OneAgent Ruby Agent Documentation

Spis treści

1. Licensing

Our agent is licensed based on RAM consumption in similar way as Dynatrace OneAgent:

Max. RAM	License
1.6 GB	0.10
4 GB	0.25
8 GB	0.50
16 GB	1.0
32 GB	2.0
48 GB	3.0
64 GB	4.0
80 GB	5.0
96 GB	6.0
112 GB	7.0
nx16 GB	n

Single license cost is calculated on OneAgent Host Unit license and normally it's 25% of Agent Cost.

2. Installation

Supported version of ruby is 1.9 +. Right know jRuby is not supported. Ruby Agent is distributed as GEM file with native extension. This means that it must be installed in the way that will execute native code building.

First you have to add a reference to our library into your Gemfile:

```
gem 'onesdk_ruby'
```

Our gem is not available in any public repository, so you cannot just use bundle install command.

Easiest way is create directory in root of application:
`/your_app_dir/vendor/cache` (if it's not exist) and put your gemfile there. Then you can just execute:

```
bundle install --local
```

and gem should be installed without any issues.

Alternative way: You can use local repository if available in your environment. In such case you will be able to install gemfile without copying file.

You can install as well our gem from public repo with credentials sent via e-mail:

Installation for you will need few steps (it's not in docs because it's special for you):

1. You need authenticate in gemfury (our gem artifactory)
   `bundle config gem.fury.io KEY_RECEIVED_VIA_EMAIL` or
   `export BUNDLE_GEM__FURY__IO=KEY_RECEIVED_VIA_EMAIL`
2. Add in you Gemfile this definition (you need to have open traffic to this url):
```
source 'https://gem.fury.io/spicasolutions/' do
      gem 'onesdk_ruby', '~> 1.0.28'
end
```
3. `Execute bundle install`
4. `Run your application on Kubernetes cluster`

3. License

License has to be puted to onesdk.yaml file

```
license: LICENSEKEY
```

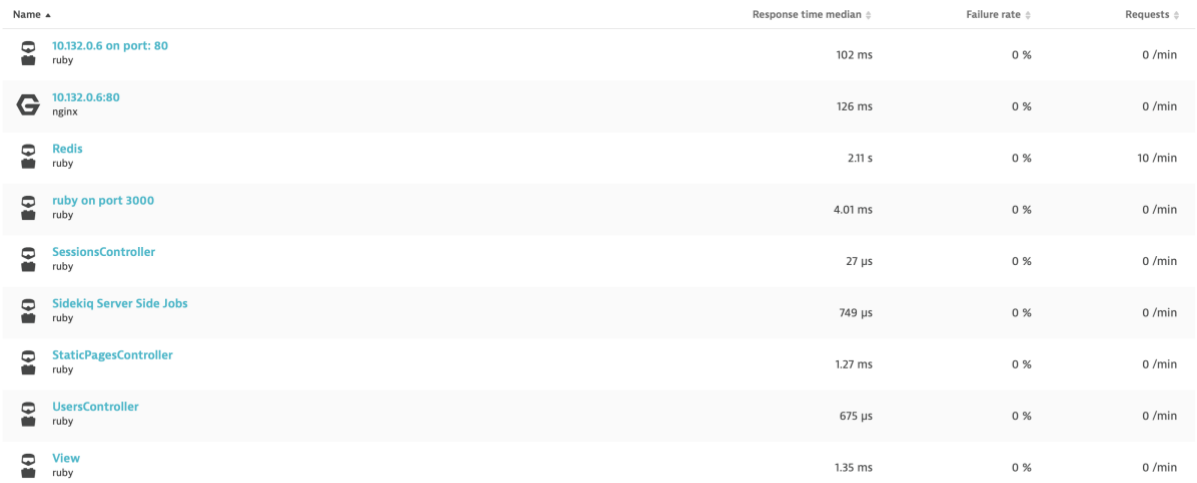
or via environment variable:

ONESDK_LICENSE=LICENSEKEY

4. Operating

4.1. Configuration

Our agent is made over OneAgent SDK. In such case you don't have to create any extra configuration. You should install OneAgent in Full Stack mode to run Ruby Agent properly and restart the application. After that and detection of traffic by OneAgent you should be able to see detected ruby's services in Dynatrace.



Name	Response time median	Failure rate	Requests
10.132.0.6 on port: 80 ruby	102 ms	0 %	0 /min
10.132.0.6:80 nginx	126 ms	0 %	0 /min
Redis ruby	2.11 s	0 %	10 /min
ruby on port 3000 ruby	4.01 ms	0 %	0 /min
SessionsController ruby	27 µs	0 %	0 /min
Sidekiq Server Side Jobs ruby	749 µs	0 %	0 /min
StaticPagesController ruby	1.27 ms	0 %	0 /min
UsersController ruby	675 µs	0 %	0 /min
View ruby	1.35 ms	0 %	0 /min

From this moment agent will be running with your application after each restart like regular OneAgent.

