



Кейс с коммитом

Иван Круглов
SRE

slurm.io

rollback

kill instance

fail-over

Поломки и что с ними делать

100% систем **ломаются**

Избежать поломок не вариант

Что делать?

- Минимизировать вероятность
- Минимизировать ущерб
- Минимизировать время поломок



Минимизируем вероятность

- Code health
 - Тестирование, читаемость кода
- Планирование
 - Design documents
- Код ревью изменений

Минимизируем время решения

Мониторинг

Документация

Образование

Коммуникации



Аннотации

<https://gitlab.slurm.io/-/snippets/172>

Минимизируем ущерб

Баги всё равно попадут в продакшн

Мы их всё равно будем решать N минут

Всегда триггер: обращения пользователей или мониторинг

Пользователи точно пострадают

Но сколько?



Сколько пользователей заденет?

- 100% пользователей
- 50% пользователей
- 5 (не 5%) пользователей
- Свой вариант

Canary

Применение изменений сначала только к **подмножеству сервиса**

Если упадёт, то заденет не всех

Проще выдерживать **SLO**



Примеры подмножества

- Подмножество деплоимента:
 - Один под, кластер, регион
- Подмножество пользователей:
 - Только для **N%** пользователей
 - Случайная выборка:
 - Рандомный выбор
 - Стабильный выбор
 - Неслучайная:
 - Подписка на бета-версию

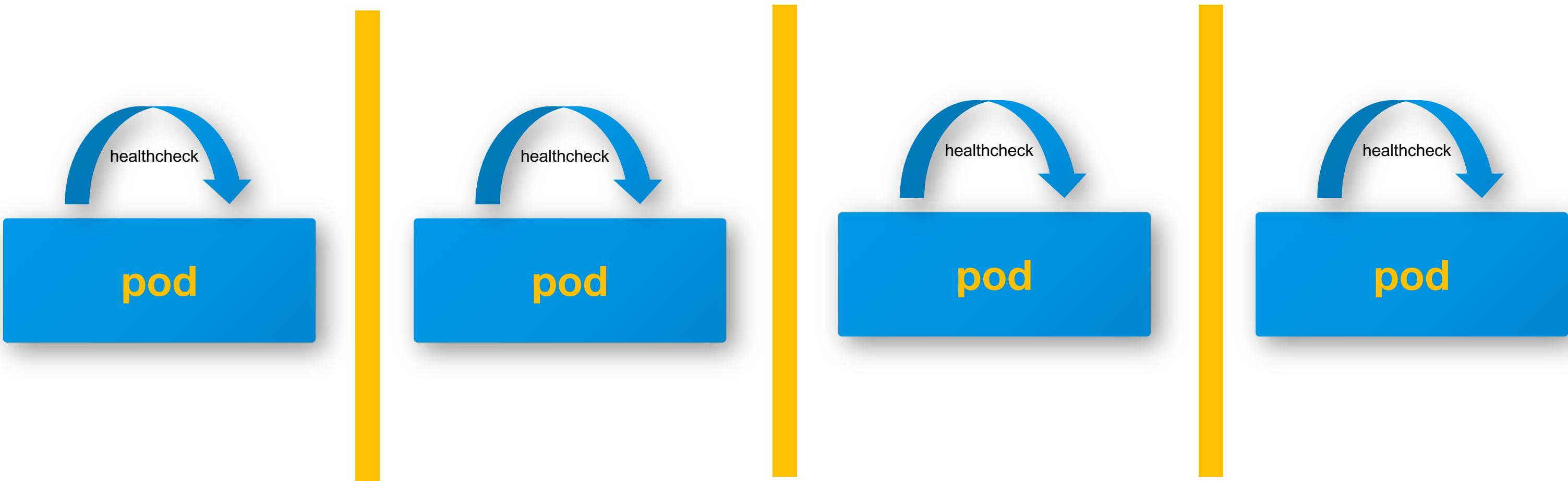


canary vs rolling update

Canary vs rolling update



Canary vs rolling update



Мониторинг

Метрики, которые разделяют “до” и “после”

В идеале два графика сравнимых метрик:

Плохо: общее кол-во запросов, ошибок

Хорошо: % ошибок, % сри, \$/пользователя

Что канарировать?

