

Desafio DevOps Pleno – Infra as Code com Terraform

Autor: Renan Bonissoni

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Este PDF compila evidências das validações: Terraform, EC2, Nginx, App Node, Jenkins (opcional) e Datadog.

Infra via Terraform (plan/apply + backend remoto).

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

module.vpc.aws_subnet.public_a: Refreshing state... [id=subnet-06eea351e4a09263e]
module.vpc.aws_route_table.public: Refreshing state... [id=rtb-00b663cdd33878c92]
module.ec2.data.aws_subnet.sel: Reading...
module.vpc.aws_route_table.association.pub_assoc: Refreshing state... [id=rtbassoc-0170ab0e59c907900]
module.ec2.data.aws_subnet.sel: Read complete after 0s [id=subnet-06eea351e4a09263e]
module.ec2.aws_security_group.app_sg: Refreshing state... [id=sg-028b60e30783a9b81]
module.ec2.aws_instance.app: Refreshing state... [id=i-0bd550e50e0409e0e]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes are needed.
Acquiring state lock. This may take a few moments...
module.ec2.data.aws_ami.debian12: Reading...
module.vpc.aws_vpc.this: Refreshing state... [id=vpc-0d57505b7115ea66d]
module.ec2.data.aws_ami.debian12: Read complete after 1s [id=ami-0109c48272c1a1186]
module.vpc.aws_internet_gateway.this: Refreshing state... [id=igw-07190d9ff3bc80059]
module.vpc.aws_subnet.public_a: Refreshing state... [id=subnet-06eea351e4a09263e]
module.vpc.aws_route_table.public: Refreshing state... [id=rtb-00b663cdd33878c92]
module.ec2.data.aws_subnet.sel: Reading...
module.vpc.aws_route_table.association.pub_assoc: Refreshing state... [id=rtbassoc-0170ab0e59c907900]
module.ec2.data.aws_subnet.sel: Read complete after 0s [id=subnet-06eea351e4a09263e]
module.ec2.aws_security_group.app_sg: Refreshing state... [id=sg-028b60e30783a9b81]
module.ec2.aws_instance.app: Refreshing state... [id=i-0bd550e50e0409e0e]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes are needed.

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
```

Outputs da EC2 (IP/DNS/URL do Jenkins).

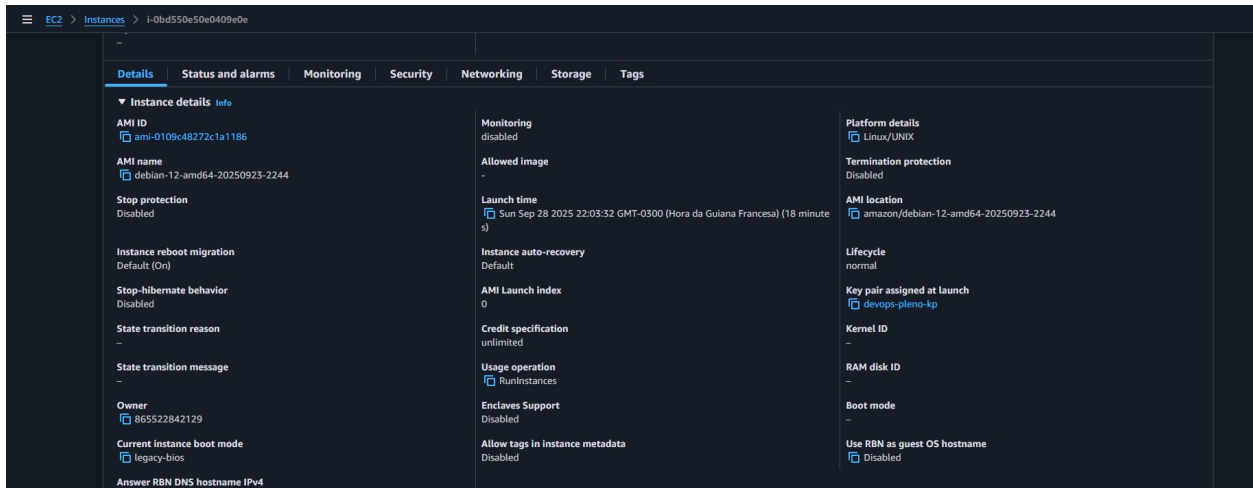
```
resource "aws_security_group" "app_sg" {
  name           = "${var.name}-sg"
  description    = "Allow SSH, HTTP, Jenkins"
  vpc_id        = data.aws_subnet.sel.vpc_id

