Резервное копирование

- ????????? ??????????? ? ????????????? ???? KUMA
- ????????? ????? (?????????) ??????? ?? ?????????
- ???????????? ? ????????????? ?? ????? ClickHouse BACKUP/RESTORE

Резервное копирование и восстановление Ядра KUMA

?????????, ??????????? ?? ?????? ????????, ???????? ??????????? ??????? pre-sales ?/??? community KUMA ? **НЕ** ???????? ??????????? ????????????? ???????.

??????????? ???????????? ?? ??????? ??????? ????????? ? ??????-??????? ?? ???????: https://support.kaspersky.com/help/KUMA/4.0/ru-RU/222208.htm

?????? ??????-??????? «REST API»: https://support.kaspersky.ru/kuma/4.0/217973

?????? ??????-??????? «???????? ????????? ????? ???? KUMA»: https://support.kaspersky.ru/kuma/4.2/316014

KUMA ????????? ????????? ????????? ??????????? ???? ?????? ???? KUMA ? ????????????.

??????? ?????????? ??????????? ????????????? ??? ?????????????? KUMA – ??? ???????? ??? ??????????? ???????? ??????? ???????????? ??????? ???????? ? ??????? ????????.

???????? ????????? ??????????? ???????? ????????? ????? ? ????????????? ?? ????????? ?????:

- ? ??????? REST API.
- ????? ???-????????? (??????? ? ?????? 4.2)

?????????????? ?????? ?? ????????? ????? ???????? ?????? ?? ??? ?? ?????? KUMA.

С помощью REST API [KUMA 3.4+]

Создание резервной копии

KUMA ???????????? API-?????????, ??????? ???????? ????? HTTP ? ???????????? ????? ??????? ??????/?????.

??? ???????? ????????? ????? ???? ???????????? ????? `GET /system/backup`.

??? ????????????? ?? ????????? ????? ????? `POST /system/restore`.

> KUMA Public API (v. 3): https://support.kaspersky.com/help/KUMA/4.0/common/RestAPI/3/swagger_dist/dist/index.html

????? ??????? ????????? ????? ???? ?????????? ??????? ???????????? ? ???????????? ??? ????? ??????? ? ??????? API `GET /system/backup` ? `POST /system/restore` (??? ?????????????):

- ????????? ? ?????? **Параметры** ? **Доступ** ? **Пользователи** ? ??????? **Создать**.
  - ? ?????????? ???? **Пользователь** ??????? ????????? ?????? ????????????:
    - **Статус учетной записи пользователя** – ???????.
    - **Имя** – ??????? ??? ????????????.
    - **Логин** – ??????? ?????????? ????? ??????? ?????? ????????????. ????? ?????? ???? ?? 3 ?? 64 ???????? (?????????? ????????????? ?????? ???????? a–z, A–Z, 0–9, . \ - _).
    - **Адрес электронной почты** – ??????? ?????????? ????? ?????????? ????? ????????????. ????? ?????????? ????? ?????? ???? ?????????????.

      > ???? ???????? ?????????? ?? ????? ?? ?????????????, ?? ????? ??????? ????? ?????, ???????? test@abc.local

    - **Новый пароль** – ??????? ?????? ??? ??????? ?????? ????????????. ?? ?????? ???? ?????? ?????? ???????, ???? ?????? ?? ??????

      Сгенерировать пароль. ?????? ?????? ????????????????? ????????? ???????????:
      - ????? ????????????? ???????? ????????????;
      - ??? ??????? ???? ?????? ? ?????? ????????;
      - ??? ??????? ???? ?????? ? ??????? ????????;
      - ??? ??????? ???? ?????;
      - ??? ??????? ???? ?????????? ?????? ?? ?????? ??????????

???????? ? ???????? ????????????;

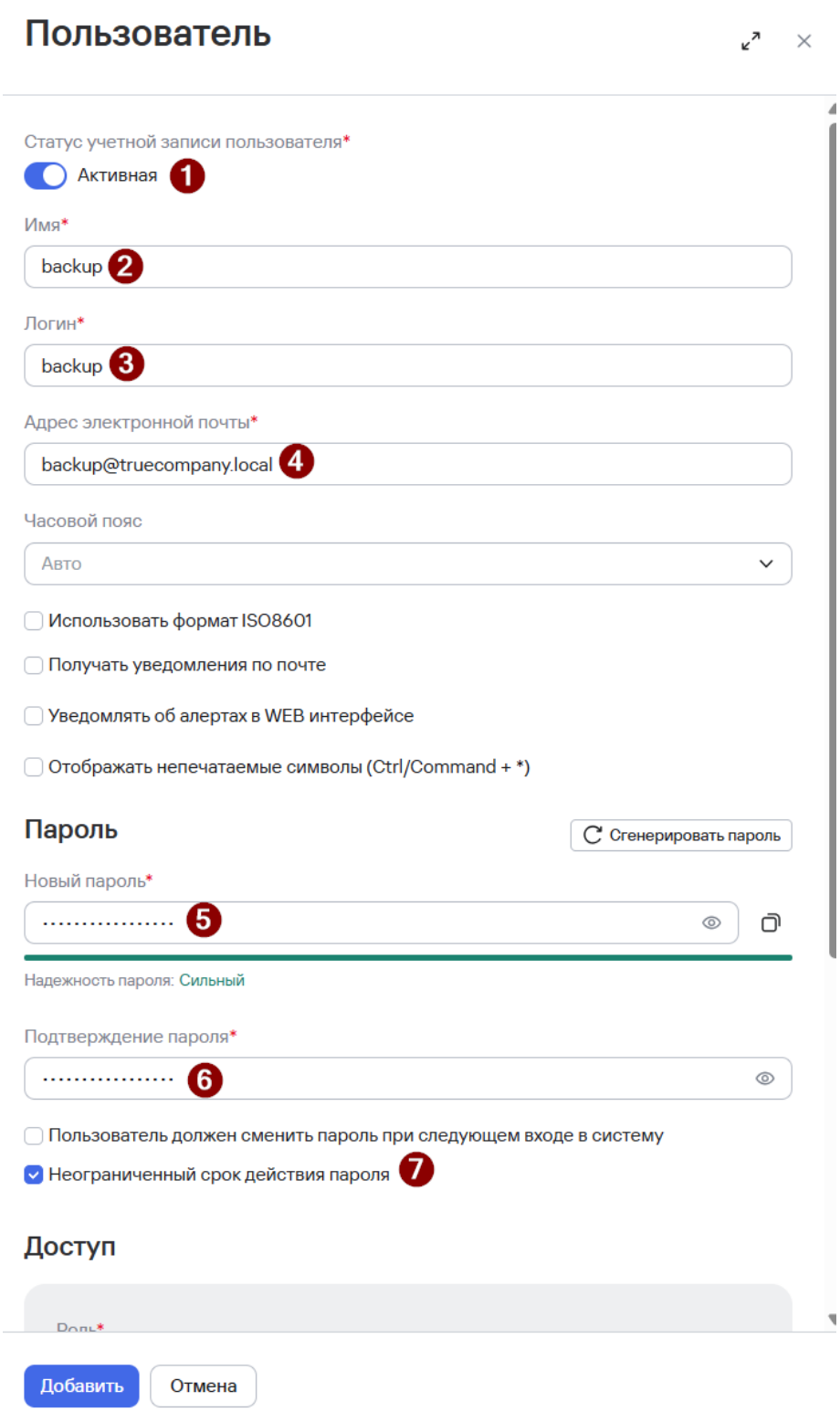
- ?? ????? ???? ?????????? ???????? ??????;
- ?????? ?? ???????? ?????.

