# Lab Three: Security Report of Functionality

In this lab the Operations Team is going to deploy a load balanced architecture serving the “Explore California” web site. Your task for this lab is to develop the security policies that you feel this architecture should live up to and then develop a test that you can run against the “Release Candidates” to determine if they meet those policies. Please don’t forget that “availability” is a security issue. In lab 2 you created a Siege and monitoring architecture. In that lab you tested your architecture to support an expected load of 100 concurrent connections. That was with a single server. Now that we have a load balanced architecture with at least three servers you should be able to support a much bigger load. I will leave it up to you to figure out your new expected load. In Lab 2 you had to determine how your architecture would fail. Do you think this architecture will fail differently? Be sure to include this test of availability in the security testing you develop.

## Security Policies to be followed:

*Web Servers should Continue to Follow Policies from Lab 1.*

The loadbalancer should expect a load of 300 concurrent users.

Ideally, the loadbalancer will be able to handle a significant amount above 300 users to account for times of high traffic.

When the loadbalancer is overloaded it should slow down no matter how much instead of crashing.

Ideally, our architecture will include 2 loadbalancers with one being a failsafe in the case the first crashes or is overloaded. However, if not the Release Candidate is still reliable enough for production.

## Deliverables:

Reports turned in should contain parts of the following components

* Enough of a description of the system or script that a new user understands its purpose
* Explanation of complicated or non-intuitive portions of code or process
* Basic usage and operation
* Which user to interact with the system or script as
* Where the script or system runs and what it touches or needs access to
* Known issues
* Future plans or features

Be concise and effective.

# Security Report:

|  |  |
| --- | --- |
| Group Number: | 4 |
| Group Members: | Nate Bachelder (Formerly Williams), Steffen Barr, Eli Hopkins, Xavier Rivera |
|  |  |
| Security Team Members: | ? |
| Version/Lab Number: | Lab 3 |
| Date: | 10/15/21 |

Fill in the table below with a short description that answers the question.

## Project Description:

|  |  |
| --- | --- |
| What are the security policies of your group that must be met for this lab? | Web Servers should Continue to Follow Policies from Lab 1.  The loadbalancer should expect a load of 300 concurrent users.  Ideally, the loadbalancer will be able to handle a significant amount above 300 users to account for times of high traffic.  When the loadbalancer is overloaded it should slow down no matter how much instead of crashing.  Ideally, our architecture will include 2 loadbalancers with one being a failsafe in the case the first crashes or is overloaded. However, if not the Release Candidate is still reliable enough for production. |
| What workload do you feel your application should be able to satisfy? | We feel our application should expect 300 users but should also be able to handle a significant number more in case of an overload. |
|  |  |
| Success/Definition of successful completion | The sec team’s role has been successfully completed once all security policies are confirmed to have been followed and the application behaves as expected under load. |

In your answers be sure to include both a textual description and screen shots showing your systems responding.

[student@calAdmin Sec]$ ansible-playbook Lab3SecTest.yml

PLAY [Lab 3 Sec Test] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

TASK [Gathering Facts] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [calWeb3]

ok: [calWeb1]

ok: [calWeb2]

TASK [Copy Lab 1 Sec Test Script] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [calWeb3]

ok: [calWeb2]

ok: [calWeb1]

TASK [Run Lab 1 Sec Test Script] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [calWeb1]

changed: [calWeb2]

changed: [calWeb3]

TASK [Print Lab 1 Sec Test Script Output] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [calWeb1] => {

"output.stdout\_lines": [

"Percentage of the requests served within a certain time (ms)",

" 50% 142",

" 66% 179",

" 75% 239",

" 80% 294",

" 90% 1052",

" 95% 1132",

" 98% 1186",

" 99% 1376",

" 100% 3570 (longest request)",

"Testing Apache Policies",

"Enabled Modules: 45",

"Disabled Modules: 17",

"All packages are up to date",

"Starting benchmarking... Data is for 50000 requests with 1000 concurrently.",

"Checking opened firewall services...",

"No bad services were enabled on the firewall"

]

}

ok: [calWeb2] => {

"output.stdout\_lines": [

"Percentage of the requests served within a certain time (ms)",

" 50% 23",

" 66% 33",

" 75% 54",

" 80% 219",

" 90% 230",

" 95% 1018",

" 98% 1049",

" 99% 3024",

" 100% 23031 (longest request)",

"Testing Apache Policies",

"Enabled Modules: 45",

"Disabled Modules: 17",

"All packages are up to date",

"Starting benchmarking... Data is for 50000 requests with 1000 concurrently.",

"Checking opened firewall services...",

"No bad services were enabled on the firewall"

]

