CONFIGSHELL

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RELEASE 1.1

NEW COMMANDS

- urlencode <<str>>, urldecode <<str>>
 Conversion of URL-encoded parameters
- base64-to-base64urlPipe-tool to convert base64 format

INTRODUCTION

CONFIGSHELL

ConfiShell is an open-source (MIT-based) project to support Linux/UNIX® interactive working environments. This work is not paid by an employer. It offers:

- Shell interactive support for bash, fish, zsh (partly)
- Linux support for proxied environments
- golang development support
- TLS & SSH key and certificate creation and analysis
- bash scripting, markdown & LaTeX support
- git encryption and general git support
- k8s support

FEATURES

- can be installed (git clone) without password
- script included to automatically upgrade when logging in
- continuously be updated
- experience from 40 years of UNIX experience

THE INSTALLATION

1ST STEPS - PUT YOUR SHOES ON...

- 1. Use the default path if possible
 mkdir /opt/ConfigShell
- 1. Install ConfigShell
 - git clone https://github.com/engelch/ConfigShell /opt/ConfigShell
- 2. Activate it for you (home directory of the current user)
 - /opt/ConfigShell/installDotFiles2home
- 3. Restart your shell



GIT-SUBMODULES CONFIGLINUX CONFIGDARWIN

Additions for Linux, OS-X alias Darwin, e.g.

- Linux gnome-terminal colours; signfile, gosha256
- OSX iTerm and Terminal colour profiles; divvy profile; signfile, gosha256

```
cd /opt/ConfigShell
  git submodule update -init
```

YOU ARE USING CONFIGSHELL, IF

with <u>bash</u>, your prompt looks like #EXTRA by ConfigShell

[0] 14:13:46 engelch@mac160 D? feature/vcs...bs/feature/vcs/pki-zz/~/x/cias-pki-svs-k8s

exit-code prompt-creation user@host git-repo aws-profile CWD

Here, a possible <u>fish</u> prompt #EXTRA by ConfigShell

engelch@mac160 ~/x/cias-pki-svs-k8s (D? feature/vcs...bs/feature/vcs) <AWS:pki-zz> >

user@host PWD/CWD if in a git-repo if AWS_PROFILE

SHELL ENHANCEMENT

ABOUT

- abbreviations for often used programmes
- let's live the AKÜFI

ABOUT

- abbreviations for often used programmes
- let's live the AKÜFI (Abkürzfimmel /abbreviation madness)
- standard on all systems (@work, @home, @IoT, @srv)

BASH & FISH COMMANDS 1 - DIRECTORIES # EXTRA by ConfigShell

ls	multiple columns, colourised, showing file type
la	like Is above with -a option (showing dot files)
11	like Is above with -I option (long listing, one file per line)
lla	like Is above with -la options
11d	like Is above with -d (show current and parent directory file)
llad	like Is above with -adl
cd	same as cd (typoo saver)
.27	cd/ cd////
mkcd <dir></dir>	create directory and make it the CWD (current working directory)
brmd	go to the parent directory and try to delete the child directory (must be mt)

BASH & FISH COMMANDS 1 - DIRECTORIES # EXTRA by ConfigShell

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brmd	go to the parent directory and try to delete the child directory (must be mt)	

BASH & FISH COMMANDS 2 # EXTRA by ConfigShell

cp / rm / mv	all mapped to include the -i option (confirm deletion, protect overwrite)
1	less (Δ to some Ubuntu default installations)
j	jobs
wh	which
rm~ rmtex	delete backup files or TeX intermediate files
а	alias (show aliases - depending on the shell there might be more)
pu	pushd .
ро	popd
8601	output date/time in UTC and in ISO 8601 format w/out spaces

BASH & FISH COMMANDS 3 # EXTRA by ConfigShell

tm	tmux new -s
tw ⇔ tn	tmux new-window -n
tj	tmux join-pane -s
tmux-prd, tmux-prd2	red-coloured tmux, tmux select-pane -P "fg=white,bg=color052
tmux-qul	yellow-coloured tmux
tmux-dvl	blue-coloured tmux
tmux-loc	white-grey coloured tmux
tmux-blwh	black-whitish coloured tmux

