



```
Script started on 2025-06-29 13:29:14+07:00 [COMMAND="./Programming/check.sh" TERM="xterm-256color" TTY="/dev/pts/1" COLUMNS="110" LINES="19"]
System Health Status
Hostname : localhost
Operating System: "Fedora Linux 42 (KD
Kernel Version: 6.15.4-200.fc42.x86_64
OS Architecture: 64 Bit OS
                               "Fedora Linux 42 (KDE Plasma Mobile)"
System Uptime : up 1 hour, 11 minutes
Current System Date & Time : Min 29 Jun 2025 13:29:14
                ****************
           .;cccccccccccccc;
        .:cccccccccccccccccccc
   .;ccccccccc;.:dddl:.;cccccc;.
.:cccccccccc;OWMKOOXMWd;cccccc:
 ccccc; OMMKxdd: ; MMMkddc.; cccccccccc;
ccccc;XMO';ccccc;MMM.;ccccccccccccccccccccccccc;
cccc:0MNc.ccc.xMMd:cccccccccccc:
ccccc;dNMWXXXWM0:;ccccccccccc;,ccccccc;.:odl:.;ccccccccccc;..
ccccccccccccccccccccccccccccccccccc
 :cccccccccccccc:;,.bima@localhost
OS: Fedora Linux 42 (KDE Plasma Mobile) x86 64
Host: 2349N7G (ThinkPad T430)
Kernel: Linux 6.15.4-200.fc42.x86_64
Uptime: 1 hour, 11 mins
Packages: 3575 (rpm), 51 (flatpak), 16 (snap)
Shell: bash 5.2.37
Display (AU0363C): 1366x768 @ 60 Hz in 14" [Built-in]
DE: KDE Plasma 6.4.1
WM: KWin (X11)
WM Theme: Breeze
Theme: Breeze (Light) [Qt]
Icons: breeze [Qt]
Font: Noto Sans (10pt) [Qt]
Cursor: breeze (24px)
Terminal: qmlkonsole
CPU: Intel(R) Core(TM) i5-3230M (4) @ 3.20 GHz
GPU: Intel 3rd Gen Core processor Graphics Controller @ 1.10 GHz [Integrated] Memory: 4.08 GiB / 11.49 GiB (35%) Swap: 0 B / 8.00 GiB (0%) Disk (/): 67.98 GiB / 17.66 GiB (58%) - btrfs
Local IP (wlp3s0): 192.168.1.18/24
Battery (45N1015): 45% [Discharging]
Locale: id_ID.UTF-8
Read-only File Systems:
   All file systems are writable
Mounted File Systems:
                                                                                                                                                                                                      (rw,relatime,seclabel,compress=zstd:1,ssd,discard=async,space_cache=v2,subvolid=257
                                                                                                                                                                         btrfs
/dev/sda3
                                                                                                                                                                type
devtmpfs
                                                                                       /dev
                                                                                                                                                                         devtmpfs
                                                                                                                                                                                                      (rw,nosuid,seclabel,size=6005492k,nr_inodes=1501373,mode=755,inode64)
                                                                                                                                                                                                     (Tw,nosuid,nodev,seclabel,inode64)
(rw,nosuid,noexec,relatime,seclabel,gid=5,mode=620,ptmxmode=000)
 tmpfs
                                                                                        /dev/shm
                                                                                                                                                                type
                                                                                                                                                                         tmpfs
devpts
                                                                                  on
                                                                                        /dev/pts
                                                                                                                                                                type
                                                                                                                                                                         devpts
                                                                                  on
on
on
                                                                                                                                                                type
type
sysfs
                                                                                        /svs
                                                                                                                                                                         sysfs
                                                                                                                                                                                                      (rw.nosuid.nodev.noexec.relatime.seclabel)
                                                                                       /sys/kernel/security
 securityfs
                                                                                                                                                                          securityfs
                                                                                                                                                                                                     (rw,nosuid,nodev,noexec,relatime)
(rw,nosuid,nodev,noexec,relatime,seclabel,nsdelegate,memory_recursiveprot)
                                                                                        /sys/fs/cgroup
cgroup2
                                                                                                                                                                type
                                                                                                                                                                         cgroup2
                                                                                  on
                                                                                        /svs/fs/pstore
                                                                                                                                                                type
                                                                                                                                                                         pstore
                                                                                                                                                                                                      (rw.nosuid.nodev.noexec.relatime.seclabel)
                                                                                  on
on
on
                                                                                       /sys/firmware/efi/efivars
/sys/fs/bpf
/sys/kernel/config
                                                                                                                                                                                                     (rw,nosuid,nodev,noexec,relatime)
(rw,nosuid,nodev,noexec,relatime,mode
efivarfs
                                                                                                                                                                          efivarfs
                                                                                                                                                                         bpf
configfs
bpf
configfs
                                                                                                                                                                type
                                                                                                                                                                type
                                                                                                                                                                                                      (rw, nosuid, nodev, noexec, relatime)
                                                                                                                                                                         proc
proc
                                                                                  on
on
                                                                                       /proc
/run
                                                                                                                                                                type
                                                                                                                                                                                                     (rw,nosuid,nodev,noexec',relatime)
(rw,nosuid,nodev,seclabel,size=2410560k,nr_inodes=819200,mode=755,inode64)
                                                                                                                                                                         tmpfs
selinuxfs
                                                                                                                                                                type
                                                                                        /sys/fs/selinux
selinuxf
                                                                                  on
                                                                                                                                                                type
                                                                                                                                                                                                      (rw, nosuid, noexec, relatime)
                                                                                        /proc/sys/fs/binfmt_misc
/dev/hugepages
/sys/kernel/debug
                                                                                                                                                                                                     (rw, relatime, fd=33, pgrp=1, timeout=0, minproto=5, maxproto=5, direct, pipe_ino=6311)
(rw, nosuid, nodev, relatime, seclabel, pagesize=2M)
(rw, nosuid, nodev, noexec, relatime, seclabel)
                                                                                                                                                                type
type
                                                                                                                                                                         autofs
hugetlbfs
systemd-1
                                                                                  on
on
hugetlbfs
                                                                                  on
debugfs
                                                                                                                                                                type
                                                                                                                                                                         debugfs
binder
                                                                                  on
on
on
                                                                                        /dev/binderfs
                                                                                                                                                                type
type
                                                                                                                                                                         binder
                                                                                                                                                                                                      (rw.relatime.max=1048576)
mqueue
tracefs
                                                                                        /dev/mqueue
/sys/kernel/tracing
                                                                                                                                                                                                     (rw,nosuid,nodev,noexec,relatime,seclabel)
(rw,nosuid,nodev,noexec,relatime,seclabel)
                                                                                                                                                                         mqueue
tracefs
                                                                                                                                                                type
                                                                                                                                                                                                      (ro,nosuid,nodev,noexec,relatime,nosymfollow,seclabel,size=1024k,nr_inodes=1024,moc
tmpfs
                                                                                  on
                                                                                        /run/credentials/systemd-journald.service
                                                                                                                                                                type
                                                                                                                                                                         tmpfs
                                                                                        /sys/fs/fuse/connections
/boot
                                                                                                                                                                                                     (rw,nosuid,nodev,noexec,relatime)
(rw,relatime,seclabel)
 fusect1
                                                                                  on
on
                                                                                                                                                                         fusect1
 /dev/sda2
                                                                                                                                                                          ext4
                                                                                                                                                                type
                                                                                  on
on
on
                                                                                                                                                                                                      (rw,relatime,seclabel,compress=zstd:1,ssd,discard=async,space_cache=v2,subvolid=256
 /dev/sda3
                                                                                        /home
                                                                                                                                                                type
                                                                                                                                                                         btrfs
 tmpfs
/var/lib/snapd/snaps/bare_5.snap
                                                                                        /tmp
/var/lib/snapd/snap/bare/5
                                                                                                                                                                type
                                                                                                                                                                         tmpfs
squashfs
                                                                                                                                                                                                      (tw,nosuid,nodev,seclabel,size=6026400k,nr_inodes=1048576,inode64)
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
                                                                                                                                                                                                     (ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
/var/lib/snapd/snaps/core_17210.snap
                                                                                  on
                                                                                        /var/lib/snapd/snap/core/17210
                                                                                                                                                                type
                                                                                                                                                                         squashfs
                                                                                                                                                                type
/var/lib/snapd/snaps/core20 2599.snap
                                                                                         /var/lib/snapd/snap/core20/2599
                                                                                                                                                                          squashfs
 /var/lib/snapd/snaps/core_17212.snap
                                                                                         /var/lib/snapd/snap/core/17212
                                                                                                                                                                          squashfs
                                                                                                                                                                                                      (ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
/var/lib/snapd/snaps/core18_2887.snap
                                                                                  on
on
                                                                                         /var/lib/snapd/snap/core18/2887
                                                                                                                                                                type
                                                                                                                                                                         squashfs
/var/lib/snapd/snaps/core22_2010.snap
/var/lib/snapd/snaps/core24_1006.snap
/var/lib/snapd/snaps/easy-disk-cleaner_48.snap
                                                                                        /var/lib/snapd/snap/core22/2010
/var/lib/snapd/snap/core24/1006
/var/lib/snapd/snap/easy-disk-cleaner/48
                                                                                                                                                                                                     (ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdt
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdt
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdt
                                                                                                                                                                type
                                                                                                                                                                          squashfs
                                                                                  on
on
                                                                                                                                                                          squashfs
squashfs
                                                                                                                                                                type
/var/lib/snapd/snaps/gnome-3-28-1804_198.snap
/var/lib/snapd/snaps/gnome-46-2404_90.snap
/var/lib/snapd/snaps/gnome-42-2204_202.snap
                                                                                                                                                                                                     (ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdt
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdt
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdt
                                                                                                                                                                type
type
                                                                                  on
                                                                                        /var/lib/snapd/snap/gnome-3-28-1804/198
                                                                                                                                                                         squashfs
                                                                                        /var/lib/snapd/snap/gnome-46-2404/90
/var/lib/snapd/snap/gnome-42-2204/202
                                                                                                                                                                          squashfs
squashfs
                                                                                                                                                                type
                                                                                        /var/lib/snapd/snap/gtk-common-themes/1535
/var/lib/snapd/snap/mesa-2404/887
/var/lib/snapd/snap/ngrok/280
/var/lib/snapd/snaps/gtk-common-themes_1535.snap
/var/lib/snapd/snaps/mesa-2404_887.snap
/var/lib/snapd/snaps/ngrok_280.snap
                                                                                                                                                                                                     (ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
(ro,nodev,relatime,context=system_u:object_r:snappy_snap_t:s0,errors=continue,x-gdu
                                                                                 on
                                                                                                                                                                type
                                                                                                                                                                         squashfs
                                                                                                                                                                         squashfs
squashfs
                                                                                                                                                                type
                                                                                        /var/lib/snapd/snap/openbabel/27
                                                                                                                                                                                                     (ro, nodev, relatime, context=system_u: object_r: snappy_snap_t:s0, errors=continue, x-gdt (ro, nodev, relatime, context=system_u: object_r: snappy_snap_t:s0, errors=continue, x-gdt (ro, nodev, relatime, context=system_u: object_r: snappy_snap_t:s0, errors=continue, x-gdt (rw, relatime, fmask=0077, dmask=0077, codepage=437, iocharset=ascii, shortname=winnt, errors
/var/lib/snapd/snaps/openbabel 27.snap
                                                                                  on
                                                                                                                                                                tvpe
                                                                                                                                                                         squashfs
                                                                                        /var/lib/snapd/snap/spapdue1/2/
/var/lib/snapd/snap/snapd/24718
/var/lib/snapd/snap/ppsspp-emu/11
/boot/efi
                                                                                                                                                                         squashfs
squashfs
vfat
/var/lib/snapd/snaps/snapd_24718.snap
/var/lib/snapd/snaps/ppsspp-emu_11.snap
```

type

type

type type

type

type type

binfmt_misc

fuse.portal

fuse.gvfsd-fuse

(rw,relatime)

tmpfs rpc_pipefs (rw,nosuid,nodev,noexec,relatime)
(ro,nosuid,nodev,noexec,relatime,nosymfollow,seclabel,size=1024k,nr_inodes=1024,modes=1024k,nr_inodes=1

(rw,nosuid,nodev,relatime,seclabel,size=1205276k,nr_inodes=301319,mode=700,uid=1000

(rw,nosuid,nodev,relatime,user_id=1000,group_id=1000)
(rw,nosuid,nodev,relatime,user_id=1000,group_id=1000)

