OpenNetwork Technologies DirectorySmart 4.6 AuthMark Performance

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Disclosure

OpenNetwork Technologies sponsored the testing in this report. Mindcraft, Inc. conducted the performance tests described in this report at Sun's test lab in Frankfurt, Germany.

Acknowledgement

We thank Sun for providing the systems used for the tests and the support staff who helped configure the servers.

Executive Summary

DirectorySmart 4.6 delivers outstanding performance scaling and achieves the highest login and Extranet sequence rates we've seen to date: 146,051 logins per minute and 25,428 Extranet Sequences (279,708 operations) per minute.

Mindcraft® tested OpenNetwork Technologies DirectorySmart 4.6 running on Sun Enterprise servers. For these tests, we used Mindcraft's iLOAD MVP™ test tool running the AuthMark™ Login and Extranet Scenarios. During these tests DirectorySmart set new performance records for authentication/authorization products while providing almost linear performance scaling.

Login Scenario

The Login Scenario represents the type of load commonly seen at portal sites. It simulates users accessing protected resources via Web servers. The Login Scenario assumes that 10% of a portal's user population logs in concurrently to use portal resources. All tests were done using a 1,000,000-user directory with 100,000 active users.

The Login Scenario measures the combination of one user authentication and one authorization for access to a resource (called a Login). The Result Analysis section in the second part of this white paper explains the benchmark results.

DirectorySmart, which is located on a Web server for the configurations we tested, is the control point for all authentication and authorization. Our tests were structured to push the Web server systems as closely as possible to 100% CPU utilization. DirectorySmart uses LDAP directory servers to store user authentication and authorization information without an intervening policy/authentication server. So, the performance of DirectorySmart is closely coupled to that of the LDAP directory servers. That is why Table 1 summarizes the Login Scenario performance as a function of the Web and LDAP server configurations. The Scaling Factor in Table 1 shows how much faster a configuration is compared to the smallest configuration,

Configuration 1.

Table 1: DirectorySmart Login Performance Scalability - 1,000,000-User Directory

Config.	Logins per second	Logins per minute	Total # CPUs	Logins/ minute/ Total CPUs	Scaling Factor	Web/LDAP Server CPU Utilization
1	346	**20,760**	6	**3,460**	-	Web: 100% LDAP: 60%
2	622	**37,299**	12	**3,108**	1.8	Web: 99% LDAP: 60%
3	960	**57,593**	16	**3,600**	2.8	Web: 90-95% LDAP: 85%
4	1,886	**113,181**	36	**3,144**	5.5	Web: 98% LDAP: 70%
5	2,180	**130,788**	40	**3,270**	6.3	Web: 92% LDAP: 82%
6	2,434	**146,051**	44	**3,319**	7.0	Web: 7@95%, 1@80% LDAP: 85%

