

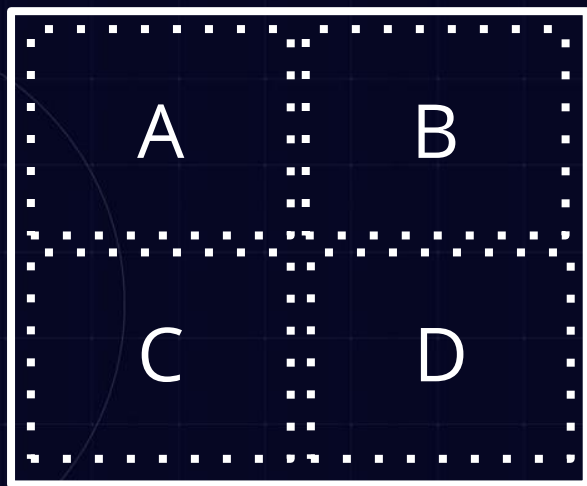


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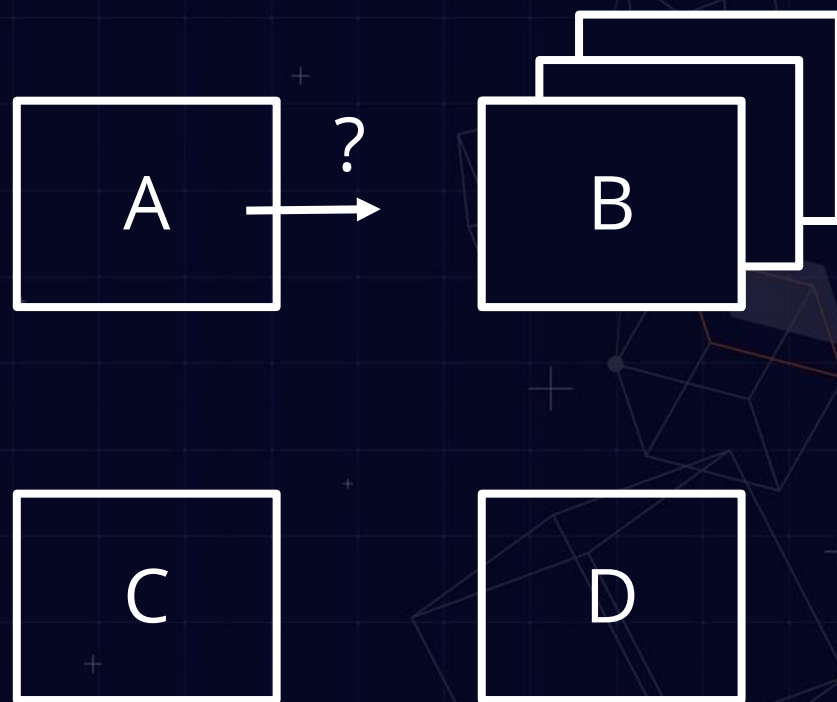
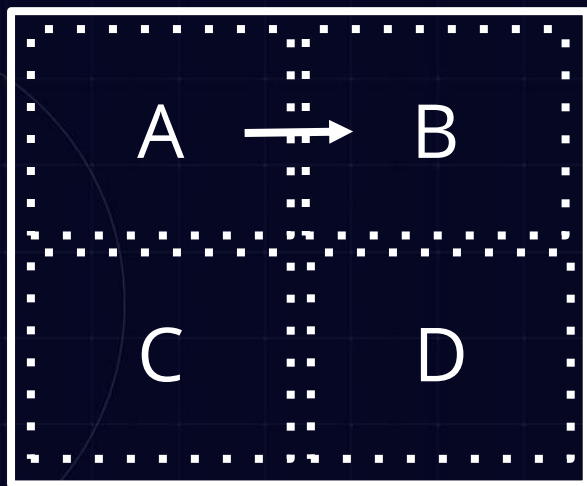
Consul для масштабирования и настройки Asterisk



Введение

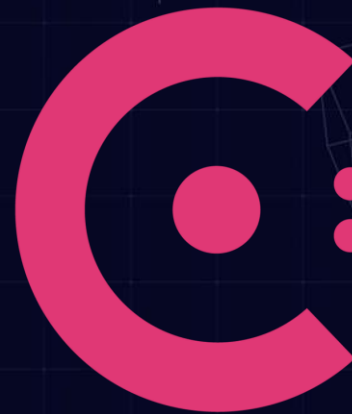


Введение



Введение

- Высокодоступное решение для объединения и настройки приложений в динамической распределенной инфраструктуре.
- <https://www.consul.io/>
- Официальный релиз: 17 апреля 2014
- Open Source: MPL-2.0
- Есть Cloud и Enterprise версии



