



Infrastructure as Code mit Terraform

Niklaus Hofer
Infrastructure as Code
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Übersicht



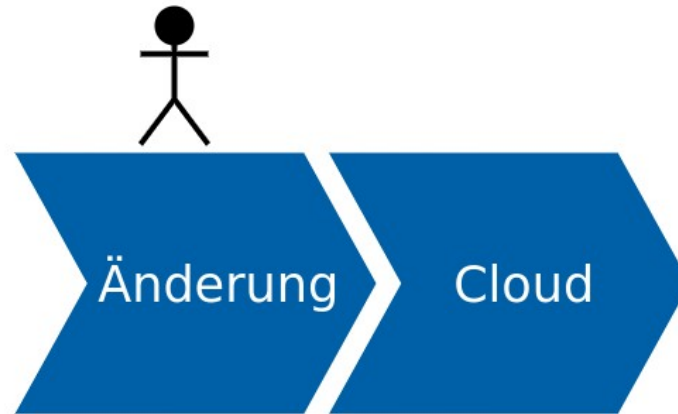
- IaC Begriffserklärung
- Unser Arbeitsablauf
- IaC Beispiel



IaC Begriffserklärung



Traditionelles Arbeiten



Nachteile



- Nicht reproduzierbar
- Manuelle Dokumentation
- Nicht nachvollziehbar
- Schwierige Wiederverwendbarkeit
- Inkonsequentes Vieraugenprinzip

IaC Ablauf



Vorteile



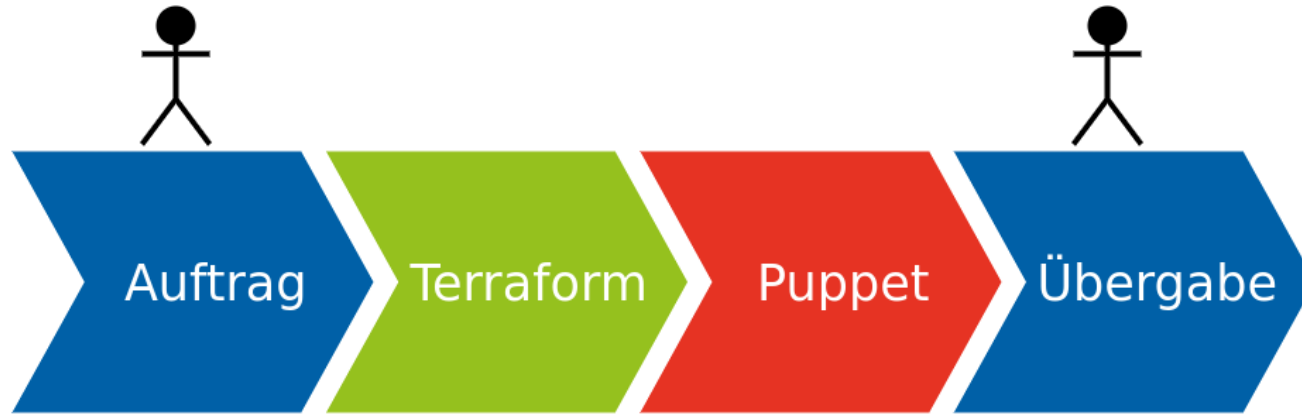
- Reproduzierbar
- Inhärente Dokumentation
- Nachvollziehbar
- Wiederverwendbar
- Vieraugenprinzip einfach umzusetzen
- Roll-back Möglichkeit



Unser Arbeitsablauf



Arbeitsablauf Überblick



Arbeitsablauf Terraform





IaC Beispiel



Code: Firewall Regel



```
1 resource "openstack_networking_secgroup_v2" "sftp_beispiel_gmbh" {
2   name          = "sFTP Beispiel GmbH"
3   description   = "Allow sFTP traffic from Beispiel GmbH on TCP port 22."
4 }
5
6 resource "openstack_networking_secgroup_rule_v2" "sftp_beispiel_gmbh-beispiel_gmbh" {
7   direction     = "ingress"
8   ethertype     = "IPv4"
9   protocol      = "tcp"
10  port_range_min = 22
11  port_range_max = 22
12  remote_ip_prefix = "233.252.0.42/32"
13  security_group_id = openstack_networking_secgroup_v2.sftp_beispiel_gmbh.id
14 }
```