- Все изменения
- Код приложения
- Конфиги – тоже код
- Данные
- Внешние зависимости



Что дальше: автоматизация

- Интеграция с CI/CD: выбор подмножества
- Автоматическая проверка метрики
- Автоматическое реагирование на метрику:
 - **Успех:** выкатываем на большее подмножество
 - **Провал:** откатываем версию, шлем отчёты

Argo Rollout

Argo Rollout - это кубернетес контроллер и набор CRDs, которые реализуют продвинутые стратегии деплоя в кубернетес:

- blue-green
- canary
- canary analysis
- эксперименты



argo



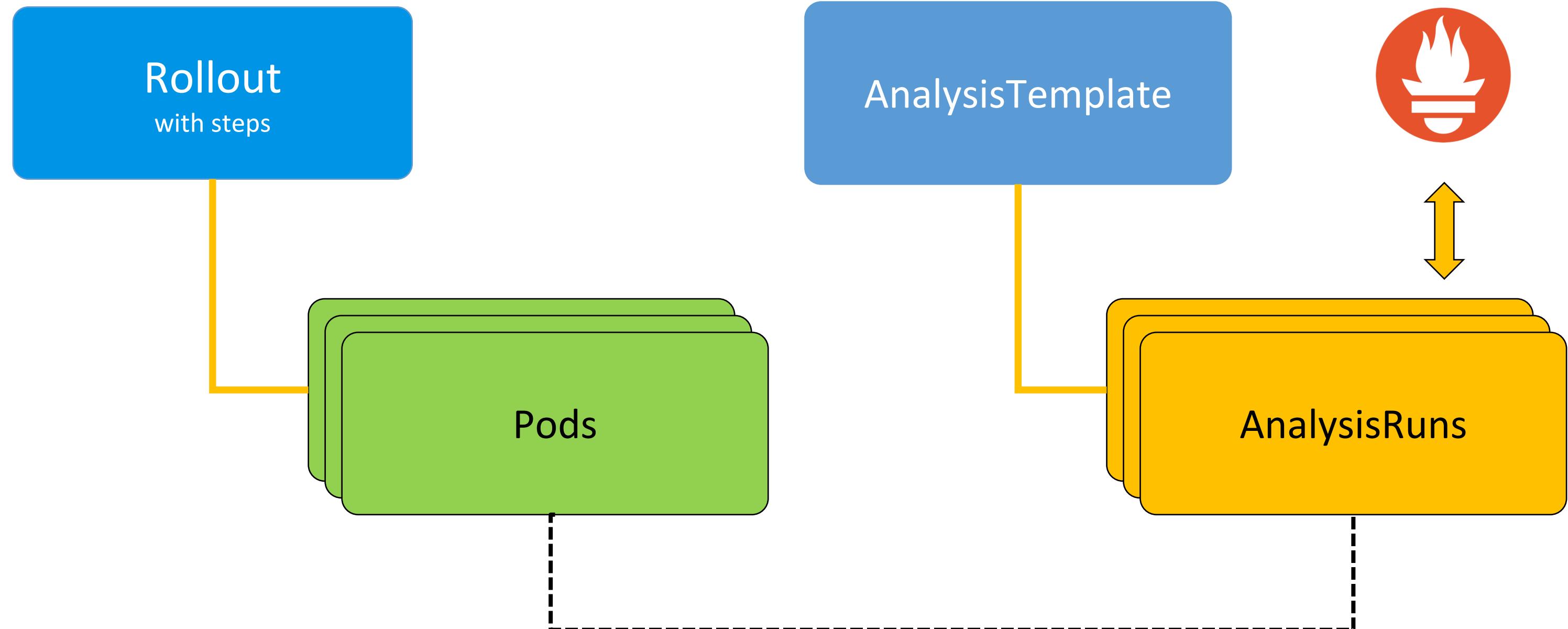
Argo Rollout

<https://gitlab.slurm.io/snippets/100>

slurm.io

Автоматический откат?

