



# Relabeling

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- <https://github.com/grafana/grafonnet-lib>





Inuits

State		Labels
UP		<div>ad="litora" adipiscing="elit" aliquam="quis" amet="consectetur" blandit="lorem" class="aptent" consectetur="adipiscing" conubia="dictum="turpis" dolor="sit" donec="pulvinar" efficitur="congue"="mi" elit="duis" ex="malesuada" faucibus="eget" finibus="quam"="sem" fusce="vulputate" hac="habitasse" hendrerit="purus" himenae="suspendisse" id="ornare" instance="127.0.0.1:9090" Integer="imperdiet"="interdum="sit" ipsum="dolor" lacinia="ante" lacus="sed" laoreet="arcu"ligula="convallis" lorem="ipsum" magna="diam" malesuada="fusce" met="us="sed" molestie="sit" mollis="accumsan" nam="vestibulum" nec="risus"="nibh="in" nisi="luctus" pellentesque="risus" per="inceptos" placerat="vitae" platea="dictumst" posuere="blandit" pretium="justo" quisque="dapibus" sagittis="viverra" sed="eleifend" sit="amet" taciti="sociosqu" tellus="elit" torquent="per" tortor="at" urna="scelerisque" ut="sollicitudin" velit="quis" volutpat="morbi"</div>
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# Labels



A metric is identified by:

- its name
- key/value pairs (labels)

```
haproxy_http_responses_total{  
  backend="circuit",  
  code="1xx",  
  env="acc",  
  instance="proxacc01",  
  job="haproxy",  
}
```



# Metric names are labels

```
{  
  __name__="haproxy_http_responses_total",  
  backend="circuit",  
  code="1xx",  
  env="acc",  
  instance="proxacc01",  
  job="haproxy",  
}
```



**Because they are labels we can get an idea of the cardinality:**

```
topk(  
  10,  
  count({job="prometheus"}) by (___name___)  
)
```



# Prometheus adds labels at scrape time

```
haproxy_http_responses_total{
  backend="circuit",
  code="1xx",
  env="acc",
  instance="proxacc01",
  job="haproxy",
}
```

haproxy (1/1 up) [show less](#)

Endpoint	State	Labels
<a href="http://172.21.1.26:45008/metrics">http://172.21.1.26:45008/metrics</a>	UP	Instance="proxacc01"



# Where is the concept of "label" used?

- Before scraping targets ; prometheus uses some labels as configuration
- When scraping targets, prometheus will fetch labels of metrics and add its own
- After scraping, before registering metrics, labels can be altered
- With recording rules



## But also ...

- On the federation endpoint Prometheus can add labels
- When sending alerts we can alter alerts labels



# There are "hidden" labels

Labels that start with `__` are for internal use.

Some are added by Service Discovery (`__meta`), and `__tmp` prefix can be used by users.

12/metrics	UP	env="monit" instance="nlp-prometheu	29.141s ago
<b>Before relabeling:</b> __address__="172.21.1.26:45008" __meta_filepath="/etc/prometheus/prometheus.d/haproxy_proxacc01.yml" __metrics_path__="/metrics" __scheme__="http" instance="proxacc01" job="haproxy"			
show less	Labels		
metrics	UP	instance="proxacc01"	Last Scrap 1.34s ago



# Example: kube pod

```
__meta_kubernetes_namespace  
__meta_kubernetes_pod_name  
__meta_kubernetes_pod_ip  
__meta_kubernetes_pod_label_labelname  
__meta_kubernetes_pod_annotation_annotationname  
__meta_kubernetes_pod_container_name  
__meta_kubernetes_pod_container_port_name  
__meta_kubernetes_pod_container_port_number
```

.. and more

Source: Prometheus documentation



# Relabeling

Relabeling means mutating labels. Adding, removing, changing them.

