

**Министерство науки и высшего образования Российской Федерации**  
федеральное государственное автономное образовательное учреждение высшего  
образования  
**«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»**

**Отчет**  
по практической работе №1  
“Loki + Zabbix + Grafana”  
по дисциплине «Администрирование компьютерных сетей»

Автор: Полякова Д.И.

Факультет: ИКТ

Группа: К3342

Преподаватель: Самохин Н.Ю.

Санкт-Петербург 2024

- Для начала я создала файл docker-compose.yml: в терминале сделала новую папку для моего проекта: mkdir nextcloud-monitoring, cd nextcloud-monitoring
- Создала файл docker-compose.yml с помощью текстового редактора: touch docker-compose.yml, nano docker-compose.yml и вставила код, который представлен в задании лабы (точно так же с promtail\_config.yml)
- Запускаем контейнеры: docker-compose up -d, все сработало:

```
[dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % docker-compose up -d
WARN[0000] /Users/dariapolyakova/nextcloud-monitoring/docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion
[+] Running 75/15
✓ postgres-zabbix Pulled
✓ zabbix-server Pulled
✓ loki Pulled
✓ promtail Pulled
✓ nextcloud Pulled
✓ zabbix-web-nginx+pgsql Pulled
✓ grafana Pulled
                                         69.3s
                                         22.6s
                                         157.2s
                                         153.2s
                                         155.1s
                                         135.6s
                                         45.6s

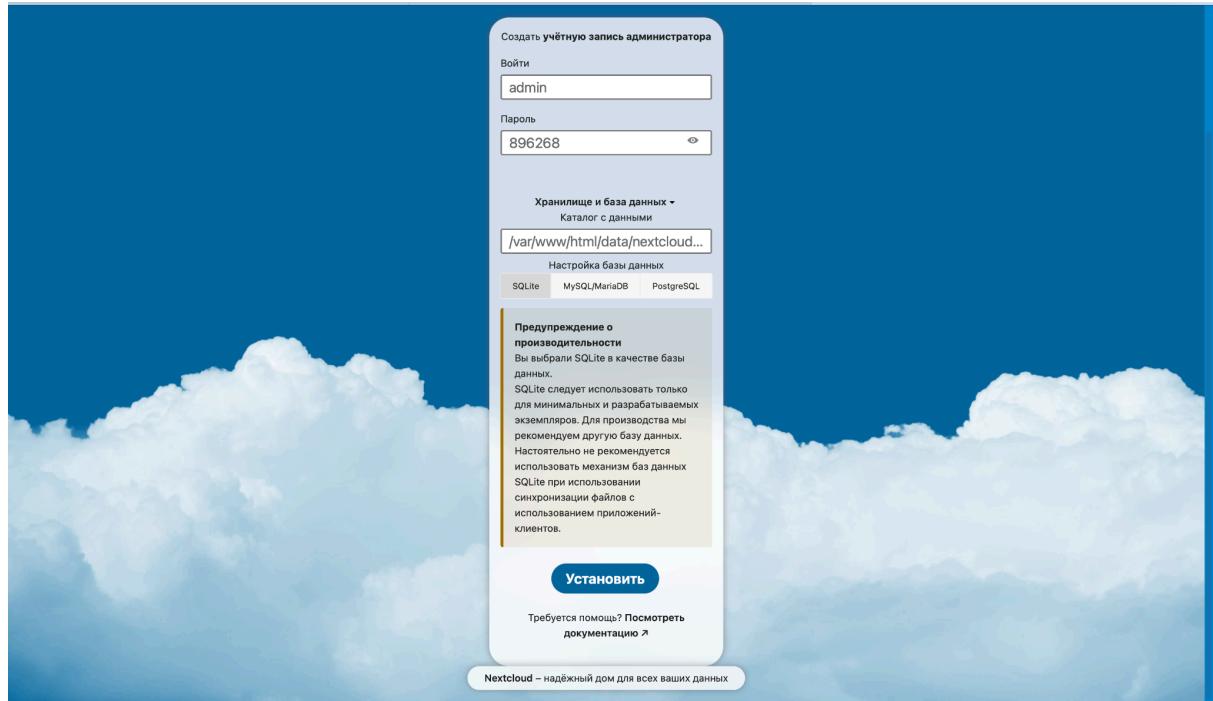
[+] Running 10/10
✓ Network nextcloud-monitoring_default      Created          0.0s
✓ Volume "nextcloud-monitoring_nc-data"     Created          0.1s
✓ Volume "nextcloud-monitoring_zabbix-db"   Created          0.0s
✓ Container postgres-zabbix                 Started         0.7s
✓ Container nextcloud                      Started         0.7s
✓ Container grafana                        Started         0.7s
✓ Container promtail                      Started         0.7s
✓ Container loki                          Started         0.7s
✓ Container zabbix-back                  Started         0.9s
✓ Container zabbix-front                 Started         0.9s
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring %
```

```
dariapolyakova@MacBook-Air-Dasa-2 ~ % mkdir nextcloud-monitoring
dariapolyakova@MacBook-Air-Dasa-2 ~ % cd nextcloud-monitoring
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % touch docker-compose.yml
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % nano docker-compose.yml
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % touch promtail_config.yml
