Chaos Engineering Report

20 May 2019

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Summary

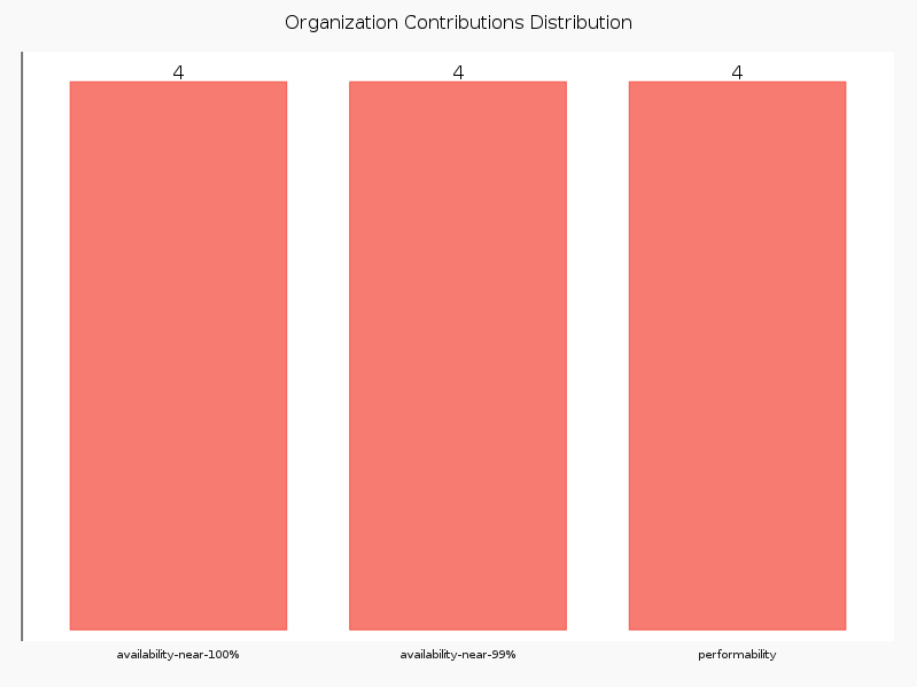
This report aggregates 4 experiments spanning over the following subjects:

service2, *service1*

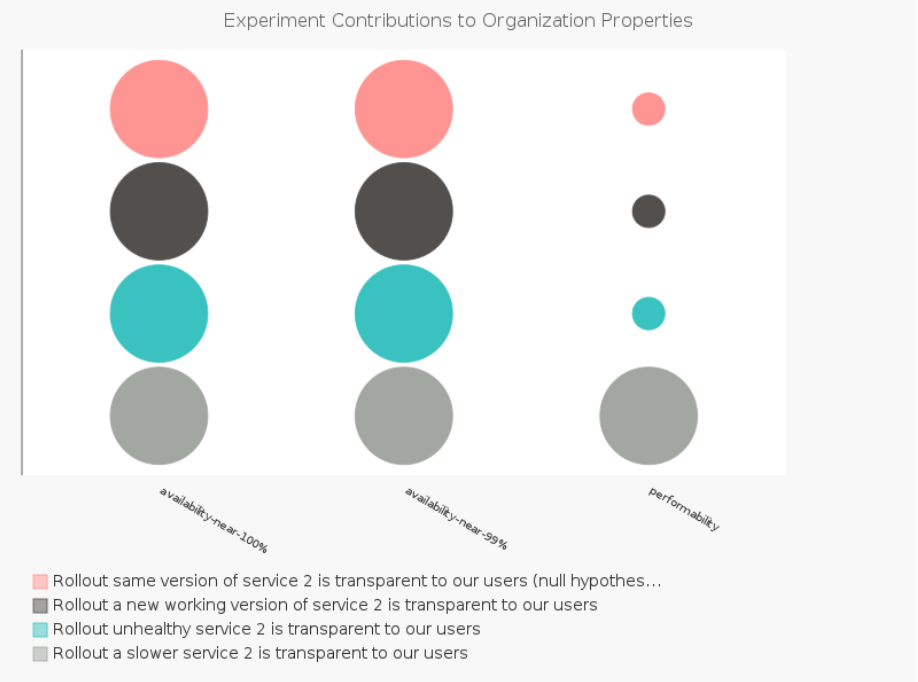
Contributions

Contributions surface the properties this collection of experiments target in order to improve the confidence and trust in the system.

The aggregated 4 experiments cover 3 distinct contributions:



Experiment Contributions Breakdown The breakdown of impacts each experiment contributes to for these system properties[1]:

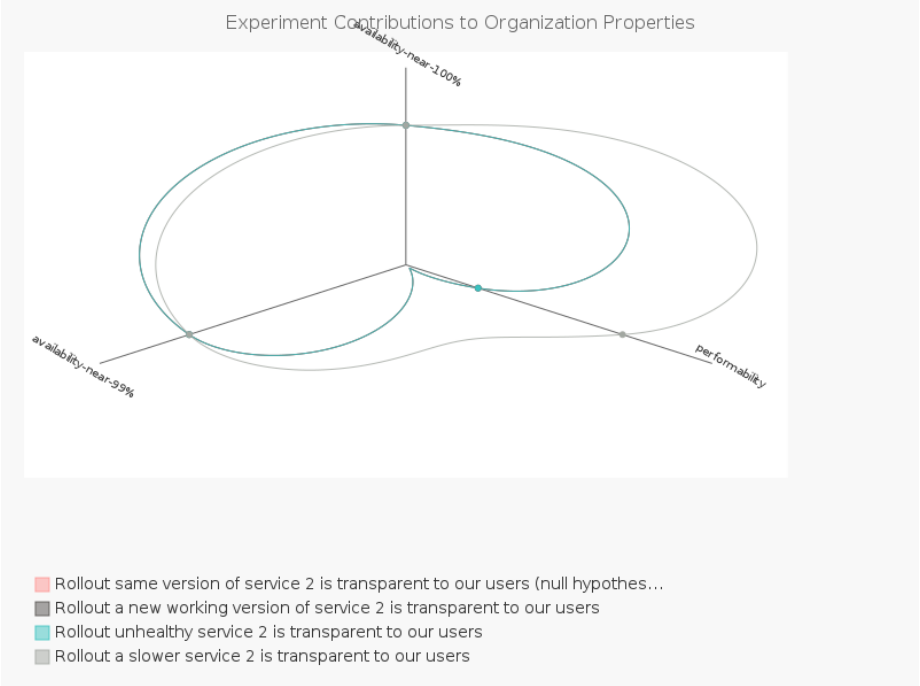


Sparse lines indicate a given experiment focused on a specific subset of contributions.

