



链滴

基于 SkyWalking 的分布式跟踪系统 - 异常告警

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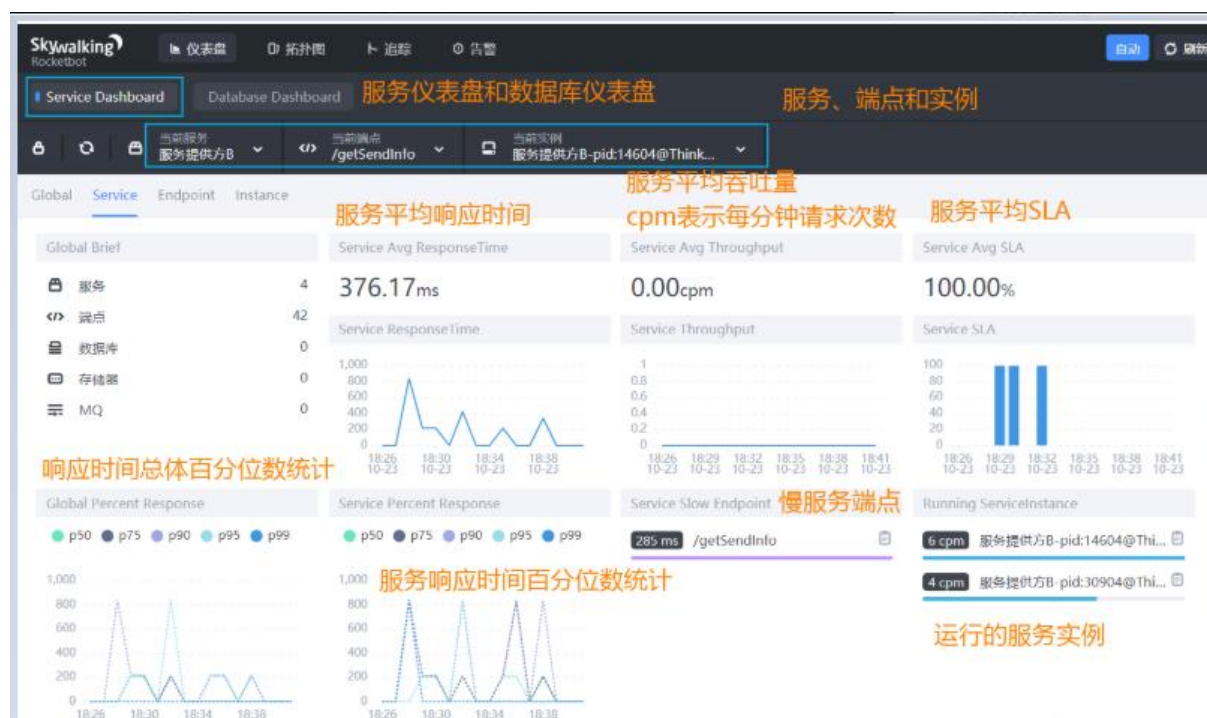
许可协议: [署名-相同方式共享 4.0 国际 \(CC BY-SA 4.0\)](#)



通过前面2篇文章我们搭建了SW的基础环境，监控了微服务，能了解所有服务的运行情况。但是当出服务响应慢，接口耗时严重时我们需要立即定位到问题，这就需要我们今天的主角--监控告警，同时篇也是SW系列的最后一篇。

UI参数

首先我们认识一下SW Dashboard上的几个关键参数，如下图所示



告警配置

告警流程

skywalking发送告警的基本原理是每隔一段时间轮询skywalking-collector收集到的链路追踪的数据再根据所配置的告警规则（如服务响应时间、服务响应时间百分比）等，如果达到阈值则发送响应的警信息。发送告警信息是以线程池异步的方式调用webhook接口完成，（具体的webhook接口可以用者自行定义），从而开发者可以在指定的webhook接口中自行编写各种告警方式，钉钉告警、邮件告警等等。

规则配置

告警的核心由一组规则驱动，这些规则定义在 `config/alarm-settings.yml`，打开之后如下所示：

```
rules:
  # Rule unique name, must be ended with `_rule`.
  service_resp_time_rule:
    metrics-name: service_resp_time
    op: ">"
    threshold: 1000
    period: 10
    count: 3
    silence-period: 5
    message: Response time of service {name} is more than 1000ms in 3 minutes of last 10 minutes.
  service_sla_rule:
    # Metrics value need to be long, double or int
    metrics-name: service_sla
    op: "<"
    threshold: 8000
    # The length of time to evaluate the metrics
    period: 10
    # How many times after the metrics match the condition, will trigger alarm
    count: 2
    # How many times of checks, the alarm keeps silence after alarm triggered, default as same as period.
    silence-period: 3
    message: Successful rate of service {name} is lower than 80% in 2 minutes of last 10 minutes
  service_p90_sla_rule:
    # Metrics value need to be long, double or int
    metrics-name: service_p90
    op: ">"
    threshold: 1000
    period: 10
    count: 3
    silence-period: 5
    message: 90% response time of service {name} is more than 1000ms in 3 minutes of last 10 minutes
  service_instance_resp_time_rule:
    metrics-name: service_instance_resp_time
    op: ">"
    threshold: 1000
    period: 10
    count: 2
    silence-period: 5
    message: Response time of service instance {name} is more than 1000ms in 2 minutes of last 10 minutes
  # Active endpoint related metrics alarm will cost more memory than service and service instance metrics alarm.
  # Because the number of endpoint is much more than service and instance.
  #
  # endpoint_avg_rule:
  #   metrics-name: endpoint_avg
  #   op: ">"
  #   threshold: 1000
  #   period: 10
  #   count: 2
  #   silence-period: 5
  #   message: Response time of endpoint {name} is more than 1000ms in 2 minutes of last 10 minutes

webhooks:
# - http://127.0.0.1/notify/
# - http://127.0.0.1/go-wechat/
```