Code: VM



```
1 resource "openstack_compute_instance_v2" "sst-tte-001" {
2   name          = "sst-tte-001: Beispiel GmbH: AlmaLinux 9 (Webserver)"
3   flavor_name   = "Standard Düdingen c001m0002"
4   region        = "duedingen-production"
5   image_id      = "14d32353-f778-4156-afb6-290e0529debf" # AlmaLinux 9 (20220527): Single disk
6   security_groups = [
7     "HTTP World",
8     "HTTPS World",
9     "SSH stepping stone AG",
10    "sFTP Beispiel GmbH"
11  ]
12  network {
13    name = "internal"
14  }
15 }
```


Code: Commit



```
Terraform fmt.....Passed
[master 3367a24] sst-tte-001: Add security group "sFTP Beispiel GmbH.
2 files changed, 17 insertions(+), 1 deletion(-)
create mode 100644 2000000/3723426/039446d4bb394120900389e1554e5dca/security_groups/sftp_beispiel_gmbh.tf
```




Terraform plan: Firewall Regel




 Menu + / 8 4 31 ? ?


```
58 Terraform will perform the following actions:
59 # module.test.module.security_groups.openstack_networking_secgroup_rule_v2.sftp_beispiel_gm
    bh-beispiel_gmbh will be created
60 + resource "openstack_networking_secgroup_rule_v2" "sftp_beispiel_gmbh-beispiel_gmbh" {
61     + direction          = "ingress"
62     + ethertype          = "IPv4"
63     + id                 = (known after apply)
64     + port_range_max     = 22
65     + port_range_min    = 22
66     + protocol           = "tcp"
67     + region             = (known after apply)
68     + remote_group_id   = (known after apply)
69     + remote_ip_prefix  = "233.252.0.42/32"
70     + security_group_id = (known after apply)
71     + tenant_id         = (known after apply)
72 }
73 # module.test.module.security_groups.openstack_networking_secgroup_v2.sftp_beispiel_gmbh wi
    ll be created
```

build

Duration: 18 seconds
Finished: 1 minute ago
Queued: 0 seconds
Timeout: 1h (from project) 
Runner: #3 (UotPNPXG) ci

Job artifacts
These artifacts are the latest. They will not be deleted (even if expired) until newer artifacts are available.

Commit [9dfacfe6](#) 
sst-tte-001: Add security group "sFTP Beispiel GmbH"

Terraform plan: VM



Menu Search GitLab 8 4 31

```
82 # module.test.module.servers.openstack_compute_instance_v2.test will be updated in-place
83 ~ resource "openstack_compute_instance_v2" "test" {
84     id          = "ab795607-2cd2-4563-b5ea-b8836b653432"
85     name        = "sst-tte-001: Beispiel GmbH: AlmaLinux 9 (Webserver)"
86     ~ security_groups = [
87         + "sFTP Beispiel GmbH",
88         # (3 unchanged elements hidden)
89     ]
90     tags          = []
91     # (12 unchanged attributes hidden)
92     # (1 unchanged block hidden)
93 }
94 Plan: 2 to add, 1 to change, 0 to destroy.
95 $ gitlab-terraform plan-json
96 Saving cache
97 Creating cache /builds/stoney-cloud/terraform-protected...
98 /builds/stoney-cloud/terraform/.terraform/: found 14 matching files and directories
```

build

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Keep Download Browse

Commit [9dfacfe6](#)
sst-tte-001: Add security group "sFTP Beispiel GmbH"

Terraform apply



GitLab interface showing Terraform Pipelines. The top navigation bar includes a menu, search, and notification icons. The breadcrumb path is stoney-cloud > Terraform > Pipelines. The page has tabs for All (21), Finished, Branches, and Tags. Action buttons include Clear runner caches, CI lint, and Run pipeline. A search bar for pipelines and a Show Pipeline ID dropdown are also present.