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % nano promtail_config.yml
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % docker-compose up -d
[+] Running 75/21
✓ zabbix-server Pulled
✓ zabbix-web-nginx+pgsql Pulled
✓ loki Pulled
✓ postgres-zabbix Pulled
✓ grafana Pulled
✓ promtail Pulled
                                         132.5s
                                         88.9s
                                         133.7s
                                         63.0s
                                         33.0s
                                         51.7s
                                         57.2s
```

```
[+] Running 9/9
✓ Volume "nextcloud-monitoring_nc-data"      Created          0.0s
✓ Volume "nextcloud-monitoring_zabbix-db"    Created          0.0s
✓ Container loki                          Started         0.8s
✓ Container postgres-zabbix                 Started         0.8s
✓ Container grafana                        Started         0.8s
✓ Container nextcloud                      Started         0.8s
✓ Container promtail                      Start...        0.8s
✓ Container zabbix-back                  Sta...          0.6s
✓ Container zabbix-front                 Sta...          0.6s
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
28b1a4ebe7c zabbix/zabbix-server-pgsql:ubuntu-6.4-latest "/usr/bin/tini -- /u..." 14 seconds ago Up 13 seconds 0.0.0.0:10051->10051/tcp zabbix-back
e492f3347fc zabbix/zabbix-web-nginx+pgsql:ubuntu-6.4-latest "/usr/bin/tini -- /u..." 14 seconds ago Up 13 seconds 8443/tcp, 0.0.0.0:8082->8080/tcp zabbix-front
6e1c495b5aef postgres:15 "docker-entrypoint.s..." 14 seconds ago Up 13 seconds (healthy) 5432/tcp nextcloud
3b019bdc3ad grafana/promtail:2.9.0 "docker-entrypoint.s..." 14 seconds ago Up 13 seconds 0.0.0.0:8080->8080/tcp postgres-zabbix
3167b27c19d6 grafana/loki:2.9.0 "/usr/bin/loki -conf..." 14 seconds ago Up 13 seconds 0.0.0.0:3100->3100/tcp promtail
2000002e70 grafana/grafana:11.2.0 "/run.sh" 14 seconds ago Up 13 seconds 0.0.0.0:3000->3000/tcp loki
grafana
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % ls -la
total 16
drwxr-xr-x  4 dariapolyakova staff 128 27 сен 17:32 .
drwxr-xr-x  61 dariapolyakova staff 1952 27 сен 17:32 ..
-rw-r--r--  1 dariapolyakova staff 308 27 сен 17:32 docker-compose.yml
-rw-r--r--  1 dariapolyakova staff 312 27 сен 17:33 promtail_config.yml
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring %
```

## Теперь инициализируем Nextcloud

1) сначала я перешла по ссылке <http://localhost:8080> и создала учетную запись



Теперь переходим в терминал и пишем

```
docker exec -it nextcloud cat /var/www/html/data/nextcloud.log
```