Disk Usage (0-85%=OK/HEALTHY, 85-95%=WARNING, 95-100%=CRITICAL): /dev/sda3 / 60% OK/HEALTHY efivarfs /sys/firmware/efi/efivars 39% OK/HEALTHY /dev/sda2 /boot 41% OK/HEALTHY /dev/sda3 /home 60% OK/HEALTHY /dev/sda1 /boot/efi 4% OK/HEALTHY No zombie processes found INode Usage (0-85%=OK/HEALTHY, 85-95%=MARNING, 95-100%=CRITICAL):
/dev/sda3 / -% (Unavailable or Btrfs subvolume)
devtmpfs /dev 1% OK/HEALTHY
tmpfs /dev/shm 1% OK/HEALTHY
efivarfs /sys/firmware/efi/efivars -% (Unavailable or Btrfs subvolume)

on

on on

on

/run/user/1000

/run/user/1000/gvfs

/run/user/1000/doc

/proc/sys/fs/binfmt_misc /run/credentials/systemd-resolved.service /var/lib/nfs/rpc_pipefs

/dev/sda1

tmpfs

sunrpc

tmofs gvfsd-fuse

portal

binfmt_misc

```
tmofs /run 1% OK/HEALTHY
 tmpfs /run/credentials/systemd-journald.service 1% OK/HEALTHY
/dev/sda2 /boot 1% OK/HEALTHY
/dev/sda2/boot 1% OK/HEALTHY
/dev/sda3/home -% (Unavailable or Btrfs subvolume)

tmpfs /tmp 1% OK/HEALTHY
/dev/sda1 /boot/efi -% (Skipped: vfat has no valid inode info)
tmpfs /run/credentials/systemd-resolved.service 1% OK/HEALTHY

tmpfs /run/user/1000 1% OK/HEALTHY
SWAP Usage:
Total Swap: 8.00 GiB
Swap Free : 8.00 GiB
CPU Utilization:
13:29:16 all 31,31
Rata-rata: all 31,31
                                       0,00
                                                  3,79
                                                             1,52
                                                                        2,02
                                                                                    0,25
                                                                                               0,00
                                                                                                           0,00
                                                                                                                      0,00
                                                                                                                               61,11
  4,89, 5,59, 5,17
Recent Reboot Events:
          system boot 6.15.4-200.fc42. Sun Jun 29 12:17 still system boot 6.15.4-200.fc42. Sun Jun 29 12:15 - 12:17
                                                                               still running
reboot
reboot
            system boot 6.15.4-200.fc42. Sun Jun 29 08:45 - 08:46 (00:01)
Recent Shutdown Events:
Shutdown system down 6.15.4-200.fc42. Sun Jun 29 12:17 - 12:17 (00:00) shutdown system down 6.15.4-200.fc42. Sun Jun 29 08:46 - 12:15 (03:28) shutdown system down 6.15.4-200.fc42. Sun Jun 29 08:44 - 08:45 (00:00)
Top 5 Memory-Consuming Processes
                                          STAT COMMAND
                      PPID USER
%МЕМ
            PID
                                          S1 /usr/lib64/firefox/firefox -contentproc -isForBrowser -prefsHandle 0:50716 -prefMapHandle 1:272986 -jsInitHandle 2:242716 -parentBuildID 20250619215142 -sandboxReporter Ssl /usr/lib64/firefox/firefox
 6.0
4.6
           9986
                      9743 bima
           9743
                      1860 bima
          10147
                      9743 bima
                                          S1 /usr/lib64/firefox/firefox -contentproc -isForBrowser -prefshandle 0:44047 -prefMapHandle 1:272986 -jsInitHandle 2:242716 -parentBuildID 20250619215142 -sandboxReporter
 4.4
                                          Ssl /usr/bin/plasmashell --no-respawn
Ssl /usr/bin/simplescreenrecorder --logfile
 3.5
2.7
           2195
                      1860 bima
           6927
                      1860 bima
Top 5 CPU-Consuming Processes:
%CPU
152
           PID
6927
                      PPID USER
1860 bima
                                          STAT COMMAND
                                          Ssl /usr/bin/simplescreenrecorder --logfile
                                         1 /usr/lib64/firefox/firefox -contentproc -isForBrowser -prefshandle 0:44047 -prefMapHandle 1:272986 -jsInitHandle 2:242716 -parentBuildID 20250619215142 -sandboxReporter Ssl /usr/lib64/firefox/firefox
Ssl+ /usr/lib6xec/Xorg -nolisten tcp -background none -seat seat0 vt2 -auth /run/sddm/xauth_jgbQzC -noreset -displayfd 15
Ssl /usr/bin/kwin_xl1 --replace
26.7
          10147
                      9743 bima
11 2
           9743
                       1860 bima
          1600
2174
 5.7
                      1860 bima
Broken Packages (DNF):
No broken packages detected.
Broken Permissions (Expected: root owned, 755/700):
NOTE: Some fields may be blank or NA if unsupported by the system.
CPU Info:
Architecture:
                                                         Intel(R) Core(TM) i5-3230M CPU @ 2.60GHz
Model name:
Thread(s) per core:
Core(s) per socket:
Socket(s):
Memory Info:
                    total
                                                                      shared buff/cache
                                                                                                 available
                                       used
                                                        free
                      11Gi
                                     4.2Gi
                                                      769Mi
                                                                       429Mi
                                                                                        7.4Gi
  RAM Total : 11770 MB
SWAP Total: 8191 MB
Disk Info:
NAME
        SIZE TYPE MOUNTPOINT
119,2G disk
sda
├sda1 600M part /boot/efi
sda2 1G part /boot
sda3 117,7G part /home
srø
          1024M rom
               8G disk [SWAP]
GPU Info:
00:02.0 VGA compatible controller: Intel Corporation 3rd Gen Core processor Graphics Controller (rev 09)
Network Interfaces
lo UNKNOWN 00:00:00:00:00:00
enp0s25 DOWN 28:d2:44:07:b4:19
wlp3s0 UP de:48:b2:2f:c2:05
Checking Battery Info...
Using UPower at: /org/freedesktop/UPower/devices/battery_BAT0
  Status : discharging
Capacity : 82%
Health : 82%
   Battery Health Status: Good - Some Wear
Disk SMART Health Check:
Checking /dev/sda...
[sudo] password for bima:
Sorry, try again.

[sudo] password for bima:

SMART overall-health self-assessment test result: PASSED
Fan Health Check:
                      enabled
```

5825

disengaged

enable, disable

Script done on 2025-06-29 13:32:08+07:00 [COMMAND_EXIT_CODE="0"]

level <level> (<level> is 0-7, auto, disengaged, full-speed)

watchdog <timeout> (<timeout> is 0 (off), 1-120 (seconds))

speed:
level:
commands:

commands:

Berikut adalah rangkuman sistem ThinkPad T430 milik Bima, diperluas dengan estimasi ketahanan hingga 4 tahun masa kuliah atau sampai end-of-life (EOL) perangkat:

Rangkuman Sistem – ThinkPad T430 (Bima)

Kondisi Sistem Saat Ini:

Komponen	Spesifikasi / Status
CPU	Intel Core i5-3230M (4 thread, 3.2 GHz)
GPU	Intel HD Graphics 4000 (Integrated)
RAM	11.5 GB (tersedia ~7.2 GB saat idle)
Disk	120 GB SSD Btrfs (41% terpakai, sehat)
OS	Fedora Linux 42 (KDE Plasma Mobile) – modern, aktif dikembangkan
Baterai	Kapasitas 82% (masih sehat – <i>Good / Some Wear</i>)
Kipas	Aktif otomatis via thinkfan (terdeteksi hingga 5800+ RPM pada disengaged mode)
Suhu / Beban	CPU usage tinggi saat SSR aktif, Load avg: 5.1 → wajar untuk laptop generasi ini
File system	Tidak ada error, semua filesystem RW (tidak read-only), tidak ada inode penuh

🗾 Estimasi Masa Guna Laptop (Normal vs Berat)

Penggunaan Normal – Mahasiswa (kuliah + coding + browsing)

Tahun Kuliah	Status Performa	Risiko	Keterangan
Tahun 1–2	✓ Sangat layak	Rendah	Multitasking ringan lancar (office, browser, coding)
Tahun 3	Masih layak	Menengah	Bisa mulai terasa lambat jika kebutuhan naik (VM, simulasi berat)
Tahun 4	1 Terbatas	Menengah– Tinggi	Baterai bisa mulai degradasi <60%, software bisa mulai lebih berat
>2028 (5+ thn)	X Tidak ideal	Tinggi	Tidak disarankan dipakai sebagai perangkat utama, hanya untuk cadangan

Dengan perawatan baik dan upgrade kecil (misal ganti baterai), laptop bisa bertahan hingga akhir kuliah.

🦲 Penggunaan Berat – Programming intensif, virtualisasi, multimedia, ML training

- Tahun 1–2: <u>Masih bisa</u>, tapi CPU sering penuh (khususnya dengan banyak tab atau
- Tahun 3–4: X Akan sering bottleneck (RAM & CPU penuh), tidak nyaman untuk beban berat harian.

- Tidak cocok untuk:
 - Deep learning GPU training
 - Video editing high-res
 - Game 3D modern

🧠 Kompatibilitas Aplikasi & Pengembangan

Kompatibel?	Catatan
V	Aman untuk skripsi, tugas, dll.
V	Lancar
V	Kompatibel penuh
<u> </u>	Bisa, tapi berat → hanya untuk project ringan
<u> </u>	Bisa, tapi CPU sering penuh
V	CPU-based (numpy, sklearn, pandas) lancar
X	Tidak punya dedicated GPU (tidak ideal untuk PyTorch/TF)



🔬 Kesiapan untuk Machine Learning

Cocok untuk:

- Data Science awal: Pandas, Matplotlib, Seaborn, NumPy
- Model klasik: SVM, RandomForest, Logistic Regression
- Pembelajaran dasar TensorFlow / PyTorch (CPU-only)

X Tidak cocok untuk:

- CNN, RNN, Vision, NLP bertingkat
- Dataset besar (misalnya CIFAR-100, ImageNet)
- Framework dengan CUDA (tidak ada NVIDIA GPU)

Estimasi Daya Tahan Fisik / Baterai

Komponen	Estimasi Saat Ini	Perkiraan di Tahun ke-4
Baterai	82% kapasitas	±60% kapasitas (1–1.5 jam waktu pakai)
Kipas	Aktif, sehat	Bisa tetap awet dengan thinkfan
Keyboard	ThinkPad T430 awet (bisa ganti per key)	Masih oke
SSD	Belum mendekati limit (TRIM aktif via	Aman

Btrfs)



🔧 Saran Jangka Panjang

Komponen Rekomendasi

Baterai Siap-siap ganti di tahun ke-3/4 (jika daya tahan <45 menit)

OS Fedora 42 → masih disupport hingga 2026–2027

Cadangan Simpan backup sistem, dual-boot atau Live USB untuk jaga-jaga

Pengganti Siapkan migrasi ke laptop dengan GPU (NVIDIA/AMD) di akhir kuliah

🧭 Kesimpulan Akhir

🎓 Laptop ThinkPad T430 milik Bima masih sangat layak digunakan selama masa kuliah (4 tahun) untuk:

- Pemrograman
- Pekerjaan akademik
- Riset non-berat
- Pembelajaran Machine Learning dasar

💡 Namun untuk project ML berat atau multimedia intensif di semester akhir atau skripsi berbasis AI — disarankan upgrade ke laptop dengan GPU khusus.

Untuk belajar Machine Learning (ML) secara efisien di laptop seperti ThinkPad T430 milikmu (tanpa GPU khusus), berikut solusi **praktis, ringan, dan tetap powerful** untuk menyesuaikan keterbatasan perangkat namun tetap mendalam secara materi:

🎯 Strategi Belajar Machine Learning di Laptop Mid-End (CPU-only)

🔽 1. Fokus pada Algoritma Klasik Dulu

Kamu bisa membangun fondasi ML yang kuat **tanpa GPU**.

Gunakan pustaka:

- scikit-learn untuk klasifikasi, regresi, clustering.
- pandas, numpy untuk manipulasi data.
- matplotlib, seaborn visualisasi.
- joblib untuk mempercepat proses dengan multi-thread CPU.
- Ini semua lancar dijalankan di laptopmu.

2. Gunakan Dataset Ringan

Hindari dataset besar yang memakan RAM dan CPU.

Dataset rekomendasi:

- Iris, Wine, Breast Cancer → bawaan sklearn.datasets.
- MNIST (784 fitur) → cukup ringan di CPU.
- CSV dataset dari Kaggle ukuran <10MB.

3. Gunakan Google Colab untuk Deep Learning / GPU

Ini solusi gratis dan legal untuk menjalankan PyTorch/TensorFlow dengan GPU.

Kode tetap kamu tulis di laptop, training jalan di cloud:

Di Google Colab

!nvidia-smi # Verifikasi GPU

- Cocok untuk belajar:
 - CNN, LSTM, Transformer
 - · TensorFlow, PyTorch, keras
 - Image & NLP project

🔽 4. Gunakan VSCode atau JupyterLite secara lokal

Untuk belajar model kecil:

- Jalankan jupyter notebook lokal
- Atau pakai vscode + extension Python

Untuk pembelajaran konsep → **cukup ringan** di RAM dan CPU.

