

Assignment – 2

Distributed Database System and Load Balancing on Cloud

By:

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Task Description:

The business application takes a lot of time, efforts and planning generally and these things get cumbersome when it comes to dealing with large datasets and web-based applications. At present, web-based development is on the hike and giving tough competition to the native mobile applications. As they are not platforms specific and it only needs a web browser and internet connection to run on.

Here, in this assignment, we have built an application in Node.JS [1] which runs DBMS [2] query in the backend and gives the results when we run its link. For the cloud operation, we have used IBM cloud platform [3] and for testing the service we have used postman [4] and JMeter [5].

Database Design:

In the designing stage of the database, we have uploaded the data on IBM Cloud Platform. The data is sectioned in 'Nova' table which has following columns – mode_of_entry, month_year, visitor_origin, country, no_of_visitors. These columns are for the mode of travel which can be either road or air, the timestamp of traveling, their origin area, destination country and a total number of visitors.

The screenshot displays the IBM Db2 Warehouse on Cloud web interface. The top navigation bar includes 'Load', 'Explore', 'Run SQL', and 'Analyze' buttons. The main content area is titled 'Database tables' and shows a list of schemas on the left, including 'DASH6900' (selected) and 'ERRORSCHEMA'. The central pane shows the 'NOVA' table selected. The right pane displays the 'Table definition' for 'NOVA', which has 4544 rows (224 KB) and was updated on 2/6/2018 at 6:29:18 PM. The table definition table is as follows:

COLUMN NAME	DATA TYPE	NULLA...
MODE_OF_E...	VARCHAR	Y
MONTH_YEAR	TIMESTAMP	Y
VISITOR_ORI...	VARCHAR	Y
COUNTRY	VARCHAR	Y
NO_OF_VISIT...	INTEGER	Y

A 'View Data' button is located at the bottom of the table definition pane.

Secure | <https://dashdb-entry-yp-dal10-01.services.dal.bluemix.net/dashdb/explorer>

IBM Db2 Warehouse on Cloud Load Explore Run SQL Analyze 0% dash6900 Upgrade

Back DASH6900.NOVA Delete Table Export to CSV

	MODE_OF_ENTRY VARCHAR(4)	MONTH_YEAR TIMESTAMP(6)	VISITOR_ORIGIN VARCHAR(23)	COUNTRY VARCHAR(13)	NO_OF_VISITORS INTEGER
1	Air	2017-01-08 00:00:00	Other Overseas	Overseas	5200
2	Road	2017-01-08 00:00:00	Atlantic Canada	Canada	128600
3	Road	2017-01-08 00:00:00	Quebec	Canada	34000
4	Road	2017-01-08 00:00:00	Ontario	Canada	109400
5	Road	2017-01-08 00:00:00	Western Canada	Canada	8300
6	Road	2017-01-08 00:00:00	Maine (by road only)	United States	3800
7	Road	2017-01-08 00:00:00	Other New England	United States	14200
8	Road	2017-01-08 00:00:00	Middle Atlantic	United States	5900
9	Road	2017-01-08 00:00:00	East North Central	United States	3000
10	Road	2017-01-08 00:00:00	West North Central	United States	600
11	Road	2017-01-08 00:00:00	South Atlantic	United States	5200

1 2 3 4 5 ... 20 >

Application Queries & Test Results:

Node.JS application

a. Retrieve first 10 rows from the database.

URL: <http://tutorial3rahul.mybluemix.net/>


Query:

SQL editor

```

1 SELECT mode_of_entry, month_year, visitor_origin, country, no_of_visitors
2 from nova
3 FETCH FIRST 10 ROWS ONLY;
```

Results:

Results		Details				
	MODE_OF_ENTRY	MONTH_YEAR	VISITOR_ORIGIN	COUNTRY	NO_OF_VISITORS	
1	Air	2017-01-08 00:00:00	Other Overseas	Overseas	5200	
2	Road	2017-01-08 00:00:00	Atlantic Canada	Canada	128600	
3	Road	2017-01-08 00:00:00	Quebec	Canada	34000	
4	Road	2017-01-08 00:00:00	Ontario	Canada	109400	
5	Road	2017-01-08 00:00:00	Western Canada	Canada	8300	
6	Road	2017-01-08 00:00:00	Maine (by road only)	United States	3800	
7	Road	2017-01-08 00:00:00	Other New England	United States	14200	
8	Road	2017-01-08 00:00:00	Middle Atlantic	United States	5900	
9	Road	2017-01-08 00:00:00	East North Central	United States	3000	
10	Road	2017-01-08 00:00:00	West North Central	United States	600	



First 10 rows from the database

MODE_OF_ENTRY	MONTH_YEAR	VISITOR_ORIGIN	COUNTRY	NO_OF_VISITORS
Road	2013-01-10 00:00:00.000000	Quebec	Canada	1800
Road	2013-01-10 00:00:00.000000	Ontario	Canada	11500
Road	2013-01-10 00:00:00.000000	Western Canada	Canada	1300
Road	2013-01-10 00:00:00.000000	Maine (by road only)	United States	1000
Road	2013-01-10 00:00:00.000000	Other New England	United States	2000
Road	2013-01-10 00:00:00.000000	Middle Atlantic	United States	1000
Road	2013-01-10 00:00:00.000000	East North Central	United States	900
Road	2014-01-05 00:00:00.000000	Overseas	Overseas	0
Road	2013-01-10 00:00:00.000000	West North Central	United States	200
Road	2013-01-10 00:00:00.000000	South Atlantic	United States	500

GET <https://tutorial3rahul.mybluemix.net/> Params Send Save

Authorization Headers (1) Body Pre-request Script Tests Cookies Code

Key	Value	Description
<input checked="" type="checkbox"/> Content-Type	application/json	
New key	Value	Description

Body Cookies (1) Headers (9) Test Results

Status: 200 OK Time: 139 ms Size: 1.77 KB

Pretty Raw Preview HTML

```

1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title></title>
5     <link rel="stylesheet" href="/stylesheets/style.css">
6   </head>
7   <body>
8     <h1></h1>
9     <h2>First 10 rows from the database</h2>
10    <form id="list-form">
11      <div id="main">
12        <table id="list">
13          <thead>
14            <tr>
15              <th>MODE_OF_ENTRY</th>
16              <th>MONTH_YEAR</th>
17              <th>VISITOR_ORIGIN</th>
18              <th>COUNTRY</th>
19              <th>NO_OF_VISITORS</th>
20            </tr>
21          </thead>
22          <tbody>
23            <tr>
24              <td>Road</td>
25              <td>2013-01-10 00:00:00.000000</td>
26              <td>Quebec</td>

```

Response Time: 0.007 Seconds (IBM Bluemix)

b. Retrieve number of visitors per year by country

URL: <http://tutorial3rahul.mybluemix.net/visitorsbycountry>

Query:

SQL editor

```

1 select sum(no_of_visitors) as Total, year(month_year) as Year ,country
2 from nova
3 group by year(month_year) ,country order by country,Year;

```

Results:

Results Details			
	TOTAL	YEAR	COUNTRY
1	1796800	2006	Canada
2	1843100	2007	Canada
3	1815300	2008	Canada
4	1837300	2009	Canada
5	1713400	2010	Canada
6	1709200	2011	Canada

Total number of Visitors per year by Country

TOTAL YEAR COUNTRY

1796600	2006	Canada
1843100	2007	Canada
1815300	2008	Canada
1837300	2009	Canada
1713400	2010	Canada
1709200	2011	Canada
1758500	2012	Canada
1667200	2013	Canada
1707100	2014	Canada
1793800	2015	Canada
1933400	2016	Canada
1844400	2017	Canada
76500	2006	Overseas
72200	2007	Overseas
73100	2008	Overseas
68900	2009	Overseas
64000	2010	Overseas
72000	2011	Overseas
66400	2012	Overseas
66000	2013	Overseas
72900	2014	Overseas
81300	2015	Overseas
82200	2016	Overseas
84500	2017	Overseas
242400	2006	United States
223700	2007	United States

https://tutorial3rahul. No Environment

GET https://tutorial3rahul.mybluemix.net/visitorsbycountry Params Send Save

Authorization Headers (1) Body Pre-request Script Tests Cookies Code

Key	Value	Description
Content-Type	application/x-www-form-urlencoded	

Body Cookies (1) Headers (9) Test Results

Status: 200 OK Time: 167 ms Size: 2.56 KB

Pretty Raw Preview HTML

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title></title>
5     <link rel="stylesheet" href="/stylesheets/style.css">
6   </head>
7   <body>
8     <h1></h1>
9     <h2>Total number of Visitors per year by Country</h2>
10    <form id="list-form">
11      <div id="main">
12        <table id="list">
13          <thead>
14            <tr>
15              <th>TOTAL</th>
16              <th>YEAR</th>
17              <th>COUNTRY</th>
18            </tr>
19          </thead>
20          <tbody>
```

Response Time: 0.019 Seconds (IBM Bluemix)

c. Retrieve number of visitors per year by mode

URL: <http://tutorial3rahul.mybluemix.net/visitorsbymode>

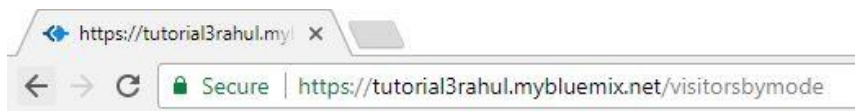
Query:

SQL editor

```
1 select sum(no_of_visitors) as Total, year(month_year) as Year ,mode_of_entry
2 from nova
3 group by year(month_year) ,mode_of_entry order by mode_of_entry,Year;
```

Results:

Results Details					
	TOTAL	YEAR	MODE_OF_ENTRY		
1	645400	2006	Air		
2	667700	2007	Air		
3	681200	2008	Air		
4	606700	2009	Air		
5	602100	2010	Air		
6	655800	2011	Air		



Total number of Visitors per year by Mode

TOTAL YEAR MODE_OF_ENTRY

645400 2006 Air
667700 2007 Air
681200 2008 Air
606700 2009 Air
602100 2010 Air
655800 2011 Air
636900 2012 Air
600500 2013 Air
645700 2014 Air
631100 2015 Air
701000 2016 Air
687600 2017 Air
1470100 2006 Road
1471300 2007 Road
1397800 2008 Road
1484400 2009 Road
1352400 2010 Road
1297200 2011 Road
1353800 2012 Road
1290800 2013 Road
1313200 2014 Road
1437700 2015 Road
1536500 2016 Road
1470100 2017 Road

https://tutorial3rahul. + ... No Environment ▼ 👁 ⚙

GET ▼ https://tutorial3rahul.mybluemix.net/visitorsbymode Params Send Save ▼

Authorization Headers (1) Body Pre-request Script Tests Cookies Code

Key	Value	Description
<input checked="" type="checkbox"/> Content-Type	application/x-www-form-urlencoded	
New key	Value	Description

Body Cookies (1) Headers (9) Test Results Status: 200 OK Time: 144 ms Size: 1.8 KB

Pretty Raw Preview HTML 🔍

