
RESONATE | APPLICATION NOTE

**iPlanet™ and Resonate®: Fine-Grained Performance Control
for Multi-Tier Architectures**

Resonate Central Dispatch Application Note

As Web-based applications become increasingly sophisticated, so does their underlying architecture. These complex e-business environments usually involve multi-tiers including Web, application and database servers. The servers host complex business logic, handle transaction management and legacy system integration. IPlanet™ Web Server, Enterprise Edition 4.1 (iWS), the market leading Web server from iPlanet E-commerce Solutions, a Sun-Netscape Alliance, now includes a plug-in that works in concert with Resonate Central Dispatch™, Resonate's single site, service level solution, to provide intelligent traffic management of multi-tier architectures. Managing Web server traffic based on CPU load, is not always sufficient to optimally direct traffic among the servers in a multi-tier Internet infrastructure. For instance, although a Web server's CPU load might be low, the application resources may be near exhaustion. The iPlanet Web Server plug-in allows the iPlanet Web Server, through Resonate Central Dispatch, to automatically control the level of incoming traffic based on application resource levels. This helps ensure e-business application high availability, performance, and maximum service levels.

HIGHLIGHTS

- **Eliminates need for manual monitoring of application loads or adjusting Web server traffic**
- **Prevents under- or over-utilization of Web server application resources**
- **Augments Resonate Central Dispatch service level control features to provide finer-grained performance control**
- **Supports Sun Solaris Operating System**

The Resonate Central Dispatch - iPlanet Web Server combination is an ideal solution for the IT manager desiring fine, granular resource control with real-time, reflexive actions. Traffic flow to a Resonate-determined content server is automatically adjusted by the iPlanet Web Server plug-in to prevent over- or under-utilization of Web Server application resources. Where both products are present, the benefit is clearly mutual and maximized; Resonate can adjust traffic flow with the added intelligence while iPlanet Web Server applications have optimized performance.

When Availability, Scalability and Predictable Performance Are Necessities

Together, Resonate Central Dispatch and iPlanet Web Server provide the ideal solution for high traffic, mission-critical e-business

applications and services where availability, scalability and predictable performance are necessities, not "nice-to-have" extras.

Feature	Function	Benefit
Automated self-monitoring, reflexive action	Throttle traffic flow to the Web server based on condition	Eliminates need for manual monitoring of application loads or adjusting Web server traffic
Tight integration of Resonate Central Dispatch and iPlanet Web Server 4.1	iWS calls CDAAction, via batch files, to change the target server weighting to allow or disallow traffic to the Web server.	Prevents under- or over-utilization (application degradation) of Web server application resources

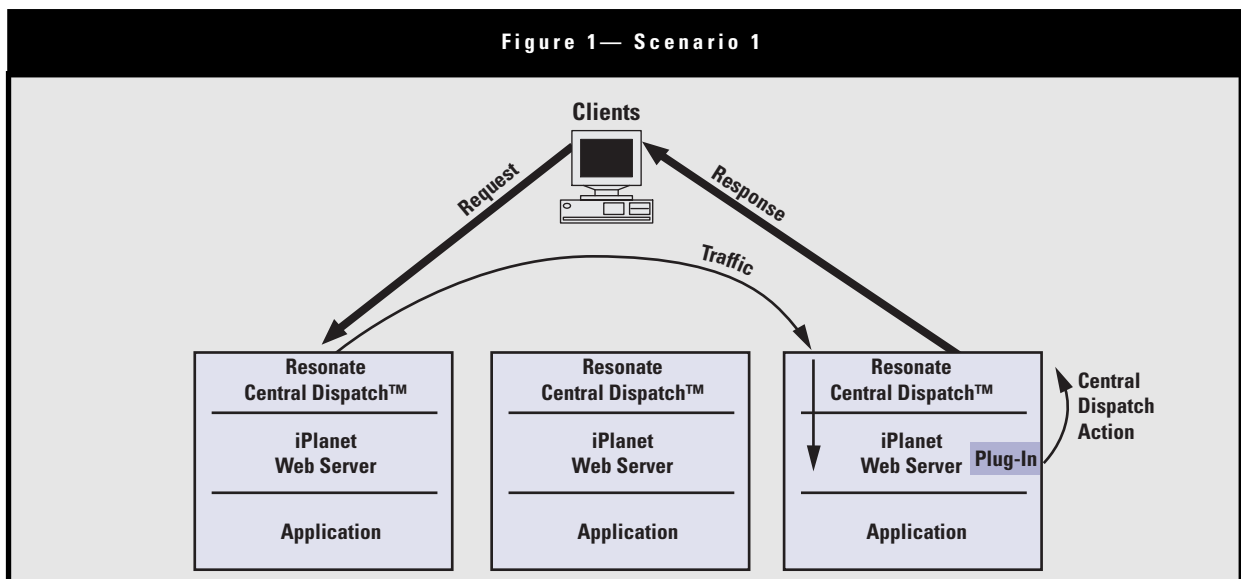
continued...