🔽 5. Gunakan Virtual Environment (venv/conda) agar ringkas

python3 -m venv ml-env
source ml-env/bin/activate
pip install numpy pandas scikit-learn matplotlib seaborn

Kurikulum Rekomendasi (Tanpa GPU)



Topik Tools Linear Regression sklearn

Tools Topik

KNN, SVM, Decision Tree sklearn

Feature Engineering pandas, sklearn Model Evaluation sklearn.metrics

📊 Lanjut

Topik **Tools**

Ensemble (RandomForest, XGBoost) sklearn, xgboost

Clustering (KMeans, DBSCAN) sklearn Dimensi reduksi (PCA, tSNE) sklearn NLP dasar (TFIDF, n-grams) sklearn, nltk

🔖 Advanced (via Google Colab)

Topik Tools

Neural Networks keras, tf CNN, LSTM pytorch **Transformers** HuggingFace

Dataset besar (CIFAR10, IMDB) torch + Colab GPU



🚀 Kombinasi Ideal (Perangkat & Cloud)

Kegiatan Di Laptop Di Colab

Koding & eksplorasi data Ya (VSCode, Jupyter) Ya Training model kecil ✓ Ya ✓ Ya

Ya (GPU/TPU gratis) Deep learning (DL) training X Tidak

Visualisasi & evaluasi ✓ Ya ✓ Ya Latihan soal & studi kasus **✓** Ya ✓ Ya

Penutup

Kamu tidak harus beli laptop baru hanya untuk belajar ML. Gunakan strategi:

- Local untuk eksplorasi & coding.
- Cloud untuk eksekusi berat.

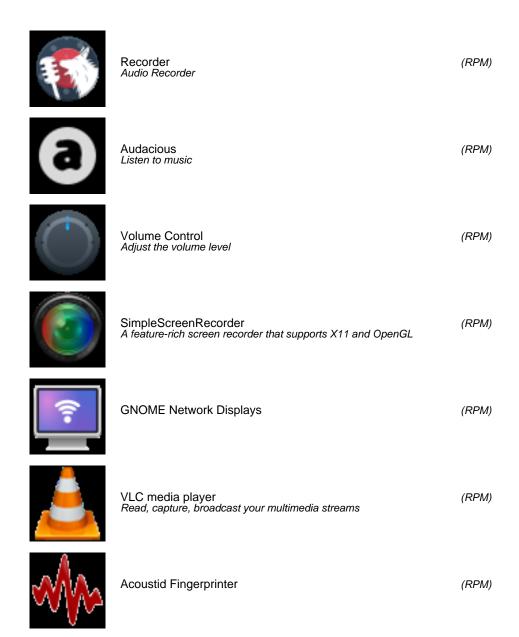
Mau aku bantu setup:

- ml-env + library dasar di Fedora kamu?
- Atau template **notebook starter** untuk belajar ML dengan CPU?

Tinggal bilang!

Jika kamu ingin versi **PDF** dari ringkasan ini, atau ingin **disisipkan sebagai lampiran di** check.pdf, tinggal bilang.

■ AudioVideo (With Icon)



■ Development (With Icon)



OpenJDK 21 for x86_64 Monitoring & Management Console (21(@FFM).6-2.fc42.x86_64) Monitor and manage OpenJDK applications

■ Education (With Icon)



Qur'In Hadith (Snap)
Qur'In Hadith is an Online reader with fashion interface, smooth performance and more features. It sharpens your focus on what you

■ GNOME (With Icon)



Files Access and organize files

(RPM)



Document Scanner Make a digital copy of your photos and documents

(RPM)



Disks Manage Drives and Media (RPM)



GParted Create, reorganize, and delete partitions (RPM)



Tkphone





Character Map Insert special characters into documents

(RPM)



Graphics Tablet (RPM) Set button mappings and adjust stylus sensitivity for graphics tablets

■ GTK (With Icon)



Screenshot (RPM) Take screenshots of the entire screen, of the active window or of a region



Xarchiver (RPM)
Create, extract and modify archives



Leafpad (RPM) Simple text editor



GChemCalc (RPM)
A simple calculator for chemistry



GChemTable (RPM)
A Mendeleiev table of the chemical elements



LXTerminal (RPM)
Use the command line



Parental Controls
Set parental controls and monitor usage by users

(RPM)



GChemPaint (RPM) Edit chemical 2D structures



Color Color management settings



Display Change resolution and position of monitors and projectors

(RPM)



Network Network settings

(RPM)



Icon Browser Inspect GTK Icon Theme

(RPM)



Geany A fast and lightweight IDE using GTK+

(RPM)

■ Game (With Icon)



PPSSPP (Snap) PlayStation Portable Simulator Suitable for Playing Portably (PPSSPP)



Nestopia Accurate NES Emulator

(RPM)



DOSBox Staging DOS/x86 emulator focusing on ease of use

(RPM)



WineMine Wine Minesweeper

■ Graphics (With Icon)



mtPaint
Painting program to create pixel art and manipulate digital photos

(RPM)



Luminance HDR Create and tonemap HDR images

(RPM)



Rawstudio Read, manipulate and convert digital camera raw-images (RPM)

■ Network (With Icon)



Tokodon Client for the Mastodon (RPM)



NeoChat Chat on Matrix

(RPM)



Kasts Mobile Podcast Application



Firefox Browse the Web



FileZilla Download and upload files via FTP, FTPS and SFTP

(RPM)



Chromium Web Browser Access the Internet (RPM)

■ Office (With Icon)



LibreOffice Writer (RPM)
Create and edit text and graphics in letters, reports, documents and Web pages.



LibreOffice Impress (RPM) Create and edit presentations for slideshows, meetings and Web pages.



LibreOffice Calc (RPM) Perform calculations, analyze information and manage lists in spreadsheets.

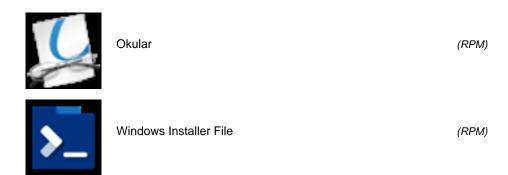


LibreOffice Base (RPM)
Manage databases, create queries and reports to track and manage your information.



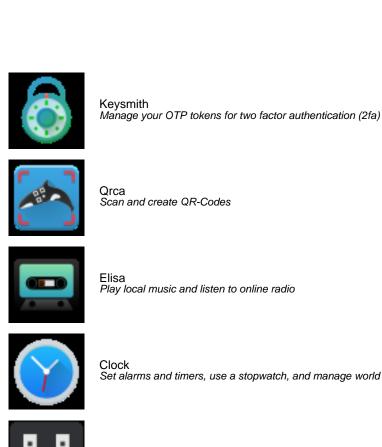
LibreOffice Draw Create and edit drawings, flow charts and logos.

■ Other (With Icon)



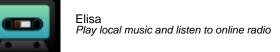
■ Qt (With Icon)

Marknote Markdown Note Management Tool	(RPM)
Settings Settings for Plasma	(RPM)
Weather View real-time weather forecasts and other information	(RPM)
Angelfish Mobile web browser	(RPM)
Arianna	(RPM)
Photos An Image gallery application	(RPM)



Qrca Scan and create QR-Codes

(RPM)



(RPM)

Clock Set alarms and timers, use a stopwatch, and manage world clocks (RPM)

(RPM) Open source media player built with Qt/QML and libmpv



Calculator (RPM) A feature rich calculator



Terminal Command line access (RPM)



Kamoso Use your webcam to take pictures or make videos (RPM)



Kdenlive (RPM) Nonlinear video editor by KDE



KStars (RPM) Desktop Planetarium



Krita Digital Painting



(RPM)

(RPM)

(RPM)



Emoji Selector Copy emojis to the clipboard (RPM)



Info Center Centralized and convenient overview of system information (RPM)



Spacebar Instant Messenger (RPM)



Dolphin (RPM)



Qt6 Assistant Shows Qt5 documentation and examples (RPM)



Qt6 Designer Design GUIs for Qt6 applications (RPM)



Qt6 Linguist Add translations to Qt5 applications



Spectacle Screenshot capture utility

(RPM)



digiKam (RPM) Manage your photographs like a professional with the power of open source



showFoto (RPM) Manage your photographs like a professional with the power of open source



Okular Universal document viewer

(RPM)

■ Science (With Icon)



Siril Astronomical image (pre-)processing program

(RPM)

■ Settings (With Icon)



Rygel Preferences

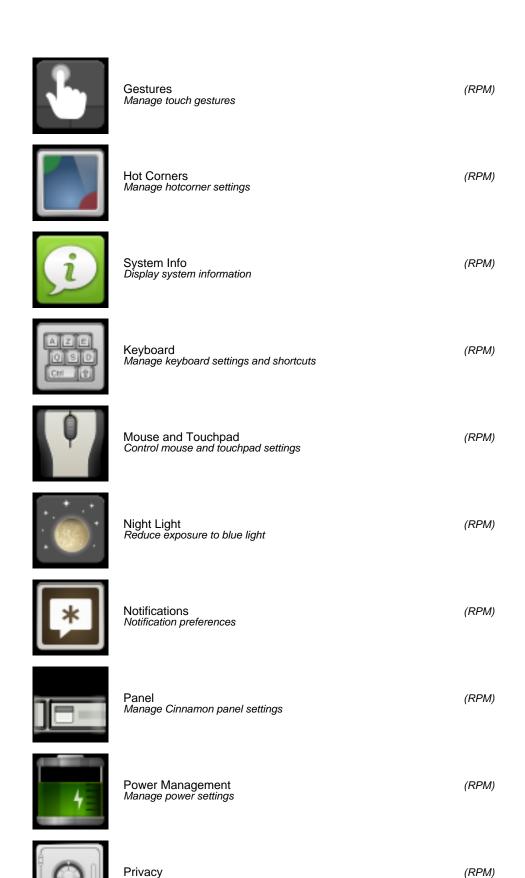




Font Selection Configure system fonts



General Miscellaneous Cinnamon preferences





Screensaver Manage screen lock settings

Cinnamon privacy settings

(RPM)



Startup Applications Manage your startup applications

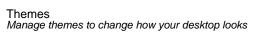
Sound

Manage sound settings

(RPM)

(RPM)

(RPM)



Window Tiling Manage window tiling preferences

(RPM)



Accessibility Configure accessibility features

(RPM)



Account details Change your user preferences and password

(RPM)



Windows Manage window preferences

(RPM)



Workspaces Manage workspace preferences

(RPM)



System Settings Control Center

(RPM)



Online Accounts Connect to your data in the cloud

■ System (With Icon)



■ Utility (With Icon)



Disk Space Saver Disk Space Analyzer that saves hundreds of gigabytes!



Virtual keyboard Turn on-screen keyboard on or off (RPM)

(Snap)

■ X-WayDroid-App (With Icon)



Waydroid

(RPM)

■ X-Wine (With Icon)



Notepad Text Editor

(RPM)



Wine OLE View Windows OLE View

(RPM)



Regedit Wine registry editor (RPM)



Wine Software Uninstaller Interface to uninstall software

(RPM)



Wine Boot Simulate restart

(RPM)



Wine Configuration Interface to set wine parameters



Wine File Wine File Browser



Wine Help Windows Help Browser

(RPM)



Wine Wordpad Text Editor

(RPM)

■ CLI Only (No Icon)



2to3

(PATH)



2to3-3.10

(PATH)



2to3-3.11

(PATH)



7z

(PATH)