Sparse columns indicate that a given contribution was seldom impacted by this collection of experiments.

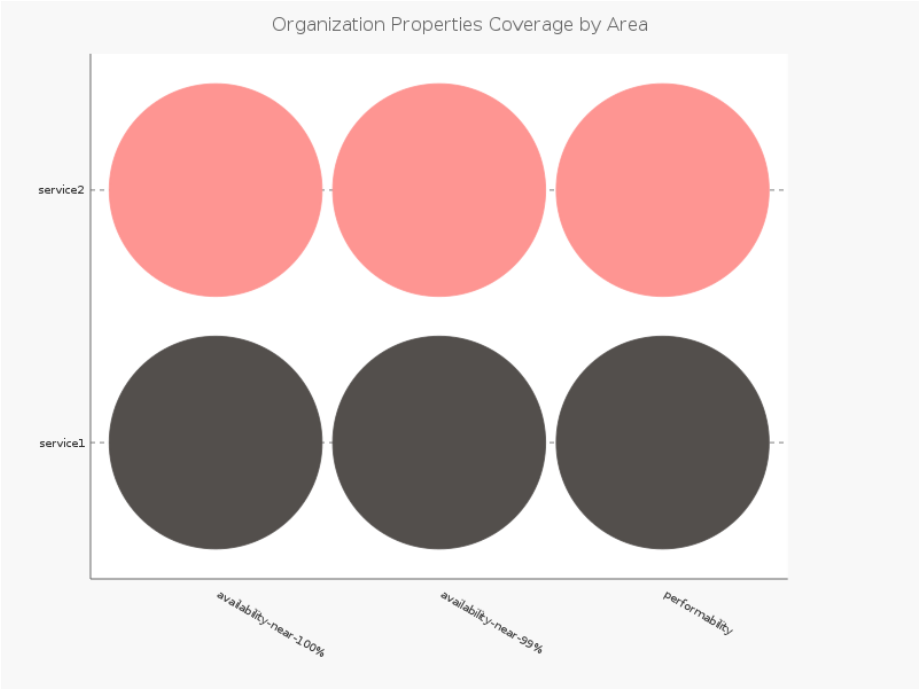
[1]Empty dots indicate an experiment is explicitely not addressing a given contribution while missing dots indicate no data for a given contribution.

Another view of the same data:



Areas Contributions Breakdown

The distribution of areas impacted by these contributions[2]:



Sparse lines indicate a given tag contributes only to a specific subset of system property.

Sparse columns indicate that a given contribution impacts moderately areas covered by the experiments.

[2]Empty dots indicate a tag is explicitely not addressing a given contribution while missing dots indicate no data for a given contribution.

Experiments

Rollout same version of service 2 is transparent to our users (null hypothesis)

Rolling out a backend service should not impact the service our users rely on

Summary

Status	completed
Tagged	service1, service2
Executed From	sylvain-work
Platform	Linux-5.0.0-15-generic-x86_64-with-Ubuntu-19.04-disco
Started	Mon, 20 May 2019 13:44:09 GMT
Completed	Mon, 20 May 2019 13:44:41 GMT
Duration	32 seconds

Definition

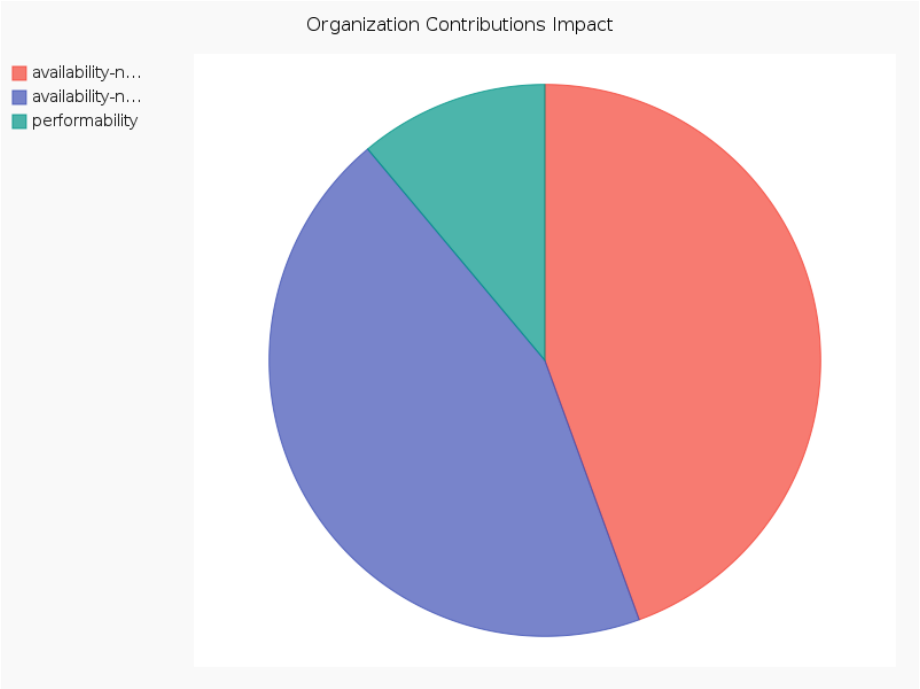
The experiment was made of 2 actions, to vary conditions in your system, and 2 probes, to collect objective data from your system during the experiment.