Our agent is instrumenting / enables visibility:

- Incomming WebRequests

- Controllers with actions
- Views
- Database Calls
- Redis Calls
- External WebRequests
- Exceptions
- Sidekiq Jobs
- Rails framework
- Sinatra framework

4.2. Debug logs

By default, debug logs are disabled. During troubleshooting you can enable those logs using flag in onesdk.yaml config file:

To start collecting debug logs with our agent you have to create **onesdk.yaml** file in config directory and put there such key:

debug: true

As alternative you can use environment variable **ONESDK_DEBUG=true**. Environment variables has higher priority than config file

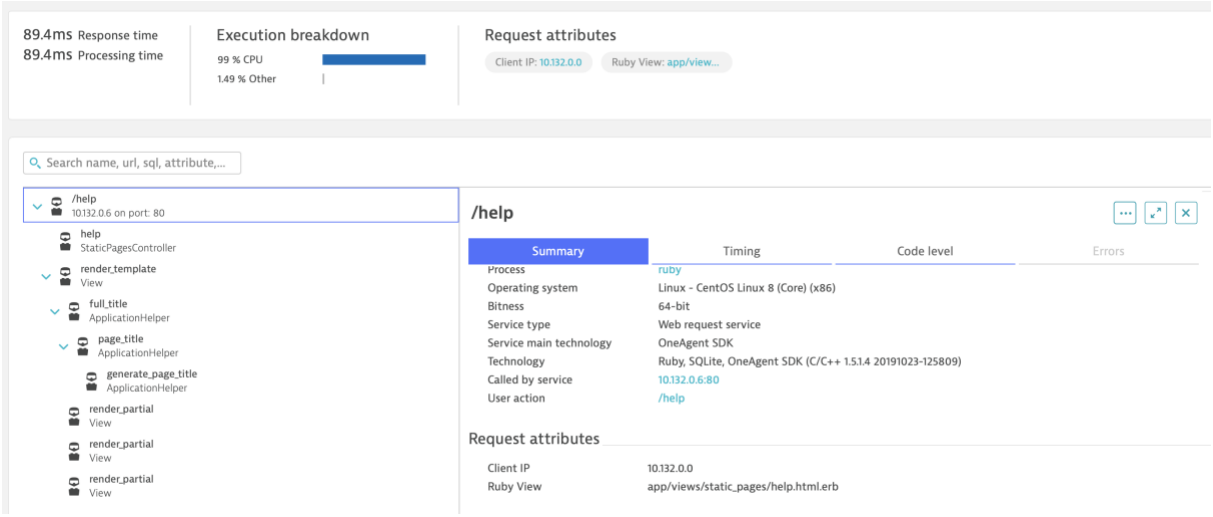
4.3. Disabling agent

Agent can be deactivated using environment variable
ONESDK_MONITORING_DISABLED=true or via config file **monitoring_disabled: true**

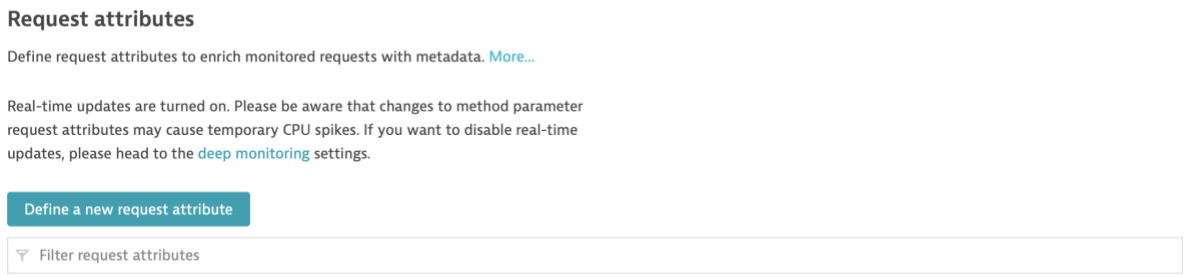
When application starts, this configuration will prevent app instrumentation process. Agent will not perform any changes in code, SDK will not be initialized as well. After switching value to false or remove flag, application restart is needed.

4.4. Collecting names of ruby Views as Request Attributes

To see names of views on PurePaths you must create request attribute in Dynatrace.