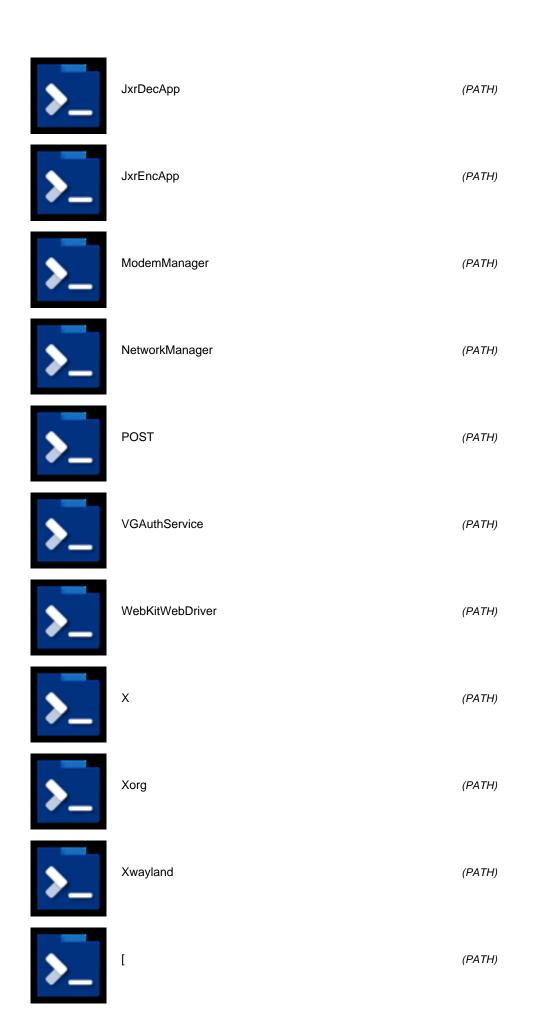
GET

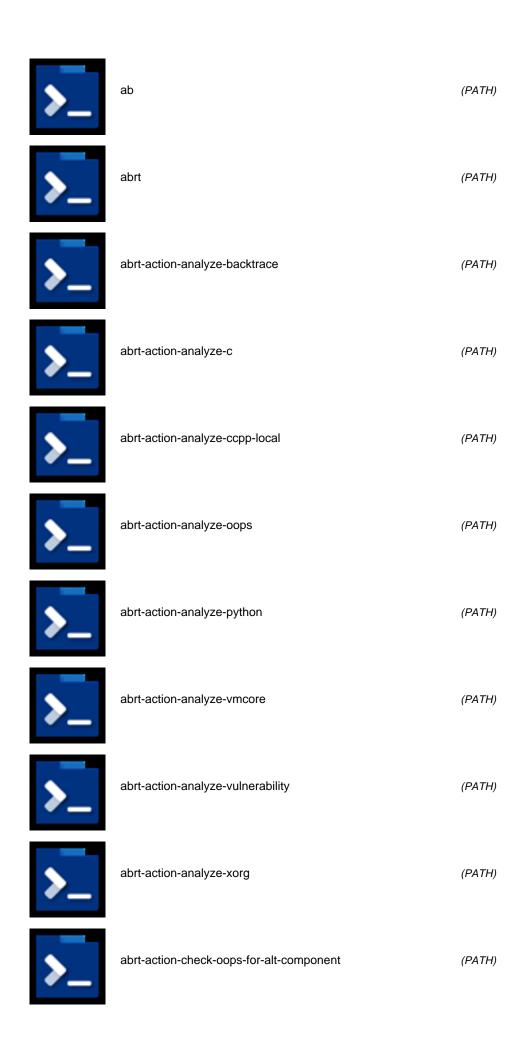
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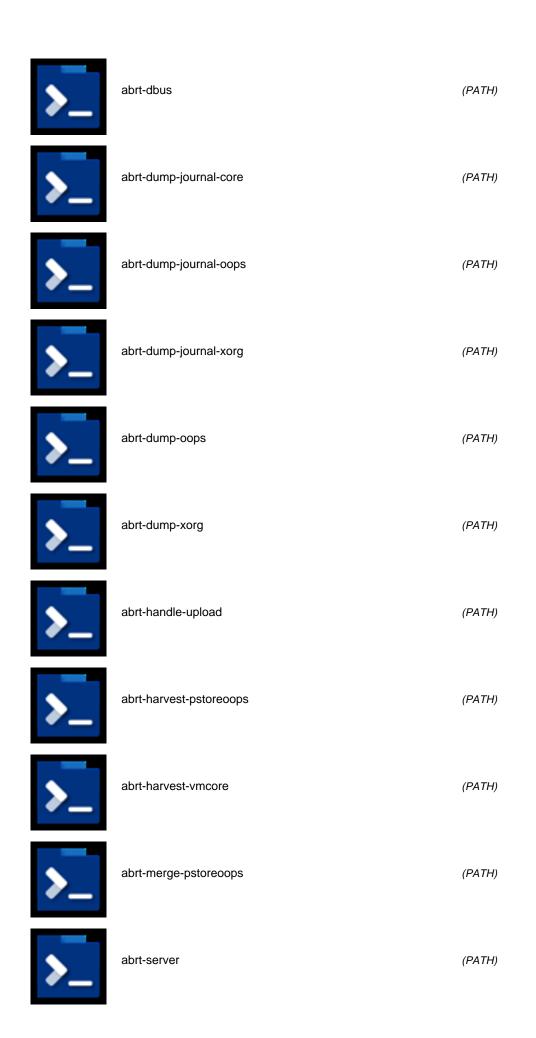
HEAD

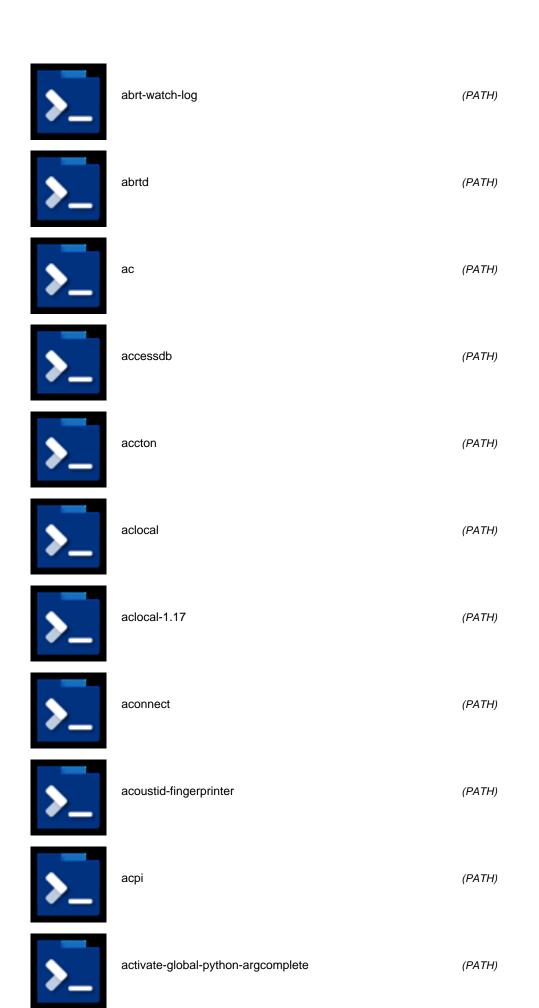
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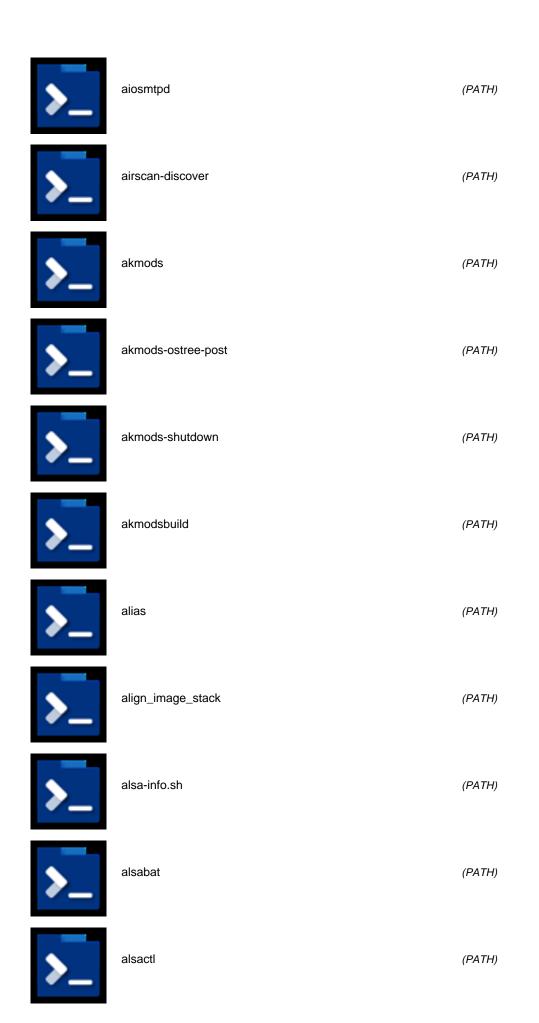


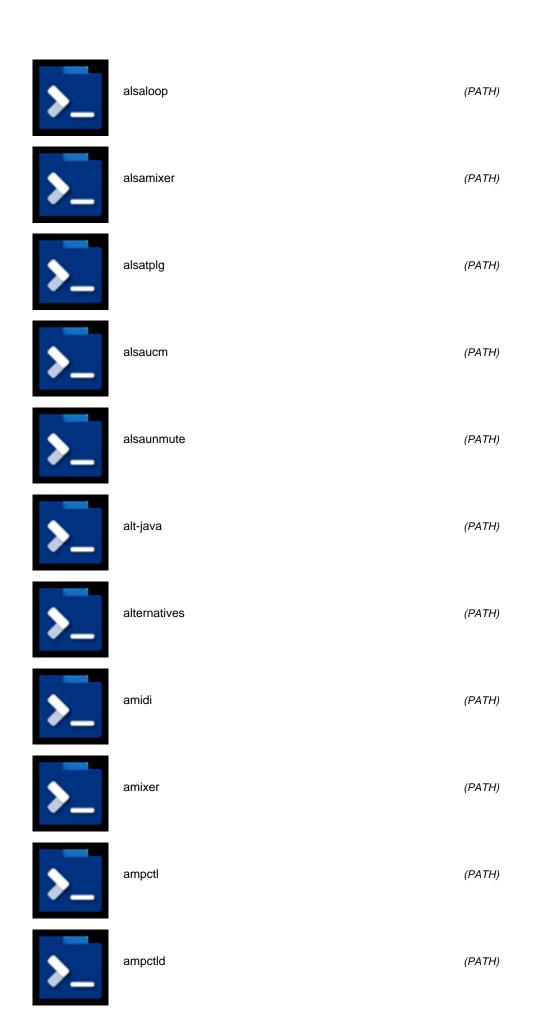
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> _	abrt-action-generate-backtrace	(PATH)
> _	abrt-action-generate-core-backtrace	(PATH)
>_	abrt-action-list-dsos	(PATH)
>_	abrt-action-notify	(PATH)
>_	abrt-action-save-package-data	(PATH)
>_	abrt-action-trim-files	(PATH)
>_	abrt-auto-reporting	(PATH)
>_	abrt-bodhi	(PATH)
> _	abrt-cli	(PATH)