```

1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title></title>
5     <link rel="stylesheet" href="/stylesheets/style.css">
6   </head>
7   <body>
8     <h1></h1>
9     <h2>Total number of Visitors per year by Mode</h2>
10    <form id="list-form">
11      <div id="main">
12        <table id="list">
13          <thead>
14            <tr>
15              <th>TOTAL</th>
16              <th>YEAR</th>
17              <th>MODE_OF_ENTRY</th>
18            </tr>
19          </thead>
20          <tbody>

```

Response Time: 0.018 Seconds (IBM Bluemix)

JMeter Section:

Instance: 1

IBM Cloud Catalog Docs Support Manage

Getting started Overview Runtime Connections Logs Monitoring API Management

Cloud Foundry apps / js tutorial3rahul Running [Visit App URL](#) Routes ↺ ↻ ⋮

Org: rahulmidha@dal.ca Location: US South Space: dev

BUILDPACK
SDK for Node.js™

INSTANCES
All instances are running
Health is 100%

MB MEMORY PER INSTANCE

TOTAL MB ALLOCATION
1 GB still available ?

Thread: 10

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse...

Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(m...
1	09:49:53.549	Thread Group 1-1	HTTP Request	1191	✓	2765	149	1191	633
2	09:49:53.852	Thread Group 1-4	HTTP Request	896	✓	2764	149	895	350
3	09:49:53.751	Thread Group 1-3	HTTP Request	1000	✓	2762	149	1000	427
4	09:49:53.648	Thread Group 1-2	HTTP Request	1116	✓	2767	149	1114	533
5	09:49:53.952	Thread Group 1-5	HTTP Request	829	✓	2761	149	828	409
6	09:49:54.058	Thread Group 1-6	HTTP Request	724	✓	2768	149	723	368
7	09:49:54.352	Thread Group 1-9	HTTP Request	478	✓	2765	149	478	326
8	09:49:54.450	Thread Group 1-...	HTTP Request	497	✓	2760	149	497	345
9	09:49:54.152	Thread Group 1-7	HTTP Request	1201	✓	2765	149	1111	954
10	09:49:54.252	Thread Group 1-8	HTTP Request	11289	✓	2761	149	11289	11036

☐ Scroll automatically? ☐ Child samples? **No of Samples 10** Latest Sample 11289 **Average 1922** Deviation 3131

Thread: 20

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse...

Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(m...
1	09:58:44.722	Thread Group 1-1	HTTP Request	887	✓	2767	149	887	333
2	09:58:44.775	Thread Group 1-2	HTTP Request	847	✓	2764	149	846	325
3	09:58:44.828	Thread Group 1-3	HTTP Request	804	✓	2765	149	801	335
4	09:58:44.880	Thread Group 1-4	HTTP Request	754	✓	2760	149	750	335
5	09:58:44.927	Thread Group 1-5	HTTP Request	712	✓	2763	149	711	338
6	09:58:44.976	Thread Group 1-6	HTTP Request	666	✓	2762	149	665	331
7	09:58:45.029	Thread Group 1-7	HTTP Request	626	✓	2769	149	626	348
8	09:58:45.078	Thread Group 1-8	HTTP Request	603	✓	2761	149	602	338
9	09:58:45.127	Thread Group 1-9	HTTP Request	560	✓	2763	149	559	357
10	09:58:45.232	Thread Group 1-...	HTTP Request	506	✓	2765	149	506	341
11	09:58:45.178	Thread Group 1-...	HTTP Request	568	✓	2766	149	567	344
12	09:58:45.277	Thread Group 1-...	HTTP Request	541	✓	2761	149	539	338
13	09:58:45.329	Thread Group 1-...	HTTP Request	500	✓	2761	149	500	337
14	09:58:45.379	Thread Group 1-...	HTTP Request	512	✓	2762	149	511	347
15	09:58:45.428	Thread Group 1-...	HTTP Request	489	✓	2762	149	489	335
16	09:58:45.478	Thread Group 1-...	HTTP Request	487	✓	2764	149	486	333
17	09:58:45.530	Thread Group 1-...	HTTP Request	490	✓	2762	149	489	339
18	09:58:45.580	Thread Group 1-...	HTTP Request	514	✓	2765	149	513	332
19	09:58:45.636	Thread Group 1-...	HTTP Request	552	✓	2764	149	551	361
20	09:58:45.679	Thread Group 1-...	HTTP Request	522	✓	2762	149	521	324

☐ Scroll automatically? ☐ Child samples? **No of Samples 20** Latest Sample 522 **Average 607** Deviation 124

Thread: 30

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

00:00:01 0 0/30

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	09:59:46.007	Thread Group 1-5	HTTP Request	1356	✓	2760	149	1356	312
2	09:59:45.906	Thread Group 1-2	HTTP Request	1459	✓	2765	149	1458	345
3	09:59:46.075	Thread Group 1-7	HTTP Request	1318	✓	2760	149	1318	306
4	09:59:46.243	Thread Group 1-...	HTTP Request	1151	✓	2764	149	1151	295
5	09:59:46.044	Thread Group 1-6	HTTP Request	1352	✓	2764	149	1352	323
6	09:59:46.114	Thread Group 1-8	HTTP Request	1283	✓	2761	149	1282	329
7	09:59:45.871	Thread Group 1-1	HTTP Request	1527	✓	2764	149	1527	376
8	09:59:46.144	Thread Group 1-9	HTTP Request	1261	✓	2763	149	1261	300
9	09:59:46.341	Thread Group 1-...	HTTP Request	1068	✓	2761	149	1067	287
10	09:59:46.375	Thread Group 1-...	HTTP Request	1037	✓	2764	149	1037	294
11	09:59:45.973	Thread Group 1-4	HTTP Request	1442	✓	2765	149	1441	304
12	09:59:45.943	Thread Group 1-3	HTTP Request	1472	✓	2765	149	1463	317
13	09:59:46.173	Thread Group 1-...	HTTP Request	1242	✓	2763	149	1235	298
14	09:59:46.275	Thread Group 1-...	HTTP Request	1144	✓	2762	149	1144	300
15	09:59:46.410	Thread Group 1-...	HTTP Request	1011	✓	2760	149	1011	319
16	09:59:46.476	Thread Group 1-...	HTTP Request	947	✓	2763	149	947	290
17	09:59:46.308	Thread Group 1-...	HTTP Request	1116	✓	2761	149	1116	304
18	09:59:46.207	Thread Group 1-...	HTTP Request	1219	✓	2764	149	1219	289
19	09:59:46.503	Thread Group 1-...	HTTP Request	926	✓	2764	149	926	301
20	09:59:46.542	Thread Group 1-...	HTTP Request	889	✓	2763	149	889	310
21	09:59:46.578	Thread Group 1-...	HTTP Request	854	✓	2761	149	853	308