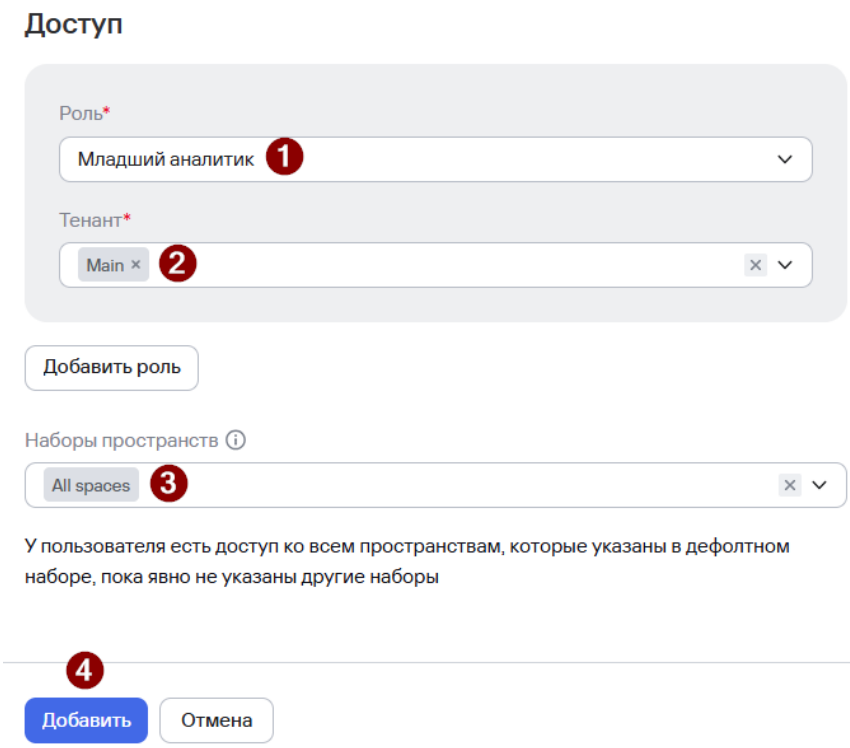
?????? ??????-??????? «????????? ???????? ???????????? ??? ????? ? ???-????????? KUMA»: https://support.kaspersky.ru/kuma/4.0/302832

- **Подтверждение пароля** – ????????? ??????.
- **Пользователь должен сменить пароль при следующем входе в систему** - ??????? ??????, ??? ??? ??? ????????? ??????? ?????? ??? ?? ?????????.
- **Неограниченный срок действия пароля** - ?????????? ???? ??????, ????? ?? ??????? ?????? ???????????? ?? ?????????? ???????? **Время жизни пароля**. ????????????? ???????? ???? ???????? ??? ????????? ??????? ??????, ?????????? ????? ??????? ?????? ????? ? ?????????? ?????? ???????????? ?????????.
- **Роль** – ???????? ???? ????????????. ? ??????? ??????? ?????????? ???????????? ???? – **Младший аналитик**.
- **Тенант** - ???????? ?????? **Main**.

?????? ??????-??????? «? ????????»: https://support.kaspersky.ru/kuma/4.0/221264

- **Наборы пространств** – ? ????????????? ?????? ???????? ???? ??? ????????? ??????? ???????????, ? ??????? ?? ?????? ???????????? ??????, ????????? ????? ??????. ???? ? ???????????? ??? ????????? ??????? ???????????, ????? ???????????? ?????? ? ?????? ???????????? ?? ?????????.
- ??????? **Добавить**.