There is one golden rule: *After relabeling, metrics must be unique.*



# Regex

- Prometheus uses RE2 regular expression
- They are anchored: `bar` regex will not match `foobar`
- Unanchor with `.*bar.*`
- You can use capture groups: `(.*)bar` used against `foobar` will create a variable `$1` whose value is `foo`

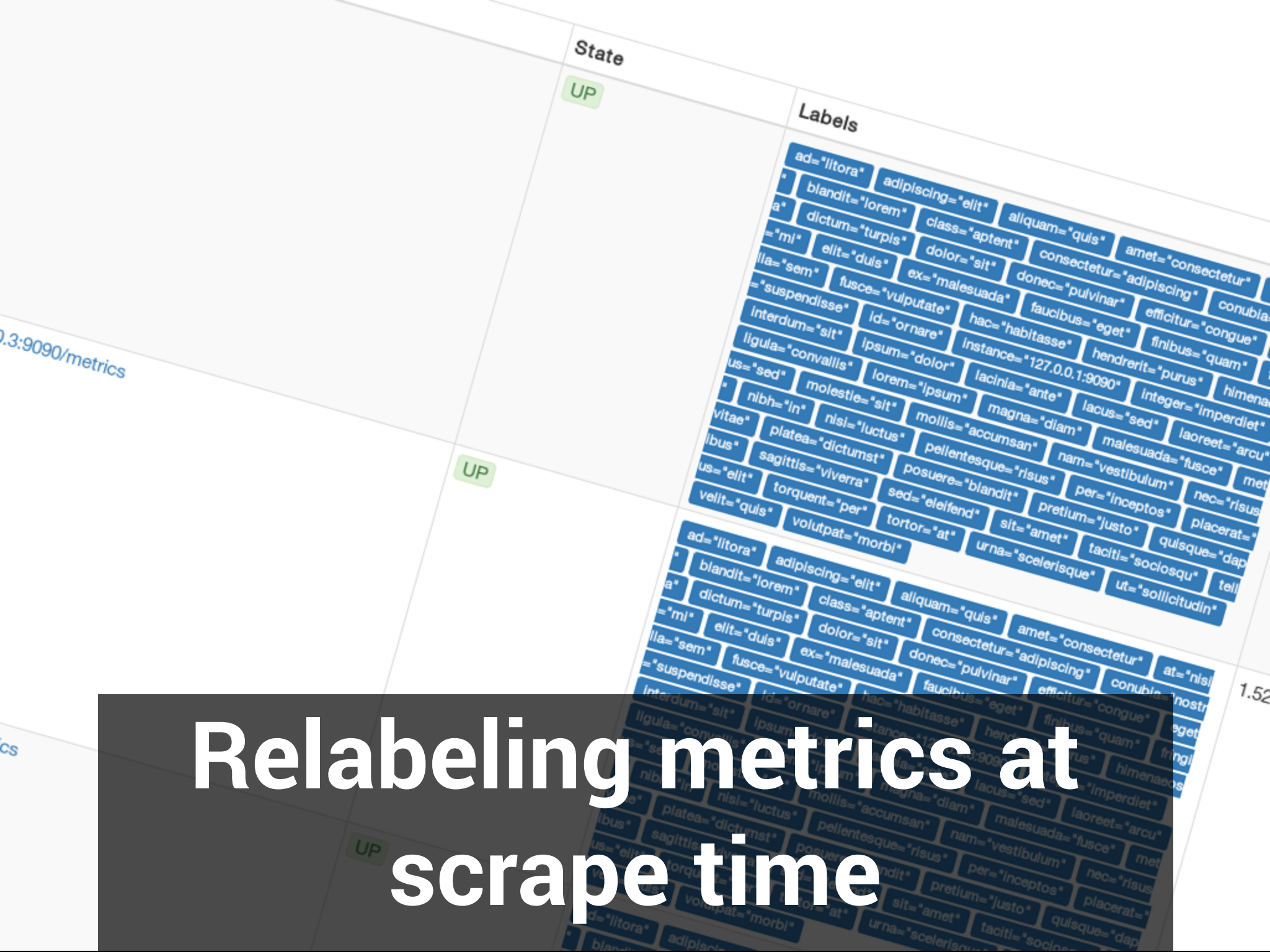


# Regex examples

- `prom|alert` **will match** `prom` **and** `alert`
- `201[78]` **will match** `2017` **and** `2018`
- `promcon(20.+)` **will match** `promcon2020` ,  
`promcon20xx` ,... **and for**  
`promcon2018` , `$1` **will be** `2018`