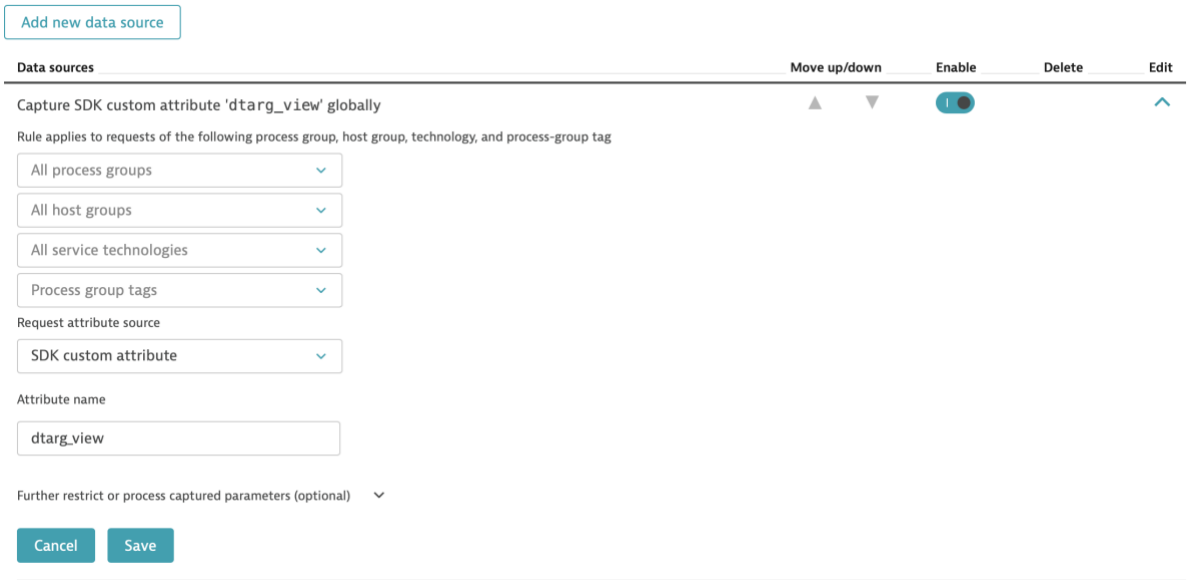


In such case you will be able to filter transactions using its value and see it in particular transactions.
To start collecting those values you have to go to Settings -> Server-side service monitoring -> Request attributes:

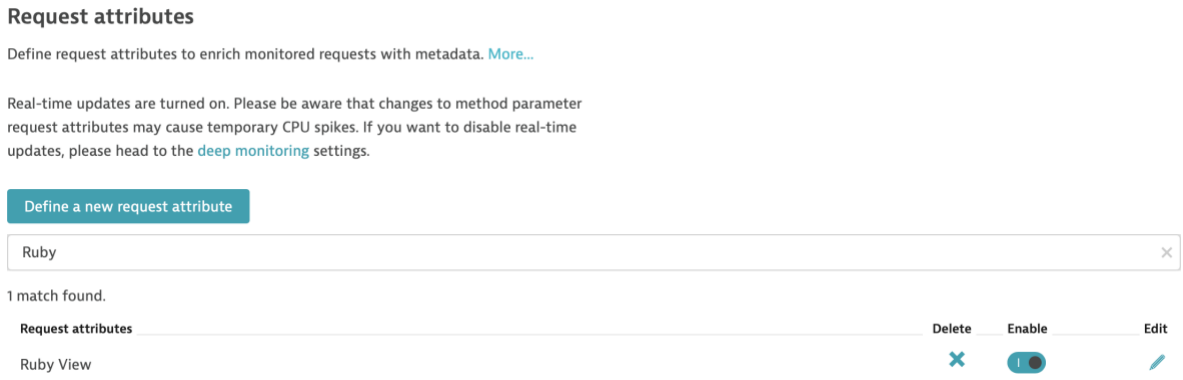


Click on “Define a new request attribute”:

Name it: Ruby View (or like you want) and add new data source:



Filled it like on screen above. Attribute name should be set as: **dtarg_view.** Click on “Save on data source” and “Request attribute” as well. As result you should be able to see your newly created request attribute in Dynatrace:



You don’t need restart your process if it’s already monitored with our agent.

4.5. Coexistence of other APM Agent

It’s highly not recommended to use our agent on the same application with other solutions like NewRelic, Instana, DataDog, ScoutAPM etc. The pattern of the instrumentation is similar in all of mentioned agents, so there may produce some issues on your application.

5. Custom metrics collection

Our gem is able to collect some extra metrics from GC and Threads. List of available metrics is listed below:

onesdk.ruby_count (GC count),
onesdk.ruby_heap_allocated_pages
onesdk.ruby_heap_sorted_length
onesdk.ruby_heap_allocatable_pages
onesdk.ruby_heap_available_slots
onesdk.ruby_heap_live_slots
onesdk.ruby_heap_free_slots
onesdk.ruby_heap_final_slots
onesdk.ruby_heap_marked_slots
onesdk.ruby_heap_eden_pages
onesdk.ruby_heap_tomb_pages
onesdk.ruby_total_allocated_pages
onesdk.ruby_total_freed_pages
onesdk.ruby_total_allocated_objects
onesdk.ruby_total_freed_objects
onesdk.ruby_malloc_increase_bytes
onesdk.ruby_malloc_increase_bytes
onesdk.ruby_minor_gc_count
onesdk.ruby_major_gc_count

onesdk.ruby_compact_count
onesdk.ruby_remembered_wb_unprotected_objects
onesdk.ruby_remembered_wb_unprotected_objects_limit
onesdk.ruby_old_objects
onesdk.ruby_old_objects_limit
onesdk.ruby_oldmalloc_increase_bytes
onesdk.ruby_oldmalloc_increase_bytes_limit
onesdk.gc_total_time (ms)
onesdk.ruby_thread_count

IMPORTANT:
To start collecting metrics you should enable OneAgent metric API according to this doc:
https://www.dynatrace.com/support/help/shortlink/local-api#enable-the-oneagent-metric-api