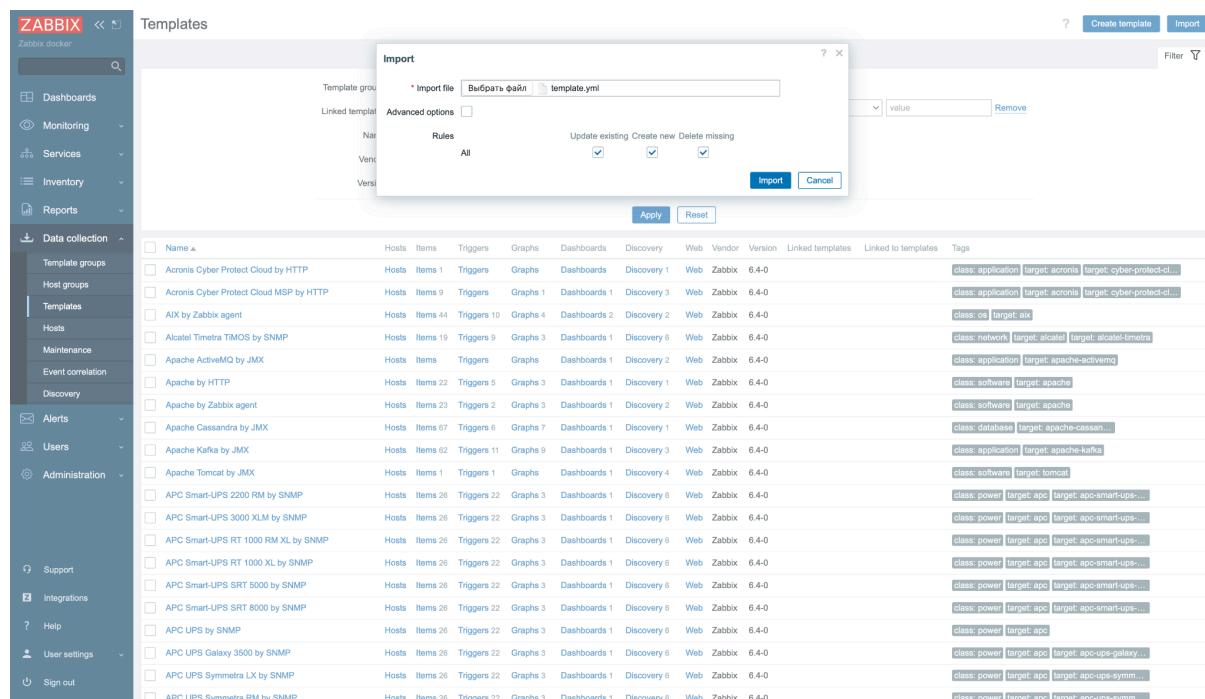
Затем пишем:

docker logs promtail

И находим фразу «Seeked /opt/nc data/nextcloud.log»

ЧАСТЬ 2

1. я создала файл template.yml
  2. Открыла Zabbix по ссылке <http://localhost:8082> и вошла с учетными данными.
  3. Перешла в раздел Configuration > Templates, нажала import и выгрузила template.yml



3. Чтобы Zabbix и Nextcloud могли общаться по своим коротким именам внутри докеровской сети, в некстклайде необходимо "разрешить" это имя. Для этого нужно зайти на контейнер некстклайда под юзером `www-data` и выполнить команду `php occ config:system:set trusted_domains 1 --value="nextcloud"`

```
[dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % docker exec -u www-data -it nextcloud bash
www-data@5e52f3342fcb:~/html$ php occ config:system:set trusted_domains 1 --value="nextcloud"
System config value trusted_domains => 1 set to string nextcloud
www-data@5e52f3342fcb:~/html$ ]
```