HashiCorp

Consul

Ключевые возможности

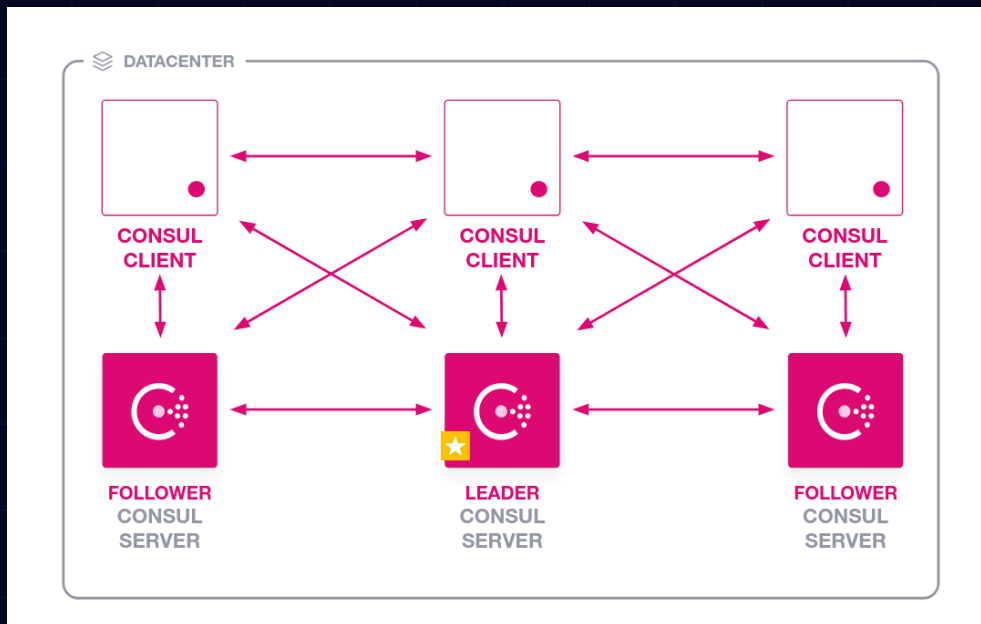


- Service discovery
- Health checking
- K/V Store
- Secure service communication
- Multi datacenter