Status	Pipeline	Triggerer	Stages	Actions
⊛ blocked ⌚ 00:01:33	sst-tte-001: Add security group "sFTP Beispiel G... #1398 master -> 9dfacfe6 latest		✓ ✓ ✓ ⚙	▶ ⋮
✓ passed ⌚ 00:01:56 📅 10 minutes ago	[REDACTED] #1396 master -> 5be5df2b		✓ ✓ ✓ ✓	▶ ⋮
✓ passed ⌚ 00:01:39	[REDACTED] #1395 master -> 5daa7a3b		✓ ✓ ✓ ✓	▶ ⋮

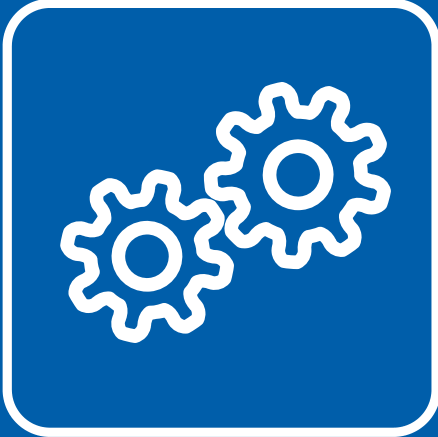
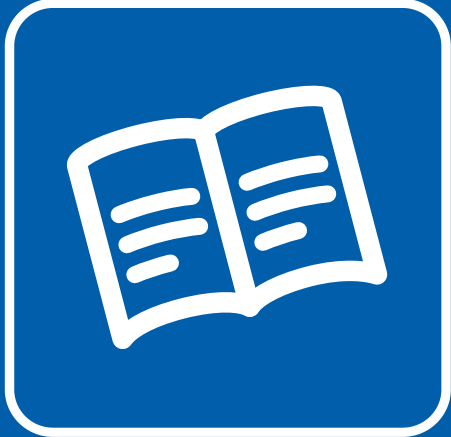
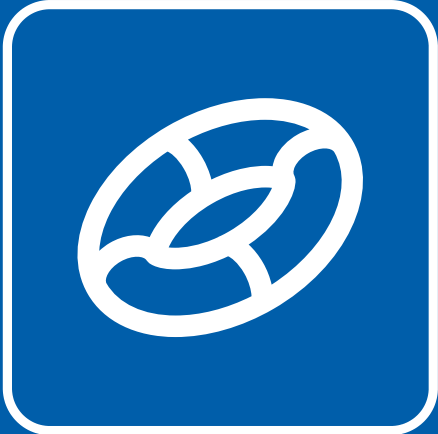
A tooltip with the text "deploy" is visible over the pipeline actions.

Terraform apply



A screenshot of the Stoney Cloud web interface showing the 'Edit Instance' dialog box. The dialog is titled 'Edit Instance' and has a close button (X) in the top right corner. It contains two tabs: 'Information *' and 'Security Groups'. The 'Security Groups' tab is active. Below the tabs, there is a text instruction: 'Add and remove security groups to this instance from the list of available security groups.' The dialog is divided into two main sections: 'All Security Groups' and 'Instance Security Groups'. Each section has a 'Filter' input field with a search icon. The 'All Security Groups' section lists 'default' and 'SSH World', both with a blue '+' button to add them. The 'Instance Security Groups' section lists 'SSH stepping stone AG', 'HTTPS World', 'HTTP World', and 'sFTP Beispiel GmbH', each with a blue '-' button to remove them. At the bottom right of the dialog are 'Cancel' and 'Save' buttons. The background shows a sidebar with navigation options like 'Project', 'Compute', 'Instances', 'Volumes', 'Images', 'Key Pairs', 'API Access', 'Network', and 'Identity'. The main content area behind the dialog shows a 'Delete Instances' button and a 'More Actions' dropdown menu.

Fragen?





stepping stone AG

Wasserwerksgasse 7
CH-3011 Bern

Telefon: +41 31 332 53 63
www.stepping-stone.ch
info@stepping-stone.ch