22	09:59:46.671	Thread Group 1-...	HTTP Request	766	✓	2761	149	765	292
23	09:59:46.738	Thread Group 1-...	HTTP Request	707	✓	2761	149	707	318
24	09:59:46.844	Thread Group 1-...	HTTP Request	720	✓	2762	149	720	382
25	09:59:46.442	Thread Group 1-...	HTTP Request	1145	✓	2765	149	1145	706
26	09:59:46.637	Thread Group 1-...	HTTP Request	957	✓	2764	149	956	724
27	09:59:46.704	Thread Group 1-...	HTTP Request	893	✓	2760	149	892	657

☐ Scroll automatically? ☐ Child samples? No of Samples 30 Latest Sample 804 Average 1096 Deviation 234

Thread: 40

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

00:00:05 0 0/40

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:01:02.280	Thread Group 1-1	HTTP Request	4728	✓	2762	149	4728	315
2	10:01:02.356	Thread Group 1-4	HTTP Request	4701	✓	2763	149	4701	298
3	10:01:02.407	Thread Group 1-6	HTTP Request	4650	✓	2764	149	4650	293
4	10:01:02.299	Thread Group 1-2	HTTP Request	4759	✓	2767	149	4759	303
5	10:01:02.382	Thread Group 1-5	HTTP Request	4678	✓	2762	149	4677	305
6	10:01:02.483	Thread Group 1-9	HTTP Request	4577	✓	2760	149	4577	309
7	10:01:02.460	Thread Group 1-8	HTTP Request	4601	✓	2765	149	4600	309
8	10:01:02.864	Thread Group 1-...	HTTP Request	4341	✓	2761	149	4340	307
9	10:01:03.094	Thread Group 1-...	HTTP Request	4113	✓	2762	149	4112	304
10	10:01:02.969	Thread Group 1-...	HTTP Request	4241	✓	2760	149	4241	295
11	10:01:03.070	Thread Group 1-...	HTTP Request	4142	✓	2762	149	4141	290
12	10:01:03.017	Thread Group 1-...	HTTP Request	4195	✓	2762	149	4195	302
13	10:01:03.041	Thread Group 1-...	HTTP Request	4172	✓	2760	149	4172	303
14	10:01:02.433	Thread Group 1-7	HTTP Request	4783	✓	2770	149	4685	300
15	10:01:03.193	Thread Group 1-...	HTTP Request	4025	✓	2765	149	4024	311
16	10:01:03.219	Thread Group 1-...	HTTP Request	4001	✓	2766	149	4001	310
17	10:01:03.172	Thread Group 1-...	HTTP Request	4048	✓	2767	149	4048	304
18	10:01:02.996	Thread Group 1-...	HTTP Request	4225	✓	2763	149	4225	303
19	10:01:02.585	Thread Group 1-...	HTTP Request	4637	✓	2768	149	4635	309
20	10:01:02.534	Thread Group 1-...	HTTP Request	4688	✓	2766	149	4591	314
21	10:01:03.117	Thread Group 1-...	HTTP Request	4106	✓	2763	149	4106	292
22	10:01:03.144	Thread Group 1-...	HTTP Request	4080	✓	2761	149	4080	305
23	10:01:02.890	Thread Group 1-...	HTTP Request	4336	✓	2768	149	4335	308
24	10:01:02.331	Thread Group 1-3	HTTP Request	4895	✓	2768	149	4796	298
25	10:01:02.508	Thread Group 1-...	HTTP Request	4717	✓	2766	149	4623	307
26	10:01:02.664	Thread Group 1-...	HTTP Request	4563	✓	2776	149	4473	311
27	10:01:03.268	Thread Group 1-...	HTTP Request	3861	✓	2767	149	3860	304

☐ Scroll automatically? ☐ Child samples? No of Samples 40 Latest Sample 4354 Average 4422 Deviation 259

Thread: 50

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse...

Log/Display Only: ☐ Errors ☐ Successes


Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:02:36.307	Thread Group 1-1	HTTP Request	500	✓	2765	149	500	328
2	10:02:36.331	Thread Group 1-2	HTTP Request	551	✓	2763	149	551	313
3	10:02:36.351	Thread Group 1-3	HTTP Request	544	✓	2763	149	543	323
4	10:02:36.413	Thread Group 1-6	HTTP Request	490	✓	2763	149	489	301
5	10:02:36.393	Thread Group 1-5	HTTP Request	1747	✓	2764	149	1746	323
6	10:02:36.372	Thread Group 1-4	HTTP Request	1770	✓	2763	149	1770	337
7	10:02:36.434	Thread Group 1-7	HTTP Request	1711	✓	2771	149	1710	310
8	10:02:36.454	Thread Group 1-8	HTTP Request	1696	✓	2763	149	1695	355
9	10:02:36.515	Thread Group 1-...	HTTP Request	1657	✓	2763	149	1657	305
10	10:02:36.535	Thread Group 1-...	HTTP Request	1638	✓	2765	149	1638	339
11	10:02:36.556	Thread Group 1-...	HTTP Request	1618	✓	2765	149	1618	328
12	10:02:36.494	Thread Group 1-...	HTTP Request	1680	✓	2761	149	1680	320
13	10:02:36.597	Thread Group 1-...	HTTP Request	1586	✓	2765	149	1586	312
14	10:02:36.463	Thread Group 1-9	HTTP Request	1721	✓	2763	149	1721	345
15	10:02:36.617	Thread Group 1-...	HTTP Request	1645	✓	2765	149	1645	312
16	10:02:36.637	Thread Group 1-...	HTTP Request	1626	✓	2765	149	1626	332
17	10:02:36.577	Thread Group 1-...	HTTP Request	1687	✓	2761	149	1687	322
18	10:02:36.698	Thread Group 1-...	HTTP Request	1569	✓	2765	149	1568	336
19	10:02:36.688	Thread Group 1-...	HTTP Request	1580	✓	2763	149	1580	317
20	10:02:36.658	Thread Group 1-...	HTTP Request	1621	✓	2761	149	1621	346
21	10:02:36.764	Thread Group 1-...	HTTP Request	1516	✓	2762	149	1516	311
22	10:02:36.810	Thread Group 1-...	HTTP Request	1506	✓	2765	149	1506	344
23	10:02:36.741	Thread Group 1-...	HTTP Request	1575	✓	2761	149	1575	340
24	10:02:36.718	Thread Group 1-...	HTTP Request	1599	✓	2763	149	1599	363
25	10:02:36.821	Thread Group 1-...	HTTP Request	1497	✓	2763	149	1496	339
26	10:02:36.779	Thread Group 1-...	HTTP Request	1557	✓	2763	149	1556	382
27	10:02:36.846	Thread Group 1-...	HTTP Request	1490	✓	2767	149	1490	316

☐ Scroll automatically? ☐ Child samples? **No of Samples 50** Latest Sample 3497 **Average 1444** Deviation 424




Instance: 2


IBM Cloud

Cloud Foundry apps /

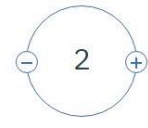
 tutorial3rahul Running [Visit App URL](#)

Org: rahulmidha@daLca Location: US South Space: dev

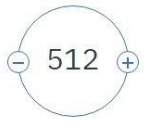