}

ok: [calWeb3] => {

"output.stdout\_lines": [

"Percentage of the requests served within a certain time (ms)",

" 50% 51",

" 66% 78",

" 75% 105",

" 80% 231",

" 90% 465",

" 95% 1053",

" 98% 1088",

" 99% 1271",

" 100% 21021 (longest request)",

"Testing Apache Policies",

"Enabled Modules: 45",

"Disabled Modules: 17",

"All packages are up to date",

"Starting benchmarking... Data is for 50000 requests with 1000 concurrently.",

"Checking opened firewall services...",

"No bad services were enabled on the firewall"

]

}

TASK [Run Modified Lab 2 Load Test Expected Load] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [calWeb3 -> localhost]

changed: [calWeb2 -> localhost]

changed: [calWeb1 -> localhost]

TASK [Print Lab 2 Load Test Expected Load Output] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [calWeb1] => {

"expectedout.stdout\_lines[-14:-2]": [

"Transactions:\t\t 40500 hits",

"Availability:\t\t 100.00 %",

"Elapsed time:\t\t 76.05 secs",

"Data transferred:\t 1107.68 MB",

"Response time:\t\t 0.06 secs",

"Transaction rate:\t 532.54 trans/sec",

"Throughput:\t\t 14.57 MB/sec",

"Concurrency:\t\t 33.51",

"Successful transactions: 40500",

"Failed transactions:\t 0",

"Longest transaction:\t 2.64",

"Shortest transaction:\t 0.00"

]

}

ok: [calWeb2] => {

"expectedout.stdout\_lines[-14:-2]": [

"Transactions:\t\t 40500 hits",

"Availability:\t\t 100.00 %",

"Elapsed time:\t\t 76.50 secs",

"Data transferred:\t 1107.68 MB",

"Response time:\t\t 0.06 secs",

"Transaction rate:\t 529.41 trans/sec",

"Throughput:\t\t 14.48 MB/sec",

"Concurrency:\t\t 33.79",

"Successful transactions: 40500",

"Failed transactions:\t 0",

"Longest transaction:\t 3.05",

"Shortest transaction:\t 0.00"

]

}

ok: [calWeb3] => {

"expectedout.stdout\_lines[-14:-2]": [

"Transactions:\t\t 40428 hits",

"Availability:\t\t 99.98 %",

"Elapsed time:\t\t 75.15 secs",

"Data transferred:\t 1105.72 MB",

"Response time:\t\t 0.06 secs",

"Transaction rate:\t 537.96 trans/sec",

"Throughput:\t\t 14.71 MB/sec",

"Concurrency:\t\t 32.19",

"Successful transactions: 40428",

"Failed transactions:\t 8",

"Longest transaction:\t 3.06",

"Shortest transaction:\t 0.00"

]

}

TASK [Run Modified Lab 2 Load Test Overload] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [calWeb1 -> localhost]

changed: [calWeb2 -> localhost]

changed: [calWeb3 -> localhost]

TASK [Print Lab 2 Load Test Overload Output] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [calWeb1] => {

"overloadout.stdout\_lines[-14:-2]": [

"Transactions:\t\t 45000 hits",

"Availability:\t\t 100.00 %",

"Elapsed time:\t\t 87.95 secs",

"Data transferred:\t 1230.76 MB",

"Response time:\t\t 0.11 secs",

"Transaction rate:\t 511.65 trans/sec",

"Throughput:\t\t 13.99 MB/sec",

"Concurrency:\t\t 56.44",

"Successful transactions: 45000",

"Failed transactions:\t 0",

"Longest transaction:\t 9.99",

"Shortest transaction:\t 0.00"

]

}

ok: [calWeb2] => {

"overloadout.stdout\_lines[-14:-2]": [

"Transactions:\t\t 45000 hits",

"Availability:\t\t 100.00 %",

"Elapsed time:\t\t 87.14 secs",

"Data transferred:\t 1230.76 MB",

"Response time:\t\t 0.11 secs",

"Transaction rate:\t 516.41 trans/sec",

"Throughput:\t\t 14.12 MB/sec",

"Concurrency:\t\t 54.79",

"Successful transactions: 45000",

"Failed transactions:\t 0",

"Longest transaction:\t 10.59",

"Shortest transaction:\t 0.00"

]

}

ok: [calWeb3] => {

"overloadout.stdout\_lines[-14:-2]": [

"Transactions:\t\t 45000 hits",

"Availability:\t\t 100.00 %",

"Elapsed time:\t\t 88.25 secs",

"Data transferred:\t 1230.76 MB",

"Response time:\t\t 0.10 secs",

"Transaction rate:\t 509.92 trans/sec",

"Throughput:\t\t 13.95 MB/sec",

"Concurrency:\t\t 52.82",

"Successful transactions: 45000",

"Failed transactions:\t 0",

"Longest transaction:\t 10.39",

"Shortest transaction:\t 0.00"

]

}

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

calWeb1 : ok=8 changed=3 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

calWeb2 : ok=8 changed=3 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

calWeb3 : ok=8 changed=3 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