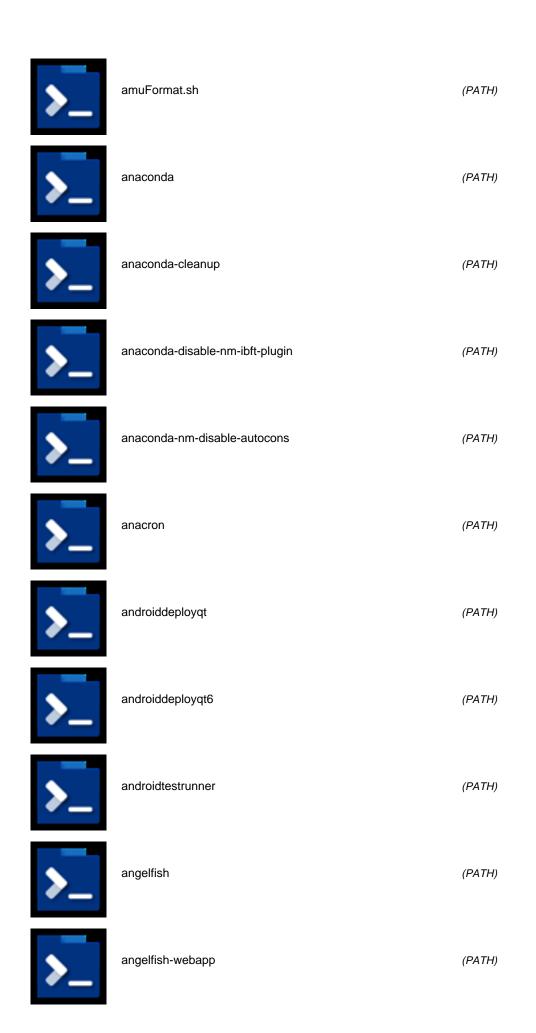


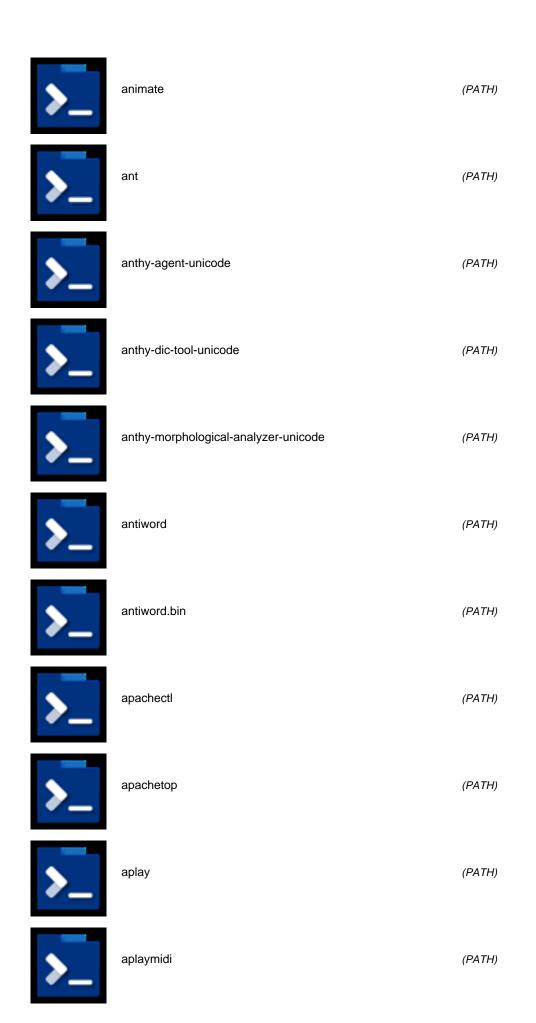






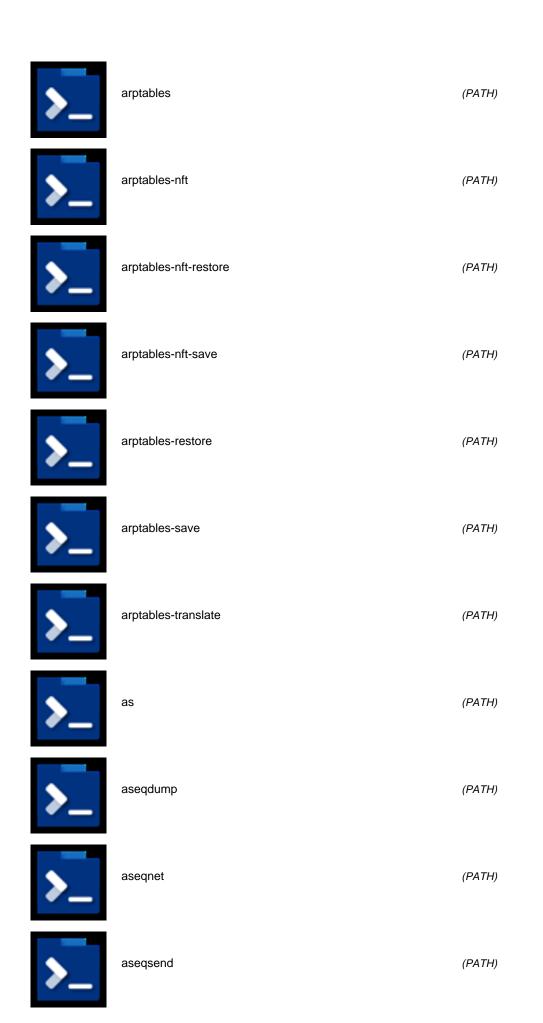


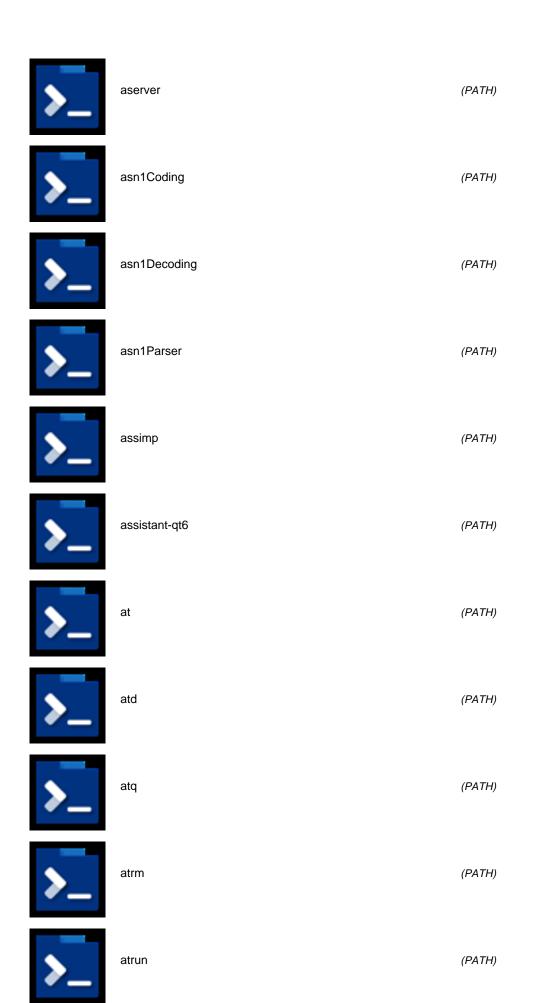


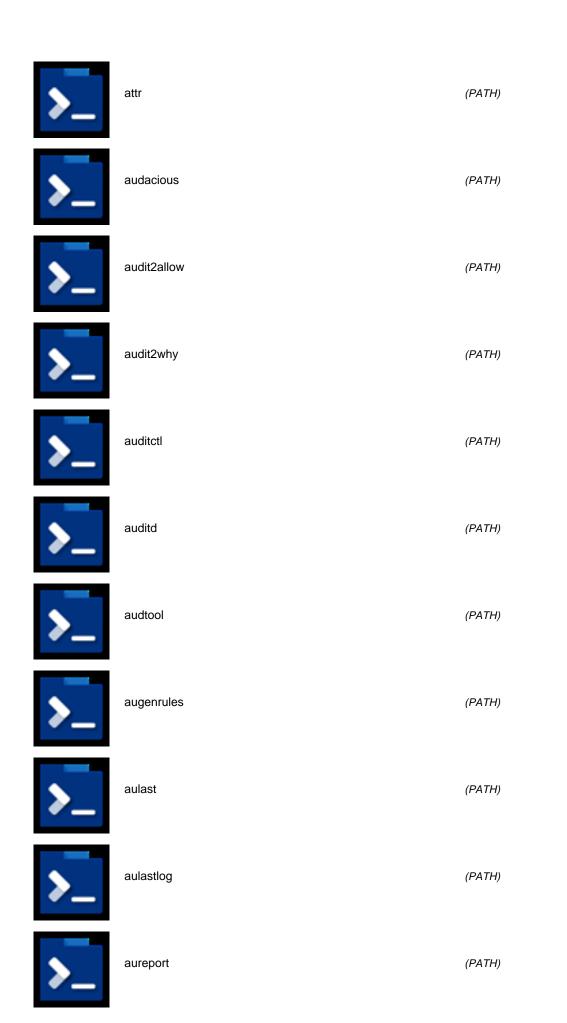


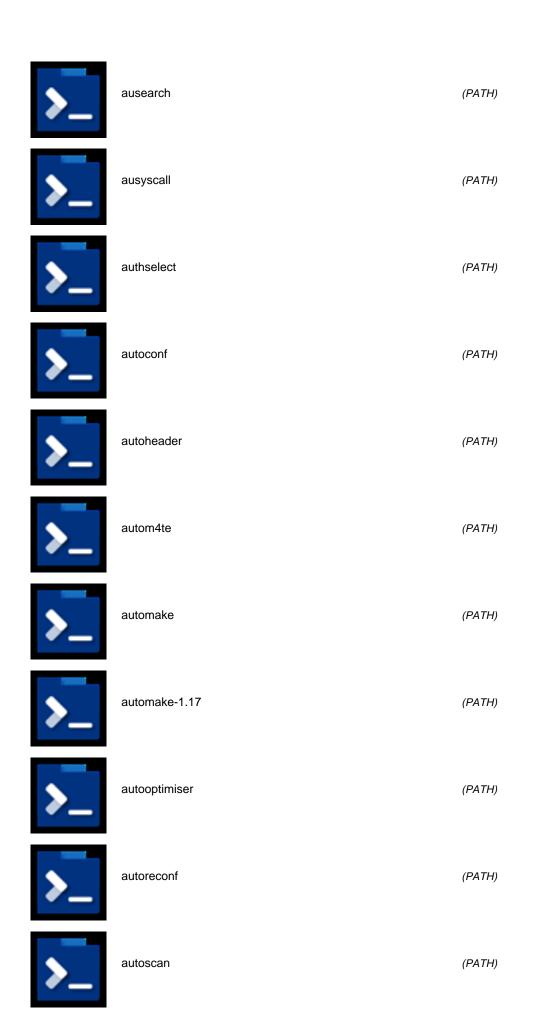




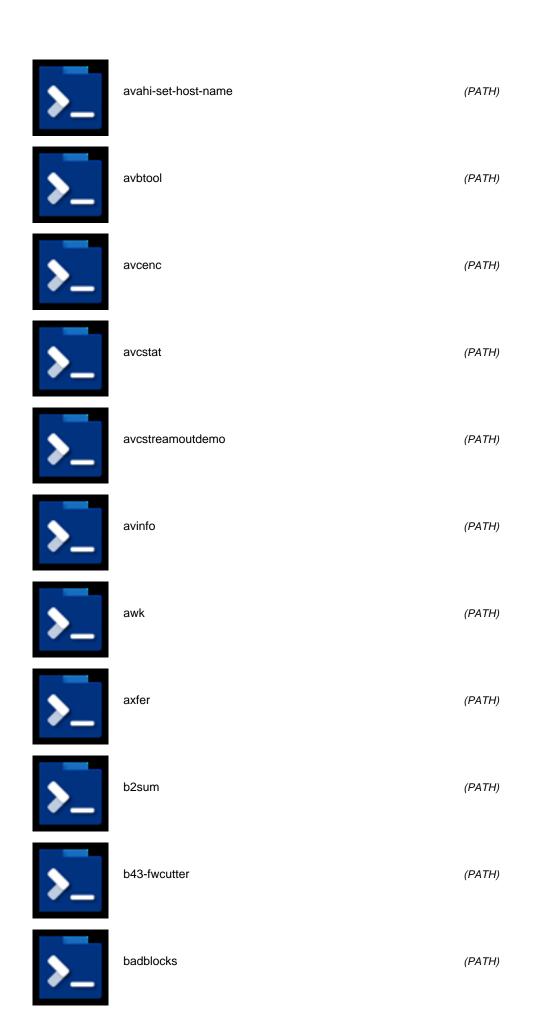


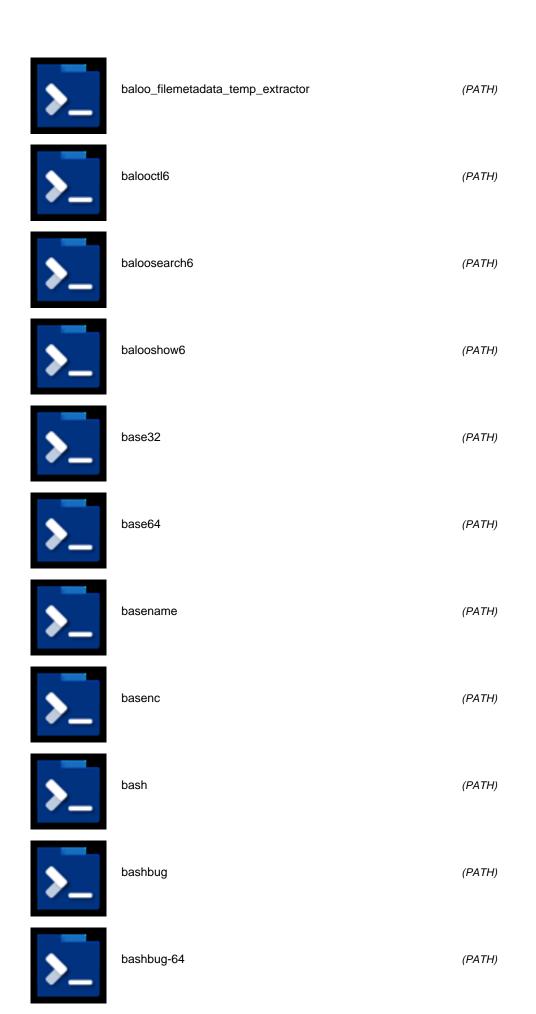


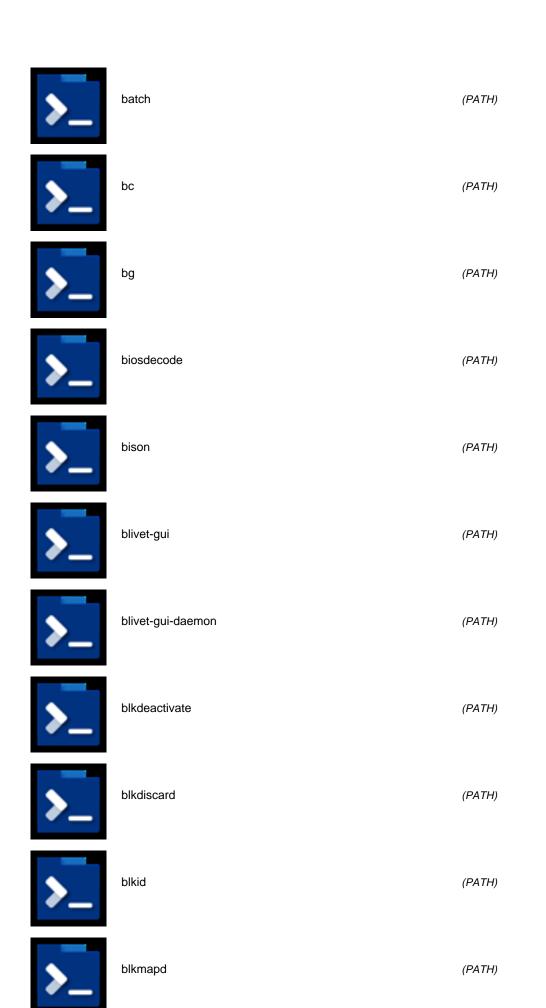


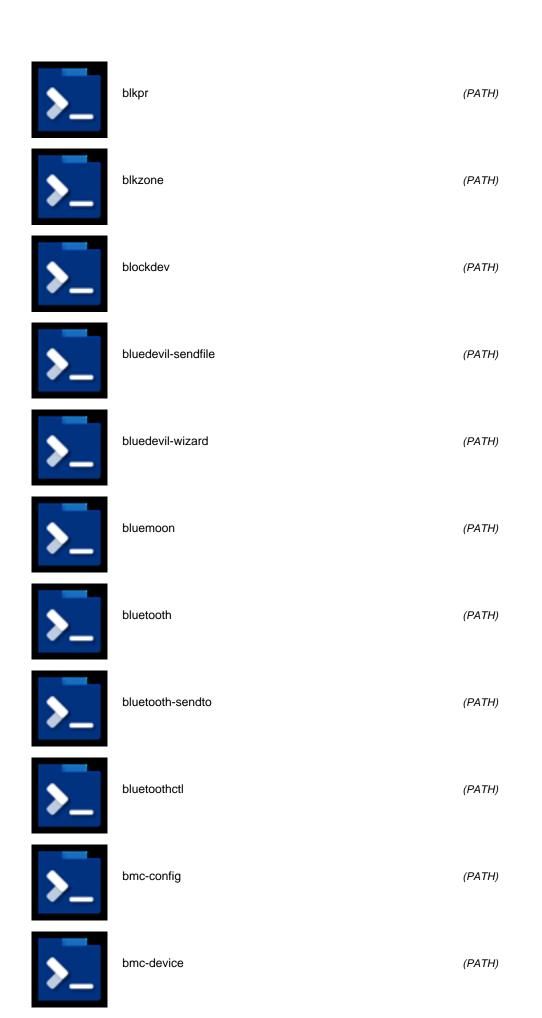


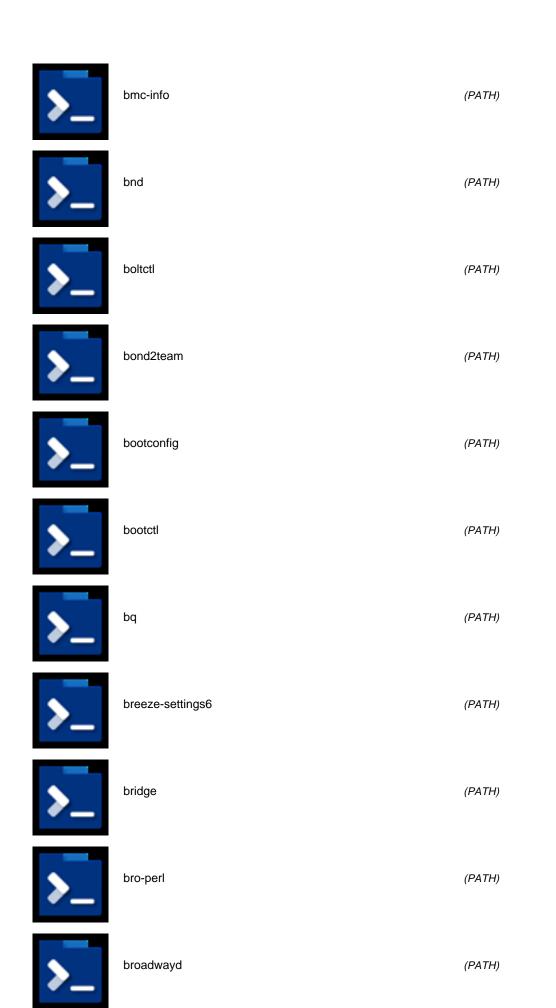
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>_	av1encode	(PATH)
> _	avahi-browse	(PATH)
> _	avahi-browse-domains	(PATH)
> _	avahi-daemon	(PATH)
> _	avahi-publish	(PATH)
> _	avahi-publish-address	(PATH)
> _	avahi-publish-service	(PATH)
> _	avahi-resolve	(PATH)
> _	avahi-resolve-address	(PATH)
>_	avahi-resolve-host-name	(PATH)



