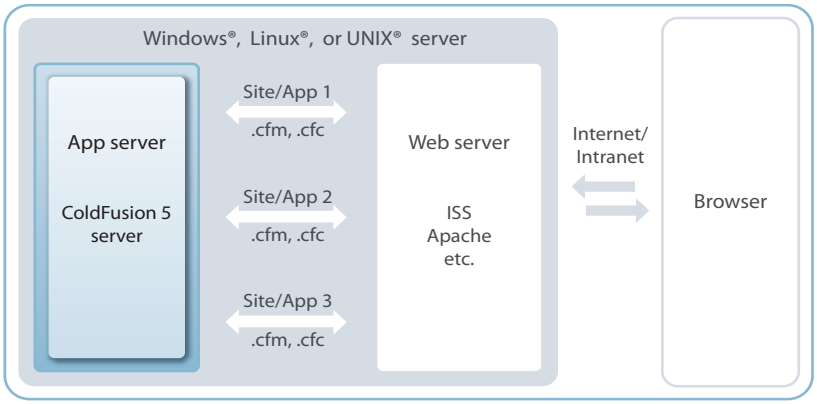

Figure 1: With earlier versions, a single instance of the ColdFusion server handled all sites or applications.

Using ColdFusion 8 Enterprise Edition, a single physical server can be configured to act as if it were many. ColdFusion is installed on a J2EE server instance running within its own Java™ Virtual Machine (JVM). As its name implies, a virtual machine is a self-contained operating environment that behaves as if it were a separate computer, while actually sharing resources with other virtual machines on the same server. As a result, a customer could install another J2EE server instance on another, completely separate JVM, and install ColdFusion there as well. These two ColdFusion servers would then operate completely isolated from each other—as if they were on separate physical servers (see Figure 2).

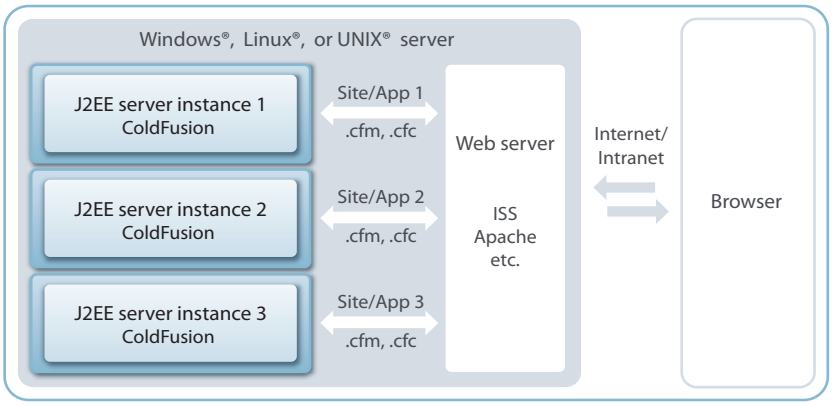

Figure 2: ColdFusion 8 Enterprise Edition enables multiple instances of ColdFusion to serve individual applications in isolation on a single physical server.

The benefits of multiple server instances

ColdFusion 8 Enterprise Edition deployed in multiple server instances is the most economical way to deliver highly available, more secure, performance-optimized applications. It enables a single server to provide many of the benefits for which earlier versions of ColdFusion required the added cost and maintenance challenges of running multiple physical servers.

High availability

As referenced earlier, all applications running on a single ColdFusion server instance have the potential to impact one another. An improperly coded application, a renegade CFX tag, a JVM bug, or excessive load in one application or site could cause all the other sites on the same machine to perform poorly, or worse—fail. Or, if a server has to be restarted, all applications in a single server instance configuration will be unavailable while the server restarts.

With ColdFusion 8 Enterprise Edition deployed in multiple server instances, these issues are mitigated. Each application is effectively treated as if it were running on its own server. Each instance and application can therefore be stopped, started, upgraded, and managed independently of any other application (see Figure 3).

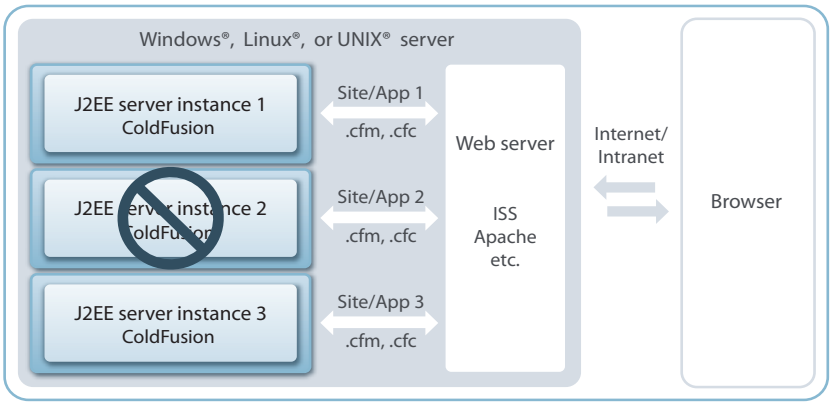

Figure 3: If, as in instance 2 above, an improperly coded application causes ColdFusion to perform poorly or even fail, or if the server needs to be restarted for any reason, the applications running in instances 1 and 3 would not be affected.