4. В разделе *Data collection → Hosts* делаем (*Create host*). Указываем адрес (имя) контейнера `nextcloud`, видимое имя - любое, хост группа - *Applications* (но в целом можно любую другую). Чтобы не просто добавить хост, а начать его мониторинг, необходимо подключить к нему нужный шаблон мониторинга. Поэтому в поле *Templates* нужно выбрать добавленный на шаге 2 *Templates/Applications→ Test ping template*

The screenshot shows the 'Hosts' creation dialog in Zabbix. The 'Host' tab is selected. In the 'Host name' field, 'nextcloud' is entered. In the 'Visible name' field, 'Nextcloud Server' is entered. Under 'Templates', 'Test ping template' is selected. Under 'Host groups', 'Applications' is selected. The 'Enabled' checkbox is checked. At the bottom right of the dialog are 'Add' and 'Cancel' buttons.

5. Настройка хоста закончена, можно сохранить и перейти в раздел *Monitoring → Latest data*. Через какое-то время там должны появиться первые данные, в нашем случае значение `healthy`

The screenshot shows the 'Latest data' monitoring screen in Zabbix. The left sidebar shows the navigation path: Monitoring → Latest data. The main area displays a table with two rows:

Host	Name	Last check	Last value	Change	Tags
Nextcloud Server 1	Nextcloud: ping service	22s	healthy		History
Zabbix server	Zabbix server: Number of processed numeric (float) values per s...	1m	0.6981	-0.0001798	component: system Graph

6. На этом мониторинг можно считать успешно настроенным. При желании можно временно включить в некстклоуде `maintenance mode` (`php occ maintenance:mode --on` в контейнере), проверить что сработал триггер (раздел *Monitoring → Problems*), выключить режим обратно (`php occ maintenance:mode --off`), убедиться что проблема помечена как "решенная"

```
dariapolyakova@MacBook-Air-Dasa-2 nextcloud-monitoring % docker exec -it 5e52f3342fcb bash
[root@5e52f3342fcb:/var/www/html# php occ maintenance:mode --on
Console has to be executed with the user that owns the file config/config.php
Current user id: 0
Owner id of config.php: 33
Try adding 'sudo -u #33' to the beginning of the command (without the single quotes)
If running with 'docker exec' try adding the option '-u 33' to the docker command (without the single quotes)
root@5e52f3342fcb:/var/www/html# php occ maintenance:mode --on
Console has to be executed with the user that owns the file config/config.php
Current user id: 0
Owner id of config.php: 33
Try adding 'sudo -u #33' to the beginning of the command (without the single quotes)
If running with 'docker exec' try adding the option '-u 33' to the docker command (without the single quotes)
root@5e52f3342fcb:/var/www/html# docker exec -it -u www-data 5e52f3342fcb php occ maintenance:mode --on
bash: docker: command not found
[root@5e52f3342fcb:/var/www/html# exit
exit
```

Time	Severity	Recovery time	Status	Info	Host	Problem	Duration	Update	Actions	Tags
19:07:31	Disaster	19:08:31	RESOLVED		Nextcloud Server	Nextcloud is in maintenance mode	1m	Update		
19:00										
17:40:26	Average		PROBLEM		Zabbix server	Linux: Zabbix agent is not available (for 3m)	1h 31m 41s	Update	class: os component: system scope: availability ...	

Displaying 2 of 2 found

### ▼ Часть 3. Визуализация

1. В терминале выполнить команду `docker exec -it grafana bash -c "grafana cli plugins install alexanderzobnin-zabbix-app"`, затем `docker restart grafana`

```
[dariapolyakova@MacBook-Air-Dasa-2 ~ % docker exec -it grafana bash -c "grafana cli plugins install alexanderzobnin-zabbix-app"
✓ Downloaded and extracted alexanderzobnin-zabbix-app v4.5.4 zip successfully to /var/lib/grafana/plugins/alexanderzobnin-zabbix-app

Please restart Grafana after installing or removing plugins. Refer to Grafana documentation for instructions if necessary.

What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug grafana
Learn more at https://docs.docker.com/go/debug-cli/
[dariapolyakova@MacBook-Air-Dasa-2 ~ % docker restart grafana
grafana
dariapolyakova@MacBook-Air-Dasa-2 ~ % ]
```

**my\_little\_loki**

Type: Loki    Alerting: Supported    Explore data    Build a dashboard

**Settings**

Configure your Loki data source below  
Or skip the effort and get Loki (and Prometheus) as fully-managed, scalable, and hosted data sources from Grafana Labs with the free-forever Grafana Cloud plan.