Routes   




BUILDPACK
SDK for Node.js™




INSTANCES
All instances are running
Health is 100%



MB MEMORY PER INSTANCE



TOTAL GB ALLOCATION
512 MB still available 

Thread: 10

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan

Thread Group

HTTP Request

View Results in Table

WorkBench

00:00:010 / 10

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(m...
1	10:08:45.077	Thread Group 1-3	HTTP Request	777	✓	2765	149	776	346
2	10:08:44.972	Thread Group 1-1	HTTP Request	1002	✓	2765	149	1001	374
3	10:08:45.177	Thread Group 1-4	HTTP Request	724	✓	2765	149	723	313
4	10:08:44.975	Thread Group 1-2	HTTP Request	953	✓	2762	149	953	306
5	10:08:45.276	Thread Group 1-5	HTTP Request	665	✓	2763	149	664	326
6	10:08:45.376	Thread Group 1-6	HTTP Request	592	✓	2765	149	592	310
7	10:08:45.476	Thread Group 1-7	HTTP Request	517	✓	2761	149	517	320
8	10:08:45.576	Thread Group 1-8	HTTP Request	495	✓	2763	149	494	336
9	10:08:45.676	Thread Group 1-9	HTTP Request	465	✓	2765	149	465	313
10	10:08:45.776	Thread Group 1-...	HTTP Request	474	✓	2763	149	474	326

☐ Scroll automatically? ☐ Child samples?

No of Samples 10

Latest Sample 474

Average 666

Deviation 185

Thread: 20

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan

Thread Group

HTTP Request

View Results in Table

WorkBench

00:00:020 / 20

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(m...
1	10:13:52.525	Thread Group 1-4	HTTP Request	1670	✓	2767	149	1670	292
2	10:13:52.372	Thread Group 1-1	HTTP Request	1825	✓	2764	149	1825	332
3	10:13:52.624	Thread Group 1-6	HTTP Request	1586	✓	2769	149	1586	299
4	10:13:52.676	Thread Group 1-7	HTTP Request	1535	✓	2765	149	1535	299
5	10:13:52.727	Thread Group 1-8	HTTP Request	1486	✓	2763	149	1486	304
6	10:13:52.827	Thread Group 1-...	HTTP Request	1389	✓	2763	149	1389	290
7	10:13:53.125	Thread Group 1-...	HTTP Request	1109	✓	2762	149	1108	296
8	10:13:53.228	Thread Group 1-...	HTTP Request	1011	✓	2763	149	1010	296
9	10:13:53.177	Thread Group 1-...	HTTP Request	1066	✓	2761	149	1066	294
10	10:13:53.328	Thread Group 1-...	HTTP Request	962	✓	2763	149	962	301
11	10:13:52.425	Thread Group 1-2	HTTP Request	1872	✓	2765	149	1872	287
12	10:13:52.572	Thread Group 1-5	HTTP Request	1743	✓	2769	149	1742	298
13	10:13:52.475	Thread Group 1-3	HTTP Request	1842	✓	2763	149	1842	293
14	10:13:52.776	Thread Group 1-9	HTTP Request	1542	✓	2769	149	1541	303
15	10:13:52.877	Thread Group 1-...	HTTP Request	1441	✓	2763	149	1441	324
16	10:13:52.928	Thread Group 1-...	HTTP Request	1393	✓	2763	149	1392	298
17	10:13:52.977	Thread Group 1-...	HTTP Request	1347	✓	2761	149	1347	289
18	10:13:53.080	Thread Group 1-...	HTTP Request	1257	✓	2759	149	1257	295
19	10:13:53.278	Thread Group 1-...	HTTP Request	1065	✓	2761	149	1064	307
20	10:13:53.029	Thread Group 1-...	HTTP Request	1386	✓	2775	149	1316	300

☐ Scroll automatically? ☐ Child samples?

No of Samples 20

Latest Sample 1386

Average 1426

Deviation 276

Thread: 30

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-Z\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse...

Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:15:39.075	Thread Group 1-1	HTTP Request	1563	✓	2761	149	1562	404
2	10:15:39.244	Thread Group 1-6	HTTP Request	1410	✓	2763	149	1409	343
3	10:15:39.345	Thread Group 1-9	HTTP Request	1312	✓	2764	149	1310	317
4	10:15:39.179	Thread Group 1-4	HTTP Request	1480	✓	2765	149	1479	410
5	10:15:39.315	Thread Group 1-8	HTTP Request	1347	✓	2763	149	1346	349
6	10:15:39.546	Thread Group 1...	HTTP Request	1121	✓	2760	149	1121	308
7	10:15:39.646	Thread Group 1...	HTTP Request	1023	✓	2762	149	1023	335
8	10:15:39.441	Thread Group 1...	HTTP Request	1230	✓	2761	149	1229	328
9	10:15:39.747	Thread Group 1...	HTTP Request	948	✓	2766	149	948	307
10	10:15:39.680	Thread Group 1...	HTTP Request	1016	✓	2765	149	1016	358
11	10:15:39.881	Thread Group 1...	HTTP Request	832	✓	2760	149	831	321
12	10:15:39.844	Thread Group 1...	HTTP Request	774	✓	2765	149	773	343
13	10:15:39.111	Thread Group 1-2	HTTP Request	1619	✓	2772	149	1649	368
14	10:15:39.977	Thread Group 1...	HTTP Request	757	✓	2760	149	756	318
15	10:15:39.144	Thread Group 1-3	HTTP Request	1693	✓	2763	149	1693	335
16	10:15:39.211	Thread Group 1-5	HTTP Request	1633	✓	2761	149	1632	341
17	10:15:39.279	Thread Group 1-7	HTTP Request	1568	✓	2763	149	1567	310
18	10:15:39.413	Thread Group 1...	HTTP Request	1450	✓	2763	149	1449	330
19	10:15:39.613	Thread Group 1...	HTTP Request	1252	✓	2762	149	1250	318
20	10:15:39.379	Thread Group 1...	HTTP Request	1489	✓	2760	149	1487	325
21	10:15:39.479	Thread Group 1...	HTTP Request	1392	✓	2763	149	1390	322
22	10:15:39.513	Thread Group 1...	HTTP Request	1360	✓	2763	149	1359	330
23	10:15:39.576	Thread Group 1...	HTTP Request	1301	✓	2762	149	1301	403
24	10:15:39.713	Thread Group 1...	HTTP Request	1166	✓	2765	149	1165	325
25	10:15:39.781	Thread Group 1...	HTTP Request	1102	✓	2762	149	1101	332
26	10:15:39.914	Thread Group 1...	HTTP Request	972	✓	2761	149	972	385
27	10:15:39.814	Thread Group 1...	HTTP Request	1076	✓	2760	149	1076	331

☐ Scroll automatically? ☐ Child samples? **No of Samples 30** Latest Sample 858 **Average 1222** Deviation 270

Thread: 40