Feature	Function	Benefit
Flexible adjustment of the throttle specifications, depending upon the customer needs.	CDAction batch files can be customized to change weighting parameters, web server target, or other similar needs.	Customizable to your site.

Optimizing An N-Tier Architecture

iPlanet Web Server delivers high performance and scalability through its unique multi-threaded, multi-process architecture. With the introduction of the iPlanet Web Server plug-in, Resonate Central Dispatch can now improve performance and availability of multi-tier, multi-server environments. Each iPlanet Web Server application or servlet can be configured with unique thread pool utilization thresholds to trigger changes in Resonate Central Dispatch IP traffic distribution. For example, when an application's thread pool utilization exceeds its pre-defined threshold, it indicates high activity, outstanding incomplete requests or a

combination of both. To remedy this situation, the iPlanet Web Server plug-in automatically calls the Resonate Central Dispatch plug-in to lower its traffic distribution weighting in order to reduce the incoming traffic volume to that server. This allows the application to complete its outstanding requests before taking on more. The iPlanet Web Server plug-in augments Resonate Central Dispatch's traffic management policies to provide even more fine-grained performance control for multi-tier architectures.



Scenario: Prevent Over-Utilization of Solaris Application Resources (Application Degradation)

1. [10:00 PM] Start Web server application
2. [3:00 AM] Traffic to host continues, based upon CPU load information. Web server application starts to consume thread pool memory.
3. [3:05 AM] Thread pool memory in Web server hits maximum condition; application is too slow to respond to requests, and more threads are started than ended.
4. [3:05 AM] Total thread pool usage hits the maximum threshold as configured by the administrator.
5. [3:05 AM] The plug-in kicks in, and the Web server automatically calls "CmdHigh", which calls CDAction to lower the incoming traffic to the Web server by changing the server weight of the target host. (The default is to change the server weight to 1.)
6. [3:10 AM] The application has recovered and thread pool utilization is now at an acceptable level, much lower than before. By virtue of no traffic coming to the Web server, the thread pool utilization is now on the minimum acceptable level. The Web server plug-in kicks in and automatically calls "CmdLow", which calls CDAction to increase the incoming traffic to the Web server by changing the server weight of the target host. (The default is to change the server weight to 100.)
7. [3:10 AM] Traffic to the host continues.

Installation Considerations

iPlanet Web Server configuration steps

- The iPlanet Web Server 4.1 plug-in is only supported on the Sun Solaris Operating Environment, versions 2.6, 2.7 and 2.8.
- The iPlanet Web Server 4.1 plug-in is already a part of the default Web server installation. Custom configuration is required to use the feature. See figure 2.
- For each application, specify the maximum and minimum thread pool configuration to trigger the automatic throttle call to Resonate Central Dispatch software. Below is an example screenshot. The 'Minimum threads' and 'Maximum threads' become the thresholds for the defined thread pool.
- The CmdLow and CmdHigh batch files are part of the iPlanet Web Server 4.1 Enterprise Edition.
- Manually modify the obj.conf file to associate your application with the Resonate plug-in.

For example:

```
Init fn="load-modules" funcs="init-resonate"  
shlib="/usr/netscape/ent41/bin/https/lib/lib  
resonate.so"
```

```
Init fn="init-resonate" ThreadPool="QTest"  
LateInit="yes"  
CmdLow="/user/netscape/ent41/plugins/load-  
bal/  
CmdLow.sh" CmdHigh="usrn/netscape/ent41/plu-  
gins/  
loadbal/CmdHigh.sh'  
:
```

- Start the iPlanet Web Server. The configuration settings will not be applied unless the Web server is restarted with the set configuration.