BASH LOADING FILES # EXTRA by ConfigShell

2. Re-Done by executing rl or rlFull (bash)

```
*.rc files are sourced into the current shell
 *.sh files are executed (sub-shell)

When?
1. Done when starting the shell
```

BASH LOADING FILES - EXAMPLE #EXTRA by ConfigShell

```
*.rc files are sol

*.sh files are exe

When?
```

~/.bashrc.d/aws.rc

export AWS_PROFILE=pki-zz

- 1. Done when starting the shell
- 2. Re-Done by executing rl or rlFull (bash)

FISH LOADING FILES

EXTRA: ~/.config.fish/conf.d/*.sh are executed with bash

FISH VS BASH VS ZSH

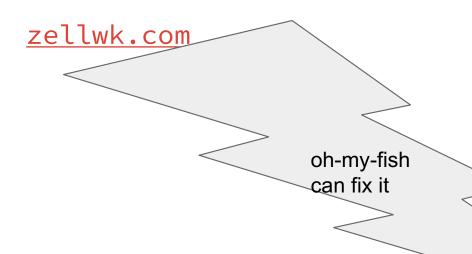
comparison article on medium.com

zellwk.com

- completion in bash can
 be a pain and was
 better before (good old
 tcsh times,...)
- zsh scripts and addones (oh-my-zsh) can become complex
- +good defaults: fish-missing in fish: !! !\$

FISH VS BASH VS ZSH

comparison article on medium.com



- become complex
- https://github.com/oh-my-fish/oh-my-fish

omf install bobthefish omf install bang-bang

- completion in bash can be a pain and was better before (good old tcsh times,...)
- zsh scripts and addones (oh-my-zsh) can

```
+good defaults: fish
-missing in fish: !! !$
```

OH-MY-FISH INSTALLATION

Installation

```
curl https://raw.githubusercontent.com/oh-my-fish/oh-my-fish/master/bin/install | fish
```

Overview about themes

https://github.com/oh-my-fish/oh-my-fish/blob/master/docs/Themes.md

Recommended Themes

```
omf install bobthefish
omf install bang-bang # !! and !$ now working
```

OH-MY-FISH INSTALLATION 2

Ubuntu 22.04 - as CE did it

1. sudo apt install -y fonts-powerline

2. In -s usr/share/fonts/opentype/PowerlineSymbols.otf ~/.fonts

3. gnome-terminal to use Ubuntu Mono Font
[ConfigLinux gnome-terminal settings use Ubuntu Mono]

OR cd /opt/ConfigShell/PowerlineFonts/; ./install.sh

Terminal requires Powerline font

1. Install powerline

sudo apt install powerline && source /usr/share/powerline/bindings/bash/powerline.sh

2. Download and install fonts

git clone https://github.com/powerline/fonts.git && cd fonts && sh ./install.sh

- 3. Add this lines to .bashrc file if bash is what you use. You could add to other files like .zshrc etc. I use bash so there. This ensures that this switch is automatic when you start bash
- if [-f /usr/share/powerline/bindings/bash/powerline.sh]; then source /usr/share/powerline/bindings/bash/powerline.sh fi

ENCRYPTION &
TLS &
SSH

BASH & FISH COMMANDS 4 # EXTRA by ConfigShell

encryptFile [-d] [-k] [-f] [file]	encrypt/decrypt file
	-k :: keep original file
	-f :: force, overwrite existing files
signFile	part of ConfigLinux and ConfigDarwin
	also for verification of signatures
gosha256	fast sha256 digest
hex2	convert into hex or base64 or raw

TLS KEY MATERIAL & CSR

```
Create key-pair

tls-csr-key-creator.sh -k <<baseFilename, here:test13>>
```

⇒ creates 2 files test13.key (prv key) and test13.pub (pub key)

Create key-pair & CSR

tls-csr-key-creator.sh -g -c cn-value -o ou-value cert1

Create CSR for existing key-pair

tls-csr-key-creator.sh -c cn-value -o ou-value cert1

TLS KEY MATERIAL & CSR

Create key-pair

tls-csr-key-creator.sh supports

- RSA 2K/4k keys, ECC keys
- CSR with CN, O, OU, S, SAN fields
- -h for help

```
tls-csr-key-creator.sh -g <<base>Filename, here:test13>>
```