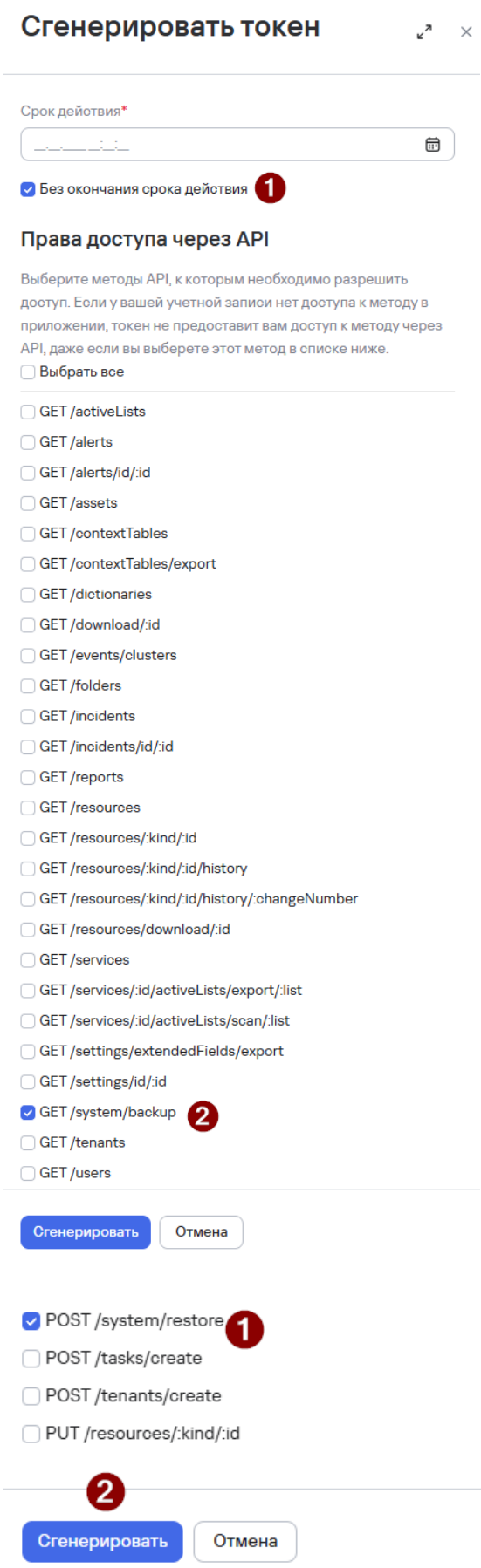

Пользователь
Статус учетной записи пользователя*
Активная
1
Имя*
backup
2
Логин*
backup
3
Адрес электронной почты*
backup@truecompany.local
4
Часовой пояс
Авто
Использовать формат ISO8601
Получать уведомления по почте
Уведомлять об алертах в WEB интерфейсе
Отображать непечатаемые символы (Ctrl/Command + *)
Пароль
Сгенерировать пароль
Новый пароль*
5
Надежность пароля: Сильный
Подтверждение пароля*
6
Пользователь должен сменить пароль при следующем входе в систему
Неограниченный срок действия пароля
7
Доступ
Роль*
Добавить
Отмена



??????? ?????? ???????????? ??????? ? ???????????? ? ??????? **Пользователи**.

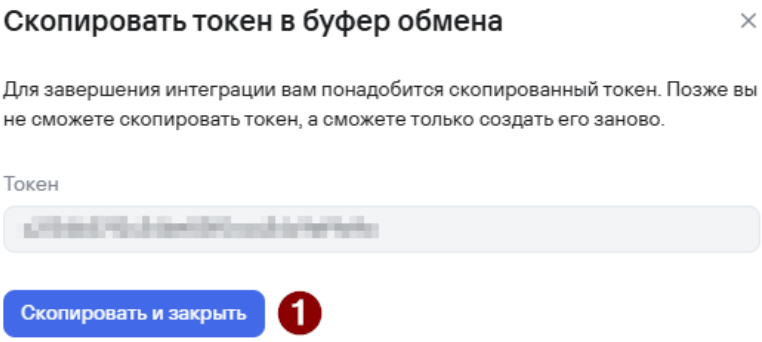
??????? ?? ?????????? ???????????? ? ? ?????????? ???? **Пользователь**:

- ? ?????? ????????????? ? KUMA ????? API ??????? **Сгенерировать токен.** ? ???? **Сгенерировать токен** ??????? **Без окончания срока действия** (??? ??? ????? ????? ????????????? ????????? ??????? ??????? backup ??? ????? ???????? ????????? ?????) ? ????????? ?????? ???????? ??????? `GET /system/backup` ? `POST /system/restore`.
- ??????? **Сгенерировать**.


Сгенерировать токен
Срок действия*
__.__.____ __:__:__
Без окончания срока действия
1
Права доступа через API
Выберите методы API, к которым необходимо разрешить доступ. Если у вашей учетной записи нет доступа к методу в приложении, токен не предоставит вам доступ к методу через API, даже если вы выберете этот метод в списке ниже.
Выбрать все
GET /activeLists
GET /alerts
GET /alerts/id/:id
GET /assets
GET /contextTables
GET /contextTables/export
GET /dictionaries
GET /download/:id
GET /events/clusters
GET /folders
GET /incidents
GET /incidents/id/:id
GET /reports
GET /resources
GET /resources/:kind/:id
GET /resources/:kind/:id/history
GET /resources/:kind/:id/history/:changeNumber
GET /resources/download/:id
GET /services
GET /services/:id/activeLists/export/:list
GET /services/:id/activeLists/scan/:list
GET /settings/extendedFields/export
GET /settings/id/:id
GET /system/backup
2
GET /tenants
GET /users
Сгенерировать
Отмена

POST /system/restore
1
POST /tasks/create
POST /tenants/create
PUT /resources/:kind/:id
2
Сгенерировать
Отмена

- ?????????? ? ????????? ?????????? ????? ??????? ? API.



????? ??????? ??????.

????? ??????? ????????? ????? ????:

- ????????? ??????????? ? CLI ??????? KUMA (??????? ? ??????????? ???? ??? ????????????? ?????????).
- ????????? ????????? ??????? ??? ???????? ????????? ????? ? ??????? API:

```
curl -k -H "Authorization: Bearer ?????_???????????" -H "accept: binary" -o /opt/backup.tar.gz https://<IP-?????/FQDN-??????? KUMA>:7223/api/v3/system/backup
```

???? ????????? ????? ???? KUMA ??????? ??????.

> ???????????????? ??????? ???????? ????????? ????? ????? ? ??????? ??????? cron ? ????????? ???????? ????? ????????? ????? ?? ???????? ??????/????????? ??????.

???? ????????? ????? ???? KUMA ??????? ??????.

> ???? ???????? ????????? ???????, ????????? ??????? ?????? ?? ?????????? ???????????:
> DeviceAction = "Core backup created"
> SourceUserID = "<user-login>"

Восстановление из резервной копии

????? ??????? ????????? ????? ????:

- ????????? ??????????? ? CLI ??????? KUMA (??????? ? ??????????? ???? ??? ????????????? ?????????).
- ????????? ????????? ??????? ??? ????????????? ?? ????????? ????? ? ??????? API:

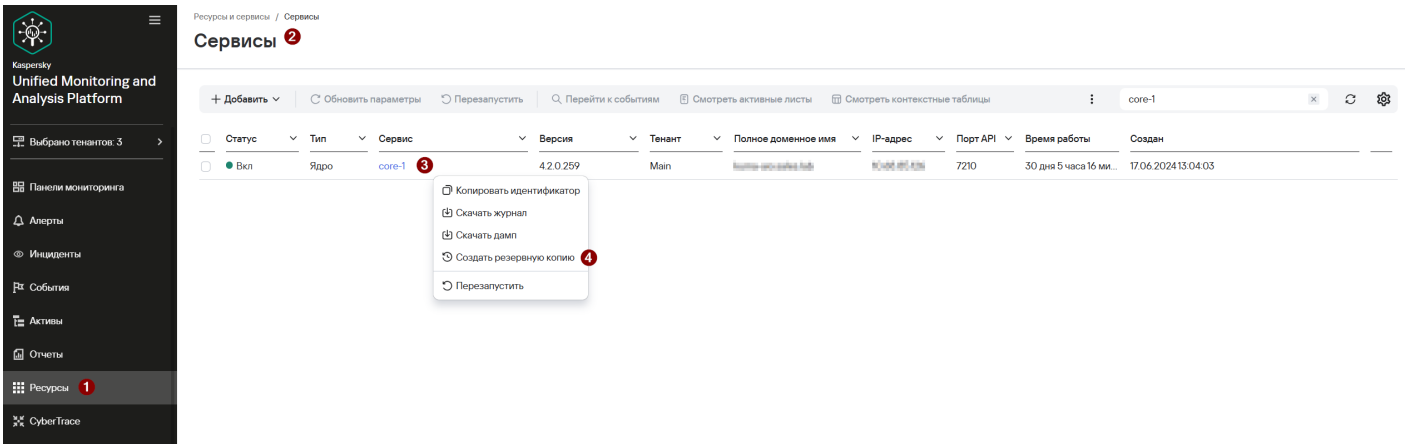
```
curl -k --request POST 'https://<IP-?????/FQDN-??????? KUMA>:7223/api/v3/system/restore' --header 'Authorization: Bearer <token>' -H 'accept: */*' -H 'Content-Type: binary' --data-binary '@/opt/backup.tar.gz'
```