SLI/SLO метрика





Analysis Template

<https://gitlab.slurm.io/snippets/102>

| Name: | stavropol | | | |
|----------------------------|--|---------------|-------|-----------|
| Namespace: | stavropol | | | |
| Status: | ○ Progressing | | | |
| Message: | more replicas need to be updated | | | |
| Strategy: | Canary | | | |
| Step: | 7/11 | | | |
| SetWeight: | 80 | | | |
| ActualWeight: | 75s | | | |
| Images: | registry.slurm.io/sre_students/stavropol/provider_backend:51801-f99c1e5d (stable) registry.slurm.io/sre_students/stavropol/provider_backend:51843-29c292c6 (canary) | | | |
| Replicas: | Up overview | | | |
| Desired: | 5 | | | |
| Current: | 5 | | | |
| Details | Updated: 4 Ready: 4 Available: 4 | | | |
| ● Recording | | | | |
| NAME | KIND | STATUS | AGE | INFO |
| stavropol | Rollout | ○ Progressing | 14h | |
| # revision:9 | | | | |
| stavropol-674f947855 | ReplicaSet | ○ Progressing | 7m29s | canary |
| stavropol-674f947855-g6zqn | Pod | ✓ Running | 7m29s | ready:1/1 |
| stavropol-674f947855-njqxw | Pod | ✓ Running | 4m23s | ready:1/1 |
| stavropol-674f947855-hdswk | Pod | ✓ Running | 2m19s | ready:1/1 |
| stavropol-674f947855-xjxxd | Pod | ✓ Running | 8s | ready:0/1 |
| stavropol-674f947855-9-2 | AnalysisRun | ✓ Successful | 6m23s | ✓ 5 |
| stavropol-674f947855-9-4 | AnalysisRun | ✓ Successful | 4m19s | ✓ 5 |
| stavropol-674f947855-9-6 | AnalysisRun | ✓ Successful | 2m8s | ✓ 5 |
| # revision:8 | | | | |
| stavropol-c76b74c7 | ReplicaSet | ✓ Healthy | 92m | stable |
| stavropol-c76b74c7-fk682 | Pod | ○ Terminating | 87m | ready:0/1 |
| stavropol-c76b74c7-cl6w8 | Pod | ✓ Running | 84m | ready:1/1 |
| stavropol-c76b74c7-8-2 | AnalysisRun | ✓ Successful | 91m | ✓ 5 |
| stavropol-c76b74c7-8-4 | AnalysisRun | ✓ Successful | 89m | ✓ 5 |
| stavropol-c76b74c7-8-6 | AnalysisRun | ✓ Successful | 86m | ✓ 5 |
| stavropol-c76b74c7-8-8 | AnalysisRun | ✓ Successful | 84m | ✓ 5 |
| stavropol-c76b74c7-8-10 | AnalysisRun | ✓ Successful | 82m | ✓ 5 |

| | | | | | |
|----------------------------|--|-------------|--------------|-------|--------------|
| Name: | stavropol | | | | |
| Namespace: | stavropol | | | | |
| Status: | Healthy | | | | |
| Strategy: | Canary | | | | |
| Step: | 11/11 | | | | |
| SetWeight: | 100 | | | | |
| ActualWeight: | 100 | | | | |
| Images: | sre_students@registry.slurm.io/sre_students/stavropol/provider_backend:51843-29c292c6 (stable) | | | | |
| Replicas: | | | | | |
| Desired: | 5 | | | | |
| Current: | 5 | | | | |
| Updated: | 5 | | | | |
| Ready: | 5 | | | | |
| Available: | 5 | | | | |
| NAME | Activity | KIND | STATUS | AGE | INFO |
| stavropol | | Rollout | ✓ Healthy | 14h | Recording... |
| # revision:9 | | | | | |
| stavropol-674f947855 | | ReplicaSet | ✓ Healthy | 12m | stable |
| stavropol-674f947855-g6zqn | | Pod | ✓ Running | 12m | ready:1/1 |
| stavropol-674f947855-njqxw | | Pod | ✓ Running | 9m39s | ready:1/1 |
| stavropol-674f947855-hdswk | | Pod | ✓ Running | 7m35s | ready:1/1 |
| stavropol-674f947855-xjxxd | | Pod | ✓ Running | 5m24s | ready:1/1 |
| stavropol-674f947855-rsspd | | Pod | ✓ Running | 3m11s | ready:1/1 |
| stavropol-674f947855-9-2 | | AnalysisRun | ✓ Successful | 11m | ✓ 5 |
| stavropol-674f947855-9-4 | | AnalysisRun | ✓ Successful | 9m35s | ✓ 5 |
| stavropol-674f947855-9-6 | | AnalysisRun | ✓ Successful | 7m24s | ✓ 5 |
| stavropol-674f947855-9-8 | | AnalysisRun | ✓ Successful | 5m11s | ✓ 5 |
| stavropol-674f947855-9-10 | | AnalysisRun | ✓ Successful | 3m | ✓ 5 |
| # revision:8 | | | | | |
| stavropol-c76b74c7 | | ReplicaSet | ● ScaledDown | 97m | |
| stavropol-c76b74c7-8-2 | | AnalysisRun | ✓ Successful | 96m | ✓ 5 |
| stavropol-c76b74c7-8-4 | | AnalysisRun | ✓ Successful | 94m | ✓ 5 |
| stavropol-c76b74c7-8-6 | | AnalysisRun | ✓ Successful | 92m | ✓ 5 |
| stavropol-c76b74c7-8-8 | | AnalysisRun | ✓ Successful | 89m | ✓ 5 |
| stavropol-c76b74c7-8-10 | | AnalysisRun | ✓ Successful | 87m | ✓ 5 |