⇒ creates 2 files test13.key (prv key) and test13.pub (pub key)

Create key-pair & CSR

tls-csr-key-creator.sh -g -c cn-value -o ou-value cert1

Create CSR for existing key-pair

tls-csr-key-creator.sh -c cn-value -o ou-value cert1

CSR SHOW

```
tls[-cert.sh] cert1.csr ... OR tls-csr.sh cert1.sh
cert1.csr:Certificate Request:
cert1.csr:
             Data:
cert1.csr:
                Version: 1 (0x0)
                 Subject: O = demoou, CN = democn
cert1.csr:
                 Subject Public Key Info:
cert1.csr:
cert1.csr:
                     Public Key Algorithm: rsaEncryption
                        RSA Public-Key: (4096 bit)
cert1.csr:
cert1.csr:
                        Modulus:
cert1.csr:
                        Exponent: 65537 (0x10001)
cert1.csr:
                Attributes:
cert1.csr:
                     a0:00
cert1.csr:
                 Requested Extensions:
cert1.csr:
             Signature Algorithm: sha256WithRSAEncryption
```

TLS TOOLS - FILE COMPARISON - DO YOU BELONG TOGETHER

check / compare keys of different files

tls-cert.sh -f cert1.*

2a5076acd8f0efb279de0e9d116417507e8bf08702bb627bf5756f009048faba cert1.crt 2a5076acd8f0efb279de0e9d116417507e8bf08702bb627bf5756f009048faba cert1.csr 2a5076acd8f0efb279de0e9d116417507e8bf08702bb627bf5756f009048faba cert1.key 2a5076acd8f0efb279de0e9d116417507e8bf08702bb627bf5756f009048faba cert1.pub

CONVERT P7B TO PEM

```
tls-p7b-to-pem.sh [ file ]
```

- can also be used in a pipe

GET PUBLIC KEY FROM PRIVATE KEY

```
tls-rsa-prv-2-pub-key.sh [ file ]
```

- can also be used in a pipe

CA - CREATION FOR SIMPLE TESTS

Simple CA creation does not replace a fully fledged PKI!

```
tls-ca-create-key-cert.sh <<options>> <<base-filename>>
-c cn-value -o o-value -u ou-value -s c-value
-y expiryDays4caCert
-g # generate-key-material
```

SIGN CSRS

For simple CA cases

```
tls-sign-csr.sh [-D] [-d days] [-s] -c ca-basefilename [<<csr-file>> ...]
-s ::= server-certificate
```

OLD

Commands

```
tls-rsa-prv-fingerprint.sh [file]
tls-rsa-pub-fingerprint.sh [file]
can be replaced by
tls[-cert] -f [file]
```

FINAL SIMPLIFICATION

Command

```
tls-cert.sh
```

can be called as tlsCert or just as

tls

SSH

SSH KEY AND CERTIFICATE SUPPORT

ssh-certificate

SSH cert information

ssh-fingerprint

accepts pub, prv keys, and certs

ssh-prv-2-pub-key

extracts the public key

SSH EXTD COMMANDS

ssh-createCompletionList

ssh-grep

ssf

creates/overwrites ssh completion list for hostnames from *.config files under ~/.ssh/ as file ~/.ssh/completion.lst (ok for bash & fish: completion with → char)

Searches ssh .config files for a hostname pattern (case-insensitive)

ssf is an alias for ssh-grep

GIT & GEE ENHANCEMENT

GIT INITIALISATION

gitInit

initialise git with reasonable default settings. This commands changes ~/.gitconfig

GIT STATUS

gitStatus

helper command for shell prompts to show the status of the current git repository. (current: from the CWD-perspective)

git-status-all

Show status of git directories starting from you home directory

GIT HELPERS

git-delete-last-remote-commit

Delete the last remote commit, keeping local commits untouched. The executed command will be shown first before the execution starts.

git-delete-remote-branch

Deletes the specified remote branch. Also shows the command first and asks for execution.