To start collecting those metrics with our agent you have to create **onesdk.yaml** file in config directory and put there such keys:

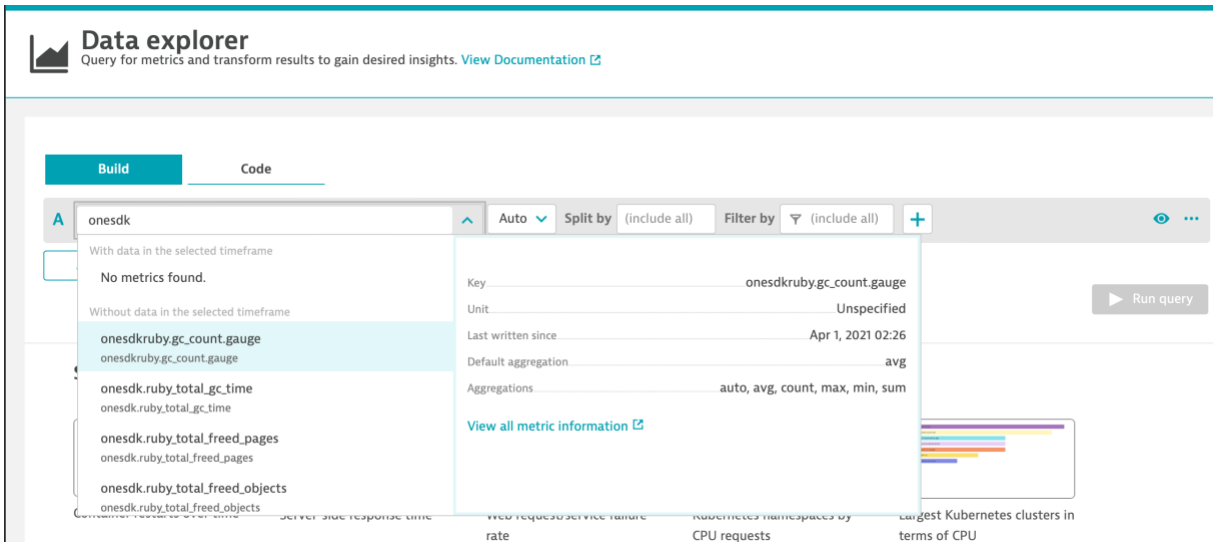
```
metrics_ingest: true
```

As alternative you can setup Environent Variable **ONESDK_METRICS_INGEST=true** which has higher priority than config file. You can switch metrics ingest with setting its value to false.

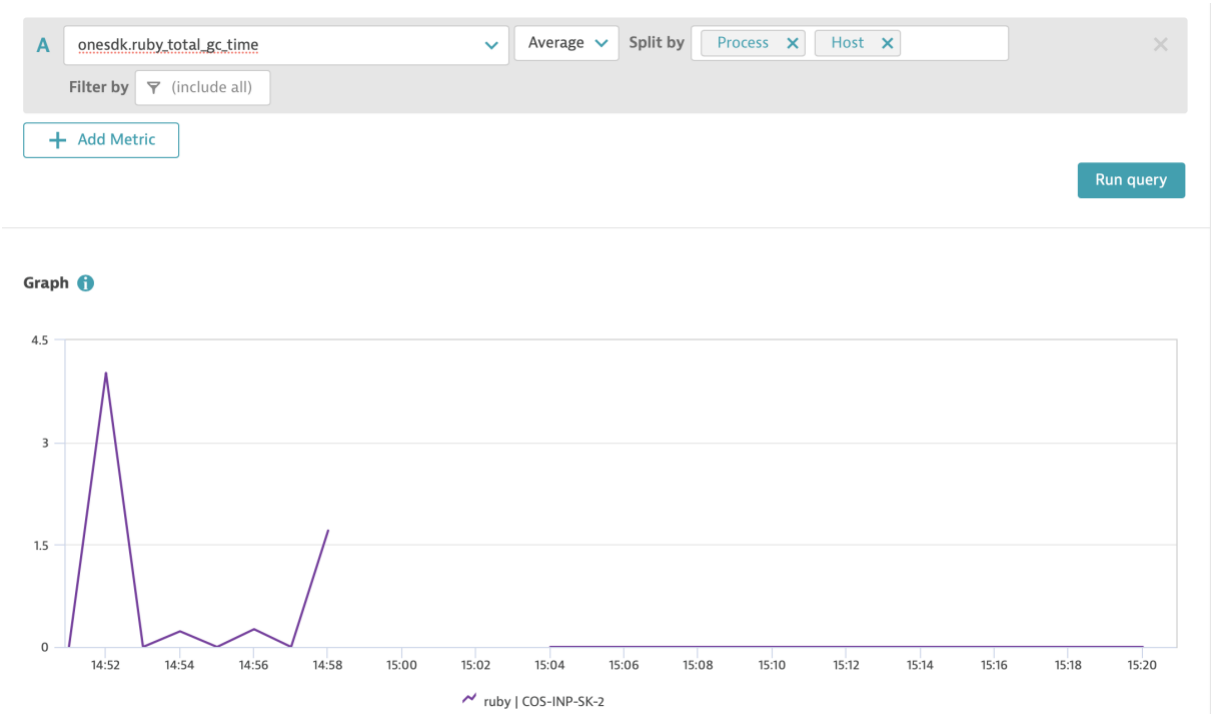
Metric_ingest key true value is enabling metrics collection.