Stable vs Canary



Argo Rollout

slurm.io

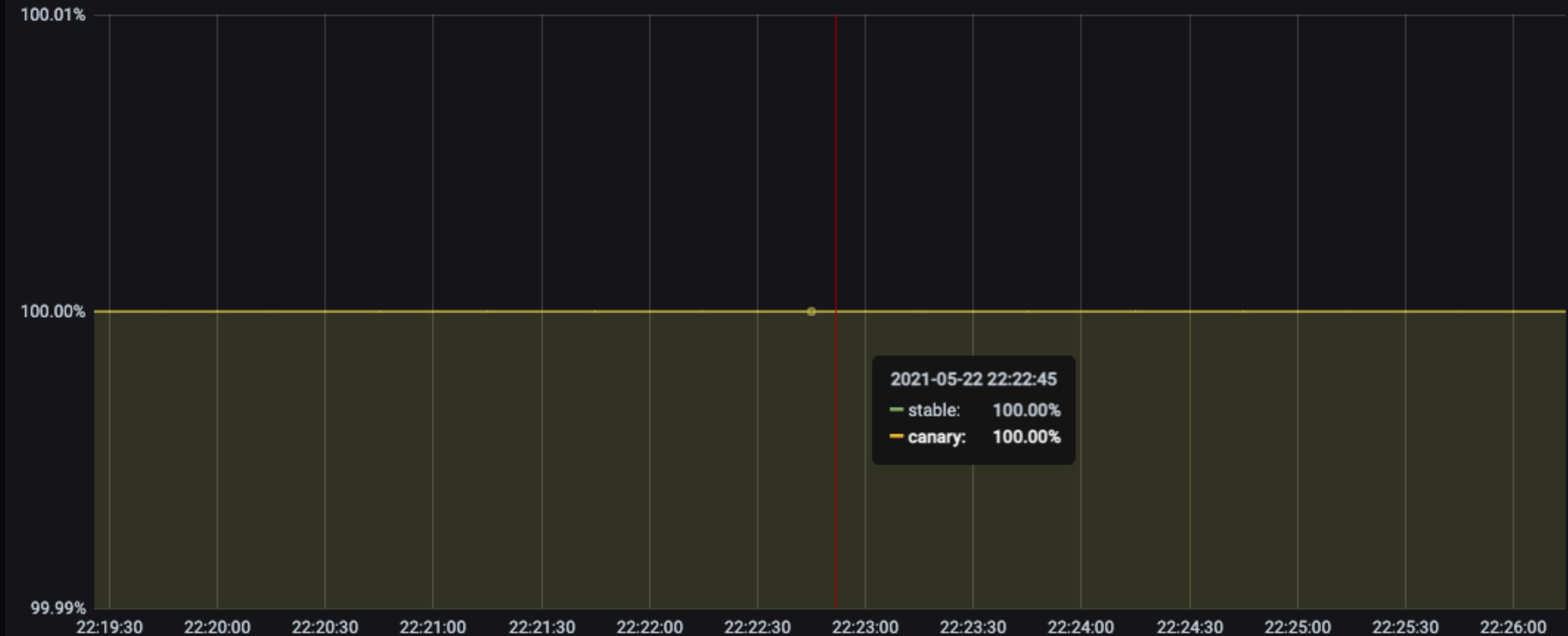


Мониторинг Canary

<https://gitlab.slurm.io/snippets/106>

SLO period 5m ▾ city stavropol ▾

SLO availability over 5m ▾



| | min | max | current |
|--------|---------|---------|---------|
| stable | 100.00% | 100.00% | 100.00% |
| canary | 100.00% | 100.00% | 100.00% |