  ingress {
    from_port     = 22
    to_port       = 22
    protocol      = "tcp"
    cidr_blocks   = ["0.0.0.0/0"]
  }

  ingress {
    from_port     = 80
    to_port       = 80
    protocol      = "tcp"
    cidr_blocks   = ["0.0.0.0/0"]
  }

  ingress {
    from_port     = 8080
    to_port       = 8080
    protocol      = "tcp"
    cidr_blocks   = ["0.0.0.0/0"]
  }
}
```

Detalhes da EC2 e SG.



Nginx válido (configuração ok).

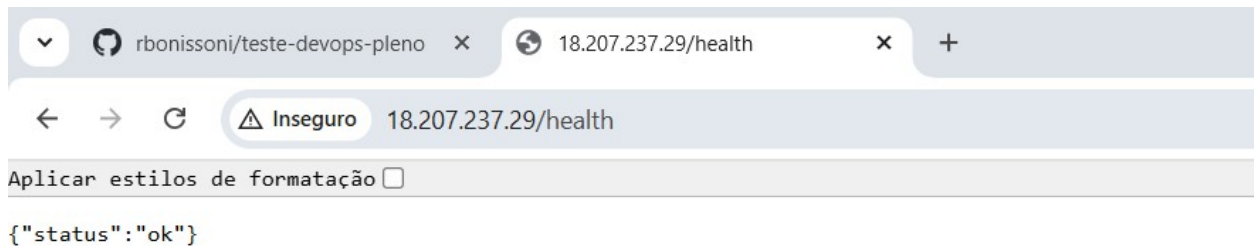
```
root@ip-10-30-1-115:/home/admin# sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
root@ip-10-30-1-115:/home/admin# sudo tail -n 50 /var/log/nginx/app_error.log
root@ip-10-30-1-115:/home/admin# sudo tail -n 50 /var/log/nginx/app_access.log
190.89.246.47 - - [29/Sep/2025:01:05:18 +0000] "GET / HTTP/1.1" 200 9 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:05:20 +0000] "GET / HTTP/1.1" 304 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:05:25 +0000] "GET / HTTP/1.1" 499 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:05:31 +0000] "GET / HTTP/1.1" 499 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:05:36 +0000] "GET / HTTP/1.1" 200 9 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
127.0.0.1 - - [29/Sep/2025:01:06:23 +0000] "GET /nginx_status HTTP/1.1" 200 98 "-" "curl/7.88.1"
190.89.246.47 - - [29/Sep/2025:01:06:29 +0000] "HEAD / HTTP/1.1" 200 0 "-" "curl/7.81.0"
190.89.246.47 - - [29/Sep/2025:01:06:39 +0000] "GET /health HTTP/1.1" 200 15 "-" "curl/7.81.0"
190.89.246.47 - - [29/Sep/2025:01:06:47 +0000] "GET / HTTP/1.1" 304 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:06:48 +0000] "GET / HTTP/1.1" 304 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:07:01 +0000] "GET / HTTP/1.1" 304 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
91.224.92.17 - - [29/Sep/2025:01:09:00 +0000] "GET / HTTP/1.1" 200 9 "-" "-"
190.89.246.47 - - [29/Sep/2025:01:09:22 +0000] "GET / HTTP/1.1" 304 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:09:32 +0000] "GET / HTTP/1.1" 304 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
190.89.246.47 - - [29/Sep/2025:01:09:34 +0000] "GET /health HTTP/1.1" 200 15 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/140.0.0.0 Safari/537.36"
```

App + Nginx: /health retornando 200.



OK - Home

App + Nginx: home do app 200.



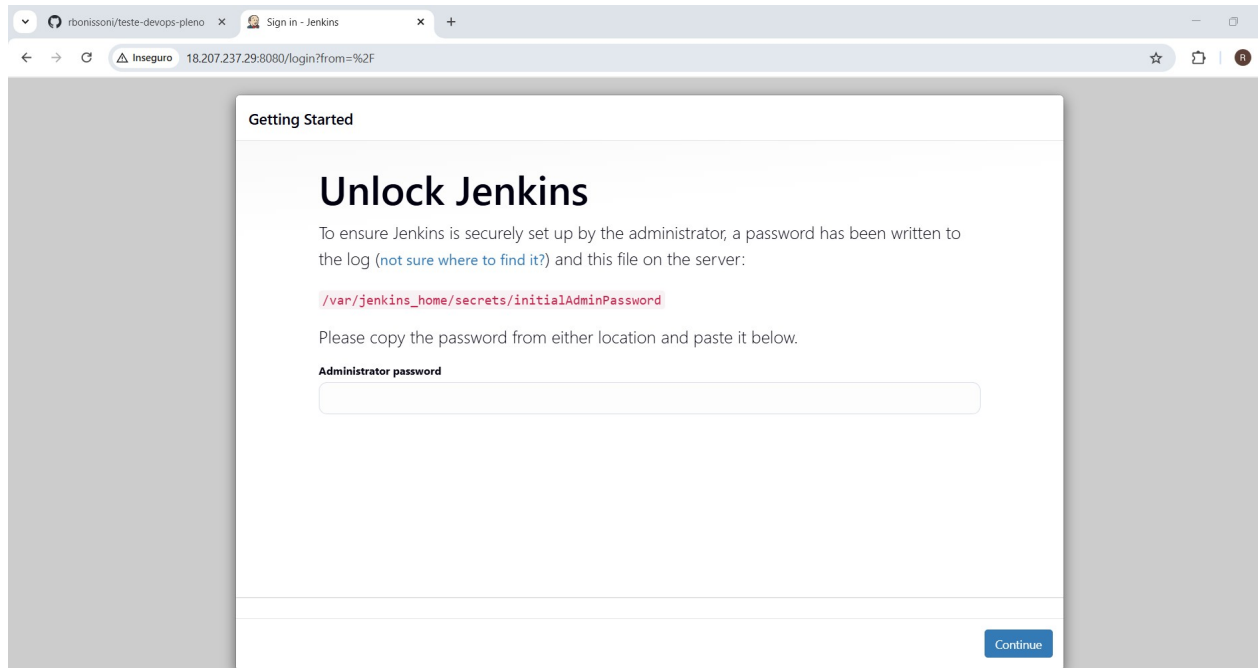
Validação do reverse proxy para 127.0.0.1:3000.