Because of Dynatrace limitations, right now metrics will not show up in further details tab on process group instance dashboard. They will be assigned to proper process group despite that. We cannot setup units for those metrics automatically so all of them are generic ones. This behavior will change in the future. To access collected metrics, you must:

Create custom chart or enter Data Explorer:



All metrics will be available on key “onesdk.metric_name”.



You can split values by process group and host. Such metric can be pinned to your dashboard.

5.1. Metrics collection for Kubernetes / OpenShift / Docker environment

Because of how OneAgent is instrumentic containers, there is only part of agent that collects data from code. Rest of agent is operating on different layer. This is why we cannot use OneAgent Metric API, we need to use Metrics API V2. In such scenario we need to do few steps:

1. We need to create API Token with **metrics.ingest** permission: How to generate Api Token in Dynatrace
2. We need to determine what type of connection between OneAgent in POD and Dynatrace we have. We can be connected directly to Dynatrace server. In such case we have such uri patterns for metrics ingestion:
   a. Managed https://{your-domain}/e/{your-environment-id}/api/v2/metrics/ingest
   b. SaaS https://{your-environment-id}.live.dynatrace.com/api/v2/metrics/ingest

   If we are using Environment ActiveGate, it will looks like this (remember to add used port, default is 9999):
   c. Environment ActiveGate https://{your-activegate-domain}/e/{your-environment-id}/api/v2/metrics/ingest
3. We need to pass those 2 values to agent via Environment Variable or config file.
   a. Environment Variables:
   ```
   export ONESDK_METRICS_API_URL=https://<DT_URL_OR_AG_URL>/api/v2/metrics/ingest
   export ONESDK_METRICS_API_TOKEN=<API_TOKEN>
   export ONESDK_METRICS_INGEST=true
   ```
   b. Config file
   ```
   metrics_ingest: true
   metrics_api_url: https://<DT_URL_OR_AG_URL>/api/v2/metrics/ingest
   metrics_api_token: <API_TOKEN>
   ```

After that start your application and proper metrics should be available for you in metrics explorer.

6. Custom instrumentation

It is always possible to instrument extra pieces of code if initial instrumentation is not enough. It may happen if your application is using multiple custom classes that should be exposed as Custom services.

6.1. Manual instrumentation

If agent is initialized and it is working properly on your application, you can always import our class and use it to instrument your code manually. Below you can find example:

First you have to import onesdk on top of your file:

```
require 'onesdk'
```

Then inside your method initialize tracer:

```
tracer = Onesdk.onesdk_customservicetracer_create(Onesdk.onesdk_asciistr(“Method name”),
Onesdk.onesdk_asciistr("Custom Service Name”))
```

Start the tracer

```
Onesdk.onesdk_tracer_start(tracer)
```

Then execute your method code.

If you want to report exception you can do this like that (before end of the tracer).

```
Onesdk.onesdk_tracer_error(tracer, Onesdk.onesdk_asciistr(“Exception Class Name”),
Onesdk.onesdk_asciistr(“Exception message”))
```

Exception can be reported only once per tracer, if you have several exceptions you have to combined them as single string.

Before method finish add line like below:

```
Onesdk.onesdk_tracer_end(tracer)
```

If you would like to report request attributes, add a below command before finishing tracer:

```
Onesdk.onesdk_customrequestattribute_add_string(Onesdk.onesdk_asciistr("KEY"),
Onesdk.onesdk_asciistr(“STRING_VALUE”));
```

To expose them in Dynatrace, you have to create proper Request Attribute configuration.

6.2. Instrumentation using config file

To use this feature you have to create yaml file in [app_dir]/config/onesdk.yaml

Sample content is:

```
custom_instrumentation: True/False (enables disables custom instrumentation)
methods:
  - class_module: string (Module::Class or Module or Class)
    method: string (method name)
```

Sample file content:

```
custom_instrumentation: True
methods:
  - class_module: User
    method: send_password_reset_email

  - class_module: User
    method: send_activation_email

  - class_module: User
    method: activate

  - class_module: User
    method: authenticated?

  - class_module: App::ApplicationHelper
    method: full_title
```

If instrumentation go fine, you will be able to see log entries related to particular method instrumentation. You can select multiple methods from single module/class

After changing config file, you have to restart ruby application to see effect.