SLO period 5m ▾ city stavropol ▾

SLO availability over 5m ▾



```
Namespace:      tomsk
Status:        ✘ Degraded
Message:       RolloutAborted: Rollout aborted update to revision 3: metric "success-rate" assessed Failed due to failed (4) > failureLimit (3)
Strategy:      Canary
Step:          0/10
SetWeight:    0
ActualWeight: 0
Images:        registry.slurm.io/sre_students/tomsk/provider_backend:51842-a55609bc (stable)
Replicas:
  Desired:    5
  Current:    5
  Updated:    0
  Ready:      5
  Available:  5
```

| NAME | KIND | STATUS | AGE | INFO |
|---------------------------|-------------|--------------|-----|-----------|
| tomsk | Rollout | ✘ Degraded | 59m | |
| # revision:3 | | | | |
| └─ tomsk-fc87785c6 | ReplicaSet | • ScaledDown | 20m | canary |
| └─ a tomsk-fc87785c6-3-1 | AnalysisRun | ✓ Successful | 20m | ✓ 2, ✘ 3 |
| └─ a tomsk-fc87785c6-3-3 | AnalysisRun | ✘ Failed | 18m | ✘ 4 |
| # revision:2 | | | | |
| └─ tomsk-7d94d6f464 | ReplicaSet | ✓ Healthy | 33m | stable |
| └─ Pod | Pod | ✓ Running | 33m | ready:1/1 |
| └─ Pod | Pod | ✓ Running | 29m | ready:1/1 |
| └─ Pod | Pod | ✓ Running | 26m | ready:1/1 |
| └─ Pod | Pod | ✓ Running | 16m | ready:1/1 |
| └─ Pod | Pod | ✓ Running | 16m | ready:1/1 |
| └─ a tomsk-7d94d6f464-2-1 | AnalysisRun | ✓ Successful | 33m | ✓ 5 |
| └─ a tomsk-7d94d6f464-2-3 | AnalysisRun | ✓ Successful | 31m | ✓ 5 |
| └─ a tomsk-7d94d6f464-2-5 | AnalysisRun | ✓ Successful | 28m | ✓ 5 |
| └─ a tomsk-7d94d6f464-2-7 | AnalysisRun | ✓ Successful | 26m | ✓ 5 |
| └─ a tomsk-7d94d6f464-2-9 | AnalysisRun | ✓ Successful | 24m | ✓ 5 |
| # revision:1 | | | | |
| └─ tomsk-77f4774f9 | ReplicaSet | • ScaledDown | 59m | |