Organization Contributions

An estimate of relative system properties this experiment contributes to:

Contribution	Impact
availability-near-100%	high
availability-near-99%	high
performability	low

The *"none"* value for an impact indicates that this experiment explicitely does not address that specific property.



Steady State Hypothesis

The steady state hypothesis this experiment tried was "**If users see errors, it may be due to a rollout breaking the link between services**".

Before Run

The steady state was verified

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{'type': 'jsonpath', 'path': '$.data.result.*[?(@.value[1]!="0")]', 'count': 0}	True

After Run

The steady state was verified

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{‘type’: ‘jsonpath’, ‘path’: ’$.data.result.*[?(@.value[1]!=“0”)]‘, ’count’: 0}	True

Method

The experiment method defines the sequence of activities that help gathering evidence towards, or against, the hypothesis.

The following activities were conducted as part of the experimental’s method:

Type	Name
action	initiate-rollout-v1-of-service2
action	pretend-users-in-background
probe	read-deployment-status
probe	read-counter-for-the-past-30-seconds

Result

The experiment was conducted on Mon, 20 May 2019 13:44:09 GMT and lasted roughly 32 seconds.

Action - initiate-rollout-v1-of-service2

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:44:09 GMT
Ended	Mon, 20 May 2019 13:44:09 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	chaosk8s.deployment.actions
Function	set_deployment_image
Arguments	{‘deployment_name’: ‘service2’, ‘container_name’: ‘service2’, ‘image’: ‘lawouach/service2:v1’}

Action - pretend-users-in-background

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:44:10 GMT
Ended	Mon, 20 May 2019 13:44:10 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	load
Function	single
Arguments	{'url': '${counter_service_url}', 'duration': 20}

Probe - read-deployment-status

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:44:10 GMT
Ended	Mon, 20 May 2019 13:44:35 GMT
Duration	25 seconds

The probe provider that was executed:

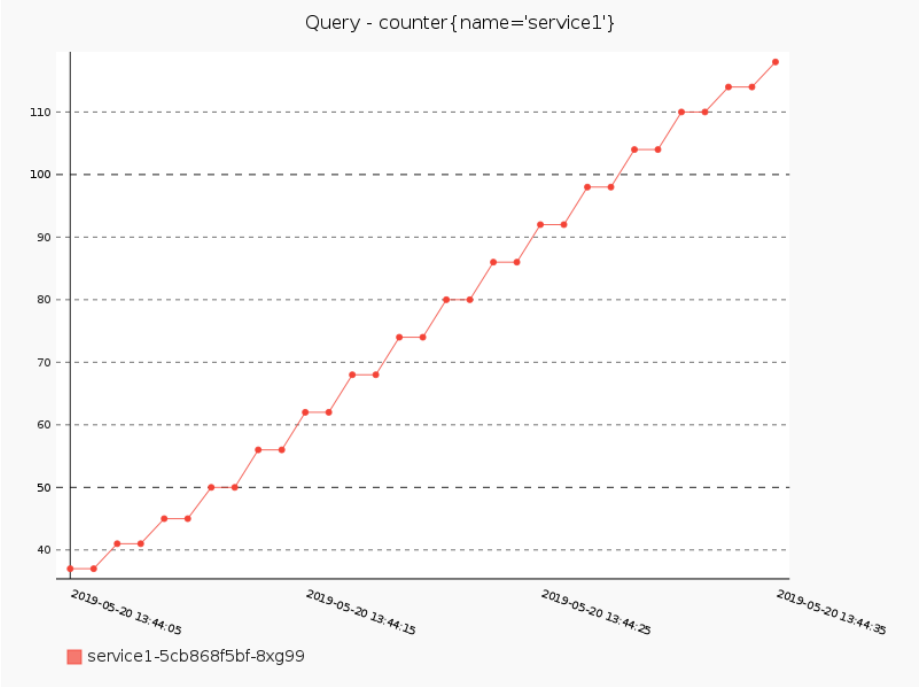
Type	python
Module	chaosk8s.deployment.probes
Function	collect_deployment_status
Arguments	{'deployment_name': 'service2', 'duration': 25}

Probe - read-counter-for-the-past-30-seconds

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:44:35 GMT
Ended	Mon, 20 May 2019 13:44:35 GMT
Duration	0 seconds

The probe provider that was executed:

Type	python
Module	chaosprometheus.probes
Function	query_interval
Arguments	{‘query’: “counter{name=‘service1’}”, ‘start’: ‘30 seconds ago’, ‘end’: ‘now’}



Appendix

Action - initiate-rollout-v1-of-service2

The *action* returned the following result:

```
None
```

Action - pretend-users-in-background

The *action* returned the following result:

```
None
```

Probe - read-deployment-status

The *probe* returned the following result:

```
[[['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
```

```
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']]]
```