6.3. Instrumentation environment variable

If you prefer using environment variable for config changes, you can setup instrumentation of custom methods in the same way as via vonfig file.
First you have to export environment variable that will enable this module:

```
export ONESDK_CUSTOM_INSTRUMENTATION=true
```

Second step is environment variable that will list Classes/Models and methods to be instrumented:

```
export
ONESDK_METHODS="App::ApplcationHelper|full_title\\User|send_password_reset_ema
il\\User|send_activation_email\\User|authenticated?"
```

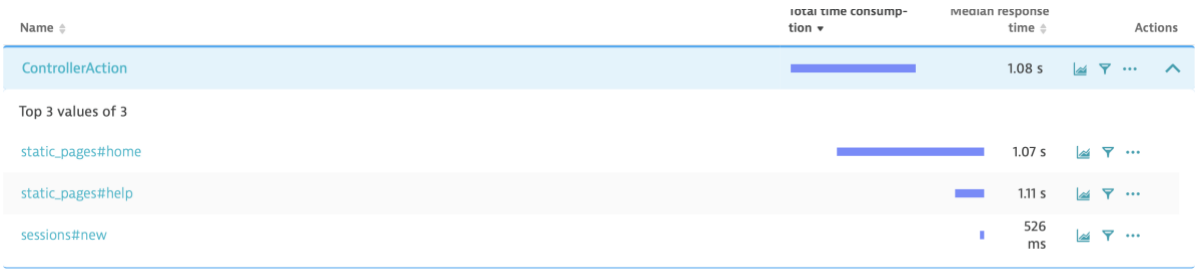
For this environment variable syntax is

“ModuleOrClass|actionOrMethos\\AnotherModuleOrClass|anotherActionOrMethod”. You can chain multiple configurations like that.

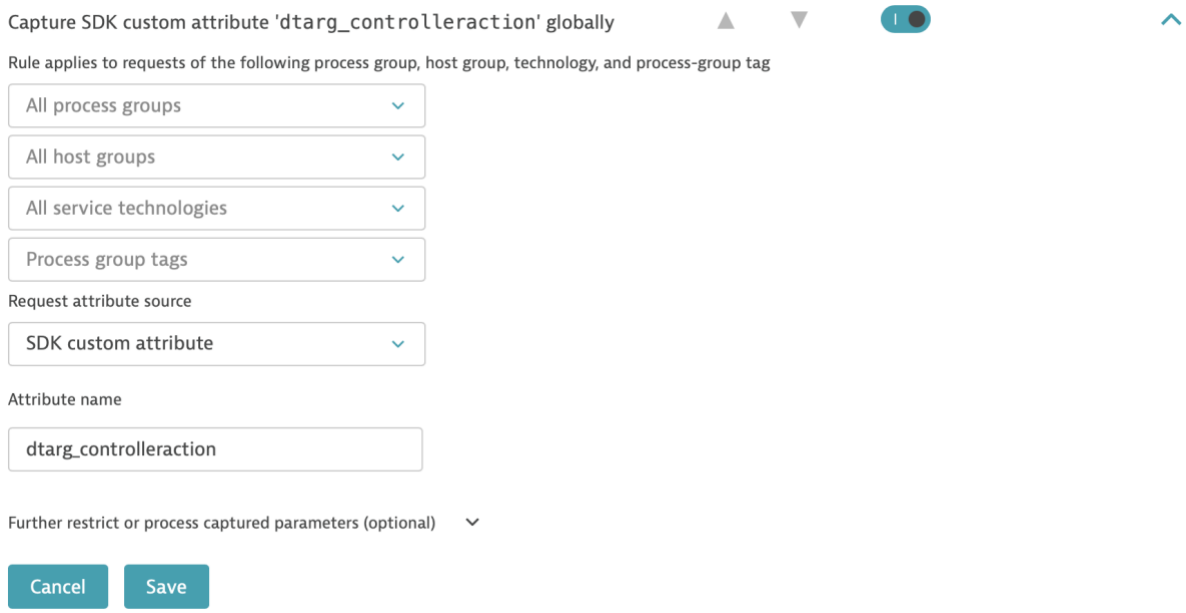
After you add environment variable, you have to restart ruby application to see effect.

6.4. Overwriting incoming WebRequest urls to controller#action naming

By default Dynatrace is naming WebRequests based on URL. This is how it works for all technologies. Ruby developers used to different approach that uses controller name and action. This is why we created Request Attribute that provides this information.