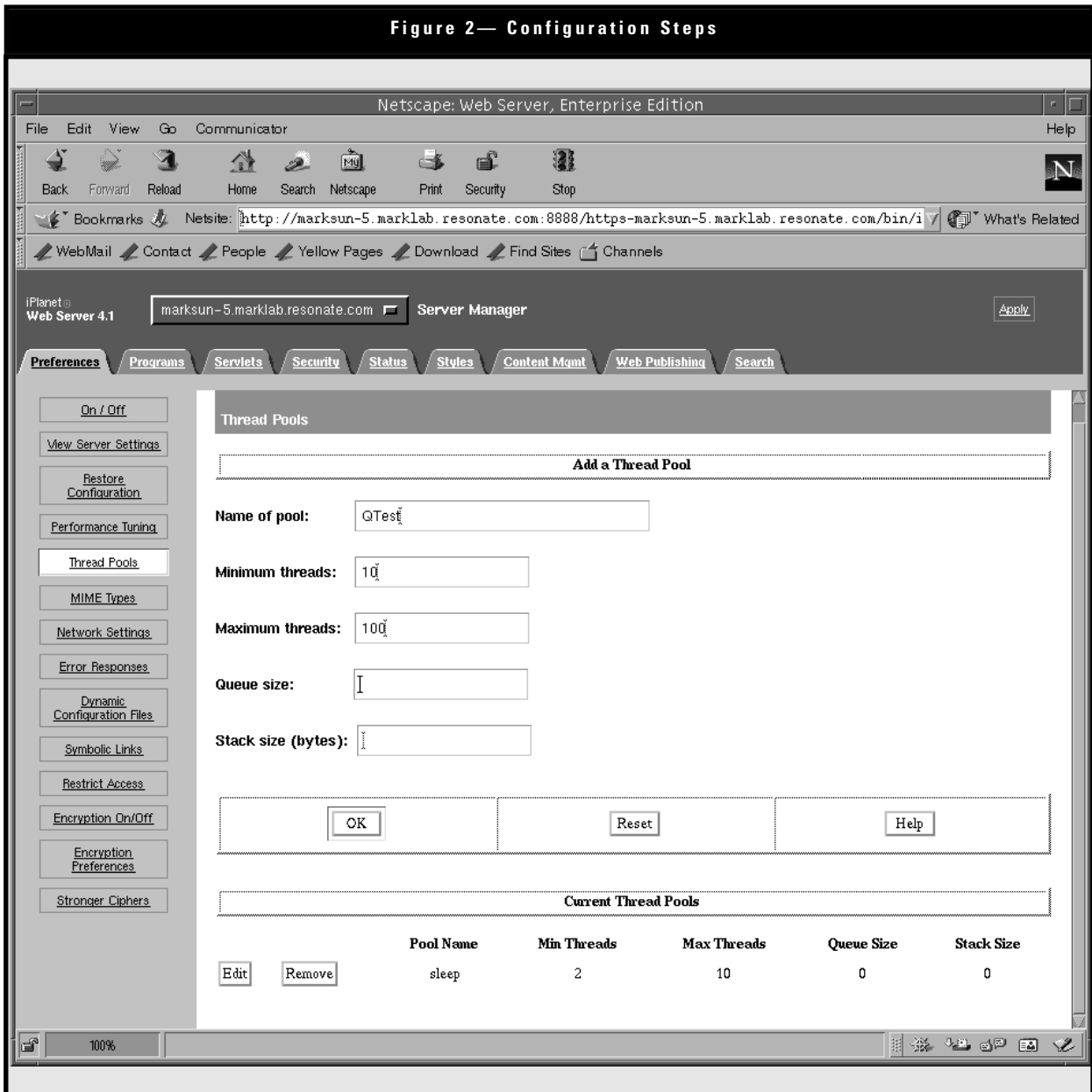
Resonate configuration steps

- Modify the batch file CmdHigh.sh and CmdLow.sh (UNIX) to specify the following parameters that may be missing or changed for the call to CDAction. These files are located in the "/user/netscape/ent41/plugins/loadbal" directory
 - Host name
 - Password

Installation Considerations Continued

- CmdHigh server weight (if other than the default of 1) cluster.
- CmdLow server weight (if other than the default of 100) Resonate *active* service level management solutions are delivered via a direct sales organization as well as through a global network of value-added resellers and Internet service providers.
- Note that you should set the CmdHigh and CmdLow server weights to a low and high number, between 1 and 100, which are relatively low and high in relation to the server weights assigned to the servers in the Central Dispatch For more information, visit www.resonate.com or contact Resonate sales at 408-548-5500 or sales@resonate.com.