Probe - read-counter-for-the-past-30-seconds

The *probe* returned the following result:

```
{'data': {'result': [{'metric': {'__name__': 'counter',
                                 'endpoint': 'http',
                                 'host': 'service1-5cb868f5bf-8xg99',
                                 'instance': '10.1.1.132:8000',
                                 'job': 'service1',
                                 'name': 'service1',
                                 'namespace': 'default',
                                 'path': '/',
                                 'pod': 'service1-5cb868f5bf-8xg99',
                                 'service': 'service1',
                                 'version': '2'},
                      'values': [[1558359845.7, '37'],
                                 [1558359846.7, '37'],
                                 [1558359847.7, '41'],
                                 [1558359848.7, '41'],
                                 [1558359849.7, '45'],
                                 [1558359850.7, '45'],
                                 [1558359851.7, '50'],
                                 [1558359852.7, '50'],
                                 [1558359853.7, '56'],
                                 [1558359854.7, '56'],
                                 [1558359855.7, '62'],
                                 [1558359856.7, '62'],
                                 [1558359857.7, '68'],
                                 [1558359858.7, '68'],
                                 [1558359859.7, '74'],
                                 [1558359860.7, '74'],
                                 [1558359861.7, '80'],
                                 [1558359862.7, '80'],
                                 [1558359863.7, '86'],
                                 [1558359864.7, '86'],
                                 [1558359865.7, '92'],
                                 [1558359866.7, '92'],
                                 [1558359867.7, '98'],
```

```
                                [1558359868.7, '98'],
                                [1558359869.7, '104'],
                                [1558359870.7, '104'],
                                [1558359871.7, '110'],
                                [1558359872.7, '110'],
                                [1558359873.7, '114'],
                                [1558359874.7, '114'],
                                [1558359875.7, '118']]}],
          'resultType': 'matrix'},
 'status': 'success'}
```


Rollout a new working version of service 2 is transparent to our users

Rolling out a backend service should not impact the service our users rely on

Summary

Status	completed
Tagged	service1, service2
Executed From	sylvain-work
Platform	Linux-5.0.0-15-generic-x86_64-with-Ubuntu-19.04-disco
Started	Mon, 20 May 2019 13:53:19 GMT
Completed	Mon, 20 May 2019 13:53:46 GMT
Duration	27 seconds

Definition

The experiment was made of 2 actions, to vary conditions in your system, and 2 probes, to collect objective data from your system during the experiment.

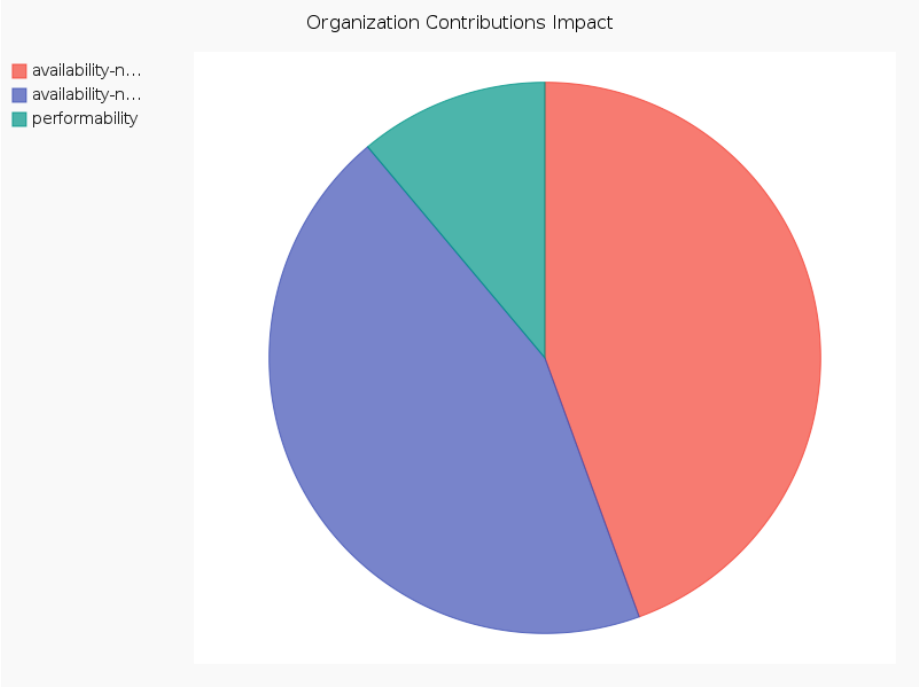
Organization Contributions

An estimate of relative system properties this experiment contributes to:

Contribution	Impact
availability-near-100%	high
availability-near-99%	high
performability	low

The *"none"* value for an impact indicates that this experiment explicitely does

not address that specific property.



Steady State Hypothesis

The steady state hypothesis this experiment tried was "**If users see errors, it may be due to a rollout breaking the link between services**".

Before Run

The steady state was verified

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{'type': 'jsonpath', 'path': '$.data.result.*[?(@.value[1]!="0")]', 'count': 0}	True

After Run

The steady state was verified

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{‘type’: ‘jsonpath’, ‘path’: ’$.data.result.*[?(@.value[1]!=“0”)]‘, ’count’: 0}	True

Method

The experiment method defines the sequence of activities that help gathering evidence towards, or against, the hypothesis.

The following activities were conducted as part of the experimental’s method:

Type	Name
action	initiate-rollout-v2-of-service2
action	pretend-users-in-background
probe	read-deployment-status
probe	read-counter-for-the-past-30-seconds

Result

The experiment was conducted on Mon, 20 May 2019 13:53:19 GMT and lasted roughly 27 seconds.

Action - initiate-rollout-v2-of-service2

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:53:20 GMT
Ended	Mon, 20 May 2019 13:53:20 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	chaosk8s.deployment.actions
Function	set_deployment_image
Arguments	{‘deployment_name’: ‘service2’, ‘container_name’: ‘service2’, ‘image’: ‘lawouach/service2:v2’}

Action - pretend-users-in-background

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:53:20 GMT
Ended	Mon, 20 May 2019 13:53:20 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	load
Function	single
Arguments	{'url': '${counter_service_url}', 'duration': 20}

Probe - read-deployment-status

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:53:20 GMT
Ended	Mon, 20 May 2019 13:53:45 GMT
Duration	25 seconds

The probe provider that was executed:

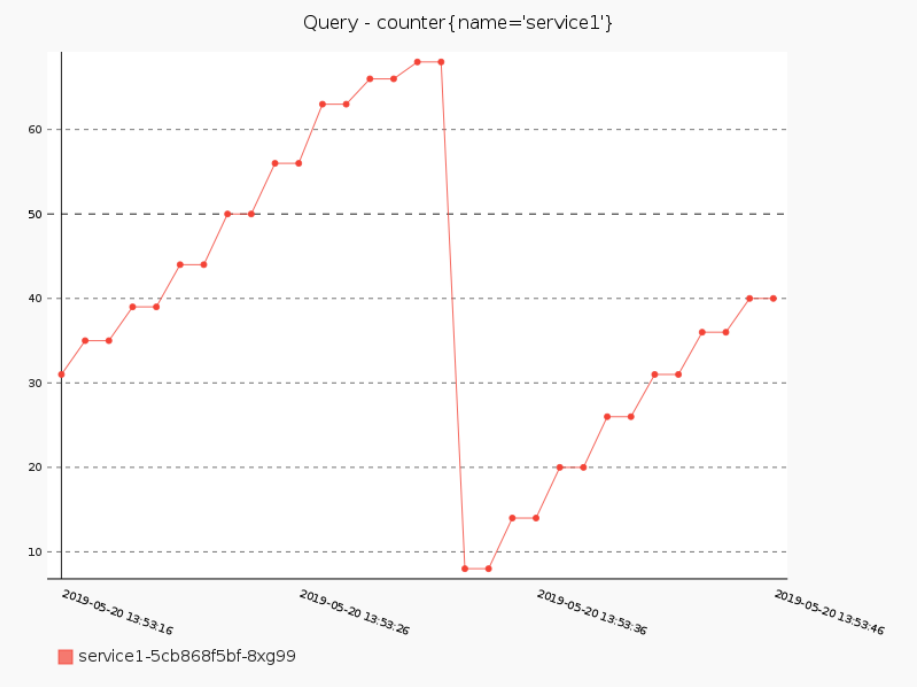
Type	python
Module	chaosk8s.deployment.probes
Function	collect_deployment_status
Arguments	{'deployment_name': 'service2', 'duration': 25}

Probe - read-counter-for-the-past-30-seconds

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:53:46 GMT
Ended	Mon, 20 May 2019 13:53:46 GMT
Duration	0 seconds

The probe provider that was executed:

Type	python
Module	chaosprometheus.probes
Function	query_interval
Arguments	{‘query’: “counter{name=‘service1’}”, ‘start’: ‘30 seconds ago’, ‘end’: ‘now’}



Appendix

Action - initiate-rollout-v2-of-service2

The *action* returned the following result:

```
None
```

Action - pretend-users-in-background

The *action* returned the following result:

```
None
```

Probe - read-deployment-status

The *probe* returned the following result:

```
[[['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
```

```
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']]]
```

Probe - read-counter-for-the-past-30-seconds

The *probe* returned the following result:

```
{'data': {'result': [{'metric': {'__name__': 'counter',
                                 'endpoint': 'http',
                                 'host': 'service1-5cb868f5bf-8xg99',
                                 'instance': '10.1.1.132:8000',
                                 'job': 'service1',
                                 'name': 'service1',
                                 'namespace': 'default',
                                 'path': '/',
                                 'pod': 'service1-5cb868f5bf-8xg99',
                                 'service': 'service1',
                                 'version': '2'},
                      'values': [[1558360396, '31'],
                                 [1558360397, '35'],
                                 [1558360398, '35'],
                                 [1558360399, '39'],
                                 [1558360400, '39'],
                                 [1558360401, '44'],
                                 [1558360402, '44'],
                                 [1558360403, '50'],
                                 [1558360404, '50'],
                                 [1558360405, '56'],
                                 [1558360406, '56'],
                                 [1558360407, '63'],
                                 [1558360408, '63'],
                                 [1558360409, '66'],
                                 [1558360410, '66'],
                                 [1558360411, '68'],
                                 [1558360412, '68'],
                                 [1558360413, '8'],
                                 [1558360414, '8'],
                                 [1558360415, '14'],
                                 [1558360416, '14'],
                                 [1558360417, '20'],
                                 [1558360418, '20'],
```

```
                                [1558360419, '26'],
                                [1558360420, '26'],
                                [1558360421, '31'],
                                [1558360422, '31'],
                                [1558360423, '36'],
                                [1558360424, '36'],
                                [1558360425, '40'],
                                [1558360426, '40']]}],
            'resultType': 'matrix'},
 'status': 'success'}
```


Rollout unhealthy service 2 is transparent to our users

Rolling out a backend service should not impact the service our users rely on

Summary

Status	completed
Tagged	service1, service2
Executed From	sylvain-work
Platform	Linux-5.0.0-15-generic-x86_64-with-Ubuntu-19.04-disco
Started	Mon, 20 May 2019 13:57:48 GMT
Completed	Mon, 20 May 2019 13:58:16 GMT
Duration	28 seconds

Definition

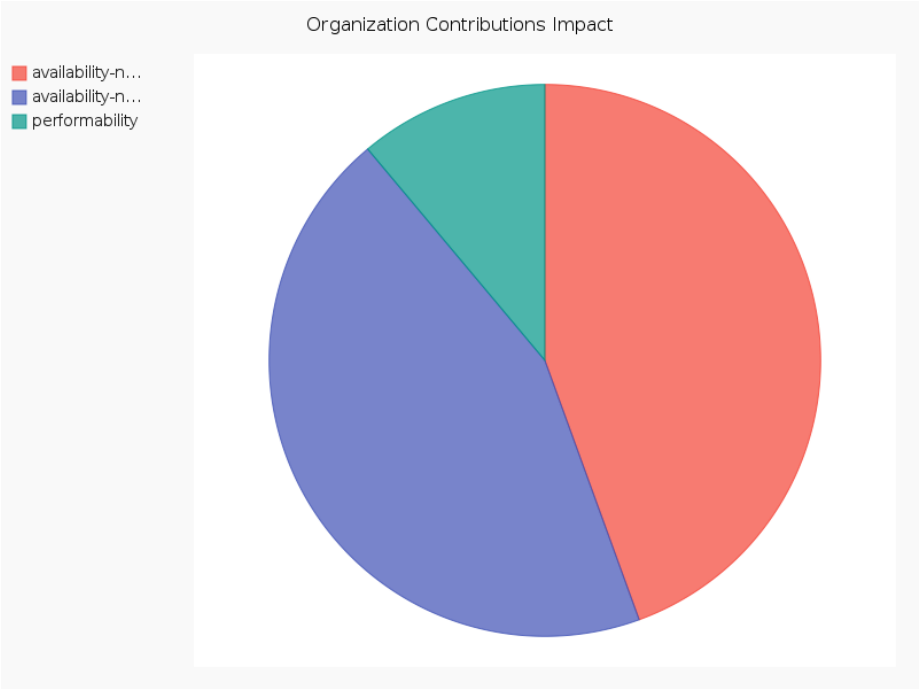
The experiment was made of 2 actions, to vary conditions in your system, and 2 probes, to collect objective data from your system during the experiment.