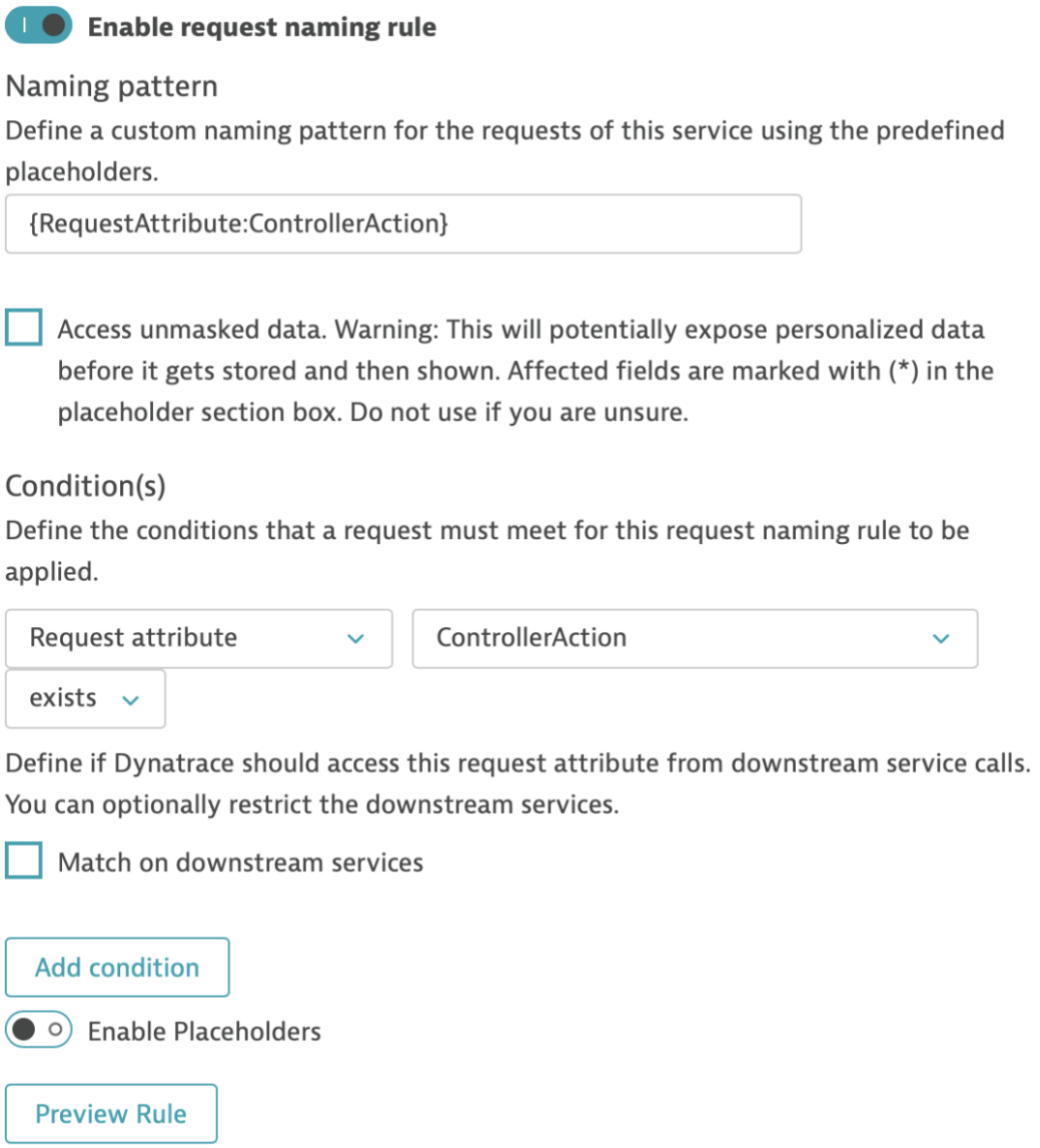
To make it work you need to create definition of request attribute in Dynatrace settings:



You can name this Request attribute as you like, important is to provide Attribute name filter as **`dtarg_controlleraction`**.

After that, new incoming web requests will be tagged. You can use request attribute for filtering and grouping transactions based on controller name and action. You can as well use it for changing original web request naming rule. To make so you need to create proper

Global Web Request naming rule or one in the service. As example here is rule used in service of your choice:

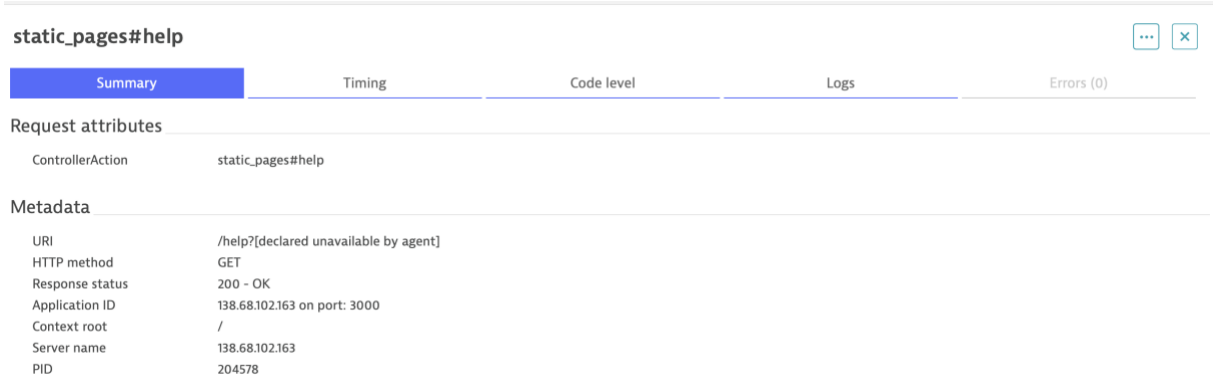


Where ControllerAction is name of created request attribute (can be different in your environment).

After that all new incoming web requests will be named based on controller#action rule (if those information's are available).

Oct 04 16:51:27.894	static_pages#home	364 ms	364 ms	GET	200
Oct 04 16:51:26.380	static_pages#help	1.11 s	1.11 s	GET	200
Oct 04 16:51:25.014	sessions#new	526 ms	526 ms	GET	200
Oct 04 16:51:23.997	static_pages#help	1.53 s	1.53 s	GET	200
Oct 04 16:51:22.148	static_pages#help	1.07 s	1.07 s	GET	200

Original information about url is still available in PurePath/trace.