# Relabeling metrics at scrape time





```
scrape_configs:  
- job_name: sql  
  targets: [172.21.132.39:41212]  
  metric_relabel_configs: []
```



# Renaming metrics

```
scrape_configs:  
- job_name: sql  
  targets: [172.21.132.39:41212]  
  metric_relabel_configs:  
  - source_labels: ['prometheus_metric_name']  
    target_label: '__name__'  
    regex: '(.*)[_]*'  
    replacement: '${1}'  
  - regex: prometheus_metric_name  
    action: labeldrop
```



# Turns

```
query_result_dm_os_performance_counters{  
  counter_instance="ex01",  
  counter_name="log file(s) size (kb)",  
  prometheus_metric_name="sqlserver_databases",  
}
```

# into

```
sqlserver_databases{  
  counter_instance="ex01",  
  counter_name="log file(s) size (kb)",  
}
```



# Extracting labels

- target\_label: 'partner'  
replacement: '\$1'  
source\_labels: ['\_\_name\_\_', 'backend']  
regex: 'haproxy\_.+; (.+) : (.+) : (.+) : (.+) '
- target\_label: 'partner\_env'  
replacement: '\$2'  
source\_labels: ['\_\_name\_\_', 'backend']  
regex: 'haproxy\_.+; (.+) : (.+) : (.+) : (.+) '



# Extracting labels

- target\_label: 'partner'  
replacement: '\$1'  
source\_labels: ['\_\_name\_\_', 'backend']  
regex: 'haproxy\_.+; (.+) : (.+) : (.+) : (.+) '
- target\_label: 'partner\_env'  
replacement: '\$2'  
source\_labels: ['\_\_name\_\_', 'backend']  
regex: 'haproxy\_.+; (.+) : (.+) : (.+) : (.+) '



# Extracting labels

- target\_label: 'partner'  
replacement: '\$1'  
source\_labels: ['\_\_name\_\_', '**backend**']  
regex: 'haproxy\_.+; (.+) : (.+) : (.+) : (.+) '
- target\_label: 'partner\_env'  
replacement: '\$2'  
source\_labels: ['\_\_name\_\_', 'backend']  
regex: 'haproxy\_.+; (.+) : (.+) : (.+) : (.+) '



# Turns

```
haproxy_backend_bytes_in_total{  
  backend="example:acc:services:medium",  
  instance="proxprd52",  
  job="haproxy"  
}
```

## into

```
haproxy_backend_bytes_in_total{  
  backend="example:acc:services:medium",  
  instance="proxprd52",  
  job="haproxy",  
  partner="example",  
  partner_env="acc",  
}
```



# ~~Be GDPR compliant~~ Drop metrics

- source\_labels: ['\_\_name\_\_']  
regex: jira\_user\_login\_count  
**action: drop**
- source\_labels: ['\_\_name\_\_']  
regex: jira\_dashboard\_view\_count  
**action: drop**
- source\_labels: ['\_\_name\_\_']  
regex: jira\_issue\_update\_count  
**action: drop**



scrape\_samples\_scraped

-

scrape\_samples\_post\_metric\_relabeling



Relabeling scrape configuration



# Reusing targets

- Use case: Using the blackbox exporter against a ssl enabled target to check its certificates



# The initial job

```
- job_name: traefik
  file_sd_configs:
    - files:
        - /etc/prometheus/traefik_*.yaml
  metrics_path: '/traefik/metrics'
  scheme: https
```

