RSA ClearTrust 5.0.1 AuthMark Performance

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Disclosure

RSA Security Inc. sponsored the testing in this report. Mindcraft, Inc. conducted the performance tests described in this report at Sun's test lab in Menlo Park, California.

Acknowledgement

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

Executive Summary

RSA ClearTrust 5.0.1 delivers the highest Login and Extranet performance per Authorization/Policy Server CPU we've measured: 60,144 Logins and 221,980 Extranet operations per minute per CPU

RSA ClearTrust's Login performance scales in two dimensions—as the number of managed users increases from 1 million to 10 million and as CPUs are added to the Authorization Server. RSA ClearTrust sets a new Extranet performance standard for policy-server-based identity and access management products. It achieved 392,117 Extranet operations per minute and 12,649 Extranet operations per minute per total CPUs in all of the servers used in the test.

Mindcraft ® tested RSA ClearTrust 5.0.1 running on [Sun Fire servers](#). For these tests, we used Mindcraft's [iLOAD MVP](#)™ test tool running the [AuthMark](#)™ [Login](#) and [Extranet](#) Scenarios.

Login Scenario

The Login Scenario simulates the type of load commonly seen at Web portals where users access protected resources. The Login Scenario assumes that 10% of a portal's user population logs in concurrently to use protected resources. These tests were done using both a 1,000,000-user and a 10,000,000-user directory with 100,000 and 1,000,000 users logging in, respectively. The Login Scenario measures the combination of one user authentication and one authorization for access to a resource (called a Login).

The RSA ClearTrust Authorization Server, which performs functions similar to Policy Servers in other products, is the control point for all authentication and authorization. Our tests were structured to push the Authorization Server systems as closely as possible to 100% CPU utilization. [Table 1](#) summarizes the Login Scenario performance for RSA ClearTrust. It also shows normalized metrics based on the total number of CPUs in the configurations tested and the number of CPUs in the single Authorization Server that was used for these tests. More [configuration details](#) are in the second part of this white paper.

The Scaling Factor/Total CPUs in Table 1 shows how much faster on a per-CPU basis a configuration is than an Authorization Server with one CPU, the smallest Authorization Server configuration. It is computed by dividing the Logins/Minute/Total CPUs for a configuration by that for the single-CPU Authorization Server configuration. A metric close to 1.0 indicates linear scaling. A metric above 1.0 means that the configuration provides better than linear scaling while a metric significantly below 1.0 means that the configuration scales less than linearly.

For the 1,000,000-user directory, the Scaling Factor/Total CPUs metric shows that performance scales linearly as the Authorization Server is expanded from one to four CPUs. For the 10,000,000-user directory, per-CPU performance also scales linearly.

Table 1: RSA ClearTrust Login Performance Scalability - 1 Million and 10 Million Users

Users in Directory	Logins per Second	Logins per Minute	Logins/ Minute/ Authorization Server CPU	Logins/ Minute/ Total CPUs	Scaling Factor/ Total CPUs	Authorization Server CPUs	Total CPUs
1 million	1,002	60,114	60,114	6,011	-	1	10
1 million	1,986	119,156	59,578	6,271	1.04	2	19
1 million	3,257	195,441	48,860	5,922	0.99	4	33
10 million	908	54,480	54,480	5,448	-	1	10
10 million	1,747	104,834	52,417	5,518	1.01	2	19

Figure 1 shows RSA ClearTrust's Login performance from Table 1 by Authorization Server configuration and directory size.