```
admin@ip-10-30-1-115: ~  
root@ip-10-30-1-115:/home/admin# curl -i http://127.0.0.1/nginx_status  
HTTP/1.1 200 OK  
Server: nginx/1.22.1  
Date: Mon, 29 Sep 2025 01:26:26 GMT  
Content-Type: text/plain  
Content-Length: 100  
Connection: keep-alive  
  
Active connections: 1  
server accepts handled requests  
 24 24 43  
Reading: 0 Writing: 1 Waiting: 0  
root@ip-10-30-1-115:/home/admin#
```

Status do service systemd do app.

```
admin@ip-10-30-1-115: ~  
root@ip-10-30-1-115:/home/admin# sudo systemctl status app --no-pager  
● app.service - Node App Service  
   Loaded: loaded (/etc/systemd/system/app.service; enabled; preset: enabled)  
   Active: active (running) since Mon 2025-09-29 01:05:03 UTC; 11min ago  
     Main PID: 3008 (node)  
       Tasks: 7 (limit: 1107)  
      Memory: 38.3M  
         CPU: 596ms  
     CGroup: /system.slice/app.service  
             └─3008 /usr/bin/node app.js  
  
Sep 29 01:05:03 ip-10-30-1-115 systemd[1]: Started app.service - Node App Service.  
Sep 29 01:05:03 ip-10-30-1-115 node[3008]: App running on port 3000  
root@ip-10-30-1-115:/home/admin#
```

Jenkins acessível em :8080 (302/403 sem login).



Security Group da EC2.

Inbound rules						
Filter rules						
Name	Security group rule ID	Port range	Protocol	Source	Security groups	Description
-	sgr-0189a0a2456782c26	80	TCP	0.0.0.0/0	devops-pleno-sg	-
-	sgr-01e70062e455f8ced	22	TCP	0.0.0.0/0	devops-pleno-sg	-
-	sgr-085b1bfc56c7a2f1c	8080	TCP	0.0.0.0/0	devops-pleno-sg	-

Testes de resiliência (recriação por mudança no user_data).

```
renan@renan:~/devops-pleno-modular/infra/envs/prod$ terraform taint module.ec2.aws_instance.app && terraform apply -auto-approve
```

Smoke checks via cloud-init.


```
24 | cidr_blocks = ["0.0.0.0/0"]
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Plan: 1 to add, 0 to change, 1 to destroy.