Now we would like to reuse the same file for mutualssl



# The second job

```
- job_name: traefik
  file_sd_configs:
    - files:
        - /etc/prometheus/traefik*.yml
  metrics_path: '/traefik/metrics'
  scheme: https
- job: traefik_blackbox
  files:
    - /etc/prometheus/traefik*.yml
  metrics_path: '/probe'
  relabel_configs:
    - source_labels: [__address__]
      replacement: 'https://$1/traefik/health'
      target_label: __param_target
    - replacement: http_2xx
      target_label: __param_module
    - replacement: '172.21.16.21:9115'
      target_label: __address__
```



# Adding a parameter to the scrape configuration

```
- source_labels: [__address__]  
  replacement: 'https://$1/traefik/health'  
  target_label: __param_target
```

*?target=https://{original\_address}/traefik/health* will  
be added upon scrape



# Adding a parameter to the scrape configuration

```
- replacement: http_2xx  
  target_label: __param_module
```

It is equivalent to

```
- job_name: traefik_blackbox  
  params:  
    module: [http_2xx]
```



# Adding a parameter to the scrape configuration

```
- replacement: '172.21.16.21:9115'  
  target_label: __address__
```

will change the scrape address to fixed value  
172.21.16.21:9115



# Result

Initial address before relabelling:

<http://172.31.22.3:9100/probe>

---

After relabelling:

<http://172.21.16.21:9115/probe?>

[module=http\\_2xx&target=https://172.31.22.3:9100/traefik/health](http://172.21.16.21:9115/probe?module=http_2xx&target=https://172.31.22.3:9100/traefik/health)

From the same service discovery source!



# Dropping targets

A unique way to spread the load between multiple prometheus servers

```
relabel_configs:  
- source_labels: [__address__]  
  regex: '.*[02468]:.*'  
  action: drop
```

And on the second server

```
relabel_configs:  
- source_labels: [__address__]  
  regex: '.*[02468]:.*'  
  action: keep
```



State		Labels
UP		ad="litora" adipiscing="elit" aliquam="quis" amet="consectetur" blandit="lorem" class="aptent" consectetur="adipiscing" conubia="dictum="turpis" dolor="sit" donec="pulvinar" efficitur="congue" dictum="turpis" elit="duis" ex="malesuada" faucibus="eget" finibus="quam" = "mi" fusce="vulputate" hac="habitasse" hendrerit="purus" himenaeus="sem" id="ornare" instance="127.0.0.1:9090" Integer="imperdiet" illa="suspendisse" ipsum="dolor" lacinia="ante" lacus="sed" laoreet="arcu" = "suspendisse" id="ornare" ipsum="dolor" lacinia="ante" lacus="sed" laoreet="arcu" interdum="sit" lorem="ipsum" mollis="accumsan" nam="vestibulum" nec="risus" ligula="convallis" molestie="sit" pellentesque="risus" per="inceptos" placerat="us="sed" nibh="in" nisi="luctus" posuere="blandit" pretium="justo" quisque="dap" = "sed" nibh="in" nisi="luctus" posuere="blandit" pretium="justo" quisque="dap" nibh="in" nisi="luctus" posuere="blandit" pretium="justo" quisque="dap" platea="dictumst" sagittis="viverra" sed="eleifend" sit="amet" taciti="sociosqu" tellus="elit" torquent="per" tortor="at" urna="scelerisque" ut="sollicitudin" velit="quis" volutpat="morbi"
	UP	ad="litora" adipiscing="elit" aliquam="quis" amet="consectetur" blandit="lorem" class="aptent" consectetur="adipiscing" conubia="dictum="turpis" dolor="sit" donec="pulvinar" efficitur="congue" dictum="turpis" elit="duis" ex="malesuada" faucibus="eget" finibus="quam" = "mi" fusce="vulputate" hac="habitasse" hendrerit="purus" himenaeus="sem" id="ornare" instance="127.0.0.3:9090" Integer="imperdiet" illa="suspendisse" ipsum="dolor" lacinia="ante" lacus="sed" laoreet="arcu" = "suspendisse" id="ornare" ipsum="dolor" lacinia="ante" lacus="sed" laoreet="arcu" interdum="sit" lorem="ipsum" mollis="accumsan" nam="vestibulum" nec="risus" ligula="convallis" molestie="sit" pellentesque="risus" per="inceptos" placerat="us="sed" nibh="in" nisi="luctus" posuere="blandit" pretium="justo" quisque="dap" = "sed" nibh="in" nisi="luctus" posuere="blandit" pretium="justo" quisque="dap" nibh="in" nisi="luctus" posuere="blandit" pretium="justo" quisque="dap" platea="dictumst" sagittis="viverra" sed="eleifend" sit="amet" taciti="sociosqu" tellus="elit" torquent="per" tortor="at" urna="scelerisque" ut="sollicitudin" velit="quis" volutpat="morbi"
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# Alerts