???? ??????? ?????? ????????? ????? ? ????????? ?????? ???? KUMA, ?????????? ? ?????????? ?????????? API-??????? ???????? ????????? ?????.

????? ????????? ?????? ? ????????? ?????? KUMA ????????? ????????? ????????:

- ????????????? ????? ? ????????? ?????? ???? KUMA ?? ????????? ??????????.
- ?????????? ?????? ??????? KUMA ? ? ??????? ????????? ????? KUMA.
- ???? ?????? ????????????? ???? ?????, ????????? ??????? ?????? ?? ?????????? ???????????:
  - DeviceAction = "Core restore scheduled"
  - SourceUserID = "<??? ???????????? ????????????? ????????????? KUMA ?? ????????? ?????"
- ???? ?????? ?? ???????????, ????????? ????????????? ?????? ?? ????????? ????? ???? KUMA.
- ??????? ????????? ?????????? ? ???????? ? ??????? ??????.
- ? ??????? ???? KUMA ???????? ?????? "WARN: restored from backup".

Через веб-интерфейс [KUMA 4.2+]



Полезные ссылки

- ???????? ????????? ????? ???? KUMA (Postman): https://www.postman.com/kl-ru-presales/workspace/kaspersky-products-apis-ru/request/23340929-bd766c26-c34b-467e-a28a-4ff65ac05328
- ?????????????? ???? KUMA ?? ????????? ????? (Postman): https://www.postman.com/kl-ru-presales/workspace/kaspersky-products-apis-ru/request/23340929-974b96b4-0876-449c-9001-9912783f6acc

Резервная копия (локальная) событий из хранилища

С помощью встроенного клиента clickhouse в KUMA

? KUMA 4.0 ???? ? ??????? CH - /opt/kaspersky/kuma/storage/<ID Storage>/deps/clickhouse/bin/client.sh

Сохранение данных

?????????? ?????? ?? ???????????? ???? ? ???? CSV:

```
/opt/kaspersky/kuma/clickhouse/bin/client.sh -d kuma --multiline --query "SELECT * FROM events_local_v2 WHERE
toDate(fromUnixTimestamp64Milli(Timestamp)) = toDate('2024-07-16') FORMAT CSVWithNames;" > click_events.csv
```

?????????? ?????? ?? ???????????? ???? ? ???? CSV ? ???????????? ??????? (c???? ???? CSV 1.4 ?? (????? 5630119) - ?????? 72 ??):

```
/opt/kaspersky/kuma/clickhouse/bin/client.sh -d kuma --multiline --query "SELECT * FROM events_local_v2 WHERE
toDate(fromUnixTimestamp64Milli(Timestamp)) = toDate('2024-07-16') FORMAT CSVWithNames;" | gzip -9 -c >
click_events.csv.gz
```

Gzip ???????? ??? ????????? ??????? ??????????, ?.?. ?? ????????????. ??? **ускорения** ????????????? ???????????? `pigz` ???? zstd, ??? ?????????? ??? ????????? ???? ??????????, ?????????? ???????????? ????????? ???????? ??????? CSV-?????? ?? ????????? ? gzip. ???? ?? ?? ??????????, ??:

```
sudo apt install pigz # Debian/Ubuntu
sudo yum install pigz # RHEL/CentOS
```

????? ??????? ?????????? ???????? ? pigz ????????? ???????:

```
/opt/kaspersky/kuma/storage/c1114ebb-45e8-461c-a576-3a222dbfe3b2/deps/clickhouse/bin/client.sh \
  -d kuma \
  --multiline \
  --query "SELECT * FROM events_local_v2 \
           WHERE toDate(fromUnixTimestamp64Milli(Timestamp)) = toDate('2025-08-13') \
           FORMAT CSVWithNames;" \
  | pigz > click_events.csv.gz
```

??????? ?????????? ???????? ? zstd ????????? ???????:

```
/opt/kaspersky/kuma/storage/c1114ebb-45e8-461c-a576-3a222dbfe3b2/deps/clickhouse/bin/client.sh \
  -d kuma \
  --multiline \
  --query "SELECT * FROM events_local_v2 \
           WHERE toDate(fromUnixTimestamp64Milli(Timestamp)) = toDate('2025-08-13') \
```

```
        FORMAT CSVWithNames;" \
  | zstd -T0 -15 -v -o click_events.csv.zst
```

?????????? ?????? ?? ???????????? ???? ?? ????????????? ?????????? ? ????? (????? ? UTC) ? ???? CSV ? ???????????? ??????? (? 10:00:00 ?? 11:00:00):

```
/opt/kaspersky/kuma/clickhouse/bin/client.sh -d kuma --multiline --query "SELECT * FROM events_local_v2 WHERE
toDateTime(fromUnixTimestamp64Milli(Timestamp)) > toDateTime('2024-07-16 10:00:00') AND
toDateTime(fromUnixTimestamp64Milli(Timestamp)) < toDateTime('2024-07-16 11:00:00') FORMAT CSVWithNames;" |
gzip -9 -c > click_events.csv.gz
```