Organization Contributions

An estimate of relative system properties this experiment contributes to:

Contribution	Impact
availability-near-100%	high
availability-near-99%	high
performability	low

The *"none"* value for an impact indicates that this experiment explicitely does not address that specific property.



Steady State Hypothesis

The steady state hypothesis this experiment tried was "**If users see errors, it may be due to a rollout breaking the link between services**".

Before Run

The steady state was verified

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{'type': 'jsonpath', 'path': '$.data.result.*[?(@.value[1]!="0")]', 'count': 0}	True

After Run

The steady state was verified

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{‘type’: ‘jsonpath’, ‘path’: ’$.data.result.*[?(@.value[1]!=“0”)]‘, ’count’: 0}	True

Method

The experiment method defines the sequence of activities that help gathering evidence towards, or against, the hypothesis.

The following activities were conducted as part of the experimental’s method:

Type	Name
action	initiate-rollout-v3-of-service2
action	pretend-users-in-background
probe	read-deployment-status
probe	read-counter-for-the-past-30-seconds

Result

The experiment was conducted on Mon, 20 May 2019 13:57:48 GMT and lasted roughly 28 seconds.

Action - initiate-rollout-v3-of-service2

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:57:49 GMT
Ended	Mon, 20 May 2019 13:57:49 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	chaosk8s.deployment.actions
Function	set_deployment_image
Arguments	{‘deployment_name’: ‘service2’, ‘container_name’: ‘service2’, ‘image’: ‘lawouach/service2:v3’}

Action - pretend-users-in-background

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:57:49 GMT
Ended	Mon, 20 May 2019 13:57:49 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	load
Function	single
Arguments	{'url': '${counter_service_url}', 'duration': 20}

Probe - read-deployment-status

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:57:49 GMT
Ended	Mon, 20 May 2019 13:58:14 GMT
Duration	25 seconds

The probe provider that was executed:

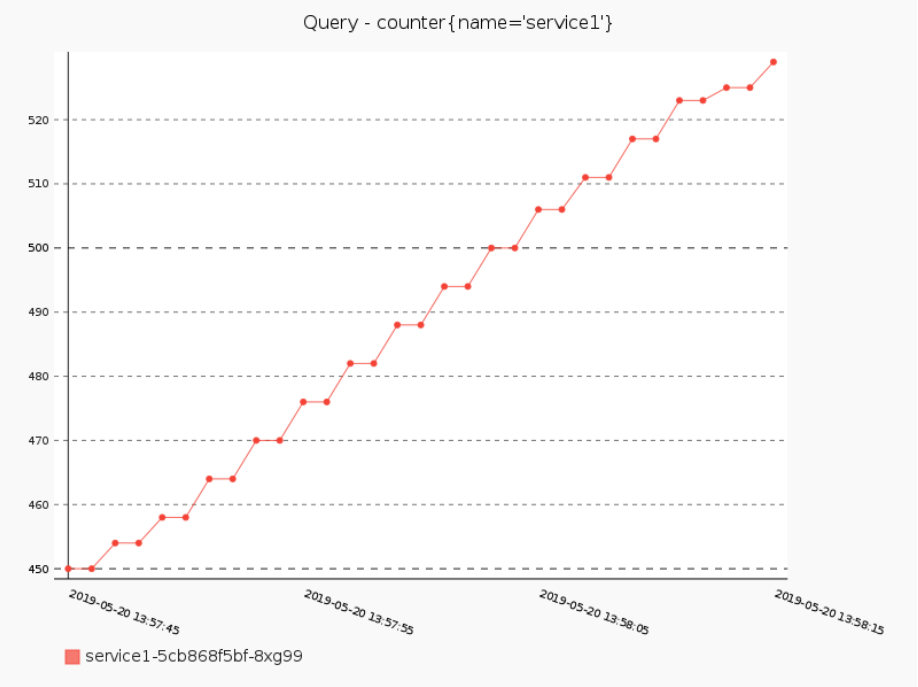
Type	python
Module	chaosk8s.deployment.probes
Function	collect_deployment_status
Arguments	{'deployment_name': 'service2', 'duration': 25}

Probe - read-counter-for-the-past-30-seconds

Status	succeeded
Background	False
Started	Mon, 20 May 2019 13:58:15 GMT
Ended	Mon, 20 May 2019 13:58:15 GMT
Duration	0 seconds

The probe provider that was executed:

Type	python
Module	chaosprometheus.probes
Function	query_interval
Arguments	{‘query’: “counter{name=‘service1’}”, ‘start’: ‘30 seconds ago’, ‘end’: ‘now’}



Appendix

Action - initiate-rollout-v3-of-service2

The *action* returned the following result:

```
None
```

Action - pretend-users-in-background

The *action* returned the following result:

```
None
```

Probe - read-deployment-status

The *probe* returned the following result:

```
[[['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'False', 'ProgressDeadlineExceeded']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
```

```
  ['Progressing', 'False', 'ProgressDeadlineExceeded']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'False', 'ProgressDeadlineExceeded']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'False', 'ProgressDeadlineExceeded']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'False', 'ProgressDeadlineExceeded']]]
```