# Alerts relabels

```
global:  
  external_labels:  
    prometheus_server: prom01
```

**Adds** {prometheus\_server="prom01"} to "exporter metrics" (federation, alerts, remote write)



# Relabeling the external labels

```
alerting:  
  alert_relabel_configs:  
    - source_labels: [prometheus_server]  
      target_label: prometheus_server  
      replacement: promdc1
```



# Adding default labels to alerts

```
alerting:  
  alert_relabel_configs:  
    - source_labels: [priority]  
      target_label: priority  
      regex: '()'  
      replacement: P1
```



# Remote Write



# Select which metrics to keep

```
remote_write:  
- url: http://localhost:8080/prometheus  
  write_relabel_configs:  
  - source_labels: [__name__]  
    regex: 'job:.*'  
    action: keep
```



State		Labels
UP		ad="litora" adipiscing="elit" aliquam="quis" amet="consectetur" blandit="lorem" class="aptent" consectetur="adipiscing" conubia="dictum="turpis" dolor="sit" donec="pulvinar" efficitur="congue"="mi" elit="duis" ex="malesuada" faucibus="eget" finibus="quam"="sem" fusce="vulputate" hac="habitasse" hendrerit="purus" himenaeus="suspendisse" id="ornare" instance="127.0.0.1:9090" Integer="imperdiet"="interdum="sit" ipsum="dolor" lacinia="ante" lacus="sed" laoreet="arcu"ligula="convallis" lorem="ipsum" magna="diam" malesuada="fusce" metus="sed" molestie="sit" mollis="accumsan" nam="vestibulum" nec="risus"="nibh="in" nisi="luctus" pellentesque="risus" per="inceptos" placerat="vitae" platea="dictumst" posuere="blandit" pretium="justo" quisque="dapibus" sagittis="viverra" sed="eleifend" sit="amet" taciti="sociosqu" tellus="elit" torquent="per" tortor="at" urna="scelerisque" ut="sollicitudin"velit="quis" volutpat="morbi"
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# Conclusion



# Final words

- Relabeling is unique to prometheus
- Gives you power over configuration
- Allows filtering/modification of metrics **and** configs
- More than just altering labels: dropping metrics, adding labels, ...



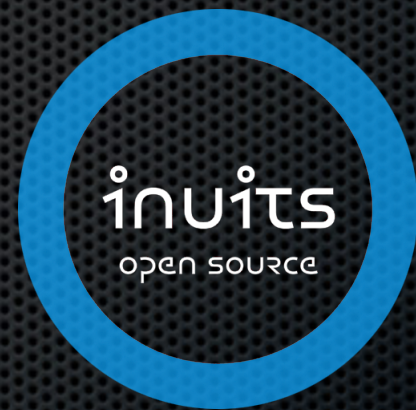
# Contact



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