Figure 1: RSA ClearTrust Login Scalability for 1 Million and 10 Million Users
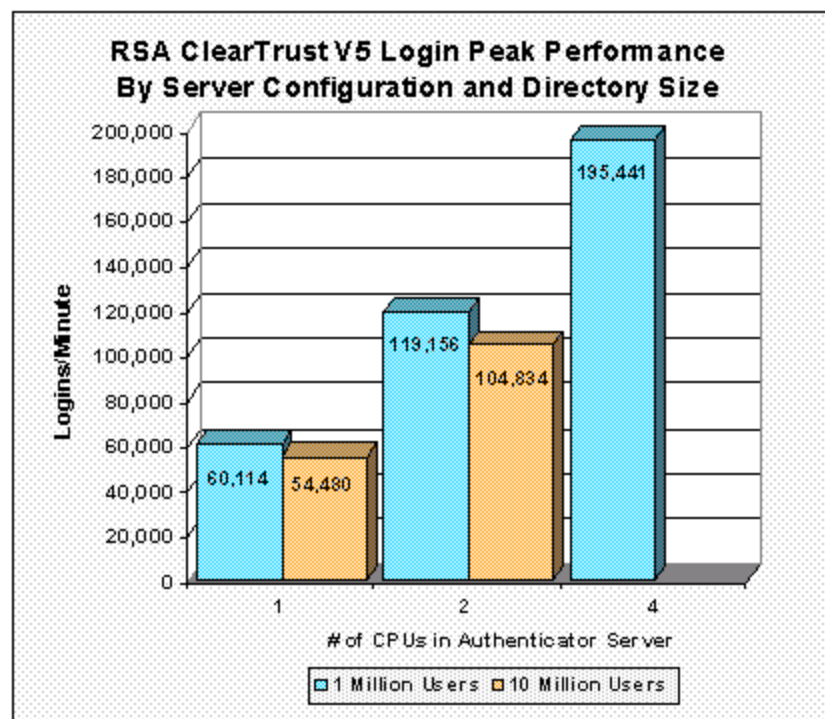
The second part of this white paper provides a detailed analysis of the benchmark results.

Extranet Scenario

The Extranet Scenario measures the combination of one user authentication and 10 authorizations for access to protected 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 and for evaluating how products will perform when deployed.

Table 2 shows the Extranet Scenario performance of RSA ClearTrust with a 1,000,000-user directory. As with the Login Scenario, the Extranet Scenario simulates the activities of 10% of the number of users in the directory, which in this case is 100,000 users.

The Scaling Factor/Total CPUs in Table 2 shows how much faster on a per-CPU basis the two-CPU Authorization Server configuration is than the one-CPU configuration. It is computed by dividing the Extranet Operations/Minute/Total CPUs for the two-CPU configuration by that for the one-CPU configuration. This metric clearly shows that performance scales better than linearly as the Authorization Server is expanded from one to two CPUs. This more-than-linear scaling occurred in part because we were able to saturate the Authorization Server in the one-CPU configuration while having excess Web server CPU capacity. In other words, we could have used fewer Web server CPUs and achieved the same level of performance for the one-CPU Authorization Server configuration. In addition, we did not have enough client performance to saturate the CPUs in the two-CPU Authorization Server configuration, which is not uncommon given the exigencies of performance testing.

The RSA ClearTrust Extranet performance shown in Table 2 demonstrates the excellent overall performance, per-CPU performance, and scalability that it delivers.

Table 2: RSA ClearTrust Extranet Performance - 1 Million Users in the Directory

Extranet Sequences per Minute	Extranet Operations per minute (authentications + authorizations)	Extranet Operations/ Minute/ Authorization Server CPU	Extranet Operations/ Minute/ Total CPUs	Scaling Factor/ Total CPUs	Total CPUs	Authorization Server CPUs
20,180	221,980 (20,180 + 201,800)	221,980	10,090	-	22	1
35,647	392,117 (35,647 + 356,470)	196,059	12,649	1.25	31	2

Conclusions

These AuthMark Benchmark results lead us to conclude that:

- RSA ClearTrust 5.0.1 delivers the highest Login performance per Authorization (Policy) Server CPU that we've measured so far, 60,144 Logins/minute/Authorization Server CPU.

- RSA ClearTrust 5.0.1 outperformed all other policy-server-based identity and access management products we tested with the Extranet Scenario both in total Extranet operations per minute (392,117) and in Extranet operations per minute per total CPUs (12,649).

- RSA ClearTrust 5.0.1 delivers outstanding linear performance scaling as Web servers and Authorization Server CPUs are added to an installation.

- RSA ClearTrust 5.0.1 provides excellent, predictable performance for moderately sized communities of 1,000,000 users as well as for large communities of at least 10,000,000 users.

Mindcraft Certification

Mindcraft certifies that the results reported herein accurately represent the performance of RSA ClearTrust 5.0.1 running on Sun Fire servers configured as specified herein and as measured by the 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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