

# Runp

runp contributors

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# Overview

Like `docker-compose` but not just for containers.

Today, every non-trivial software project is compound of a number of parts (applications, libraries, services) running together in a lot of environments: virtual machines, Docker containers, physical boxes, cloud...

Runp allows you to specify what and how you want to run and helps you to start the system as a whole, running all needed processes in parallel (like Docker compose, Foreman et simili).

This speeds up the setup of a working environment compared to the usual approaches like custom scripts, documentation (written or spoken), or, more commonly, leaving it to the developer to figure out.

Runp uses a `Runfile`, a sort of a sophisticated `Procfile` that describes the project as a system composed of `units` each of which can run a different type of process such as:

- processes on the physical box
- container processes
- SSH tunnel processes

Moreover the Runfile handles:

- working directory per process
- environment variables per process
- user defined vars per system, defined in the Runfile or passed at runtime as command line arguments
- processes dependency: a process can wait for a given condition to start, e.g. a file appearing or another process being ready
- not only *long running* processes but *one shot commands* too
- Windows OS

An example of a `Runfile` :

```
name: Example
description: |
  Sample Runfile to show runp functionalities
units:
  web:
    description: Web app
    # this process is running on host machine
    host:
      command: node app.js
      workdir: backend
      env:
        # inherit PATH from host system to find needed tools (e.g. node)
        PATH: $PATH
      await:
        # wait for the DB being available
        resource: tcp4://localhost:5432/
        timeout: 0h0m10s
  mail:
    description: Test mail server
    # this process is running in a container
    container:
      image: mailhog/mailhog
      ports:
        - "8025:8025"
        - "1025:1025"
  db:
    description: Corporate DB
    # This process is reachable through SSH port forwarding
    ssh_tunnel:
      user: user
      auth:
        identity_file: ~/.ssh/id_rsa
      local:
        port: 5432
      jump:
        host: dev.host
        port: 22
      target:
        host: corporate.db
        port: 5432
```

# Usage

## Run runp

Some command:

```
runp --help          # generic help
runp help up         # describes the command "up"
runp up              # run the runfile in the current directory
runp -d up -f /path/to/runfile.yaml # run in debug mode processes in the given
Runfile
runp encrypt --key test secret # encrypt "secret" using the key "test" and print
                                # out the value to use in a Runfile
runp ls -f /path/to/runfile.yaml # list units in Runfile
```

## App waiting for DB

A backend app running on host waiting for a DB running in a container to be available:

```
units:
  be:
    description: Backend app
    host:
      command: mvn clean compile quarkus:dev
      workdir: backend
      env:
        # inherit PATH from host system to find mvn and java
        PATH: $PATH
      await:
        resource: tcp4://localhost:5432/
        timeout: 0h0m10s
  db:
    description: Database
    container:
      image: postgres:alpine
      ports:
        - "5432:5432"
      env:
        POSTGRES_PASSWORD: pass
        POSTGRES_USER: user
        POSTGRES_DB: dbname
```

## Containers

Containers can talk to each other thorough a Docker network (`runp-network`).

The container name (the host name exposed to other containers) is set to `runp-${UNIT NAME}` or to the field `name`.

This Runfile starts Wordpress and MySql:

```
name: Wordpress Runfile
description: Runfile to run Wordpress and MySql
units:
  db:
    container:
      name: db
      image: mysql:5.7
      ports:
        - "3306:3306"
      env:
        MYSQL_ROOT_PASSWORD: somewordpress
        MYSQL_DATABASE: wordpress
        MYSQL_USER: wordpress
        MYSQL_PASSWORD: wordpress
  wordpress:
    container:
      image: wordpress:latest
      ports:
        - "8000:80"
      env:
        WORDPRESS_DB_HOST: db:3306
        WORDPRESS_DB_USER: wordpress
        WORDPRESS_DB_PASSWORD: wordpress
        WORDPRESS_DB_NAME: wordpress
    await:
      resource: tcp4://localhost:3306/
      timeout: 0h0m20s
```

## Use containers volumes

Run containers and volumes (example is from the book Docker in action - Manning):

```
name: Containers Runfile
description: This is Runfile showing Docker volumes
units:
  fowler:
    description: The Fowler collection
    container:
      image: alpine:3.12
      skip_rm: true
      mounts:
        - "type=volume,dst=/library/PoEAA"
        - "type=bind,src=/tmp,dst=/library/DSL"
      command: |
        echo "Fowler collection created"
  knuth:
    description: The Knuth collection
    container:
      image: alpine:3.12
      skip_rm: true
      mounts:
        - "type=volume,dst=/library/TAoCP.vol1"
        - "type=volume,dst=/library/TAoCP.vol2"
        - "type=volume,dst=/library/TAoCP.vol3"
      command: |
        echo "Knuth collection created"
  reader:
    description: The avid reader
    container:
      image: alpine:3.12
      volumes_from:
        - fowler
        - knuth
      command: |
        ls -l /library/
    await:
      timeout: 0h0m3s
```