7. Sample full YAML file content

```
---
debug: true
custom_instrumentation: true
methods:
  -
    class_module: User
    method: send_password_reset_email
  -
    class_module: User
    method: send_activation_email
  -
    class_module: User
    method: activate
  -
    class_module: User
    method: authenticated?
  -
    class_module: ApplicationHelper
    method: full_title
  -
    class_module: ApplicationHelper
    method: page_title
  -
    class_module: ApplicationHelper
    method: generate_page_title
metrics_ingest: true
pgi_id: PROCESS_GROUP_INSTANCE-9BE796BA4609E25F
```

8. Sample Environment Variable Config

```
ONESDK_DEBUG=true/false (default false)
ONESDK_METRICS_INGEST=true/false (default false)
ONESDK_CUSTOM_INSTRUMENTATION=true/false (default false)
ONESDK_METHODS="App::ApplcationHelper|full_title\\User|send_password_reset_email\\User|send_activation_email\
\User|authenticated?" (default empty)
```

9. EarlyAccess

Early access features are not tested well but should be working fine. By default, those features are disabled. In future releases this behavior will be changed to enable by default.

9.1. Kafka instrumentation (tested on ruby 2.5+)

Kafka instrumentation can be turned on by setting up environment variable **ONESDK_KAFKA_INSTRUMENTATION=true** or in config yaml by setting **kafka_instrumentation: true**

9.2. RabbitMQ (Bunny) instrumentation (tested on ruby 1.9+)

RabbitMQ (bunny) instrumentation can be turned on by setting up environment variable **ONESDK_RABBITMQ_INSTRUMENTATION=true** or in config yaml by setting **bunny_instrumentation: true**

9.3. Resque instrumentation (tested on ruby 1.9+)

Resque instrumentation can be turned on by setting up environment variable **ONESDK_RESQUE_INSTRUMENTATION=true** or in config yaml by setting **resque_instrumentation: true**

9.4. Sneakers instrumentation (tested on ruby 2.1+)

Sneakers instrumentation can be turned on by setting up environment variable **ONESDK_SNEAKERS_INSTRUMENTATION=true** or in config yaml by setting **sneakers_instrumentation: true**

Sneakers instrumentation provide automatic injection of tracing into worker classes. Using rake and Rails is mandatory to make instrumentation work.

9.1. Delayed Jobs instrumentation (tested on ruby 2.1+)

Delayed Jobs instrumentation can be turned on by setting up environment variable **ONESDK_DELAYED_JOB_INSTRUMENTATION=true** or in config yaml by setting **delayed_job_instrumentation: true**

9.2. Memcached instrumentation (tested on ruby 2.1+)

Memcached (Dalli) instrumentation can be turned on by setting up environment variable **ONESDK_MEMCACHED_INSTRUMENTATION=true** or in config yaml by setting **memcached_instrumentation: true**

9.3. ActionView Subscriber instrumentation (tested on ruby 2.1+)

ActionView Subscriber instrumentation can be turned on by setting up environment variable **ONESDK_ACTIONVIEW_INSTRUMENTATION=true** or in config yaml by setting **actionview_instrumentation: true**

Enabling ActionView subscriber will disable original view instrumentation.

9.4. Automatic Log / Trace correlation for Log Monitoring + Grail integration

Thanks to update of OneAgent SDK for C our agent now has implement of correlation between traces and logs entries. It works right now for default logger and Logger Formatter. To make it work you need enable log monitoring and log collection for your ruby process. You should use Dynatrace Documentation for this task.

After that you need enable environment variable:

ONESDK_LOGGER_INSTRUMENTATION=true

After that, logs collected in context of PurePath should be visible in your trace log tab.

If you don’t want to connect all collected logs to trace, you can define max log severity that will be picked for that. To make it work you need to add another environment variable:

ONESDK_MAX_LOG_SEVERITY=<SEVERITY_LEVEL>

Available log severities: DEBUG, INFO, WARN, FATAL, ERROR, UNKNOWN.

If you set for example FATAL severity, all logs that are maximum on that level will be connected to trace.

9.5. Manual Log / Trace correlation for Log Monitoring + Grail integration

If you are using custom LogFormatter, for example for JSON logging, you still can have advantages of trace / log correlation but it will need slightly changes into formatter code.

```
require "onesdk"

#We need to collect process group instance ID from agent config
pgi_id = ""
if $config && $config.key?("pgi_id")
      pgi_id = $config["pgi_id"]
end

#We need to collect spanid and traceid from tracer
spanid = Onesdk.onesdk_tracecontext_get_current_spanid()
traceid = Onesdk.onesdk_tracecontext_get_current_traceid()

#We need to check if for this log entry there is active tracer
if pgi_id != nil && spanid != "0000000000000000" && traceid !=
"00000000000000000000000000000000"

<here you need add pgi_id, trace_id and span_id to your log
according to Dynatrace documentation>

end
```

Documentation that presents how pgi_id,trace_id and span_id ingestion should looks like is available here: Link to documentation