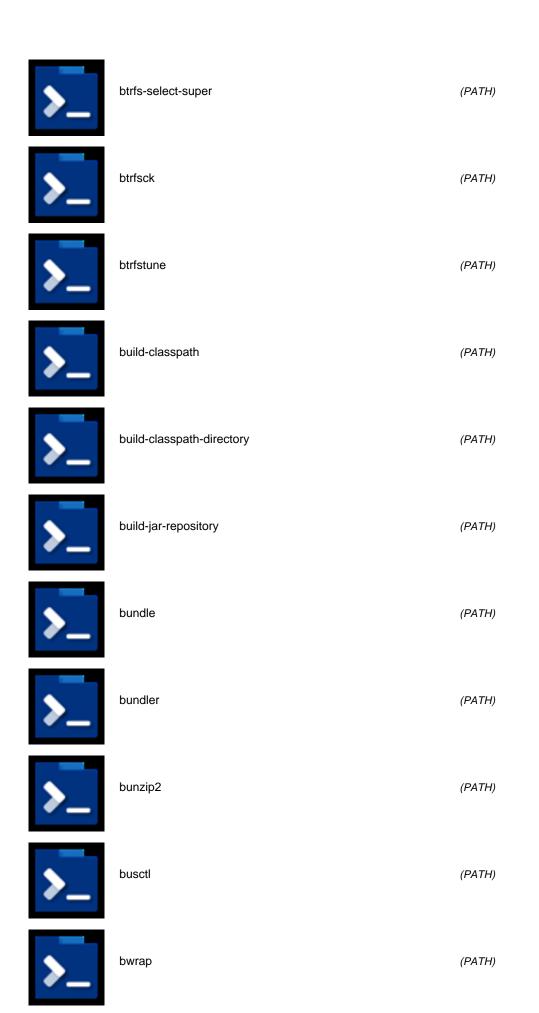


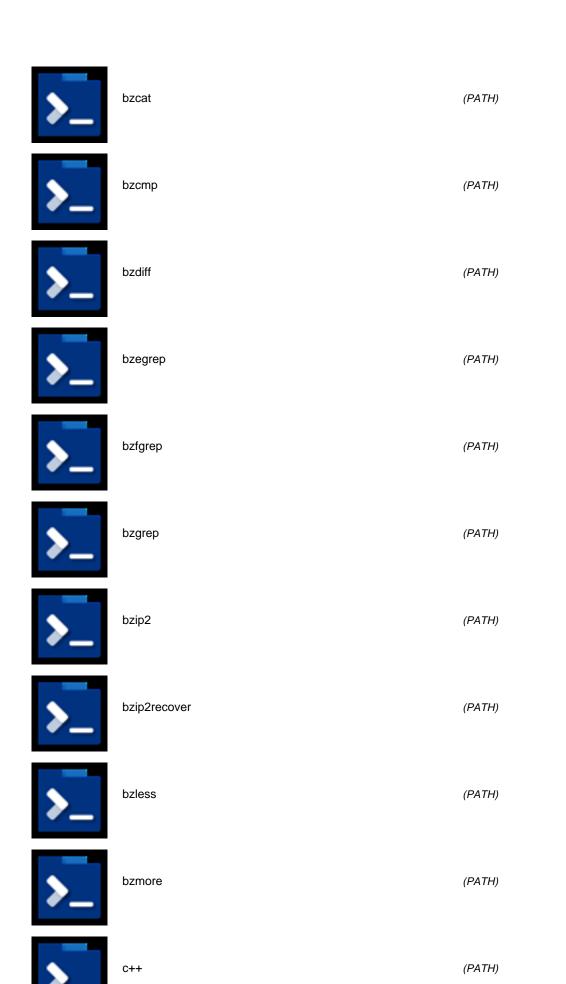


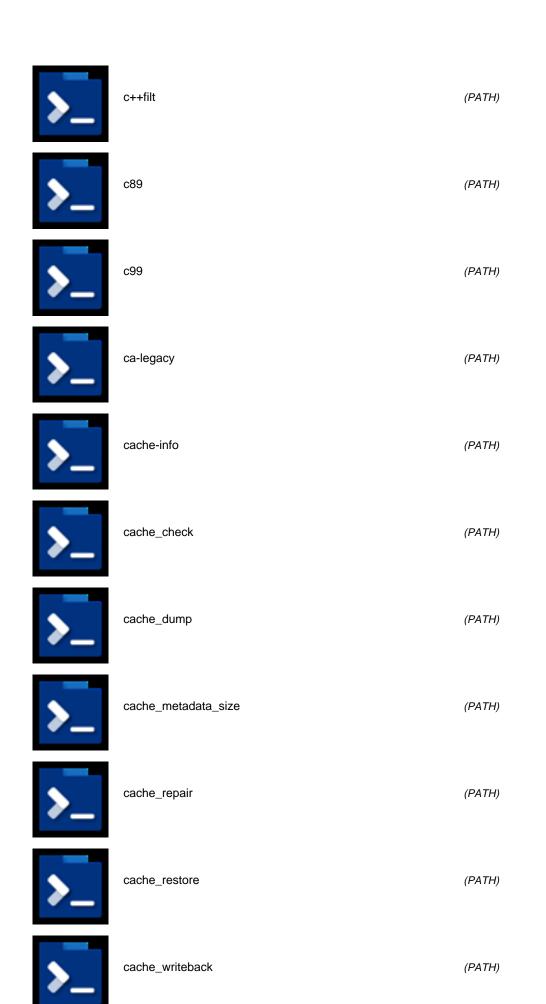


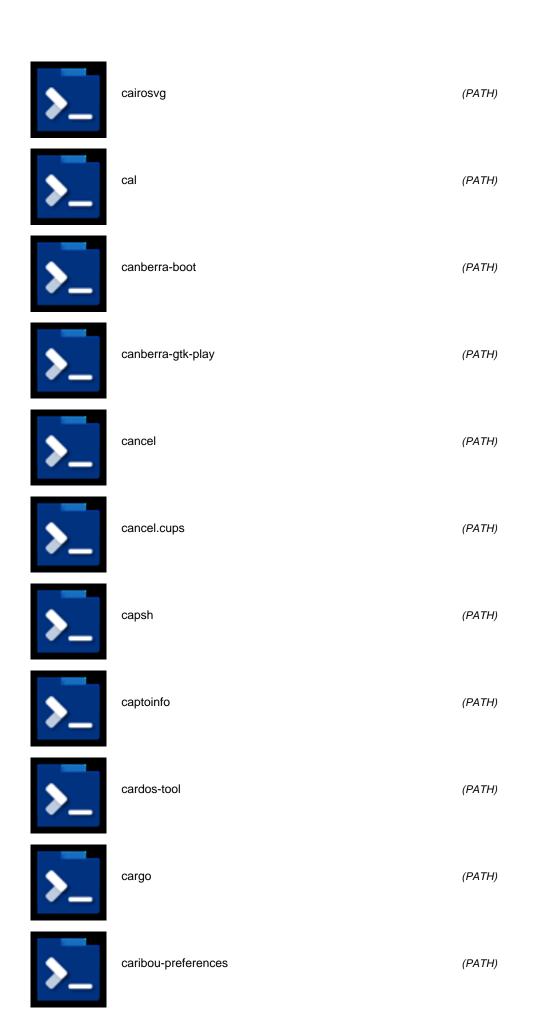


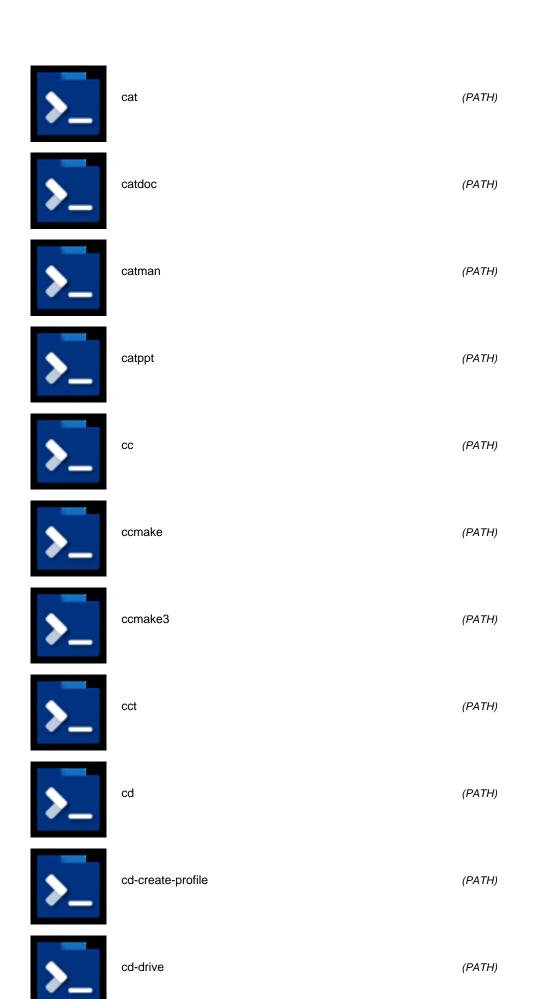


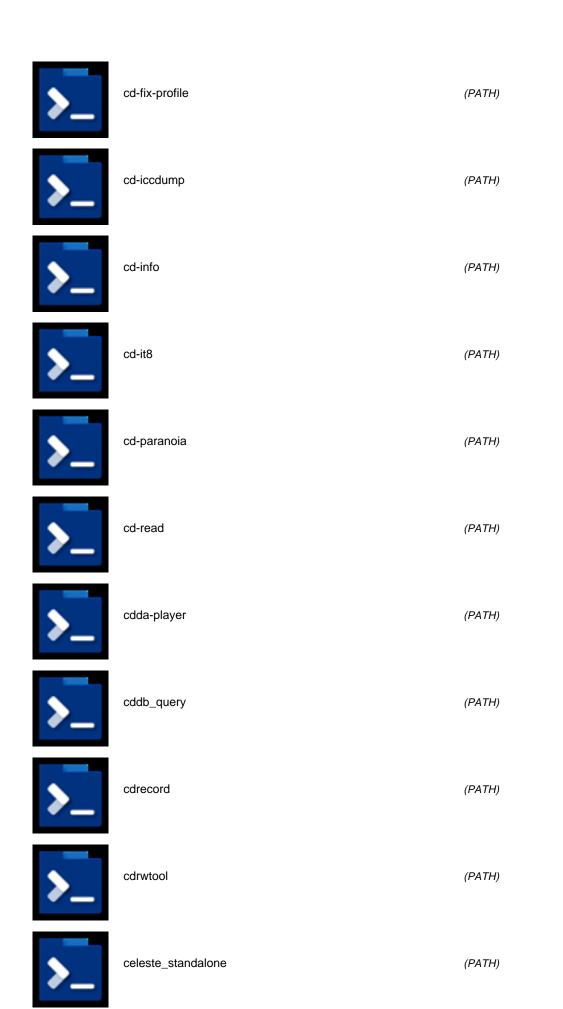


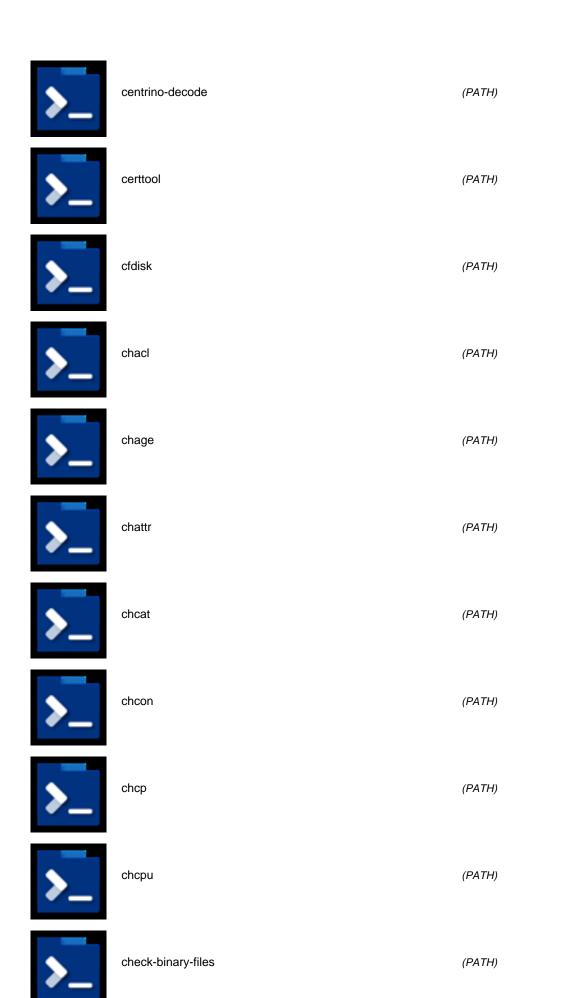


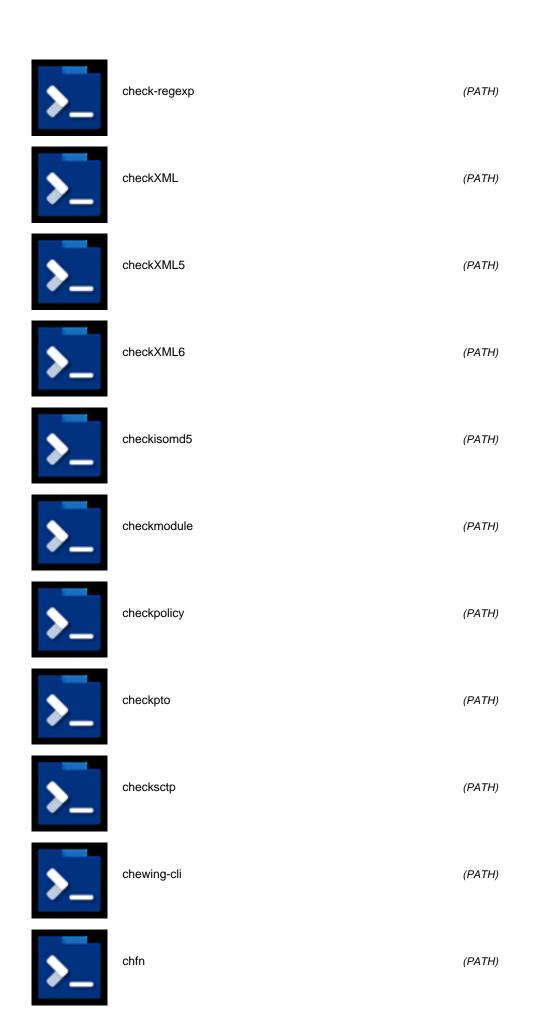


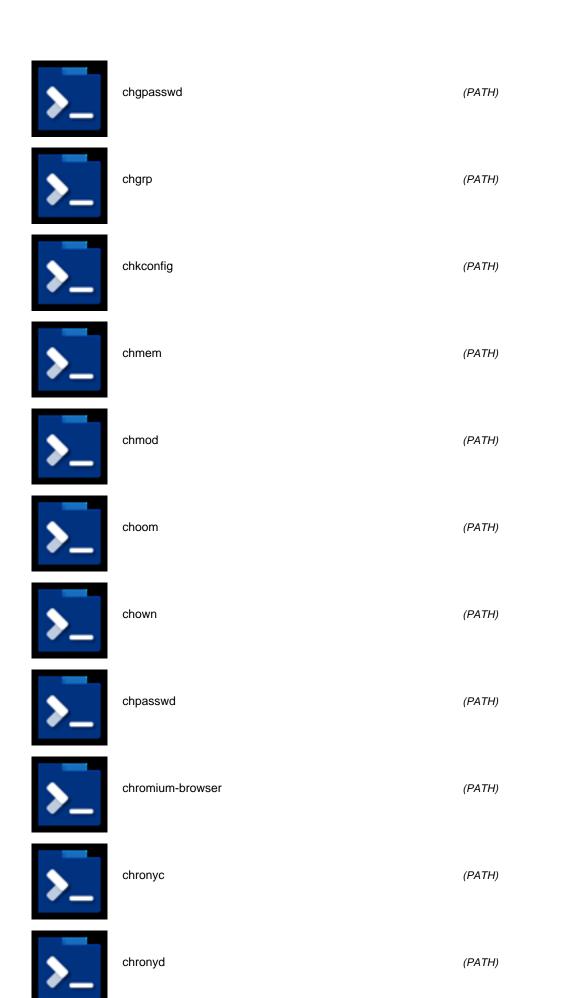


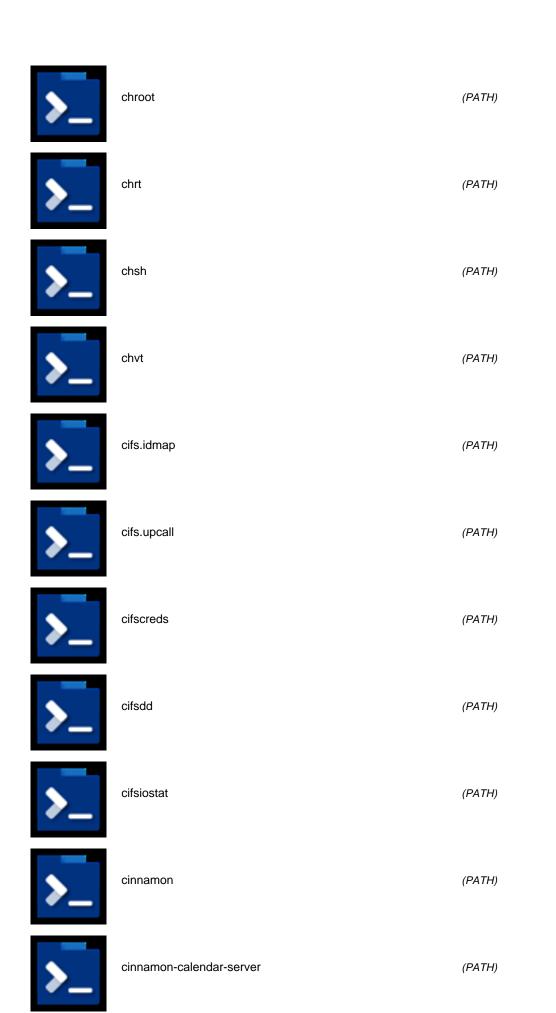










