Upgrade-ux

Open Source framework to patch, update or upgrade your Operating System (HP-UX, Linux, Solaris,...)

http://www.it3.be/projects/upgrade-ux.html
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- Independent UNIX Consultant
- Over 25 years of experience with UNIX and Linux
- Involved with several Open Source Projects:
  - relax-and-recover (rear),
  - cfg2html, wbemextras, adhocr,
  - mkCDrec, upgrade-ux,...

Why upgrade-ux?

- Check-lists are difficult

Why (again) another tool?

- Upgrade-ux prevents avoidable errors
  - Patching the wrong Operating System
  - Gather evidence before/after patching
  - Double checks if all requirements are met
  - Cannot skip a step (unless you force it)
  - Check system health so it can handle an update and survive a reboot
  - Logging is extremely important for audit and troubleshooting (if required afterwards)

Benefits of upgrade-ux

- Impossible to install any software when "preview" run was <u>not</u> successful

- Works with stages and is configurable via configuration files and an INI file

- Framework is borrowed from relax-and-recover (rear) project

- Repeatable (as it remembers the stages it executed successfully)

Benefits of upgrade-ux (cont.)

- After rebooting you can just continue

- Upgrade-ux is completely written in ksh

- Extremely modular (scripts are only a few lines long)

- Easy to modify and extend to your needs

- Is Open Source: https://github.com/gdha/upgrade-ux

Upgrade-ux requirements

- Using Korn Shell language instead of bash (so same framework works on HP-UX, Solaris, AIX, OS/X, and Linux)

- If ksh is not present:
  ```
  $ sudo opt/upgrade-ux/bin/upgrade-ux dump
  sudo: unable to execute opt/upgrade-ux/bin/upgrade-ux: No such file or directory
  ```

- The RPM/DEB package has ksh as a pre-requisite

- Manual install ksh:
  ```
  $ sudo yum install ksh
  ```

- Root privileges

Installing upgrade-ux

- The sources via git:
  `git clone https://github.com/gdha/upgrade-ux.git`

- Install the rpm/deb

- To create a rpm/deb:

  - $ cd packaging/Linux

  - $ make rpm

  - $ make deb

Upgrade-ux Stages

- Store the INI file as
  `(.)/etc/opt/upgrade-ux/${OS}-${OSver}-${YEAR}.ini`

- Stages known are (can be empty or not existing):

  - Preremove

  - Preinstall

  - Install

  - Postinstall

  - Postremove

  - Configure

  - Cleanup

  - Postexecute

Upgrade-ux INI file

- We should have at least [install] section defined
- Example of install definition on HP-UX 11.31:

```
[install]
    command[0] =  $SWINSTALL
    options[0] =  "-x mount_all_filesystems=false"
    source[0]  =  "-s
$SDSERVER:/var/opt/depots/upd11-
                31-may2014"
    bundle[0]  =  Update-UX
    version[0] =  ""
```

Upgrade-ux configuration files

- Operating System related config files

  - HP-UX.conf or GNU/Linux.conf

- Architecture related config files

  - Linux-i386.conf

- Local config file

  - local.conf or site.conf

- Use `upgrade-ux dump` to see the details of your system

Upgrade-ux dump

```
$ sudo opt/upgrade-ux/bin/upgrade-ux dump
upgrade-ux 1.2 / Git
Using log file: /home/gdha/projects/upgrade-ux/var/opt/upgrade-ux/log/upgrade-ux-20150109-1548-
LOGFILE.log
Dumping out configuration and system information
This is a 'Linux-x86_64' system, compatible with 'Linux-i386'.
System definition:
                             ARCH = Linux-i386
                               OS = GNU/Linux
                 OS_MASTER_VENDOR = fedora
                OS_MASTER_VERSION = 7
            OS_MASTER_VENDOR_ARCH = fedora/x86_64
         OS_MASTER_VENDOR_VERSION = fedora/7
    OS_MASTER_VENDOR_VERSION_ARCH = fedora/7/x86_64
                        OS_VENDOR = centos
                       OS_VERSION = 7
                   OS_VENDOR_ARCH = centos/x86_64
                OS_VENDOR_VERSION = centos/7
           OS_VENDOR_VERSION_ARCH = centos/7/x86_64
Configuration tree:
              Linux-i386.conf : missing/empty
               GNU/Linux.conf : OK
                  fedora.conf : missing/empty
           fedora/x86_64.conf : missing/empty
                fedora/7.conf : missing/empty
         fedora/7/x86_64.conf : missing/empty
                  centos.conf : missing/empty
           centos/x86_64.conf : missing/empty
                centos/7.conf : missing/empty
         centos/7/x86_64.conf : missing/empty
                    site.conf : missing/empty
                   local.conf : OK
```