GIT GEE - INTRODUCTION / ABOUT

git gee

extension for git to

- store confidential or secret data in a git repository
- uses a shared, symmetric encryption key model (key to be shared by a password mgmt solution)
- other solutions (git crypt, ...) did not work as expected
- asymmetric keys solutions face the problem to share commits that were created before a person was added to the team
- fitting our demands, not trying to fit for all requirements
- prevents committing confidential files (bullet proofed)

GIT GEE - START

git gee init

- 1. You have an existing git repository, let's call it gee-test
- 2. Create and save a secret key (use a key-creator tool)

 Skeletal-Absently-Linguini-Return-Politely2-Legacy-Cape
- 3. Put this into a file besides the gee-test/ directory called gee-test.gee.pw
- 4. Can't remember the filename, just call git gee init ERROR:Password file /Users/engelch/tmp/gee-test.gee.pw not found
- 5. Also check the permissions of the pw file and the git repo

```
11 -d gee*
drwx----@ 5 engelch staff 160B Feb 2 18:46 gee-test/
-rw-----@ 1 engelch staff 56B Feb 2 18:50 gee-
test.gee.pw
```

6. call git gee init from inside the git repo

```
engelch@mac160 ~/t/gee-test (master) > git gee init
engelch@mac160 ~/t/gee-test (master) >
```

GIT GEE - LIST FILES PROTECTED BY GEE

git gee help git gee -h help, please read it once

git version

show version

GIT GEE - LIST FILES PROTECTED BY GEE

```
git gee ligit gee list git gee lst
```

git gee a a.txt

1. list files under git gee, now: no files

2. put file a.txt under git gee protection

engelch@mac160 ~/t/gee-test (? master) > git gee a a.txt
Processing file a.txt Encryption successful

- a. encrypted file a.txt.gee was created
- b. a.txt is in .gitignore
- c. git hook prevents committing if a.txt is newer than a.txt.gee

GIT GEE - LIST FILES, ENCRYPT FILES, REMOVE UNENCRYPTED

git gee s

show status, git status does not say everything. Why?

git status does not show the status of ignored files. We ignored a.txt, but not a.txt.gee. So, if a.txt is change, the pre-commit would prevent a commit, but git status might say, everything is ok.

git gee e (git gee encrypt) encrypt files again, which are newer than the .gee counterpart. (File modification times are important.)

delete the unencrypted versions of .gee encrypted files

GIT GEE - UNENCRYPT

git gee u

unencrypt files protected by git gee

GIT GEE WRONG PASSKEY

If the wrong passkey is installed, git gee d might produce output like

engelch@air0 ~/x/cias-pki-svs-test (master..origin/master) <AWS:pki-zz> > git gee u
Procssesing file /Users/engelch/x/cias-pki-svs-test/tests/fda/d/pki-d-zz-fda.key.gee ERROR! Decryption failed (no vault secrets were found that could decrypt) on /private/var/fold
ers/ns/shqtfbhx4fz5g2ll6rttpwsc0000gn/T/git-gee.GBHxJkDE for /private/var/folders/ns/shqtfbhx4fz5g2ll6rttpwsc0000gn/T/git-gee.GBHxJkDE
ERROR:encrypting file /var/folders/ns/shqtfbhx4fz5g2ll6rttpwsc0000gn/T/git-gee.GBHxJkDE

GIT ALIASES & FUNCTIONS

gia	git add -A
gibr	git branch -avv
gidi	git diff
gidic	git diff -cached
gife	git fetch -all -p
gilo	git logbranchesremotestagsgraphonelinedecorate
gist	git status -ushow-stashignore-submodules
gipl	git pullall; git fetchtags
girm	git status sed '1,/not staged/d' grep deleted awk '{print \\$2}' xargs git rm
gicm / gicma	git commit -m / git commit -a -m
gipu / gipua	git pushall \$argv; and git pushtags \$argv / for all remote repos: gipu

KUBERNETES (K8S) ENHANCEMENT

KUBECTL HELPERS

k / k8 / k8s	kubectl
k8af / k8df	kubectl apply -f / kubectl delete -f
k8c / k8cv	kubectl config / kubectl config view
k8cg / k8cs / k8cu	kubectl config get/set/use-context
k8gd / k8gdA ⇔ k8gda	kubectl get deploy -o wide / k8gd -A
k8gn	kubectl get nodes -o wide
k8gp / k8gpa ⇔ k8gpA	kubectl get pods -o wide / k8gp -A
k8ns	kubectl get services
k8ga / k8gaa ⇔ k8gaA	kubectl get all / k8ga -A
k8ev ⇔ k8events	kubectl get eventssort-by=.metadata.creationTimestamp