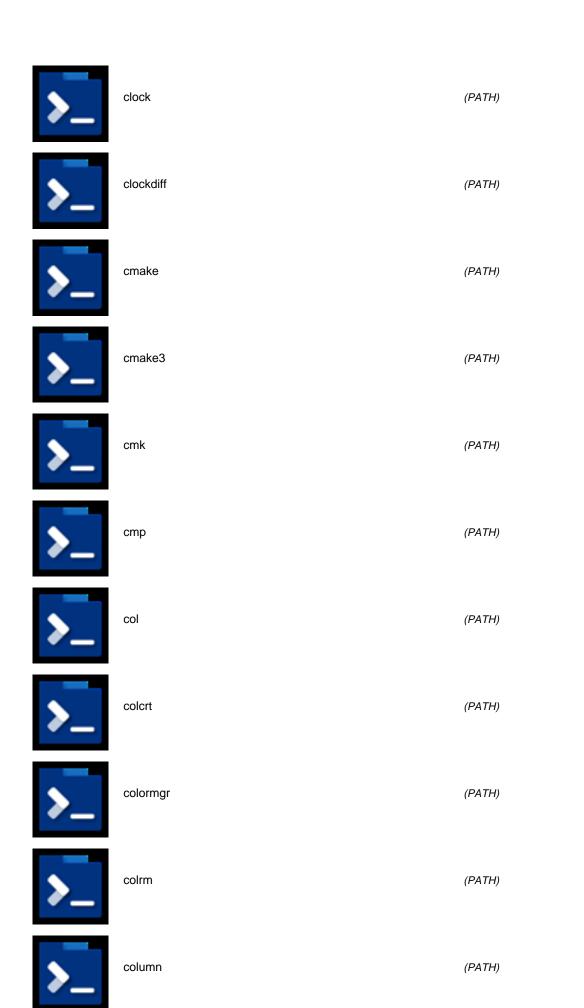


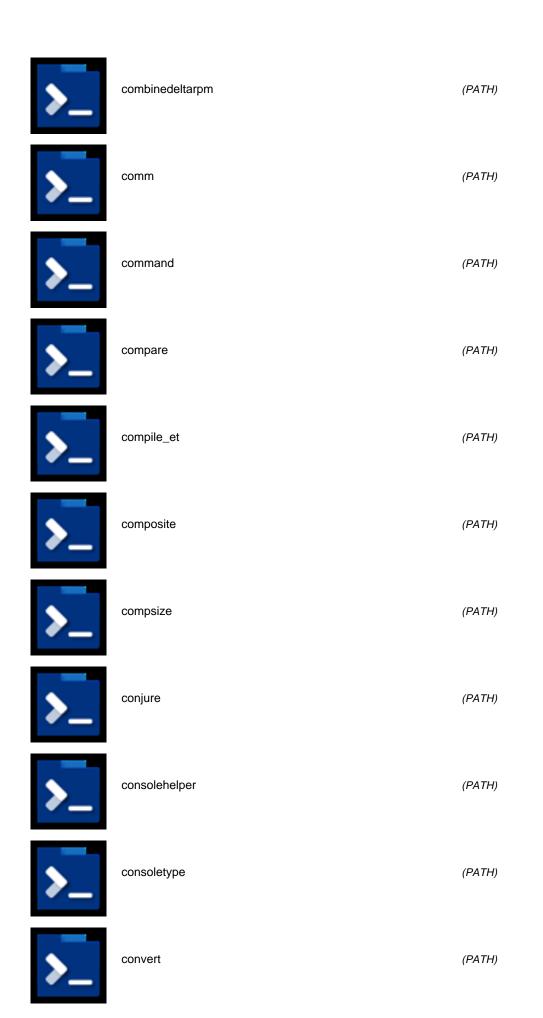
> _	cinnamon-control-center	(PATH)
> _	cinnamon-dbus-command	(PATH)
> _	cinnamon-desktop-editor	(PATH)
> _	cinnamon-file-dialog	(PATH)
>_	cinnamon-hover-click	(PATH)
> _	cinnamon-install-spice	(PATH)
> _	cinnamon-json-makepot	(PATH)
> _	cinnamon-killer-daemon	(PATH)
> _	cinnamon-launcher	(PATH)
> _	cinnamon-looking-glass	(PATH)
> _	cinnamon-menu-editor	(PATH)