Upgrade-ux help

```
$ sudo opt/upgrade-ux/bin/upgrade-ux help
Usage: upgrade-ux [-dDFsSpvV] [-c DIR ] COMMAND [-- ARGS...]

upgrade-ux comes with ABSOLUTELY NO WARRANTY; for details see
the GNU General Public License at: http://www.gnu.org/licenses/gpl.html

Available options:
 -c DIR         alternative config directory; instead of /etc/opt/upgrade-ux
 -d             debug mode; log debug messages
 -D             debugscript mode; log every function call
 -F             forcing preview or upgrade to continue when entering next
stage is             not allowed
 -s             simulation mode; show what scripts upgrade-ux would include
 -S             step-by-step mode; acknowledge each script individually
 -p             preview mode; run all install or other commands in preview
 -v             verbose mode; show more output
 -V             version information

List of commands:
 dump           dump configuration and system information
 mkdist         create a compressed tar archive distribution
 purgelogs      purge the LOG [var/opt/upgrade-ux/log] directory
 test           a simple test workflow
 upgrade        upgrade the operating system
```
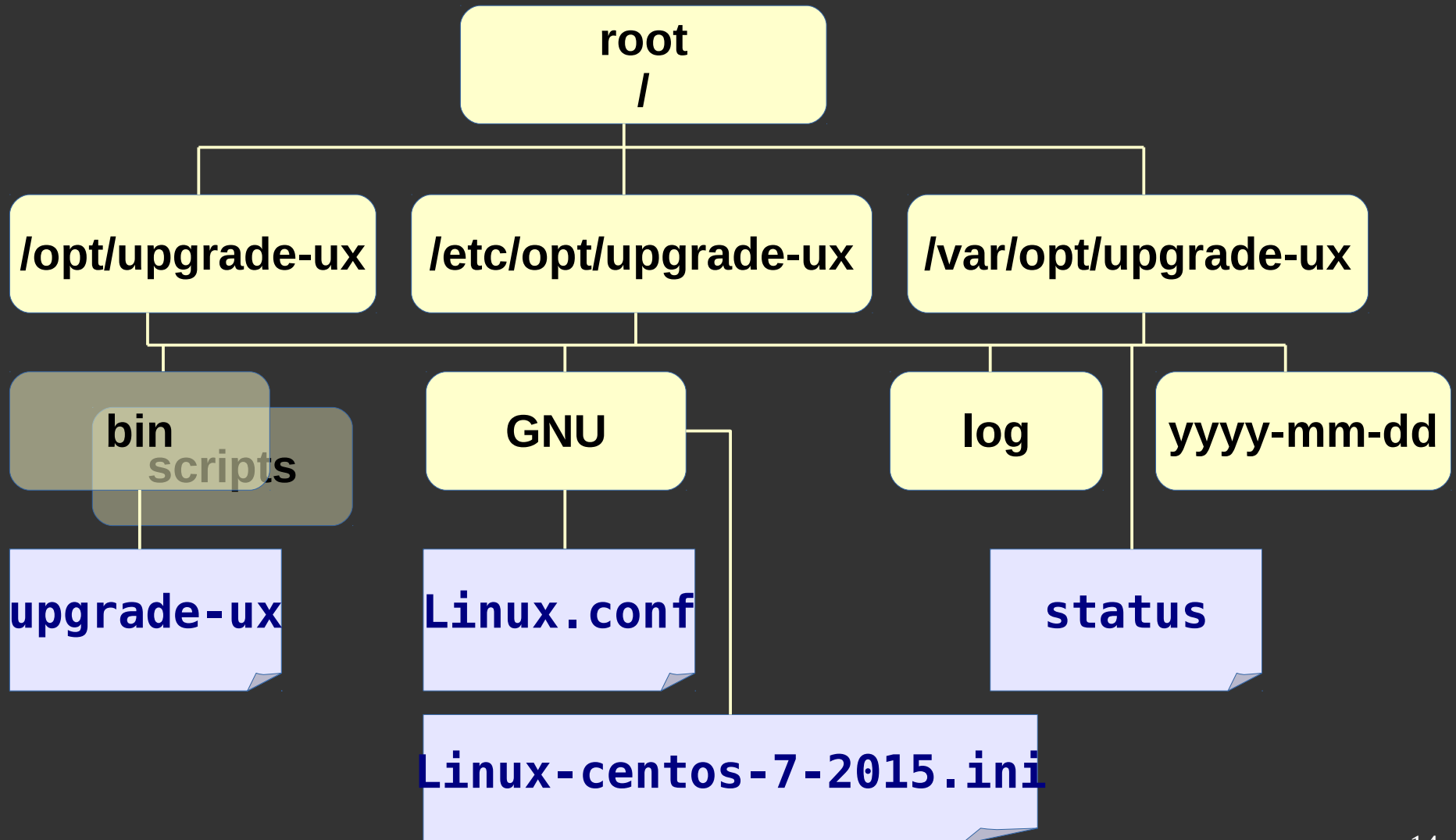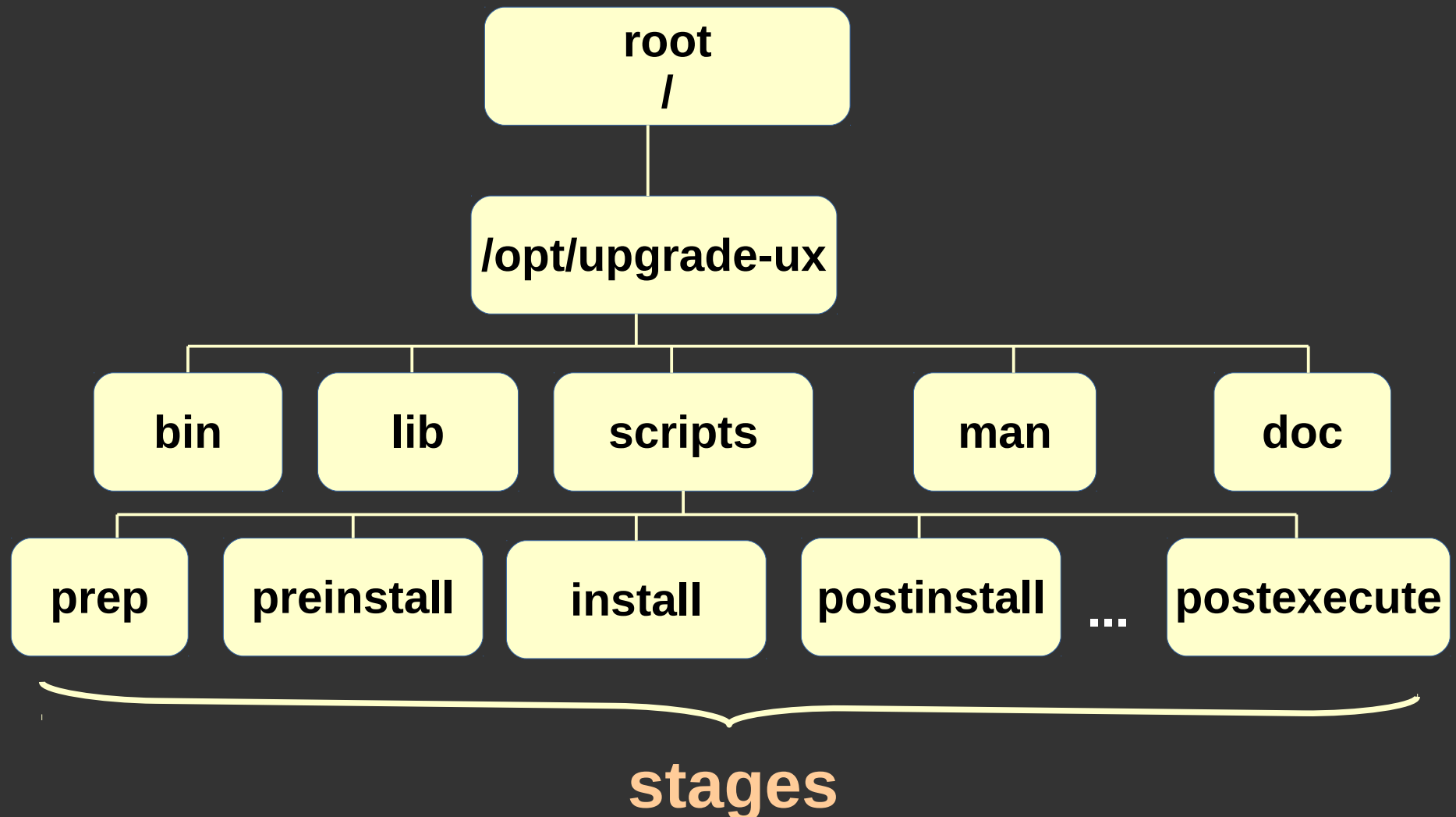
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The main paths within upgrade-ux

```
                        ┌─────────┐
                        │  root   │
                        │    /    │
                        └────┬────┘
          ┌──────────────────┼──────────────────┐
┌─────────────────┐ ┌─────────────────────┐ ┌─────────────────────┐
│ /opt/upgrade-ux │ │ /etc/opt/upgrade-ux │ │ /var/opt/upgrade-ux │
└─────────────────┘ └─────────────────────┘ └─────────────────────┘
```

/opt/upgrade-ux   **/etc/opt/upgrade-ux**   **/var/opt/upgrade-ux**

bin   **scripts**   **GNU**   **log**   **yyyy-mm-dd**

`upgrade-ux`   `Linux.conf`   `status`

`Linux-centos-7-2015.ini`

Where are the scripts?

Running upgrade-ux

- `/opt/upgrade-ux/bin/upgrade-ux -vp`

  - When successful re-run without the "p" option

  - If it fails it will tell you and give some clues

  - Restart it again to continue 'till the end

- Try it out : fully functional for HP-UX

- Working on the Linux tree

- Feedback is always welcome

- More info at
  http://www.it3.be/projects/upgrade-ux.html