Архитектура

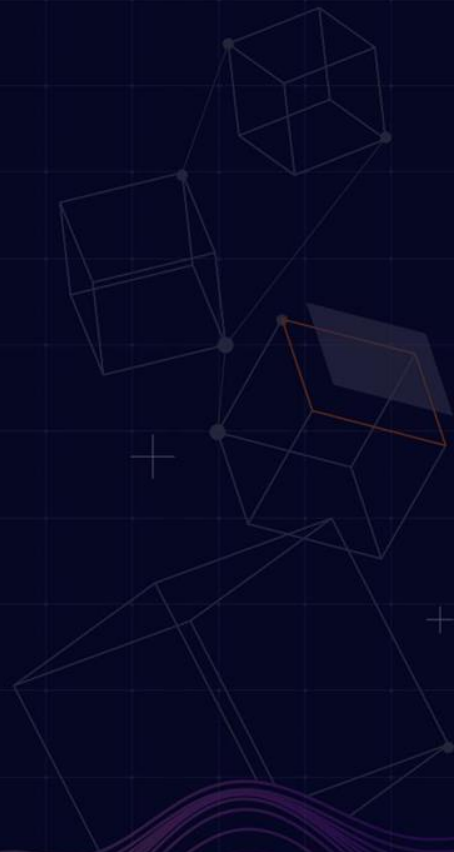
- Агент
- Клиент
- Сервер
- Лидер



Установка



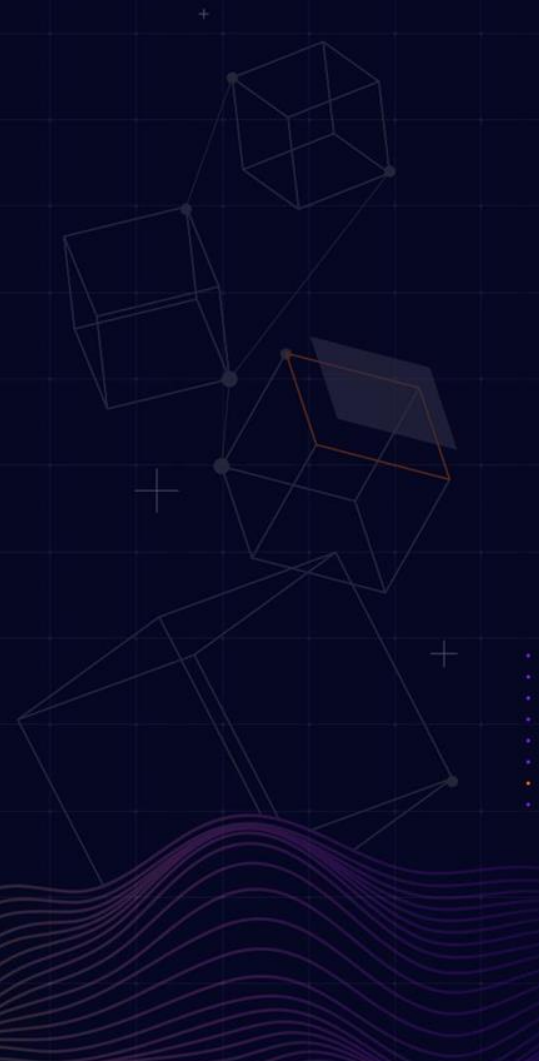
- Бинарные файлы под все ос и архитектуры
- Есть официальные DEB/RPM репозитории
- Самостоятельная сборка из исходников



Регистрация сервисов



- Конфигурационный файл Агента
- HTTP API



Конфигурационный файл

```
/etc/consul.d/asterisk-http.json
```

```
{  
  "service": {  
    "name": "asterisk-http",  
    "port": 8088  
    "checks": [{  
      "http": "http://127.0.0.1:8088/",  
      "interval": "15s"  
    }]  
  }  
}
```



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HTTP API



reg.json

```
{  
  "Name": "asterisk-sip",  
  "Port": 5060,  
  "Address": "192.168.0.1",  
  "Tags": ["legacy"],  
  "Meta": {  
    "version": "1.4"  
  }  
}
```

```
$ curl -X PUT -d @reg.json http://localhost:8500/agent/service/register
```

Обнаружение сервисов



- DNS API
- HTTP API



Discovery DNS API



- [`<tag>`].`<service>`.`service`[.`<datacenter>`].`<domain>`
`$ dig @127.0.0.1 -p 8600 asterisk-sip.service.consul`

;; ANSWER SECTION:

asterisk-sip.service.consul. 0 IN A 192.168.0.1
asterisk-sip.service.consul. 0 IN A 192.168.0.2
- Форвард в `systemd-resolved/BIND/dnsmasq/...`



Discovery HTTP API



```
$ curl http://localhost:8500/v1/catalog/service/asterisk-sip
```

```
[  
  {  
    "ModifyIndex": 4,  
    "CreateIndex": 1,  
    "Node": "srv01",  
    "Address": "192.168.0.1",  
    "ServiceID": "9a18d0a0-6b5f-4b2e-b8f5-afbdb525ec3a",  
    "ServiceName": "asterisk-sip",  
    "ServiceTags": ["legacy"],  
    "ServiceAddress": "192.168.0.1",  
    "ServicePort": 5060,  
  }  
]
```



Key/Value хранилище



- CLI API
- HTTP API



Key/Value CLI API



```
$ consul kv put config/curl/conntimeout 1
```

```
$ consul kv put config/curl/dnstimeout 2
```

```
$ consul kv get config/curl/conntimeout
```

```
1
```

```
$ consul kv delete config/curl
```

HTTP API



```
$ curl -X PUT -d 'bar' http://localhost:8500/v1/kv/foo  
true
```

```
$ curl 'http://localhost:8500/v1/kv/foo?raw'  
bar
```

Consul UI



The screenshot shows a web browser window with the URL `localhost:8500/ui/dc1/nodes`. The page title is "Nodes - Consul". The left sidebar contains a navigation menu with the following items: Overview, Services, Nodes (highlighted), Key/Value, Intentions, ACCESS CONTROLS (with a red dot), Tokens, Policies, Roles, and Auth Methods. The main content area is titled "Nodes 1 total" and features a search bar, a "Search Across" dropdown, and a "Health Status" filter set to "Unhealthy to Healthy". A single node is listed: **MSK-C02G945ZMD6R.local**, which is marked as a "Leader" (star icon), has "1 Service", and IP address "127.0.0.1". The footer of the page indicates "Consul v1.13.0".