Загрузка данных в хранилище

?????????? ?????? ? ?????????? ??????: `gzip -dk click_events.csv.gz`

?????????? ?????? ??? ?????????? ??????: `gzip -d click_events.csv.gz`

???? ?????????? ?????? TenantID ??? ????????? ??????? ? ???????????? ???????, ????? ? ????????????? ????? CSV ???????? ?????? ???????? ????? ??????? (??????? CSV `"ID","Timestamp","TenantID","ServiceID","ServiceName"...`), ?????? ??????? (?????? TenantID 746c6045-b929-4edd-8e1e-84ebe4a11880, ????? TenantID 911c6045-b929-4edd-8e1e-84ebe4a11911):

```
sed -i 's/746c6045-b929-4edd-8e1e-84ebe4a11880/911c6045-b929-4edd-8e1e-84ebe4a11911/g' click_events.csv
```

???????? ??????? ?? ????? CSV ? ????????? ClickHouse:

```
/opt/kaspersky/kuma/clickhouse/bin/client.sh -d kuma --multiline --query "INSERT INTO events_local_v2 FORMAT
CSV" < /root/click_events.csv
```

? CSV ????? ?? ?????? ???? ?????? ?????, ????? ????? ??????: `Code: 27. DB::ParsingException: Cannot parse input: expected ',' before: '\n\n':`

С утилитой clickhouse-backup

??? ???????? ????????? ?????? ????? ?????????????? ???????? clickhouse-backup. ??????????? ???? (clickhouse-backup-linux-amd64.tar.gz) ??? ?? Linux ????? ????????? **отсюда**. ????????? ??? ??????? https://github.com/Altinity/clickhouse-backup

Подготовка

????????????? ??????????? ????:

```
tar -xvf clickhouse-backup-linux-amd64.tar.gz
```

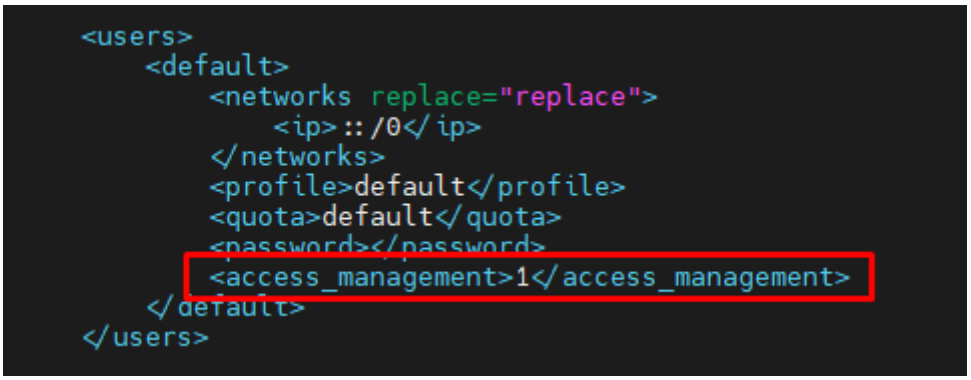
????????? ??????????? ?????????? ?????:

```
chmod +x clickhouse-backup
```

????????? ????????? ?????? `<access_management>1</access_management>` ? ????:

```
nano /opt/kaspersky/kuma/clickhouse/cfg/config.xml
```

? ???? ?????? ???????:



???????? ???? ????????????:

```
nano click_backup_config.yml
```

??????????? ???????????:

```
general:
  log_level: error
  # Uncomment below if needed
  # remote_storage: sftp

clickhouse:
  host: kuma-aio.sales.lab
  port: 9000
  username: default
  password: ""  # Use `null` or a valid password if required
  secure: true
  tls_key: "/opt/kaspersky/kuma/clickhouse/certificates/key.pem"
  tls_cert: "/opt/kaspersky/kuma/clickhouse/certificates/cert.pem"
  tls_ca: "/opt/kaspersky/kuma/clickhouse/certificates/ca-cert.pem"

  skip_tables:
    - system.*
    - INFORMATION_SCHEMA.*
    - information_schema.*
    - _temporary_and_external_tables.*

# Uncomment and configure the SFTP section if needed
# sftp:
#   address: "172.30.56.216"
#   port: 22
#   username: "sftpuser"
#   password: "password"
#   key: ""
#   path: "clickhouse-backup"
#   compression_format: gzip
#   compression_level: 1
#   concurrency: 1
#   debug: false
```

??? ??????????? ???????? ??????? ??????????? ???????? `log_level: info` ? ???????????? `click_backup_config.yml`

? ????? ?????? ???????????????? ????????? ? ???????????? All-In-One.

??? ???????? ????? ?????? (???? ???????) ???????????? ???????:

```
./clickhouse-backup create -t kuma.events_local_v2 -c click_backup_config.yml
```

????????? ????? ????????? ?? ???? `/opt/kaspersky/kuma/clickhouse/data/backup/`

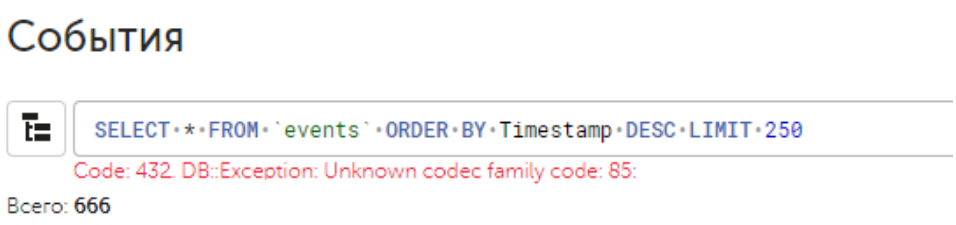
??? ????????? ????????? ????????? ????? ?????????:

```
./clickhouse-backup list -c click_backup_config.yml
```

??? ????????????? ?? ??????:

```
./clickhouse-backup restore 2024-04-08T11-07-24 -t kuma.events_local_v2 -c click_backup_config.yml
```

????? ?????????????? ??? ?????? ????? ????????? ????????? ??????:



??? ??????????? ?????? ????????????? ????????? ?? ???????? ????????.

??? ???????? ??????:

```
./clickhouse-backup delete local 2024-04-08T11-07-24 -c click_backup_config.yml
```

??????? ????????? ?????? ???????:

```
./clickhouse-backup clean -c click_backup_config.yml
```

Архивировние и восстановление БД через ClickHouse BACKUP/RESTORE

?????????, ??????????? ?? ?????? ????????, ???????? ??????????? ??????? pre-sales ?/??? community KUMA ? **НЕ** ???????? ??????????? ????????????? ???????.

?????? ?????????? ????????? ? ????????? ?????? ??? ?????? KUMA 3.0.3.19

Описание

?????? ????? ????????? ????????? ????????? ????????????? ? ????????????? ???????? ClickHouse ????? ?????????? ????????? BACKUP ? RESTORE.