## On Windows

Windows is supported:

```
name: Test Runpfile
description: This is Runpfile
units:
  await:
    description: read environment variables
    host:
      command: set
      env:
        # in env block variables have the unix notation
        MYHOME: ${HOME}
  echo:
    description: echo the value of %OS% env var
    host:
      # in command env vars have the specific OS notation
      command: echo %OS%
  infiniteloop:
    description: infinite loop
    host:
      # this script is in examples/ directory
      executable: infinite.cmd
      workdir: examples
```

Some programs, especially on Windows, implicitly use OS specific environment variables.

If you run into strange problems try adding these to the env block:

```
# Windows env vars
SystemRoot: ${SystemRoot}
ALLUSERSPROFILE: ${ALLUSERSPROFILE}
APPDATA: ${APPDATA}
CommonProgramFiles: ${CommonProgramFiles}
CommonProgramW6432: ${CommonProgramW6432}
ComSpec: ${ComSpec}
DriverData: ${DriverData}
HOMEDRIVE: ${HOMEDRIVE}
HOMEPATH: ${HOMEPATH}
LOCALAPPDATA: ${LOCALAPPDATA}
OS: ${OS}
PATHEXT: ${PATHEXT}
ProgramData: ${ProgramData}
ProgramFiles: ${ProgramFiles}
ProgramW6432: ${ProgramW6432}
PSModulePath: ${PSModulePath}
PUBLIC: ${PUBLIC}
SESSIONNAME: ${SESSIONNAME}
SystemDrive: ${SystemDrive}
TEMP=: ${TEMP}
TMP: ${TMP}
USERNAME: ${USERNAME}
USERPROFILE: ${USERPROFILE}
windir: ${windir}
```

## SSH tunnel to reach a remote LDAP

A backend app running on host using LDAP on remote server available using SSH tunneling.

SSH tunnel manage three auth methods:

- `identity_file`: the path to the private key, ie `~/.ssh/id_rsa`
- `secret`: the SSH server password in plain text
- `encrypted_secret`: the SSH server password encrypted and in base 64 (you can create it using `runp encrypt`)



```

units:
  be:
    description: Backend app
    host:
      command: mybackendapp
      workdir: backend
  ldap:
    description: LDAP
    ssh_tunnel:
      user: runp
      auth:
        #identity_file: ~/tmp/runpssh/ssh/runp
        #secret: "plain text secret"
        encrypted_secret: "NsM1hcAy/L2TfACgfzbhYyb9j5a2ySYcARFDKkv7HTk="
    local:
      # localhost is the default
      port: 389
    jump:
      host: sshserver
      port: 22
    target:
      host: ldapserver
      port: 389

```

## Use secrets

SSH tunnel process allows user to use secrets to specify the password.

To create the encrypted secret:

```
runp encrypt -k thekey SECRET
```

To run a Runpfile containing an `encrypted_secret` you have to pass the key to the `up` command (the key must coincide with the one used to encrypt).

You can pass the key on command line using the options `--key` or `--key-env`

Using the `-k/--key` argument the key is in plain text on the command line:

```
runp up -k thekey
```

Use the `--key-env` argument Runp looks up for that environment variable and use its value as key:

```
runp up --key-env RUNP_SECRET
```

## Use environment variables

A one-shot command using custom environment variables:

```
env3:
  description: echo command
  host:
    command: echo ${MYHOME}
    workdir: ..
  env:
    MYHOME: ${HOME}
```

## User defined variables

Use runtime vars:

```
vars:
  foo: FOO_DEFAULT_VALUE
units:
  vars-test-unit:
    description: echo a user defined var
    host:
      command: echo __{{vars foo}}__
```

The var `foo` will have value `FOO_DEFAULT_VALUE` or can be set from command line:

```
$ bin/runp --debug up -f examples/Runpfile-vars.yml --var foo=bar
```

## Implicit variables

Runp adds to the context some variables:

- `runp_workdir`: user current working directory as absolute path
- `runp_root`: directory parent of the Runpfile as absolute path

Usage:

```
units:
  vars:
    description: echo implicit vars from Runp
    host:
      command: "echo runp_workdir={{vars runp_workdir}} runp_root={{vars runp_root}}"
```

## Disabling color output

To have plain, non-colored text output set the environment variable `NO_COLOR` or use the option `--no-color`:

```
NO_COLOR=1 ./bin/runp -d up -f examples/Runpfile-many-units.yml  
./bin/runp -d --no-color up -f examples/Runpfile-many-units.yml
```

# License

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