Name: my\_little\_loki    Default:

Before you can use the Loki data source, you must configure it below or in the config file. For detailed instructions, [view the documentation](#).

**Connection**

URL: http://loki:3100

**Authentication**

Authentication methods: Choose an authentication method to access the data source

No Authentication

**TLS settings**

Additional security measures that can be applied on top of authentication

Add self-signed certificate    TLS Client Authentication

Saved

Home > Connections > Data sources > my\_little\_loki

Additional settings

Advanced HTTP settings

Allowed cookies: New cookie (hit enter to add)

Timeout: Timeout in seconds

Alerting

Manage alert rules for the Loki data source. [Learn more about alerting](#)

Manage alert rules in Alerting UI

Queries

Additional options to customize your querying experience. [Learn more about query settings](#)

Maximum lines: 1000

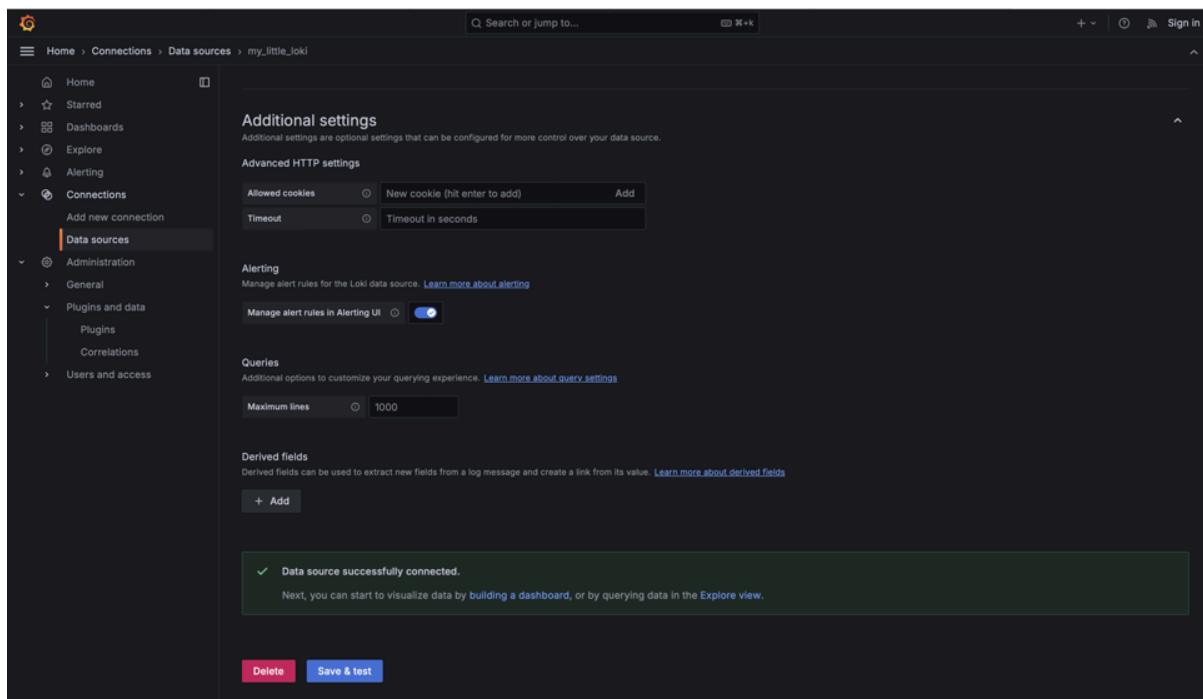
Derived fields

Derived fields can be used to extract new fields from a log message and create a link from its value. [Learn more about derived fields](#)

+ Add

✓ Data source successfully connected.