? ?????? ?????? ?????? ??????? ?????????? ??????????? ? ????????????? ?? ??????? ? ???????????? All-in-One. ??? ?????? ???????? ?????? ?????? ????? ???? ?????????????? ? ????????????? ?? ????????????? ????????????.

?????? ???????, ???? ?? ??????????? ????????? ??????????? ?/??? ????????????? ? ?? ?????????? ???????????? ???????, ? ????? ?? ???????? ?? ??????????????, ?????????? ???????????, ??? ?? ?? ??????? ????????????? ?? ????????? ?????, ????? ??? ????? ????????????? ??????????.

Настройка хранилища

1. ??????? ?? ??????? ????????? ?????????? ??? ?????????? ????????? ?????, ????????, `/tmp/test_backup`

2. ??????? ?????????? ?????????? ???????????? kuma ? ??????? ???????:

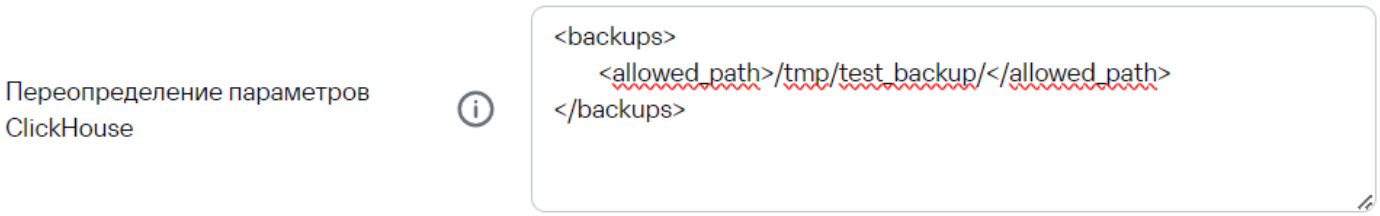
```
chown kuma:kuma /tmp/test_backup/
```

3. ?????????, ??? ? ???????????? kuma ????? ???? ????? x ? r ?? ???? ???????????? ???????????

4. ??????? ? Web-????????? KUMA ?? ??????? "???????? ???????".

5. ??????? ?? ????????????? ????????? ?????? ?????????.

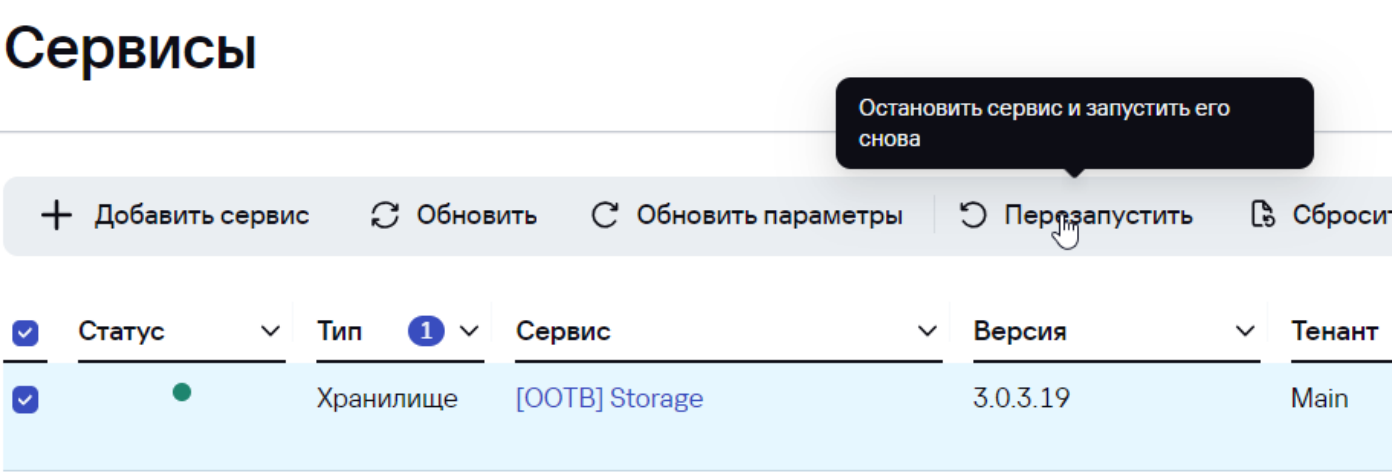
6. ? ???? "?????????????? ?????????? ClickHouse" ?????? ?????????? ???? ??? ?????????? ????????? ?????




```
<backups>
        <allowed_path>/tmp/test_backup/</allowed_path>
</backups>
```

7. ????????? ?????? ?????????

8. ?? ??????? "???????? ???????" ??????? ???????? ?????????????? ?????? ? ?????? ????????????? ? ??????? ???? ??? ?????????? ????????



Как проверить, что изменения применились

1. ????????? ? ??????? ?????????????? ??????? ?????????

2. ????????? ???????

```
cat /opt/kaspersky/kuma/clickhouse/cfg/config.d/override.xml
```

3. ? ?????? ?????? ???? ?????????, ?????????????? ? ?????????? ???????

```
[root@kuma-aio backup.tar.gz]# cat /opt/kaspersky/kuma/clickhouse/cfg/config.d/override.xm
<yandex>
<backups>
        <allowed_path>/tmp/test_backup/</allowed_path>
</backups>
</yandex>[root@kuma-aio backup.tar.gz]#
```

Выполнение архивирования

1. ????????? ??????? clickhouse ????????

```
/opt/kaspersky/kuma/clickhouse/bin/client.sh
```

2. ????????? ?????? ??? ????????? ????????, ????????, ?????

```
SELECT partition, name, partition_id
FROM system.parts
WHERE table='events_local_v2'
AND NOT positionCaseInsensitive(partition,'audit')>0
ORDER BY partition DESC
```

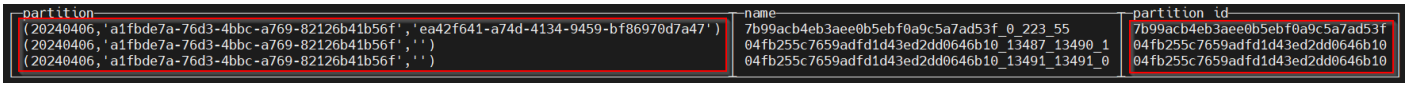
3. ? ?????????? ????? ???????? ???????? ? id ????????