| NAME | KIND | STATUS | AGE | INFO |
|----------------------------|-------------|---------------|-------|-----------|
| cursek | Rollout | ○ Progressing | 68m | |
| # revision:5 | | | | |
| └─ kursek-68fd486dd4 | ReplicaSet | ✓ Healthy | 5m54s | canary |
| └─ kursek-68fd486dd4-s7ngk | Pod | ✓ Running | 5m42s | ready:1/1 |
| └─ kursek-68fd486dd4-kd4mh | Pod | ✓ Running | 2m34s | ready:1/1 |
| └─ kursek-68fd486dd4-2vvk2 | Pod | ✓ Running | 23s | ready:1/1 |
| └─ kursek-68fd486dd4-5-2 | AnalysisRun | ✓ Successful | 4m34s | ✓ 5 |
| └─ kursek-68fd486dd4-5-4 | AnalysisRun | ✓ Successful | 2m23s | ✓ 5 |
| └─ kursek-68fd486dd4-5-6 | AnalysisRun | ○ Running | 20s | ✓ 1 |
| # revision:4 | | | | |
| └─ kursek-544674f598 | ReplicaSet | • ScaledDown | 13m | |
| └─ kursek-544674f598-4-1 | AnalysisRun | ✓ Successful | 13m | ✓ 5 |
| └─ kursek-544674f598-4-3 | AnalysisRun | ✓ Successful | 11m | ✓ 5 |
| └─ kursek-544674f598-4-5 | AnalysisRun | ✓ Successful | 9m21s | ✓ 5 |
| └─ kursek-544674f598-4-7 | AnalysisRun | ✓ Successful | 7m12s | ✓ 3 |
| # revision:3 | | | | |
| └─ kursek-8fb6bc484 | ReplicaSet | • ScaledDown | 23m | |
| └─ kursek-8fb6bc484-3-1 | AnalysisRun | ✓ Successful | 23m | ✓ 2, ✖ 3 |
| └─ kursek-8fb6bc484-3-3 | AnalysisRun | ✖ Failed | 21m | ✖ 4 |
| # revision:2 | | | | |
| └─ kursek-6b598f | ReplicaSet | ✓ Healthy | 36m | stable |
| └─ kursek-6b598f-x5lnj | Pod | ✓ Running | 32m | ready:1/1 |
| └─ kursek-6b598f-pgzls | Pod | ✓ Running | 5m42s | ready:1/1 |
| └─ kursek-6b598f-2-1 | AnalysisRun | ✓ Successful | 36m | ✓ 5 |
| └─ kursek-6b598f-2-3 | AnalysisRun | ✓ Successful | 34m | ✓ 5 |
| └─ kursek-6b598f-2-5 | AnalysisRun | ✓ Successful | 32m | ✓ 5 |
| └─ kursek-6b598f-2-7 | AnalysisRun | ✓ Successful | 30m | ✓ 5 |
| └─ kursek-6b598f-2-9 | AnalysisRun | ✓ Successful | 28m | ✓ 5 |

| | |
|---------------------------|--|
| Name: | izhevsk |
| Namespace: | izhevsk |
| Status: | ✖ Degraded |
| Message: | RolloutAborted: Rollout aborted update to revision 3: metric "success-rate" assessed Failed due to failed (4) > failureLimit (3) |
| Strategy: | Canary |
| Step: | 0/10 |
| SetWeight: | 0 |
| ActualWeight: | 0 |
| Images: | registry.slurm.io/sre_students/izhevsk/provider_backend:51846-3e7c9724 (stable) |
| Replicas: | |
| Desired: | 5 |
| Current: | 5 |
| Updated: | 0 |
| Ready: | 5 |
| Available: | 5 |
| NAME | |
| C izhevsk | |
| # revision:3 | |
| - izhevsk-7c47c4d9f | |
| - izhevsk-7c47c4d9f-3-1 | |
| - izhevsk-7c47c4d9f-3-3 | |
| # revision:2 | |
| - izhevsk-b5467dc67 | |
| - izhevsk-b5467dc67-44662 | |
| - izhevsk-b5467dc67-6wcng | |
| - izhevsk-b5467dc67-8cw7g | |
| - izhevsk-b5467dc67-dj79w | |
| - izhevsk-b5467dc67-thdsd | |
| - izhevsk-b5467dc67-2-1 | |
| - izhevsk-b5467dc67-2-3 | |
| - izhevsk-b5467dc67-2-5 | |
| - izhevsk-b5467dc67-2-7 | |
| - izhevsk-b5467dc67-2-9 | |
| # revision:1 | |
| - izhevsk-69b7bd65b9 | |
| KIND | |
| Rollout | ✖ Degraded |
| ReplicaSet | ● ScaledDown |
| AnalysisRun | ✓ Successful |
| AnalysisRun | ✖ Failed |
| ReplicaSet | ✓ Healthy |
| Pod | ✓ Running |
| Pod | # question |
| Pod | ✓ Running |
| Pod | # random |
| Pod | ✓ Running |
| ReplicaSet | ✓ Running |
| AnalysisRun | ✓ Successful |
| ReplicaSet | ● ScaledDown |
| STATUS | |
| AGE | |
| INFO | |
| bryansk | |
| canary | ✓ 2, ✖ 3 |
| | ✖ 4 |
| stable | ready:1/1 |
| ready:1/1 | provider_backend |
| ready:1/1 | ready:1/1 |
| Repository | |
| Issues | |
| Merge Requests | |
| CI/CD | |
| Labels | |



Спасибо! Вопросы?