Changes to Outputs:
  ~ ec2_public_dns = "ec2-18-207-237-29.compute-1.amazonaws.com" -> (known after apply)
  ~ ec2_public_ip   = "18.207.237.29" -> (known after apply)
  ~ jenkins_url     = "http://18.207.237.29:8080" -> (known after apply)
module.ec2.aws_instance.app: Destroying... [id=i-0bd550e50e0409e0e]
module.ec2.aws_instance.app: Still destroying... [id=i-0bd550e50e0409e0e, 00m10s elapsed]
module.ec2.aws_instance.app: Still destroying... [id=i-0bd550e50e0409e0e, 00m20s elapsed]
module.ec2.aws_instance.app: Still destroying... [id=i-0bd550e50e0409e0e, 00m29s elapsed]
module.ec2.aws_instance.app: Destruction complete after 31s
module.ec2.aws_instance.app: Creating...
module.ec2.aws_instance.app: Still creating... [00m10s elapsed]
module.ec2.aws_instance.app: Creation complete after 14s [id=i-01d81dcf19b4b0532]

Apply complete! Resources: 1 added, 0 changed, 1 destroyed.

Outputs:

ec2_public_dns = "ec2-44-220-255-23.compute-1.amazonaws.com"
ec2_public_ip  = "44.220.255.23"
jenkins_url    = "http://44.220.255.23:8080"
renan@renan:~/devops-pleno-modular/infra/envs/prod$
```

Datadog – instalação OK.

```
admin@ip-10-30-1-115: ~
root@ip-10-30-1-115:/home/admin# sudo datadog-agent status | head -n 40
Getting the status from the agent.


=====
Agent (v7.70.2)
=====
Status date: 2025-09-29 01:19:05.89 UTC (1759108745890)
Agent start: 2025-09-29 01:06:23.427 UTC (1759107983427)
Pid: 4064
Go Version: go1.24.6
Python Version: 3.12.11
Build arch: amd64
Agent flavor: agent
FIPS Mode: not available
Log Level: info

Paths
=====
Config File: /etc/datadog-agent/datadog.yaml
conf.d: /etc/datadog-agent/conf.d
checks.d: /etc/datadog-agent/checks.d

=====
Hostname
=====

ccrid: arn:aws:ec2:us-east-1:865522842129:instance/i-0bd550e50e0409e0e
ec2-hostname: ip-10-30-1-115.ec2.internal
host_aliases: [i-0bd550e50e0409e0e]
hostname: i-0bd550e50e0409e0e
```

Datadog – integração Nginx + logs.



DATADOG

Go to... Ctr1 + K

Recent

Bits AI

Dashboards

Monitors

Service Mgmt

Actions

Infrastructure

Cloud Cost

APM

Digital Experience

Software Delivery

Security

AI Observability

Errors

Metrics

Logs

Integrations

renan.bonissoni... ENV

Invite Support Help

ViewsMy View

How does this work? Turn off automatic monitors

Filter monitors

</>

> My Teams

Hide Controls

Showing 1–10 of 10

Settings

	PRIORITY	STATUS	MUTED LEFT	NAME	TAGS		
<input type="checkbox"/>	Mute	Resolve	Delete	Edit Tags	Edit Recipients NEW	Edit Teams	Export to Terraform NEW
<input type="checkbox"/>	-	OK		CPU usage is high for host {{host.name}}	integration:host monitor...	+1	
<input type="checkbox"/>	-	OK		Disk latency is high for host {{host.name}} on device {{device.name}}	integration:host monitor...	+1	
<input type="checkbox"/>	-	OK		Disk usage is high for host {{host.name}} on device {{device.name}}	integration:host monitor...	+1	
<input type="checkbox"/>	-	OK		High 5xx on Nginx (example)	service:nginx env:prod	2	
<input type="checkbox"/>	-	OK		Memory space is low for host {{host.name}}	integration:host monitor...	+1	
<input type="checkbox"/>	-	OK		Network traffic (received) is high on host {{host.name}}	integration:host monitor...	+1	
<input type="checkbox"/>	-	OK		Network traffic (sent) is high on host {{host.name}}	integration:host monitor...	+1	
<input type="checkbox"/>	-	OK		System load is high for host {{host.name}}	integration:host monitor...	+1	
<input type="checkbox"/>	-	OK		Watchdog Anomaly: {{event.title}} for {{service}}	\$env \$service monitor...	+2	
<input type="checkbox"/>	-	NO DATA		[operation:web.request] High Error Rate on {{service.name}}	monitor_pack:apm		

▼ Status

☐ Triggered 1

☐ Alert 0

☐ Warn 0

☐ No Data 1

☐ OK 9

▼ Muted

☐ True 0

☐ Muted elapsed 30d or more

☐ Muted left 1h or less

☐ False 10

▼ Draft Status

☐ Published 10

☐ Draft 0

▼ Priority

☐ P1 (Critical) 0

☐ P2 (High) 0