告警规则的定义分为两部分。

- 告警规则。它们定义了应该如何触发度量警报，应该考虑什么条件。
- [网络钩子](#Webhook)。当警告触发时，哪些服务终端需要被告知。

告警规则主要有以下几点

- **Rule name.** 在告警信息中显示的唯一名称。必须以_rule结尾。
- **Metrics name.** 也是oal脚本中的度量名。
- **Include names.** 其下的实体名称都在此规则中。比如服务名, 终端名。
- **Threshold.** 阈值。
- **OP.** 操作符, 支持 >, <, =。
- **Period.** 多久检查一次当前的指标数据是否符合告警规则这是一个时间窗口, 与后端部署环境相匹配。
- **Count.** 在一个Period窗口中, 如果values超过Threshold值 (按op), 达到Count值, 需要发警报。
- **Silence period.** 在时间N中触发报警后, 在TN -> TN + period这个阶段不告警。默认情况下它和Period一样, 这意味着相同的告警 (在同一个Metrics name拥有相同的Id) 在同一个Period内会触发一次

Webhook

SkyWalking 的告警 Webhook 要求对方是一个 Web 容器. 告警的消息会通过 HTTP 请求进行发送, 请求方法为 POST, Content-Type 为 application/json, JSON 格式基于 List<org.apache.skywalking.oap.server.core.alarm.AlarmMessage, 包含以下信息.

- scopelId. 所有可用的 Scope 请查阅 [org.apache.skywalking.oap.server.core.source.DefaultScopeDefine](#).
- name. 目标 Scope 的实体名称.
- id0. Scope 实体的 ID.
- id1. 未使用.alarmMessage. 报警消息内容.
- startTime. 告警时间, 位于当前时间与 UTC 1920/1/1 之间.

```
[[
  {
    "scopelId": 1,
    "name": "serviceA",
    "id0": 12,
    "id1": 0,
    "alarmMessage": "alarmMessage xxxx",
    "startTime": 1560524171000
  }, {
    "scopelId": 1,
    "name": "serviceB",
    "id0": 23,
    "id1": 0,
    "alarmMessage": "alarmMessage yyy",
    "startTime": 1560524171000
  }
]]
```

代码实战

- 编写实体类用于接收sw告警消息

```

@Data
public class SwAlarmVO {
    private int scopeld;
    private String name;
    private int id0;
    private int id1;
    private String alarmMessage;
    private long startTime;
}

```

- 编写webhook接口

```

@RestController
@RequestMapping("sw")
@Log4j2
public class AlarmController {
    @PostMapping("/alarm")
    public void alarm(@RequestBody List<SwAlarmVO> alarmList){
        log.info("skywalking alarm message:{},alarmList);
        //todo doalarm
    }
}

```

- 修改告警配置，开放webhook接口
- 为了模拟请求调用慢，我们在代码中使用 `Thread.sleep(1000)`增加接口耗时，然后等webhook口告警响应

The screenshot shows a console window with the following log output:

```

7763
3369
[SwAlarmVO(scopeId=2, name=dubbo-consumer-pid:13812@jianzhang11, id0=28, id1=0, alarmMessage=Response time of service instance dubbo-c
[SwAlarmVO(scopeId=1, name=dubbo-provider2, id0=9, id1=0, alarmMessage=Response time of service dubbo-provider2 is more than 1000ms in
[SwAlarmVO(scopeId=2, name=dubbo-consumer-pid:13812@jianzhang11, id0=28, id1=0, alarmMessage=Response time of service instance dubbo-c
[SwAlarmVO(scopeId=1, name=dubbo-provider2, id0=9, id1=0, alarmMessage=Response time of service dubbo-provider2 is more than 1000ms in

```

详细信息如下：

```

[SwAlarmVO(scopeId = 2, name = dubbo - consumer - pid: 13812 @ jianzhang11, id0 = 28, i
1 = 0,
alarmMessage = Response time of service instance dubbo - consumer - pid: 13812 @ jianzha
g11
is more than 1000ms in 2 minutes of last 10 minutes, startTime = 1573122018755),
SwAlarmVO(scopeId = 2, name = dubbo - provider2 - pid: 14108 @ jianzhang11, id0 = 25,
id1 = 0, alarmMessage = Response time of service instance dubbo - provider2 - pid: 14108 @
ianzhang11
is more than 1000ms in 2 minutes of last 10 minutes, startTime = 1573122018755)]

```

此时webhook能正常接收到sw的告警信息，后续的消息通知直接定制开发即可。