Модуль для Asterisk



- <https://github.com/sboily/asterisk-consul-module>
- Sylvain Boily, XiVO/Wazo founder
- 10 forks, 26 stars
- 30 Сентября 2015



Установка



- \$ make
- \$ make install
- \$make samples
- Есть дебианизация
- CLI> modules load res_discovery_consul.so



Настройка

```
/etc/asterisk/res_discovery_consul.conf
```

```
[consul]
id=auto           ;set id or auto to generate it, or asterisk to use the asterisk
ID
name=asterisk
host=127.0.0.1
port=8500
token=***
tags=test
discovery_ip=auto ;set ip or auto to discovery the ip
discovery_interface=eth0 ;only use if discovery_ip is auto
discovery_port=5060
check=true
check_http_port=8088
```



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CLI



- CLI> discovery set maintenance on
- CLI> discovery set maintenance off



Результат



- Можем находить живые инстансы и балансировать между ними
 - `asterisk.service.consul`
- Можем фильтровать инстансы конкретного типа (по тегам)
 - `tag.asterisk.service.consul`
- Можем выводить из эксплуатации без обрыва звонков

Consul Template



- <https://github.com/hashicorp/consul-template>
- Следит за изменениями в consul
- Формирует файл на основе шаблона и данных из Consul
- Выполняет команду для применения изменений



Балансировка SIP



```
template {  
    source = "/etc/kamailio/dispatcher.list.ctmpl"  
    destination = "/etc/kamailio/dispatcher.list"  
    command = "kamcmd dispatcher.reload"  
}
```

Балансировка SIP

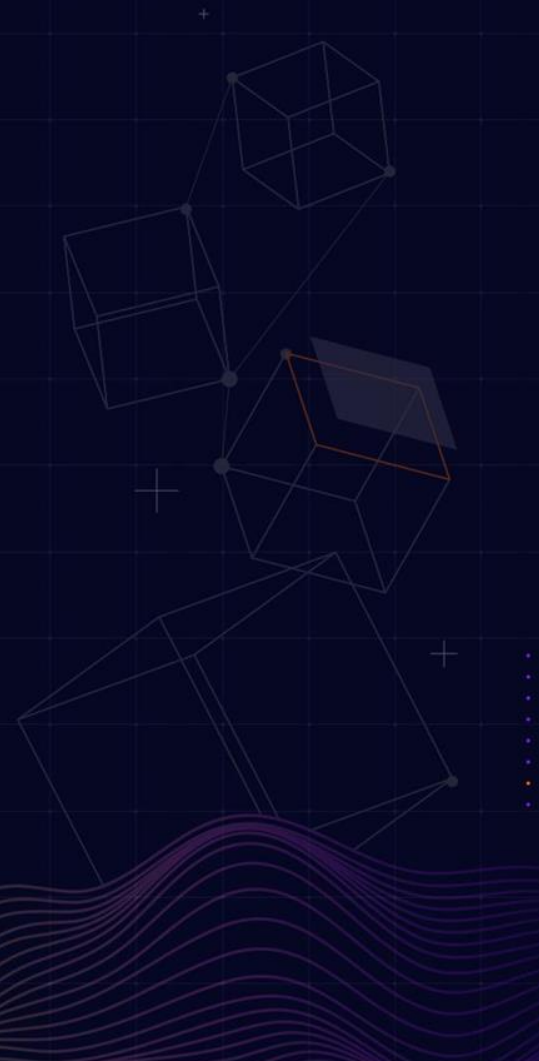


```
/etc/kamailio/dispatcher.list.ctmpl
```

```
{{range service "asterisk"}}
```

```
1 sip:{{.Address}}:{{.Port}}
```

```
{{end}}
```