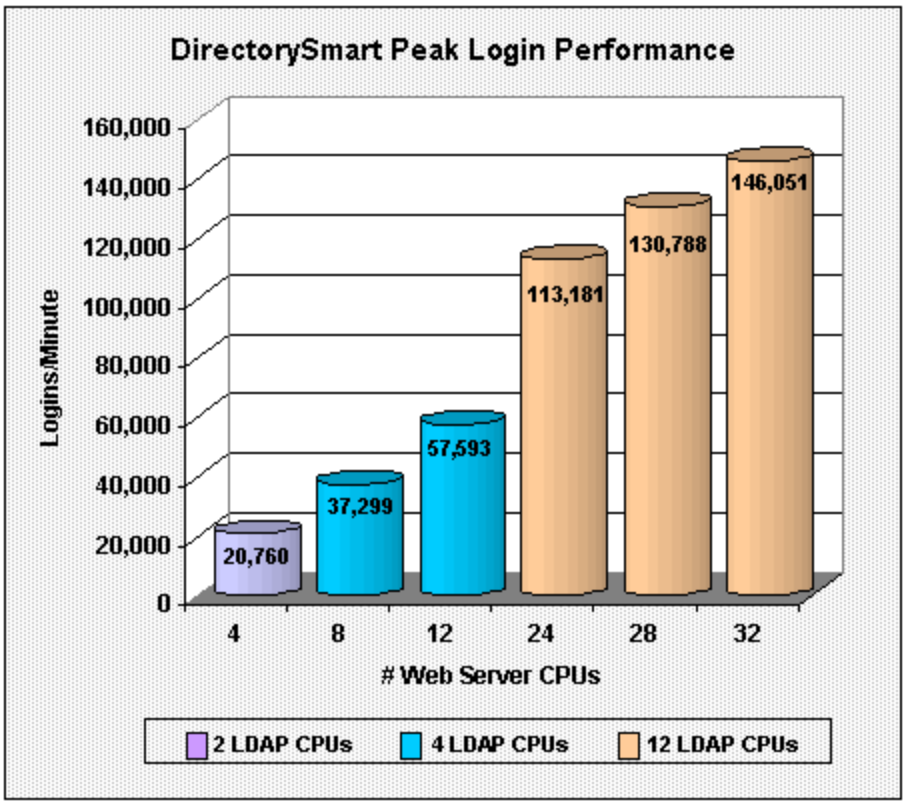
The Web server CPU utilizations for Configurations 3, 5, and 6 show that more performance could have been derived from DirectorySmart. The limiting factor in these cases was the performance of the load generator systems.

Figure 1 shows DirectorySmart's Login performance from Table 1 by server configuration. The following color coding is used to group performance results by LDAP directory server configuration:

- **Purple**: Two LDAP directory servers with one CPU each.
- **Blue**: Two LDAP directory servers with two CPUs each.
- **Orange**: Three LDAP directory servers with four CPUs each.

Look at the hardware configurations in the second part of this report for more details on the test environment.

Figure 1: DirectorySmart Login Scalability for a 1,000,000-User Directory



Extranet Scenario

The Extranet Scenario measures the combination of one user authentication and 10 authorizations for access to resources (these 11 operations constitute one Extranet sequence). The Extranet Scenario, because it uses a more realistic mix of operations than the Login Scenario, provides a better basis for capacity planning purposes.

Table 2 shows the DirectorySmart Extranet Scenario performance for Configuration 6 in Table 1 - eight Web servers with four CPUs each and three LDAP directory servers with four CPUs each. The results demonstrate that DirectorySmart performs authorizations faster than it does authentications. The CPU utilizations show that DirectorySmart could have achieved higher performance; the load generator systems were running at 100% CPU utilization, which limited our ability to drive the Web servers with DirectorySmart to their maximum performance. The 20% CPU utilization on the LDAP directory servers means that DirectorySmart uses them much less for authorizations than it does for logins. This means that you can plan to deploy more Web servers per LDAP directory server than we used for these tests and can expect to achieve higher authorization rates than we did.

Table 2: DirectorySmart Extranet Performance - 1,000,000 User Directory

Measurement	Extranet Scenario	Web/LDAP Server

		CPU Utilization
Authentications/minute	25,428	Web: 86% LDAP: 20%
Authorizations/minute	254,280	
Total operations/minute	**279,708**	

Conclusions

The benchmark results lead us to conclude that:

- OpenNetwork Technologies's DirectorySmart 4.6 has achieved the highest AuthMark Login and Extranet Scenario performance we've seen to date.
- DirectorySmart 4.6 delivers very consistent login performance per CPU, which makes it easy to plan configurations for the load you need to handle.
- DirectorySmart delivers outstanding performance scaling as CPUs are added to a configuration.

Mindcraft Certification

Mindcraft certifies that the results reported accurately represent the performance of OpenNetwork Technologies's DirectorySmart 4.6 running on Sun Enterprise servers configured as specified herein and as measured by AuthMark benchmark.

Our test results should be reproducible by others using the same test lab configuration, the same Sun server configurations, and the same software configurations documented in this white paper.

Analysis and Test Details ▶

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