Next, you can start to visualize data by [building a dashboard](#), or by querying data in the Explore view.



Saved

Home > Connections > Data sources > my\_little-zabbix

Additional settings

Allowed cookies: New cookie (hit enter to add)

Timeout: Timeout in seconds

Zabbix API

Cache TTL: 1h

Timeout: 30

Trends

Enable Trends

After: 7d

Range: 4d

Direct DB Connection

Enable Direct DB Connection

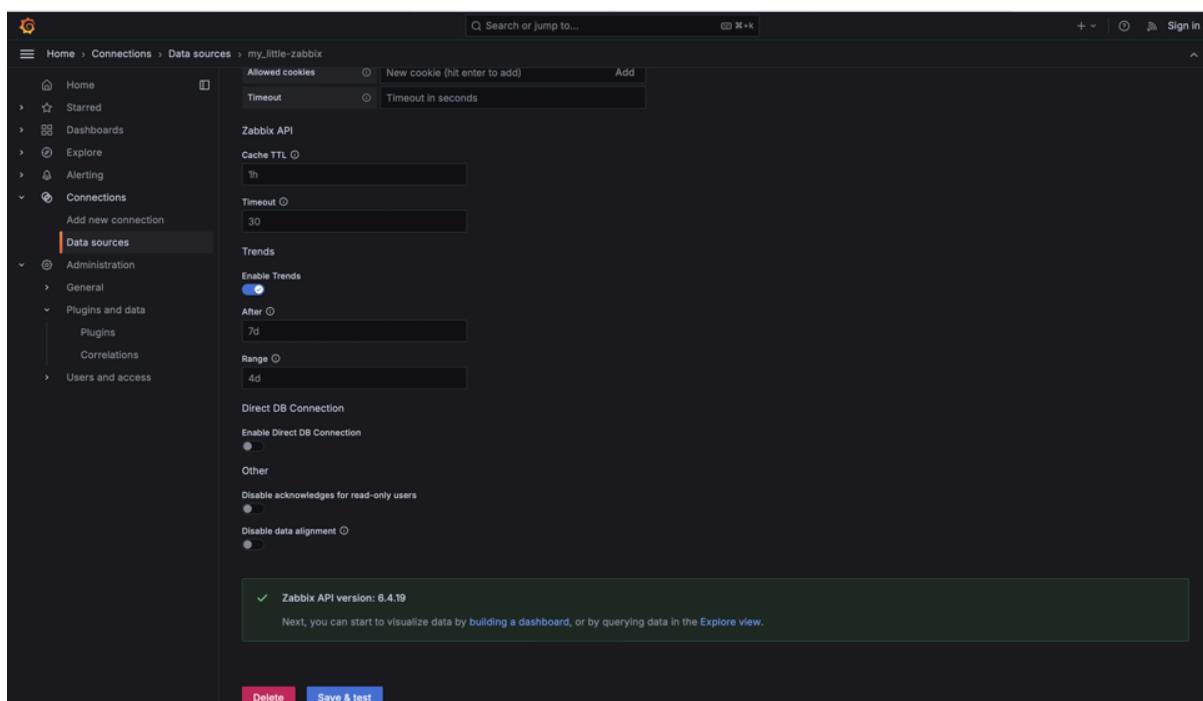
Other

Disable acknowledges for read-only users

Disable data alignment

✓ Zabbix API version: 6.4.19

Next, you can start to visualize data by [building a dashboard](#), or by querying data in the Explore view.



The screenshot shows the Grafana Explore interface. The left sidebar contains navigation links: Home, Starred, Dashboards, Explore (selected), Alerting, Connections (Add new connection, Data sources), Administration (General, Plugins and data (Plugins, Correlations), Users and access).

The main area has a search bar at the top right. Below it, the title is "my\_little-zabbix". The "Outline" tab is selected. A query editor shows a query type of "Text" with the text "(my\_little-zabbix)". The "Group" dropdown is set to "Applications" and the "Host" dropdown is set to "Nextcloud Server". The "Application" dropdown is set to "Item" and the "Item" dropdown is set to "Nextcloud: ping service". There is a "Text filter" field and a "Use capture groups" checkbox.