Балансировка SIP

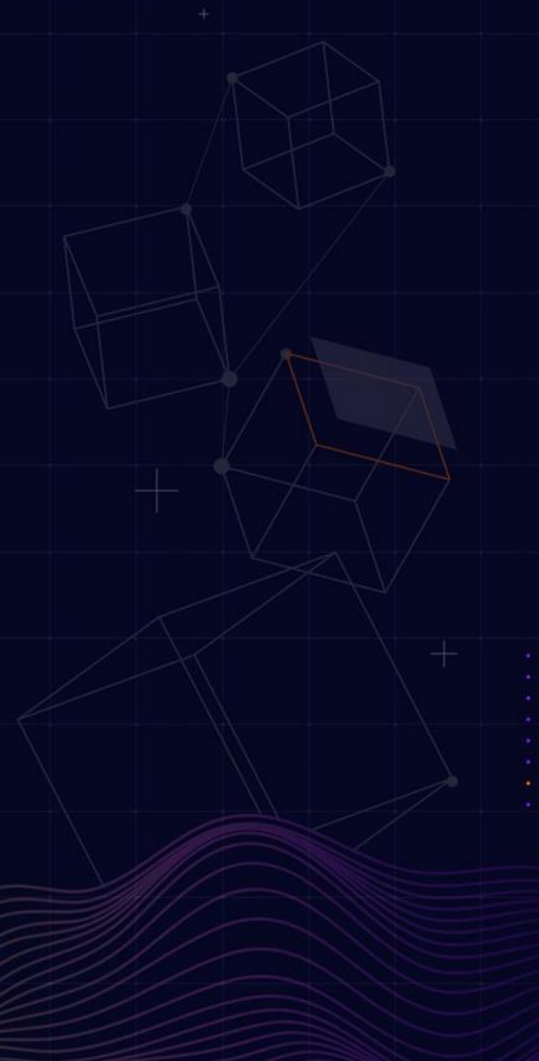


```
/etc/kamailio/dispatcher.list
```

```
1 sip:192.168.0.1:5060
```

```
1 sip:192.168.0.2:5060
```

```
1 sip:192.168.0.3:5060
```



SIP пирь соседей

```
/etc/asterisk/sip.conf
```

```
[neighbour](!  
type=peer  
context=from-neighbours  
...  
#include=/etc/asterisk/sip-consul.conf
```

```
template {  
source = "/etc/asterisk/sip-consul.conf.ctmpl"  
destination = "/etc/asterisk/sip-consul.conf"  
command = "asterisk -rx 'sip reload'"
```

```
}
```

SIP пирь соседей

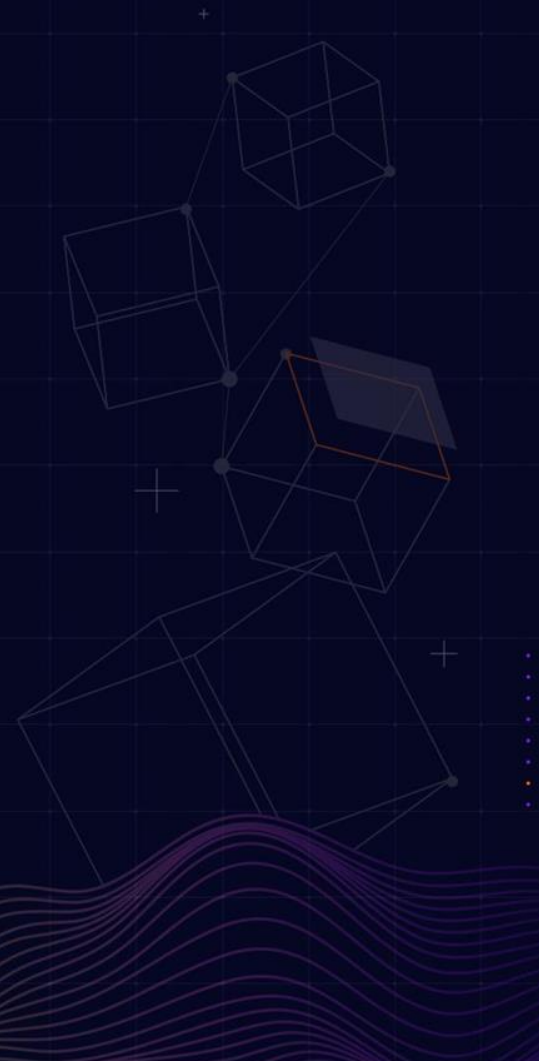


```
/etc/asterisk/sip.conf
```

```
...
```

```
#include=/etc/asterisk/sip-consul.conf
```

```
template {  
  source = "/etc/asterisk/sip-consul.conf.ctmpl"  
  destination = "/etc/asterisk/sip-consul.conf"  
  command = "asterisk -rx 'sip reload'"  
}
```