Probe - read-counter-for-the-past-30-seconds

The *probe* returned the following result:

```
{'data': {'result': [{'metric': {'__name__': 'counter',
                                 'endpoint': 'http',
                                 'host': 'service1-5cb868f5bf-8xg99',
                                 'instance': '10.1.1.132:8000',
                                 'job': 'service1',
                                 'name': 'service1',
                                 'namespace': 'default',
                                 'path': '/',
                                 'pod': 'service1-5cb868f5bf-8xg99',
                                 'service': 'service1',
                                 'version': '2'},
                      'values': [[1558360665, '450'],
                                 [1558360666, '450'],
                                 [1558360667, '454'],
                                 [1558360668, '454'],
                                 [1558360669, '458'],
                                 [1558360670, '458'],
                                 [1558360671, '464'],
                                 [1558360672, '464'],
                                 [1558360673, '470'],
                                 [1558360674, '470'],
                                 [1558360675, '476'],
                                 [1558360676, '476'],
                                 [1558360677, '482'],
                                 [1558360678, '482'],
                                 [1558360679, '488'],
                                 [1558360680, '488'],
                                 [1558360681, '494'],
                                 [1558360682, '494'],
                                 [1558360683, '500'],
                                 [1558360684, '500'],
                                 [1558360685, '506'],
                                 [1558360686, '506'],
                                 [1558360687, '511'],
```

```
                                [1558360688, '511'],
                                [1558360689, '517'],
                                [1558360690, '517'],
                                [1558360691, '523'],
                                [1558360692, '523'],
                                [1558360693, '525'],
                                [1558360694, '525'],
                                [1558360695, '529']]}],
          'resultType': 'matrix'},
 'status': 'success'}
```


Rollout a slower service 2 is transparent to our users

Rolling out a backend service should not impact the service our users rely on

Summary

Status	failed
Tagged	service1, service2
Executed From	sylvain-work
Platform	Linux-5.0.0-15-generic-x86_64-with-Ubuntu-19.04-disco
Started	Mon, 20 May 2019 14:01:05 GMT
Completed	Mon, 20 May 2019 14:01:38 GMT
Duration	33 seconds

Definition

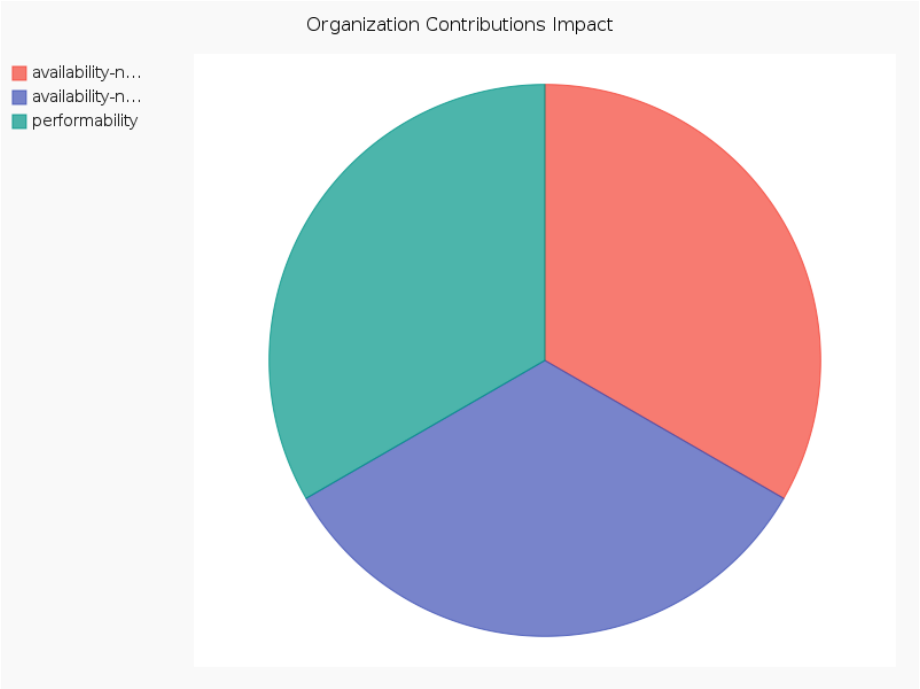
The experiment was made of 2 actions, to vary conditions in your system, and 2 probes, to collect objective data from your system during the experiment.

Organization Contributions

An estimate of relative system properties this experiment contributes to:

Contribution	Impact
availability-near-100%	high
availability-near-99%	high
performability	high

The *"none"* value for an impact indicates that this experiment explicitely does not address that specific property.



Steady State Hypothesis

The steady state hypothesis this experiment tried was "**If users see errors, it may be due to a rollout breaking the link between services**".

Before Run

The steady state was verified

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{'type': 'jsonpath', 'path': '$.data.result.*[?(@.value[1]!="0")]', 'count': 0}	True

After Run

The steady state was not verified.

Probe	Tolerance	Verified
no-http-errors-returned-from-service	{‘type’: ‘jsonpath’, ‘path’: ’$.data.result.*[?(@.value[1]!=“0”)]‘, ’count’: 0}	False

Method

The experiment method defines the sequence of activities that help gathering evidence towards, or against, the hypothesis.

The following activities were conducted as part of the experimental’s method:

Type	Name
action	initiate-rollout-v4-of-service2
action	pretend-users-in-background
probe	read-deployment-status
probe	read-counter-for-the-past-30-seconds

Result

The experiment was conducted on Mon, 20 May 2019 14:01:05 GMT and lasted roughly 33 seconds.