KUBECTL POD HELPERS

These commands work as soon as the specification of the pod uniquely identifies one pod.

k8logs [-n < <ns>>] [-f] <<unique-pod-id>></unique-pod-id></ns>	get logs from a cube
k8exec [-n < <ns>>] <<unique-pod-id>> [cmd]</unique-pod-id></ns>	exec in pod, def: bash
k8cp [-c <cont>] [-n <ns>] <uniquepodspec>:file file</uniquepodspec></ns></cont>	copy file from container
k8cp [-c <cont>] [-n <ns>] file <uniquepodspec>:file</uniquepodspec></ns></cont>	copy file to container

DEVELOPMENT

SCRIPT DEVELOPMENT

- 1. Usually, stay with bash as this is the most common shell on all systems these days.
- 2. Start a script with shebang
 #!/usr/bin/env bash
- 3. Use shellcheck to check your shell
- 4. Easy start: copy
 /opt/ConfigShell/Template/bash.mini.skeleton.sh

GOLANG DEVELOPMENT

gode	goexec-debug - compile debug version
gore	goexec-release - compile release version
godue	goexec-upx - compile compressed version
	upx is not working on all platforms
godebug [-f]	compile debug version
gorelease [-f]	
go-status ⇔ gost	check if a compilation makes sense
godistclean	delete build directories,

VERSION INCREASES - SEMANTIC VERSIONING CONCEPT

version.sh [-v]

- 1. if ./versionFilePattern (filename pattern), then it uses the pattern as a regexr for the filename to determine the version.
- 2. elif if version.txt exists, then get the version# from this file (empty lines are removed)
- 3. else it greps all *.go files for app.?version[[:space:]]*= x.y.z and uses x.y.z as the version#
- 4. -v returns the format in the form file-name:version#. Otherwise, just the version# is returned.

bump* (below) are based on version.sh and bumpversion (not part of ConfigShell)

version.sh	used to determine version of actual sw
bumpmajor ⇔ bma	increase the major version
bumpminor ⇔ bmi	increase the minor version
bumppatch ⇔ bpa	increase the patch version

CONNECT TO POSTGRESQL, MARIADB, MYSQL

```
db-connect.sh [ <<role>> ]
db-connect-<<role>>.sh
    being s-link to db-connect.sh
```

Requires db-connect.pw or db-connect.pws (must be s-link)

Example db-connect.pw for role postgres, file can contain many roles

```
postgres_DB_TYPE=psql
postgres_HOST=127.0.0.1
postgres_PORT=5432
postgres_USER=postgres
postgres_PW=secret%9127/Pe
postgres_DB=postgres
```

TEMPLATES

See the Template directory for

- bash skeletons
- markdown skeletons
- LaTeX skeletons

VIRTUALISATION

VIRTUALISATION SUPPORT

container-container-ls.sh

list all matching containers (instances of images)

container-container-rm.sh

delete all matching containers

BUILDING CONTAINER IMAGES

```
container-image-build.sh [-n] [-t <<arch>>]...
```

- use podman if available, else docker
- use Containerfile, if not existing check for Dockerfile
- use version.sh to determine the version to be build, and build for tag latest
- name of container from _name_<<name>> file or from current directory
- build a container for default architecture amd64, if not -t arm64,... is specified
- -n dry-run

10_simpleBuild.sh

roughly identical to above container-image-build.sh

BUILDING CONTAINER IMAGES 2

```
10_simpleAwsBuild.sh [ -n ] ...
```

- log-in to AWS to be able to build images based on images in ECR.
- options are passed to container-image-build.sh
- -n dry-run

```
10_goCompileBuild.sh
10_goCompileAwsBuild.sh
```

- copy ../*.go and ../../packages to this directory
- compile application using bootstrap container
- based on container-image-build.sh
- Aws version allows for using AWS ECR images for the build process