Figure 2— Configuration Steps



APPLICATION NOTE

FIVE

Resonate is a registered trademark, the Resonate logo, Keeping E-Business Open for Business, and Resonate Central Dispatch are trademarks of Resonate, Inc. All other trademarks are the property of their respective owners. Copyright © 2000 Resonate, Inc. 11/00 AN002

Evaluate Resonate Central Dispatch and iPlanet Web Server Enterprise Edition 4.1

iPlanet E-commerce solutions are delivered via a direct sales organization as well as through a global network of distributors, value-added resellers and Internet service providers. For more information, visit www.iplanet.com.

Evaluate both Resonate Central Dispatch (www.resonate.com/alliances/iplanet/eval) and iPlanet Web Server Enterprise Edition 4.1 (<http://www.iplanet.com/downloads/download/>) today.

Product Summary: Resonate Central Dispatch - The Power to Tailor E-Business Transactions

Resonate, the leading provider of active service level management solutions for e-business applications, enables businesses to effectively monitor and manage the service levels of e-business applications with quick time-to-benefit and low total cost of ownership.

Resonate Central Dispatch(tm) simplifies the job of deploying Web-enabled applications and managing high-traffic Internet, intranet and extranet sites by effectively managing IP traffic, optimizing site resources, and minimizing system administration requirements. Central Dispatch enables multiple Internet servers such as iPlanet Web Server, to act as a single, scalable, reliable, and easily-managed Internet server system. Resonate Central Dispatch software agents collect fine-grained detail on CPU load and server health, while Central Dispatch Schedulers test network latency and other pre-defined metrics. Based on the data collected from its agents and the tests performed by the

Schedulers, Central Dispatch takes real-time action and routes traffic requests accordingly to ensure maximum availability and performance of e-business applications. And with the agents leveraging the processing power of distributed servers, Resonate Central Dispatch scales linearly, without feature trade-offs. Central Dispatch's powerful prioritization system allows the provision and allocation of resources among specified classes of users to deliver predictable user experiences based on differentiated service requirements. Today's e-businesses face many challenges, including increasing competition, heightened revenue expectations, and pressure to reduce costs. In such an environment, it is critical to have the right foundation for success. iPlanet Web Server combines industrial strength reliability, performance, and security with the ability to deliver dynamic, personalized content. It provides an easy-to-manage environment that enables worry-free deployment of e-commerce sites.

Product Summary: iPlanet Web Server Enterprise Edition 4.1

Employing both a multi-process and multi-threaded architecture, iPlanet Web Server provides unparalleled reliability and scalability for high-traffic applications. A native process failover monitor automatically brings back new processes to keep traffic flowing and the Web site running. Combined with a plug-in for Resonate

Central Dispatch, iPlanet Web Server provides maximum availability.

iPlanet Web Server is also a leader in Java implementation offering the highest performance for Java servlets in the industry. The latest release, iPlanet Web Server Enterprise Edition 4.1, maintains

compliance with the latest Java specification, through JSP™ 1.1, Servlet 2.2 and JVM 2.0, allowing developers to create fully dynamic Web applications. With 66% of the Fortune 100 and 60% of Web brokerage firms using iPlanet, it is battle tested and pro-

vides the peace of mind you need to focus on your business.

Copyright © 2000 Sun Microsystems, Inc. Some preexisting portions Copyright © 2000 Netscape Communications Corp. All rights reserved.

Sun, Sun Microsystems, the Sun logo, iPlanet, the iPlanet logo, JavaServer Pages, and JSP are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. Netscape and the Netscape N logo are registered trade-

marks of Netscape Communications Corporation in the U.S. and other countries. Other Netscape logos, product names, and service names are also trademarks of Netscape Communications Corporation, which may be registered in other countries.

THIS DOCUMENTATION IS PROVIDED "AS-IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE

DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES MAY BE PERIODICALLY ADDED TO THE INFORMATION HEREIN; THESE CHANGES WILL BE INCORPORATED IN NEW EDITIONS OF THE PUBLICATION. SUN MICROSYSTEMS, INC. MAY MAKE IMPROVEMENTS AND/OR CHANGES IN THE PRODUCT(S) AND/OR THE PROGRAM(S) DESCRIBED IN THIS PUBLICATION AT ANY TIME.



Resonate

385 Moffett Park Drive, Sunnyvale, California 94089

tel: 408.548.5500 fax: 408.548.5679

www.resonate.com