Action - initiate-rollout-v4-of-service2

Status	succeeded
Background	False
Started	Mon, 20 May 2019 14:01:11 GMT
Ended	Mon, 20 May 2019 14:01:11 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	chaosk8s.deployment.actions
Function	set_deployment_image
Arguments	{‘deployment_name’: ‘service2’, ‘container_name’: ‘service2’, ‘image’: ‘lawouach/service2:v4’}

Action - pretend-users-in-background

Status	succeeded
Background	False
Started	Mon, 20 May 2019 14:01:11 GMT
Ended	Mon, 20 May 2019 14:01:11 GMT
Duration	0 seconds

The action provider that was executed:

Type	python
Module	load
Function	single
Arguments	{'url': '${counter_service_url}', 'duration': 20}

Probe - read-deployment-status

Status	succeeded
Background	False
Started	Mon, 20 May 2019 14:01:11 GMT
Ended	Mon, 20 May 2019 14:01:36 GMT
Duration	25 seconds

The probe provider that was executed:

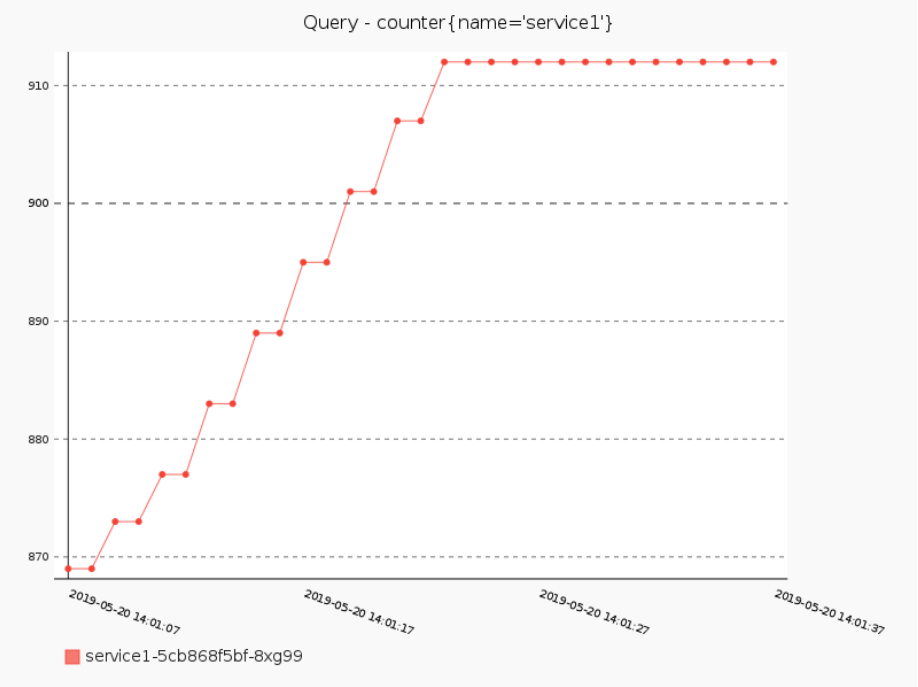
Type	python
Module	chaosk8s.deployment.probes
Function	collect_deployment_status
Arguments	{'deployment_name': 'service2', 'duration': 25}

Probe - read-counter-for-the-past-30-seconds

Status	succeeded
Background	False
Started	Mon, 20 May 2019 14:01:37 GMT
Ended	Mon, 20 May 2019 14:01:37 GMT
Duration	0 seconds

The probe provider that was executed:

Type	python
Module	chaosprometheus.probes
Function	query_interval
Arguments	{‘query’: “counter{name=‘service1’}”, ‘start’: ‘30 seconds ago’, ‘end’: ‘now’}



Appendix

Action - initiate-rollout-v4-of-service2

The *action* returned the following result:

```
None
```

Action - pretend-users-in-background

The *action* returned the following result:

```
None
```

Probe - read-deployment-status

The *probe* returned the following result:

```
[[['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'ReplicaSetUpdated']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
```

```
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']],
 [['Available', 'True', 'MinimumReplicasAvailable'],
  ['Progressing', 'True', 'NewReplicaSetAvailable']]]
```

Probe - read-counter-for-the-past-30-seconds

The *probe* returned the following result:

```
{'data': {'result': [{'metric': {'__name__': 'counter',
                                 'endpoint': 'http',
                                 'host': 'service1-5cb868f5bf-8xg99',
                                 'instance': '10.1.1.132:8000',
                                 'job': 'service1',
                                 'name': 'service1',
                                 'namespace': 'default',
                                 'path': '/',
                                 'pod': 'service1-5cb868f5bf-8xg99',
                                 'service': 'service1',
                                 'version': '2'},
                      'values': [[1558360867.1, '869'],
                                 [1558360868.1, '869'],
                                 [1558360869.1, '873'],
                                 [1558360870.1, '873'],
                                 [1558360871.1, '877'],
                                 [1558360872.1, '877'],
                                 [1558360873.1, '883'],
                                 [1558360874.1, '883'],
                                 [1558360875.1, '889'],
                                 [1558360876.1, '889'],
                                 [1558360877.1, '895'],
                                 [1558360878.1, '895'],
                                 [1558360879.1, '901'],
                                 [1558360880.1, '901'],
                                 [1558360881.1, '907'],
                                 [1558360882.1, '907'],
                                 [1558360883.1, '912'],
                                 [1558360884.1, '912'],
                                 [1558360885.1, '912'],
                                 [1558360886.1, '912'],
                                 [1558360887.1, '912'],
                                 [1558360888.1, '912'],
                                 [1558360889.1, '912'],
```

```
                                [1558360890.1, '912'],
                                [1558360891.1, '912'],
                                [1558360892.1, '912'],
                                [1558360893.1, '912'],
                                [1558360894.1, '912'],
                                [1558360895.1, '912'],
                                [1558360896.1, '912'],
                                [1558360897.1, '912']]}],
            'resultType': 'matrix'},
 'status': 'success'}
```