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-Z\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse...

Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:16:24.737	Thread Group 1-4	HTTP Request	1515	✓	2763	149	1515	319
2	10:16:24.687	Thread Group 1-2	HTTP Request	1572	✓	2762	149	1572	343
3	10:16:24.810	Thread Group 1-7	HTTP Request	1452	✓	2764	149	1452	320
4	10:16:24.909	Thread Group 1...	HTTP Request	1353	✓	2764	149	1353	298
5	10:16:24.708	Thread Group 1-3	HTTP Request	1557	✓	2762	149	1557	319
6	10:16:24.909	Thread Group 1-9	HTTP Request	1358	✓	2763	149	1358	310
7	10:16:24.656	Thread Group 1-1	HTTP Request	1612	✓	2764	149	1612	376
8	10:16:24.988	Thread Group 1...	HTTP Request	1288	✓	2767	149	1288	293
9	10:16:24.937	Thread Group 1...	HTTP Request	1340	✓	2763	149	1340	308
10	10:16:24.639	Thread Group 1-8	HTTP Request	1441	✓	2764	149	1441	308
11	10:16:24.763	Thread Group 1-5	HTTP Request	1518	✓	2763	149	1518	313
12	10:16:24.913	Thread Group 1...	HTTP Request	1369	✓	2760	149	1369	303
13	10:16:25.037	Thread Group 1...	HTTP Request	1247	✓	2765	149	1246	307
14	10:16:24.789	Thread Group 1-6	HTTP Request	1495	✓	2760	149	1495	339
15	10:16:24.962	Thread Group 1...	HTTP Request	1324	✓	2763	149	1324	300
16	10:16:25.012	Thread Group 1...	HTTP Request	1279	✓	2762	149	1279	305
17	10:16:25.137	Thread Group 1...	HTTP Request	1158	✓	2761	149	1157	313
18	10:16:25.162	Thread Group 1...	HTTP Request	1136	✓	2761	149	1136	301
19	10:16:25.089	Thread Group 1...	HTTP Request	1211	✓	2761	149	1210	299
20	10:16:25.067	Thread Group 1...	HTTP Request	1234	✓	2763	149	1234	302
21	10:16:25.187	Thread Group 1...	HTTP Request	1115	✓	2761	149	1114	311
22	10:16:25.112	Thread Group 1...	HTTP Request	1182	✓	2760	149	1181	299
23	10:16:25.212	Thread Group 1...	HTTP Request	1093	✓	2765	149	1093	317
24	10:16:25.263	Thread Group 1...	HTTP Request	1044	✓	2765	149	1044	305
25	10:16:25.340	Thread Group 1...	HTTP Request	971	✓	2761	149	970	318
26	10:16:25.288	Thread Group 1...	HTTP Request	1023	✓	2770	149	1023	316
27	10:16:25.390	Thread Group 1...	HTTP Request	923	✓	2760	149	923	311

☐ Scroll automatically? ☐ Child samples? **No of Samples 40** Latest Sample 756 **Average 1150** Deviation 259

Thread: 50

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:17:56.156	Thread Group 1-1	HTTP Request	596	✓	2763	149	595	357
2	10:17:56.257	Thread Group 1-6	HTTP Request	535	✓	2767	149	535	306
3	10:17:56.167	Thread Group 1-2	HTTP Request	630	✓	2765	149	629	347
4	10:17:56.198	Thread Group 1-3	HTTP Request	604	✓	2765	149	603	330
5	10:17:56.277	Thread Group 1-7	HTTP Request	577	✓	2762	149	577	346
6	10:17:56.215	Thread Group 1-4	HTTP Request	641	✓	2771	149	566	307
7	10:17:56.317	Thread Group 1-9	HTTP Request	568	✓	2765	149	567	334
8	10:17:56.340	Thread Group 1-...	HTTP Request	557	✓	2769	149	557	313
9	10:17:56.416	Thread Group 1-...	HTTP Request	550	✓	2765	149	549	317
10	10:17:56.458	Thread Group 1-...	HTTP Request	586	✓	2765	149	586	336
11	10:17:56.289	Thread Group 1-8	HTTP Request	758	✓	2765	149	758	362
12	10:17:56.239	Thread Group 1-5	HTTP Request	813	✓	2761	149	812	375
13	10:17:56.417	Thread Group 1-...	HTTP Request	640	✓	2771	149	639	337
14	10:17:56.439	Thread Group 1-...	HTTP Request	621	✓	2759	149	621	346
15	10:17:56.354	Thread Group 1-...	HTTP Request	710	✓	2762	149	709	377
16	10:17:56.424	Thread Group 1-...	HTTP Request	676	✓	2763	149	675	363
17	10:17:56.517	Thread Group 1-...	HTTP Request	624	✓	2764	149	624	369
18	10:17:56.500	Thread Group 1-...	HTTP Request	644	✓	2760	149	644	386
19	10:17:56.666	Thread Group 1-...	HTTP Request	1116	✓	2767	149	1116	322
20	10:17:56.673	Thread Group 1-...	HTTP Request	1114	✓	2763	149	1113	323
21	10:17:56.634	Thread Group 1-...	HTTP Request	1154	✓	2761	149	1154	361
22	10:17:56.700	Thread Group 1-...	HTTP Request	1093	✓	2765	149	1092	340
23	10:17:56.720	Thread Group 1-...	HTTP Request	1079	✓	2764	149	1079	322
24	10:17:56.735	Thread Group 1-...	HTTP Request	1068	✓	2763	149	1067	314
25	10:17:56.781	Thread Group 1-...	HTTP Request	1025	✓	2763	149	1023	365
26	10:17:56.889	Thread Group 1-...	HTTP Request	920	✓	2763	149	919	325
27	10:17:56.800	Thread Group 1-...	HTTP Request	923	✓	2763	149	922	340

☐ Scroll automatically? ☐ Child samples? No of Samples 50 Latest Sample 934 Average 900 Deviation 247

Instance: 3


IBM Cloud

Cloud Foundry apps /

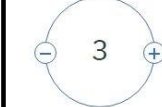
tutorial3rahul Running [Visit App URL](#)

Org: rahulmidha@daL.ca Location: US South Space: dev

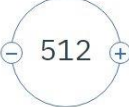
Routes [↺](#) [↻](#) [⚙](#) [⋮](#)




BUILDPACK
SDK for Node.js™



INSTANCES
All instances are running
Health is 100%



MB MEMORY PER INSTANCE



TOTAL GB ALLOCATION
0 MB still available [?](#)

Thread: 10

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan

Thread Group

HTTP Request

View Results in Table

WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(m...
1	10:26:49.870	Thread Group 1-1	HTTP Request	494	✓	2762	149	494	316
2	10:26:49.971	Thread Group 1-2	HTTP Request	522	✓	2763	149	522	365
3	10:26:50.091	Thread Group 1-3	HTTP Request	504	✓	2761	149	504	320
4	10:26:50.172	Thread Group 1-4	HTTP Request	450	✓	2763	149	450	286
5	10:26:50.274	Thread Group 1-5	HTTP Request	483	✓	2761	149	483	287