Для фильтрации по дате можно воспользоваться следующим запросом

```
SELECT partition, name, partition_id
FROM system.parts
WHERE substring(partition,2,8) = '20240406'
AND table='events_local_v2'
AND NOT positionCaseInsensitive(partition,'audit')>0
```

? ?????????? ????? ???????? ??? ????????, ????? ???????? ??????? ?????? ?? 6 ?????? 2024 ????

4. ??? ????????? ??????????? ???????? ?? ?????? ??????? (partition) ??? ????????? (partition_id)



partition	name	partition_id
(20240406,'a1fbde7a-76d3-4bbc-a769-82126b41b56f','ea42f641-a74d-4134-9459-bf86970d7a47')	7b99acb4eb3aee0b5ebf0a9c5a7ad53f_0_223_55	7b99acb4eb3aee0b5ebf0a9c5a7ad53f
(20240406,'a1fbde7a-76d3-4bbc-a769-82126b41b56f','')	04fb255c7659adfd1d43ed2dd0646b10_13487_13490_1	04fb255c7659adfd1d43ed2dd0646b10
(20240406,'a1fbde7a-76d3-4bbc-a769-82126b41b56f','')	04fb255c7659adfd1d43ed2dd0646b10_13491_13491_0	04fb255c7659adfd1d43ed2dd0646b10

5. ??? ????????? ???????? ?? id ?????????? ????????? ???????

```
BACKUP TABLE kuma.events_local_v2
PARTITION ID '0405a4ae764614f2283652209b390809'
TO File('/tmp/test_backup/20250221_0405a4ae764614f2283652209b390809.zip')
SETTINGS compression_method = 'lzma', compression_level=3
```

Описание параметров

04fb255c7659adfd1d43ed2dd0646b10 - id ???????? ?? ??????????? ???????

/tmp/test_backup/ - ?????????? ??? ???????

20240406_04fb255c7659adfd1d43ed2dd0646b10.tar.gz - ??? ????? ?????? (????? ???? ????????????)

Важно! ? ClickHouse ?????????????? ? KUMA ?? ?????? **3.4** ??????????? ??????????? ??? , ??? ??????? ???????? **compression_method** ????????????, ???? ? ????????? ????? ??????? ?????????? ???????? ?? **.zip**

? ??????, ???? ??? ?????? ??????? ????? ???????? ????????? ? ???????? ??????:

```
Query id: c77348ef-3895-4aa9-b75c-d5a30412220e

┌─id───────────────────────────────────┬─status─────────┐
│ d52ba745-7ad0-4099-827a-db688aa62649 │ BACKUP_CREATED │
└──────────────────────────────────────┴────────────────┘
```

????? ?????????? ????????? ?????? ????? ????? ?????? ? ??????? system.backups

```
SELECT * FROM system.backups ORDER BY start_time \G
```

```
Row 4:
──────
id:                d52ba745-7ad0-4099-827a-db688aa62649
name:              File('/tmp/test_backup/20250221_0405a4ae764614f2283652209b390809.zip')
status:            BACKUP_CREATED
error:
start_time:        2025-02-21 10:56:36
end_time:          2025-02-21 10:56:36
num_files:         14
total_size:        36553
num_entries:       14
uncompressed_size: 39159
compressed_size:   13562
files_read:        0
bytes_read:        0
```

???? ????? ? ??????????? ?? ???????????????? id, ??????? ??? ??????? ? ?????????? ?????????? ?????????? ???????????

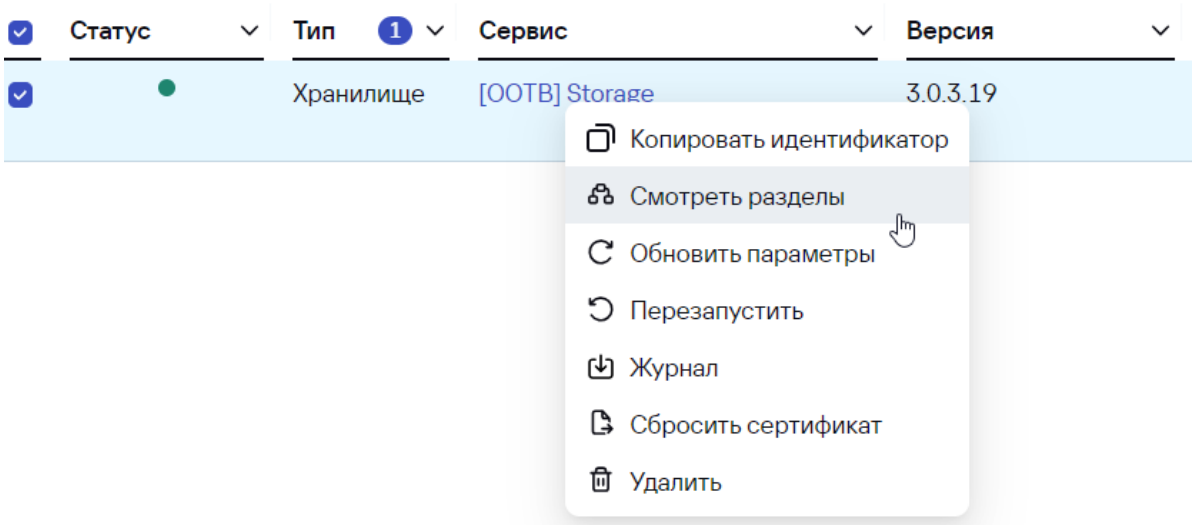
```
SELECT * FROM system.backups WHERE id = 'd52ba745-7ad0-4099-827a-db688aa62649' \G
```

????? ?????????? ?????????? ??????????? ???????? ????? ??????? ?? ?????????? KUMA, ???? ? ??????? ??????? ClickHouse, ???? ?? ????????? ????????? ????? ????????.