Enhanced security

Previously, for those hosting applications for multiple departments or clients on the same server with earlier versions of ColdFusion, granting developers access to the ColdFusion Administrator could have been a security risk if one developer inadvertently changed a setting that would affect someone else's application. With ColdFusion 8 Enterprise Edition deployed with multiple server instances, each site or application can have its own instance and therefore its own ColdFusion Administrator. The manager of each ColdFusion instance can safely make changes within the Administrator that will not affect other instances. Resources such as custom tags, ColdFusion components, Java classes, and data sources can then be safely isolated on a per-application basis.

Applications isolated within their own instance also guarantee the security of shared scopes, such as server, application, and session scopes. Developers can use these shared scopes without being concerned that another application on the same server may overwrite an important value.

Finally, within each instance, ColdFusion developers can take advantage of the powerful sandbox security features of ColdFusion 8. Developers gain precise control over resource use in applications with directory-based access control for tags, functions, data sources, and IP addresses.

Optimized applications

Different applications have different needs. Some have heavy database transaction loads, others integrate Java objects, and still others make extensive use of Verity collections. Since each server instance of ColdFusion 8 has its own ColdFusion Administrator and its own ColdFusion settings, applications can be optimized for their unique needs. Settings such as simultaneous requests, mappings, data sources, Verity collections, debugging, JVM heap size, and classpaths can be set as needed for each individual server instance.

Clustering

In earlier versions of ColdFusion, you could increase a site's ability to maintain availability, reliability, and performance by creating a cluster of multiple physical servers to eliminate the possibility of a single machine being a point of failure. This was possible using either hardware- or software-based load-balancing solutions. With most J2EE servers, you can cluster instances on the same physical server (see Figure 4). You can have multiple copies of the same ColdFusion application, each running in a separate ColdFusion instance on the same machine, and cluster them so that you have the benefits of application failover without the cost of purchasing and maintaining multiple machines. Further, you can use the new browser-based Instance Manager in the ColdFusion Administrator to create these instances and cluster them in three simple steps.

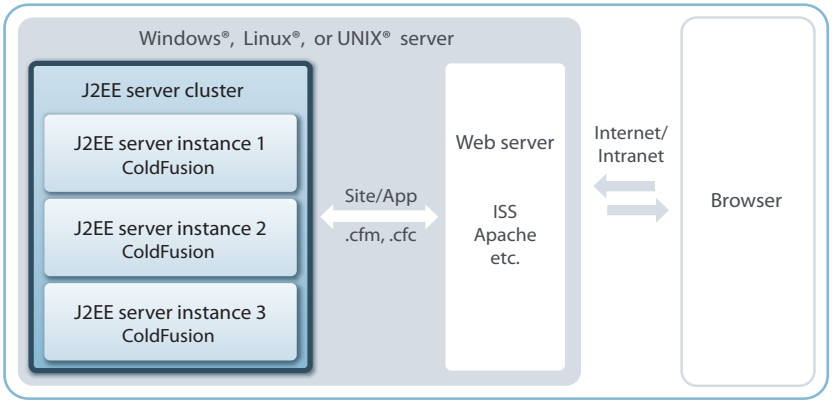

Figure 4: A cluster of ColdFusion instances on a single physical server provides the failover benefits of server clusters without the cost of additional hardware.

ColdFusion also enables developers to cluster the session variable scope. In ColdFusion 5 and earlier versions, it was difficult to use sessions and clustering at the same time. ColdFusion 8 Enterprise Edition in the J2EE configuration leverages Java sessions, which can be clustered (on some J2EE servers). As such, ColdFusion session variables can be shared across ColdFusion instances on the same physical server. Of course, depending on your site demands, you can continue to use clusters of multiple physical servers and still take advantage of Java sessions.

Conclusion

ColdFusion 8 Enterprise Edition has the ability to configure ColdFusion in a multi-instance environment, enabling a single server to provide many of the benefits that, in earlier versions, required the cost and maintenance challenges of running multiple physical servers. ColdFusion 8 Enterprise Edition delivers high availability, enhanced security, fine-grained application optimization, individualized application administration, and clustering. These features, combined with the highly productive ColdFusion scripting language and its extensive suite of built-in application services, make ColdFusion 8 Enterprise Edition the best solution for rapidly building and deploying powerful web applications and web services.

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