6	10:26:50.373	Thread Group 1-6	HTTP Request	456	✓	2763	149	456	314
7	10:26:50.473	Thread Group 1-7	HTTP Request	499	✓	2768	149	498	312
8	10:26:50.574	Thread Group 1-8	HTTP Request	444	✓	2765	149	444	296
9	10:26:50.674	Thread Group 1-9	HTTP Request	454	✓	2761	149	454	313
10	10:26:50.774	Thread Group 1-...	HTTP Request	456	✓	2763	149	456	310

☐ Scroll automatically? ☐ Child samples?

No of Samples 10

Latest Sample 456

Average 476

Deviation 26

Thread: 20

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan

Thread Group

HTTP Request

View Results in Table

WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(m...
1	10:22:30.715	Thread Group 1-3	HTTP Request	744	✓	2765	149	743	298
2	10:22:30.812	Thread Group 1-1	HTTP Request	850	✓	2762	149	849	341
3	10:22:30.766	Thread Group 1-4	HTTP Request	733	✓	2765	149	733	315
4	10:22:30.665	Thread Group 1-2	HTTP Request	840	✓	2761	149	839	304
5	10:22:30.917	Thread Group 1-7	HTTP Request	625	✓	2763	149	624	306
6	10:22:30.866	Thread Group 1-6	HTTP Request	692	✓	2766	149	692	289
7	10:22:30.817	Thread Group 1-5	HTTP Request	750	✓	2764	149	748	297
8	10:22:30.966	Thread Group 1-8	HTTP Request	630	✓	2764	149	630	297
9	10:22:31.016	Thread Group 1-9	HTTP Request	616	✓	2763	149	615	293
10	10:22:31.118	Thread Group 1-...	HTTP Request	519	✓	2761	149	519	285
11	10:22:31.067	Thread Group 1-...	HTTP Request	579	✓	2765	149	578	306
12	10:22:31.168	Thread Group 1-...	HTTP Request	484	✓	2760	149	484	303
13	10:22:31.267	Thread Group 1-...	HTTP Request	440	✓	2760	149	439	288
14	10:22:31.218	Thread Group 1-...	HTTP Request	505	✓	2765	149	504	305
15	10:22:31.318	Thread Group 1-...	HTTP Request	453	✓	2763	149	452	296
16	10:22:31.367	Thread Group 1-...	HTTP Request	455	✓	2763	149	454	304
17	10:22:31.417	Thread Group 1-...	HTTP Request	457	✓	2760	149	457	304
18	10:22:31.469	Thread Group 1-...	HTTP Request	448	✓	2763	149	447	304
19	10:22:31.518	Thread Group 1-...	HTTP Request	463	✓	2763	149	463	307
20	10:22:31.564	Thread Group 1-...	HTTP Request	437	✓	2767	149	437	292

☐ Scroll automatically? ☐ Child samples?

No of Samples 20

Latest Sample 437

Average 586

Deviation 136

Thread: 30

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan

Thread Group

HTTP Request

View Results in Table

WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:23:56.852	Thread Group 1-2	HTTP Request	694	✓	2763	149	694	299
2	10:23:56.884	Thread Group 1-3	HTTP Request	703	✓	2766	149	703	293
3	10:23:56.921	Thread Group 1-4	HTTP Request	698	✓	2760	149	698	301
4	10:23:56.988	Thread Group 1-6	HTTP Request	678	✓	2763	149	676	285
5	10:23:56.818	Thread Group 1-1	HTTP Request	878	✓	2765	149	878	332
6	10:23:56.954	Thread Group 1-5	HTTP Request	751	✓	2764	149	751	294
7	10:23:57.054	Thread Group 1-8	HTTP Request	673	✓	2763	149	672	294
8	10:23:57.085	Thread Group 1-9	HTTP Request	664	✓	2770	149	662	285
9	10:23:57.121	Thread Group 1-...	HTTP Request	653	✓	2760	149	653	285
10	10:23:57.022	Thread Group 1-7	HTTP Request	763	✓	2770	149	695	293
11	10:23:57.156	Thread Group 1-...	HTTP Request	651	✓	2763	149	651	292
12	10:23:57.185	Thread Group 1-...	HTTP Request	678	✓	2763	149	678	292
13	10:23:57.222	Thread Group 1-...	HTTP Request	645	✓	2765	149	644	288
14	10:23:57.290	Thread Group 1-...	HTTP Request	624	✓	2761	149	624	286
15	10:23:57.320	Thread Group 1-...	HTTP Request	628	✓	2761	149	627	290
16	10:23:57.256	Thread Group 1-...	HTTP Request	740	✓	2761	149	739	308
17	10:23:57.357	Thread Group 1-...	HTTP Request	647	✓	2765	149	647	296
18	10:23:57.390	Thread Group 1-...	HTTP Request	622	✓	2761	149	621	305
19	10:23:57.422	Thread Group 1-...	HTTP Request	609	✓	2760	149	608	309
20	10:23:57.457	Thread Group 1-...	HTTP Request	590	✓	2762	149	589	295
21	10:23:57.491	Thread Group 1-...	HTTP Request	582	✓	2760	149	582	292
22	10:23:57.524	Thread Group 1-...	HTTP Request	582	✓	2761	149	582	296
23	10:23:57.557	Thread Group 1-...	HTTP Request	564	✓	2764	149	563	308
24	10:23:57.588	Thread Group 1-...	HTTP Request	589	✓	2765	149	588	296
25	10:23:57.622	Thread Group 1-...	HTTP Request	587	✓	2763	149	586	319
26	10:23:57.689	Thread Group 1-...	HTTP Request	542	✓	2767	149	542	332
27	10:23:57.656	Thread Group 1-...	HTTP Request	577	✓	2764	149	577	290

☐ Scroll automatically? ☐ Child samples?

No of Samples 30 Latest Sample 533 Average 641 Deviation 76

Thread: 40

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan

Thread Group

HTTP Request

View Results in Table

WorkBench

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:24:41.341	Thread Group 1-...	HTTP Request	910	✓	2761	149	910	293
2	10:24:41.443	Thread Group 1-...	HTTP Request	824	✓	2762	149	824	296
3	10:24:41.190	Thread Group 1-4	HTTP Request	1215	✓	2761	149	1214	308
4	10:24:41.214	Thread Group 1-5	HTTP Request	1202	✓	2763	149	1202	292
5	10:24:41.490	Thread Group 1-...	HTTP Request	929	✓	2765	149	929	301
6	10:24:41.517	Thread Group 1-...	HTTP Request	907	✓	2762	149	906	285
7	10:24:41.109	Thread Group 1-1	HTTP Request	1319	✓	2762	149	1319	352
8	10:24:41.369	Thread Group 1-...	HTTP Request	1064	✓	2760	149	1064	295
9	10:24:41.240	Thread Group 1-6	HTTP Request	1228	✓	2761	149	1228	286
10	10:24:41.567	Thread Group 1-...	HTTP Request	903	✓	2761	149	903	295