SIP пиры соседей



```
{{range $ast := service "asterisk"}}  
[{{$ast.Name}}{{$ast.ID}}]  
type=peer  
host={{$ast.Address}}  
port={{$ast.Port}}  
...  
{{end}}
```

```
[asterisk-395c63f3]  
type=peer  
host=192.168.0.1  
port=5060  
...  
[asterisk-cce6aaf5]  
type=peer  
host=192.168.0.2  
port=5060  
...
```

SIP пиры соседей



```
{{range $ast := service "asterisk"}}
[{{$ast.Name}}{{$ast.ID}}]
type=peer
host={{$ast.Address}}
port={{$ast.Port}}
{{ if $ast.Tags | contains "legacy" }}
dtmfmode=inband
{{ end }}
{{ end }}
```

```
[asterisk-395c63f3]
type=peer
host=192.168.0.1
port=5060
dtmfmode=inband
...
[asterisk-cce6aaf5]
type=peer
host=192.168.0.2
port=5060
...
```



SIP пиры соседей



```
{{ with node }}
```

```
{{range $ast := service "asterisk"}}
```

```
{{ if not eq .Node.Address $ast.Address }}
```

```
[[{$ast.Name}]]{{{$ast.ID}}]
```

```
host={{$ast.Address}}
```

```
port={{$ast.Port}}
```

```
...
```

```
{{end}}
```

```
{{end}}
```

```
{{end}}
```

```
[asterisk-cce6aaf5]
```

```
type=peer
```

```
host=192.168.0.2
```

```
port=5060
```

```
...
```

Любые другие настройки



```
$ consul kv put mnp/url http://num.voxlink.ru/get/
```

```
/etc/asterisk/extensions-consul.ctmpl  
[globals]  
MNP_URL={{ key "mnp/url" }}
```

```
/etc/asterisk/extensions-consul.conf  
[globals]  
MNP_URL=http://num.voxlink.ru/get/
```

```
/etc/asterisk/extensions.conf  
#include /etc/asterisk/extensions-consul.conf
```

...

```
same => n,Set(CALLERID(name)=${CURL(${GLOBAL(MNP_URL)}?num=...)}))
```

...

Любые другие настройки

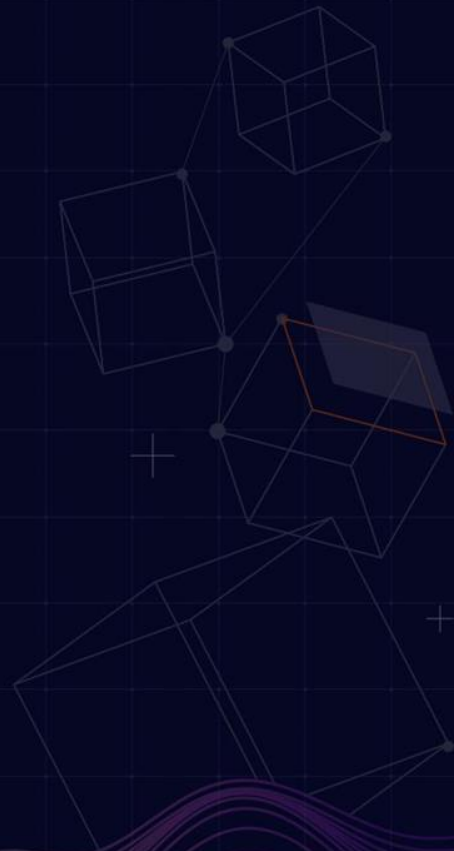
```
consul kv put dialplan/did/4959898533 100
consul kv put dialplan/did/8003337533 200
```

```
/etc/asterisk/extensions-consul.ctmpl
[external]
{{ range ls "dialplan/did/" }}
exten={{ .Key }},1,Goto(internal,{{ .Value }},1)
{{ end }}
```

```
/etc/asterisk/extensions-consul.conf
[external]
exten=4959898533,1,Goto(100,internal,1)
exten=8003337533,1,Goto(200,internal,1)
```



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Спасибо за внимание!

У кого-нибудь есть вопросы?

braams@braams.ru

<http://github.com/braams>

Пожалуйста, дайте оценку
моему докладу прямо сейчас



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