Below the query editor is a "Table" section titled "Table - Nextcloud: ping service". It contains two columns: "Time" and "Nextcloud: ping service". The data is as follows:

Time	Nextcloud: ping service
2024-09-27 18:57:31	healthy
2024-09-27 18:58:31	healthy
2024-09-27 18:59:31	healthy
2024-09-27 19:00:31	healthy
2024-09-27 19:01:31	healthy
2024-09-27 19:02:31	healthy
2024-09-27 19:03:31	healthy
2024-09-27 19:04:31	healthy
2024-09-27 19:05:31	healthy
2024-09-27 19:06:31	healthy
2024-09-27 19:07:31	unhealthy
2024-09-27 19:08:31	healthy
2024-09-27 19:09:31	healthy

## ДАШБОРДЫ

Zabbix

The screenshot shows the Grafana interface for editing a dashboard. The left sidebar contains navigation links for Home, Dashboards, Explore, Alerting, Connections, Administration, General, Plugins and data, Plugins, Correlations, and Users and access. The main area displays a panel titled "Panel Title" with a bar chart showing green bars over time. Below the chart, the text "Nextcloud: ping service" is repeated multiple times. The chart has x-axis labels at 13:01, 13:07, 13:13, and 13:19. The bottom section features a "Query" tab with a count of 1, a "Transform data" tab with a count of 0, and a "Data source" dropdown set to "my\_little-zabbix". The "Query options" section includes MD = auto > 809 and Interval = 30s. A "Query inspector" tab is also present. On the right side, there are sections for "Status history" with search options, "Panel options" for title and description, and "Transparent background" settings. Below these are "Panel links" and "Repeat options" sections. The "Status history" section includes "Show values" options (Auto, Always, Never) and various styling sliders for Row height, Column width, Line width, Fill opacity, and Font size.

Loki

The screenshot shows the Grafana Log Editor interface. On the left, a sidebar navigation includes Home, Dashboards, Explore, Alerting, Connections, Administration, General, Plugins and data, Plugins, Correlations, and Users and access. The 'Dashboards' item is highlighted. The main area has tabs for Table view, Fill, Actual, and Last 6 hours. A search bar at the top says 'Search or jump to...'. To the right, there's a 'Logs' section with a search bar and a detailed configuration pane for a panel titled 'Panel Title'. The configuration pane includes fields for Title ('Panel Title'), Description, and Transparent background (unchecked). It also lists Panel links and Repeat options. Below this is a 'Logs' section with Time (radio button selected), Unique labels (unchecked), Common labels (unchecked), Wrap lines (unchecked), and a 'Pretty JSON' checkbox. At the bottom, there are checkboxes for Enable log details (checked) and Deduplication (None, Exact, Numbers, Signature). The bottom navigation bar includes Order (Newest first, Oldest first).

Вопросы:

- 1) SLA представляет собой формальное соглашение с клиентом, устанавливающее минимально допустимые уровни обслуживания. SLO же — это конкретные цели производительности, которые могут входить в состав SLA, но также применяются внутри организации для мониторинга эффективности работы.
- 2) Инкрементальный бэкап сохраняет только изменения, произошедшие с последнего бэкапа любого типа, в то время как дифференциальный бэкап сохраняет все изменения с последнего полного бэкапа. Это делает инкрементальные бэкапы более быстрыми и экономичными по пространству, но восстановление данных требует последнего полного и всех инкрементальных бэкапов.
- 3) Мониторинг — это процесс сбора и анализа данных о работе системы для выявления проблем и их устранения. Он фокусируется на метриках и алертах.

Observability, в свою очередь, включает в себя мониторинг, но также охватывает более широкий спектр возможностей, позволяя понять внутреннее состояние системы на основе ее внешних проявлений. Это включает логи, метрики и трассировку, что помогает глубже анализировать проблемы и их причины.