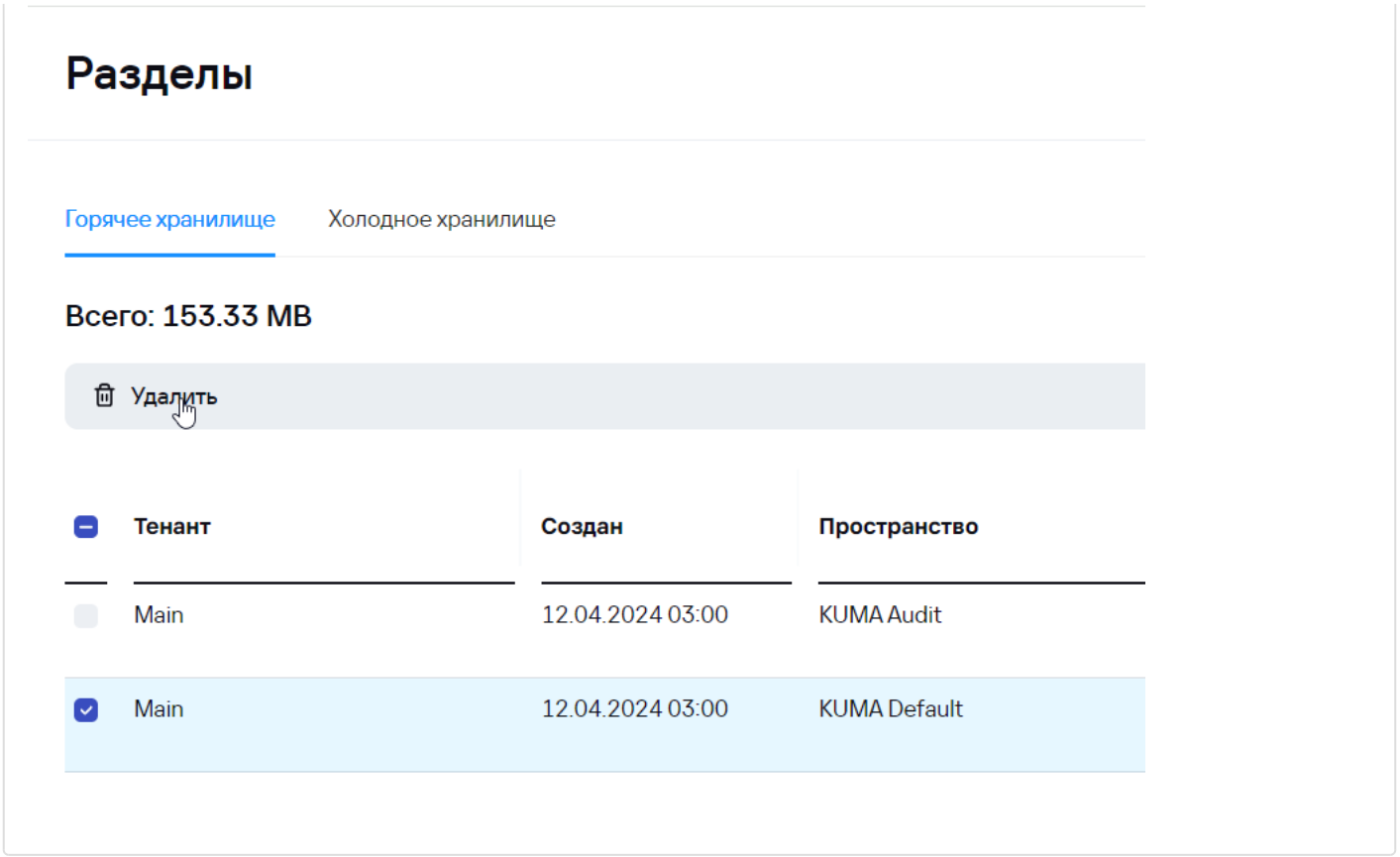
Пример удаления партиции из интерфейса

1. ??????? ?? ??????? "???????? ???????"

2. ??????? ?????? ?????????, ?????? ?? ??? ????? ?????? ??????? ???? ? ??????? ????? " ???????? ???????"



3. ? ???????? ??????? ?????? ? ?????? ???????



Выполнение восстановления

1. ????????? ??????? clickhouse ????????

```
/opt/kaspersky/kuma/clickhouse/bin/client.sh
```

? ?????? 4.0 ???? ? ???????: /opt/kaspersky/kuma/ID-storage/deps/clickhouse/bin/client.sh

2. ????????? ?????? ??? ?????????????

```
RESTORE TABLE kuma.events_local_v2
PARTITION ID '0405a4ae764614f2283652209b390809'
FROM File('/tmp/test_backup/20250221_0405a4ae764614f2283652209b390809.zip')
SETTINGS allow_non_empty_tables=true
```

3. ? ?????????? ????? ????????????? ????????? ???????? ?? ?????? ? ????????
??????????????? ?????????:

```
Query id: aad21585-a248-489b-ae42-87a129f94887

┌─id─────────────────────────────────┬─status───┐
│ d7758d2f-59c1-4650-afba-c1c288402bf5 │ RESTORED │
└────────────────────────────────────┴──────────┘
```

Если бэкап содержит несколько партиций

? ????? ?????? ????? ??????????? ????? ????????? ID ??? ???????? ????????, ????????:

```
RESTORE TABLE kuma.events_local_v2
PARTITIONS (20240405,'a1fbde7a-76d3-4bbc-a769-82126b41b56f',''),
(20240406,'faeede7a-76d3-4bbc-a769-82126b41e453','')
FROM File('/tmp/test_backup/20240406_04fb255c7659adfd1d43ed2dd0646b10.zip')
SETTINGS allow_non_empty_tables=true
```

???? ????????? ????????????? ???? ???????? ?? ?????? (????? ??????? ? ??????, ???? ?? ???????? id ??? ??? ????????)

```
RESTORE ALL
FROM File('/tmp/test_backup/20240406_04fb255c7659adfd1d43ed2dd0646b10.zip')
SETTINGS allow_non_empty_tables=true
```

?? ???????? ? ????????? ???????????? ? ??????? system.backups ????? ?????????? ?????????

```
SELECT * FROM system.backups ORDER BY start_time \G
```

```
Row 9:
──────
id:                d7758d2f-59c1-4650-afba-c1c288402bf5
name:              File('/tmp/test_backup/20240406_04fb255c7659adfd1d43ed2dd0646b10.tar.gz')
status:            RESTORED
error:
start_time:        2024-04-12 09:48:24
end_time:          2024-04-12 09:48:24
num_files:         1271
total_size:        38906350
num_entries:       300
uncompressed_size: 19721392
compressed_size:   19721392
files_read:        1271
bytes_read:        38906350
```

???? ????? ? ??????????? ?? ???????????????? id, ??????? ??? ??????? ? ?????????? ?????????? ??????????????:

```
SELECT * FROM system.backups WHERE id = 'd7758d2f-59c1-4650-afba-c1c288402bf5' \G
```

??? ????????????? ???????? ?????? ???????????????? ?? ???? ???????? ????????. ??????? ?????? ?? ???????? ???????? ??????????? ??? ? 1 ???. ??? ???????????? ???????? ?????????? ????????????? ?????? ???? KUMA

Полезные ссылки

ClickHouse Backup and Restore: https://clickhouse.com/docs/en/operations/backup