BUILDING CONTAINER IMAGES 3

```
20_aws_tag.sh
```

tag container for upload to AWS ECR

```
30_aws_push.sh
```

push previously tagged image to AWS ECR

Based on

```
container-image-aws-push.sh
  container-image-aws-tag_push.sh
```

MANAGE CONTAINER IMAGES

```
container-image-ls.sh [ pattern ]
```

- list container images in inspect form

```
container-image-rm.sh [ pattern ]
```

delete matching container images

EKSCTL AWS EKS CLUSTER VISIBILITY

Change clustervisibility

requirements: creation with eksctl

eksctlClusterVisibility <<clustername>> (true | false)

- true: publicly visible

DOCUMENTATION

LATEX

```
latexMoveSections ( down | up ) [ file ... ]
```

- move all sections one level up/down.
- if \section is existing, then up will create an error (\part not supported)
- if \subparagraph is existing, then down will create an error

MARKDOWN

```
mdMoveSections ( down | up ) [ file ... ]
```

- still to be implemented

LOREM3

lorem3 - create senseless text for testing by Per Erik Strandberg

```
-h, --help show this help message and exit
-v, --version show program's version number & exit
--words N, -n N number of words
--sentences S, -s S number of sentences
--lines L, -l L number of lines
--chars C, -c C number of chars (excl. final \n)
--lorem, --cicero
--faust, --goethe ...
```

OS-SPECIFIC ENHANCEMENT

SUBMODULES

OS UPGRADE

pkgUpgrade

- update packages on OS
- support
 - OSX
 - Linux DEB (Debian, Ubuntu,...)
 - Linux DNF (Fedora,...)

CONFIGSHELL UPGRADE

upgradeConfigShell.sh

- to be linked to ~/.bashrc.d/ or to ~/.config/fish/conf.d
- upgrades (git pull) ConfigShell if the last call to the script was more than 4 hours before
- duration (4 hours; <u>negative numbers</u>) can be changed using the environmentvariable

```
${UPDATE_CONFIGSHELL_FREQUENCE:-4}
```

PROXIES

proxy, sudoProxy

- Start a command with proxy settings
- Start a command with sudo and proxy settings, e.g. sudoProxy apt update

Commands require environment variables to be set (~/.bashrd.d/<<xx.rc>>):

PROXYUSER PROXYHOST

https_proxy, http_proxy, and ftp_proxy will be set

ROUTE53

route53 - change AWS hosted DNS records

domains list domains hosted by

current AWS account

domainlist|listdomain <domain> list A and CNAME records of a domain

list CNAME records of a domain

search <domain< <regExpr> search the domain for CNAME and A

records

create <FQDN> <IPaddr>|<destFQDN> add the A|CNAME record to the domain if not

existing

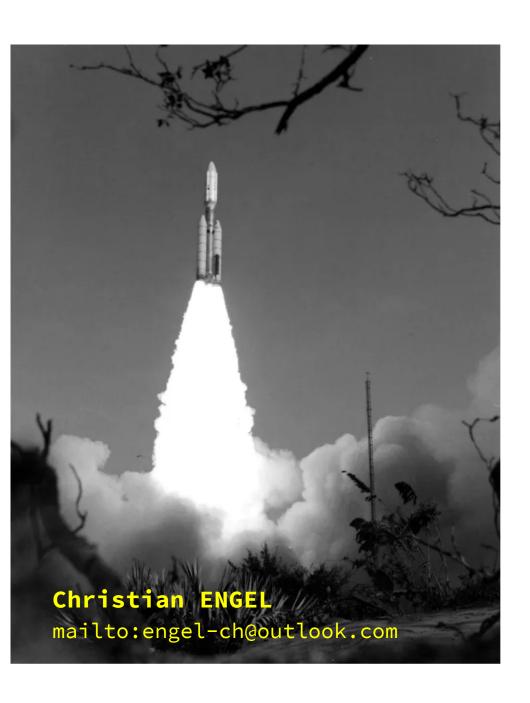
upsert <FQDN> <IPaddr>|<destFQDN> update/insert the A|CNAME record to the domain if

not existing

delete <FQDN> <IPaddr>|<destFQDN> delete an A|CNAME record

zoneid <domain> list hostedzoneID

JOIN THE TEAM



THE FUTURE OF CONFIGSHELL

Help us

Configshell is a work of enthusiastic persons, please join

Propose Ideas

Tell us the opinion about it, please help to improve it

Code with us

Even better, add functionality, streamline elements