11	10:24:41.466	Thread Group 1-...	HTTP Request	1004	✓	2766	149	1004	296
12	10:24:41.543	Thread Group 1-...	HTTP Request	959	✓	2771	149	928	297
13	10:24:41.618	Thread Group 1-...	HTTP Request	890	✓	2761	149	889	310
14	10:24:41.894	Thread Group 1-...	HTTP Request	917	✓	2763	149	916	286
15	10:24:41.618	Thread Group 1-...	HTTP Request	719	✓	2767	149	718	305
16	10:24:41.944	Thread Group 1-...	HTTP Request	598	✓	2765	149	597	289
17	10:24:42.100	Thread Group 1-...	HTTP Request	567	✓	2763	149	566	285
18	10:24:41.163	Thread Group 1-3	HTTP Request	1541	✓	2763	149	1541	288
19	10:24:41.718	Thread Group 1-...	HTTP Request	1001	✓	2762	149	1000	690
20	10:24:41.642	Thread Group 1-...	HTTP Request	1083	✓	2766	149	1082	293
21	10:24:41.141	Thread Group 1-2	HTTP Request	1586	✓	2763	149	1585	299
22	10:24:41.289	Thread Group 1-8	HTTP Request	1442	✓	2767	149	1441	286
23	10:24:41.265	Thread Group 1-7	HTTP Request	1468	✓	2761	149	1467	304
24	10:24:42.069	Thread Group 1-...	HTTP Request	669	✓	2763	149	666	293
25	10:24:41.391	Thread Group 1-...	HTTP Request	1348	✓	2763	149	1347	284
26	10:24:41.316	Thread Group 1-9	HTTP Request	1426	✓	2763	149	1425	294
27	10:24:41.770	Thread Group 1-...	HTTP Request	977	✓	2765	149	977	630

☐ Scroll automatically? ☐ Child samples?

No of Samples 40 Latest Sample 881 Average 1035 Deviation 254

Thread: 50

View Results in Table.jmx (C:\Users\Owner\Desktop\Courses\Data Warehousing\Assignments\Assignment-2\material\View Results in Table.jmx) - Apache JMeter (3.3 r1808647)

File Edit Search Run Options Help

Test Plan
Thread Group
HTTP Request
View Results in Table
WorkBench

View Results in Table

Name: View Results in Table

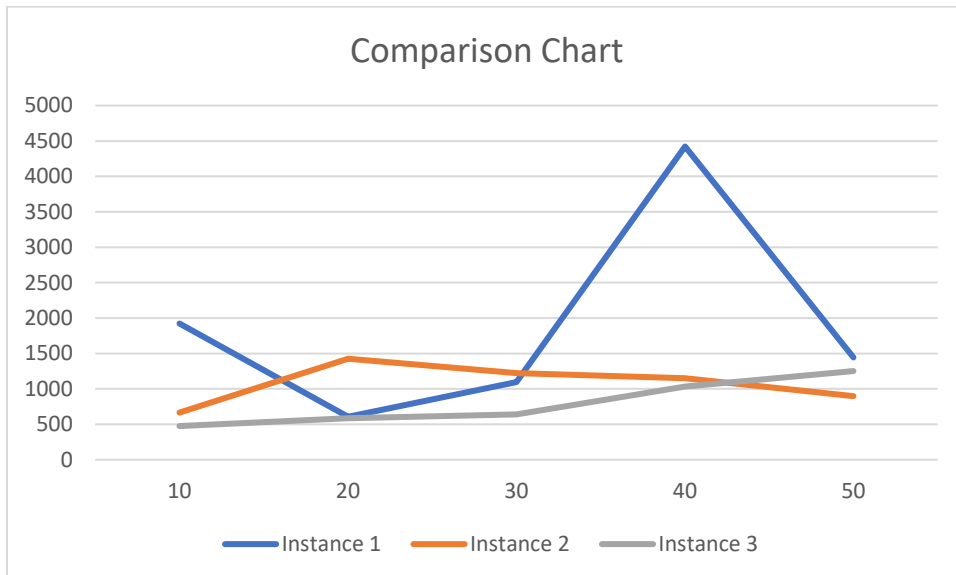
Comments:

Write results to file / Read from file
Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
1	10:27:50.411	Thread Group 1-8	HTTP Request	701	✓	2767	149	701	291
2	10:27:50.431	Thread Group 1-9	HTTP Request	688	✓	2762	149	688	300
3	10:27:50.446	Thread Group 1-...	HTTP Request	713	✓	2763	149	711	301
4	10:27:50.551	Thread Group 1-...	HTTP Request	682	✓	2767	149	682	290
5	10:27:50.571	Thread Group 1-...	HTTP Request	1255	✓	2762	149	1255	288
6	10:27:50.733	Thread Group 1-...	HTTP Request	1095	✓	2762	149	1095	303
7	10:27:50.773	Thread Group 1-...	HTTP Request	1061	✓	2765	149	1061	305
8	10:27:50.873	Thread Group 1-...	HTTP Request	983	✓	2759	149	983	300
9	10:27:50.889	Thread Group 1-...	HTTP Request	971	✓	2763	149	970	292
10	10:27:50.929	Thread Group 1-...	HTTP Request	934	✓	2765	149	932	293
11	10:27:50.953	Thread Group 1-...	HTTP Request	915	✓	2761	149	914	297
12	10:27:51.030	Thread Group 1-...	HTTP Request	852	✓	2765	149	852	315
13	10:27:51.131	Thread Group 1-...	HTTP Request	823	✓	2764	149	823	292
14	10:27:51.151	Thread Group 1-...	HTTP Request	820	✓	2770	149	819	295
15	10:27:51.254	Thread Group 1-...	HTTP Request	755	✓	2763	149	754	303
16	10:27:50.289	Thread Group 1-2	HTTP Request	1757	✓	2761	149	1757	307
17	10:27:50.306	Thread Group 1-3	HTTP Request	1745	✓	2763	149	1745	298
18	10:27:50.328	Thread Group 1-4	HTTP Request	1732	✓	2765	149	1731	298
19	10:27:50.349	Thread Group 1-5	HTTP Request	1716	✓	2763	149	1716	296
20	10:27:50.371	Thread Group 1-6	HTTP Request	1704	✓	2761	149	1704	303
21	10:27:50.506	Thread Group 1-...	HTTP Request	1575	✓	2767	149	1575	311
22	10:27:50.492	Thread Group 1-7	HTTP Request	1592	✓	2761	149	1592	306
23	10:27:50.669	Thread Group 1-...	HTTP Request	1421	✓	2763	149	1421	294
24	10:27:50.598	Thread Group 1-...	HTTP Request	1507	✓	2761	149	1507	297
25	10:27:50.635	Thread Group 1-...	HTTP Request	1462	✓	2761	149	1461	303
26	10:27:50.714	Thread Group 1-...	HTTP Request	1386	✓	2765	149	1385	296
27	10:27:50.848	Thread Group 1-...	HTTP Request	1258	✓	2765	149	1258	296

☐ Scroll automatically? ☐ Child samples? No of Samples 50 Latest Sample 1173 Average 1252 Deviation 332

Comparison Graph:



Summary:

Here, in this assignment, we have created the application in Node.JS for performing required queries. We have uploaded the application to the IBM Cloud Platform via Cloud Foundry CLI Tool [6]. Further, this application can be accessed through its link. We can check this link via any browser or any tool such as postman, JMeter and so on.

In the later part, we have checked the web response via postman by providing GET request with the link. Further, we have tested the application with JMeter which is an analyzing and measuring tool for various web-based services. In the process of testing, we have increased the instances from 1,2 to 3. While changing the instances, we also have changed the number of threads (users) gradually from 10, 20, 30, 40 to 50 and observed their response time.

At the end, we concluded that response time is decreased once we increase the number of instances. The response time also got varied as we have increased the number of threads(users) in JMeter. Apart, the overall process which is new to us and we have gained unique experience in terms of creating and accessing the application on a cloud platform.

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- [6] [Online]. Available: <https://docs.cloudfoundry.org/cf-cli/> [Accessed 06 February 2018].