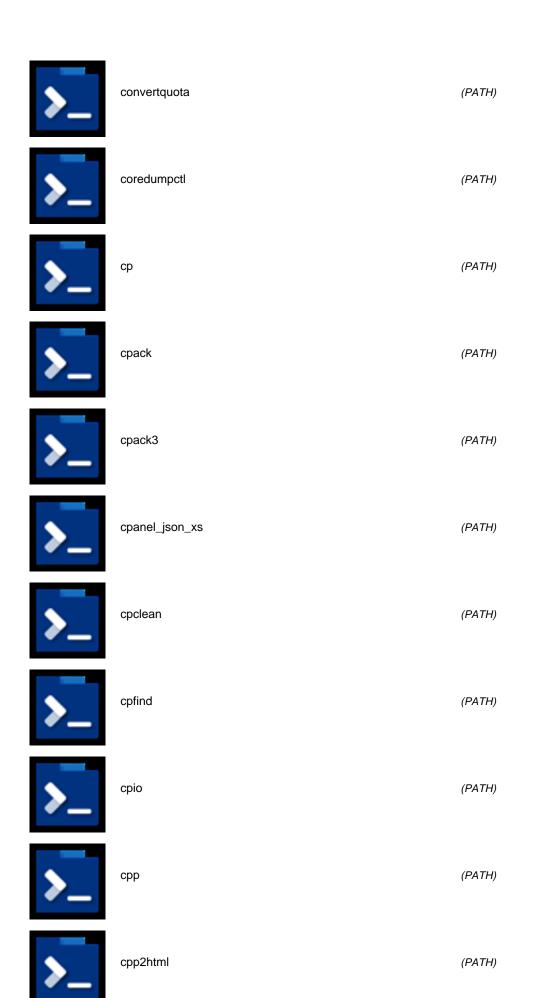
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> _	cinnamon-screensaver	(PATH)
> _	cinnamon-screensaver-command	(PATH)
>_	cinnamon-screensaver-lock-dialog	(РАТН)
>_	cinnamon-session	(PATH)
>_	cinnamon-session-cinnamon	(PATH)
>_	cinnamon-session-cinnamon2d	(PATH)
>_	cinnamon-session-quit	(PATH)
>_	cinnamon-settings	(РАТН)
>_	cinnamon-settings-users	(РАТН)
>_	cinnamon-slideshow	(РАТН)

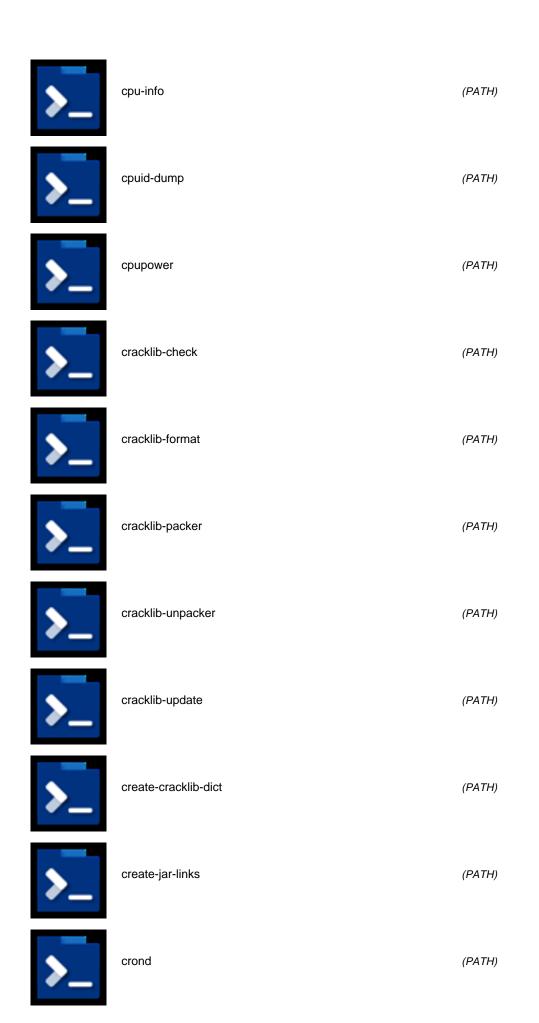


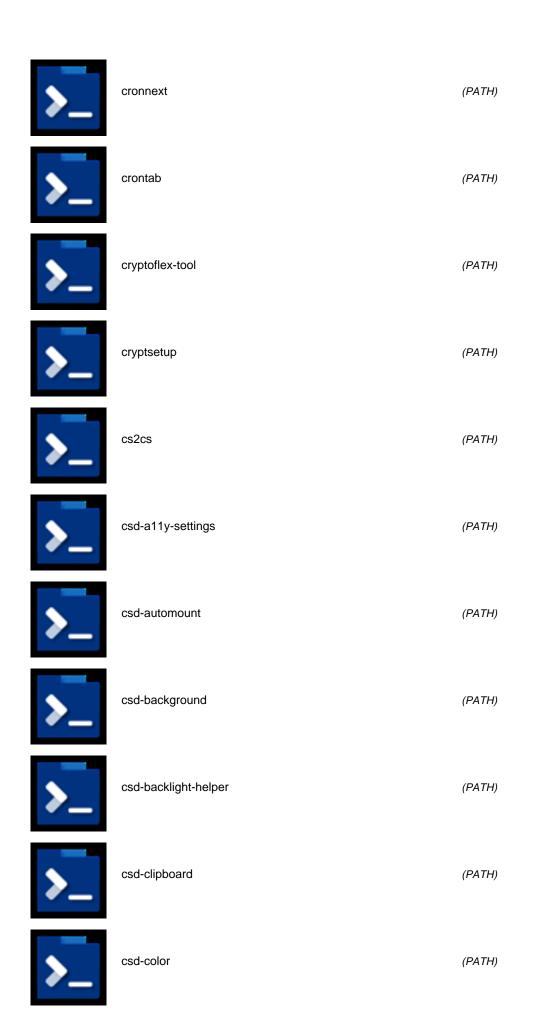


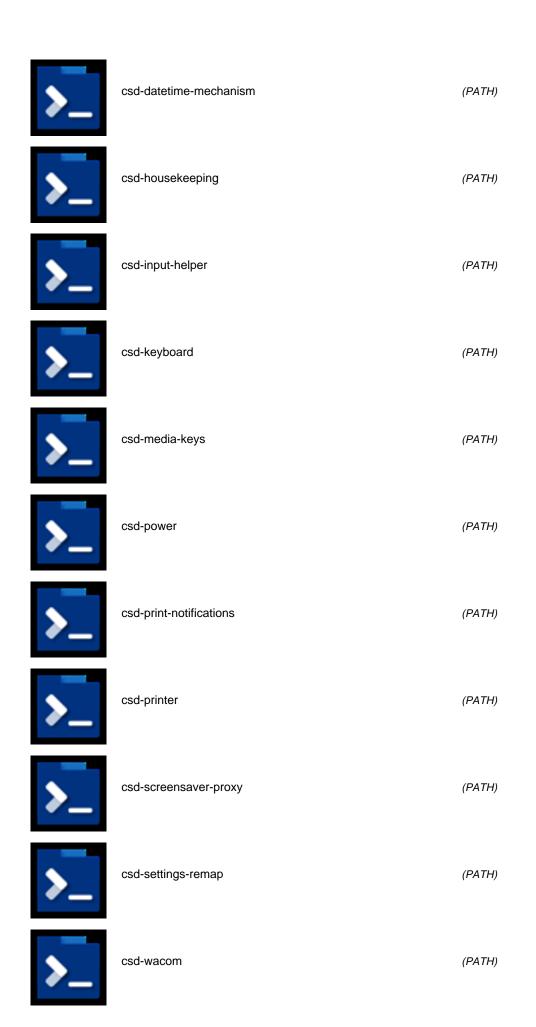


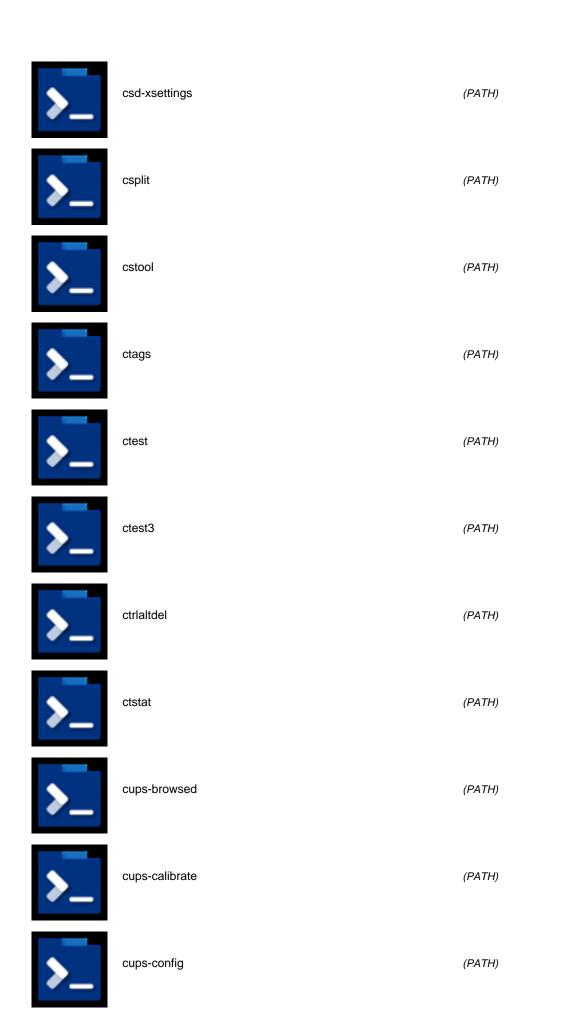


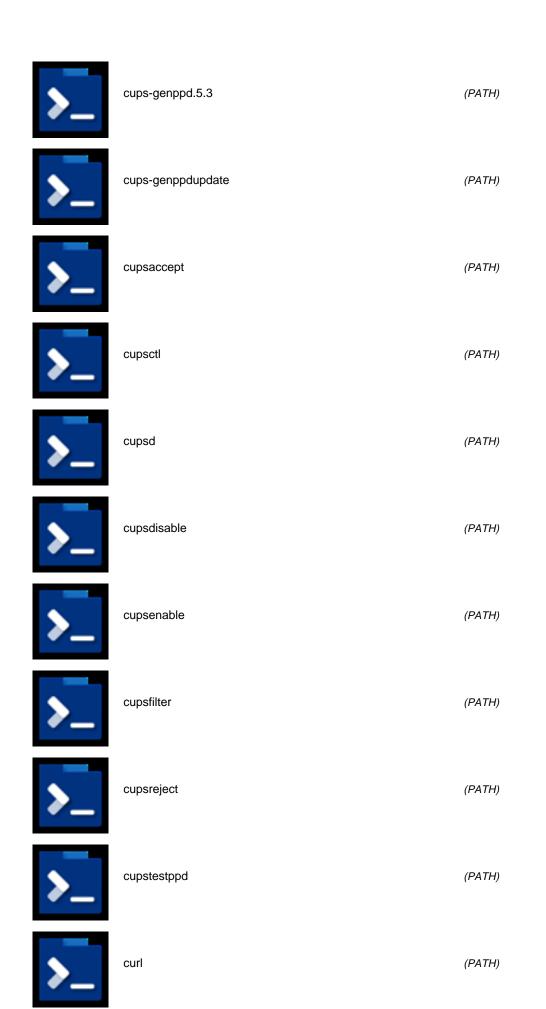


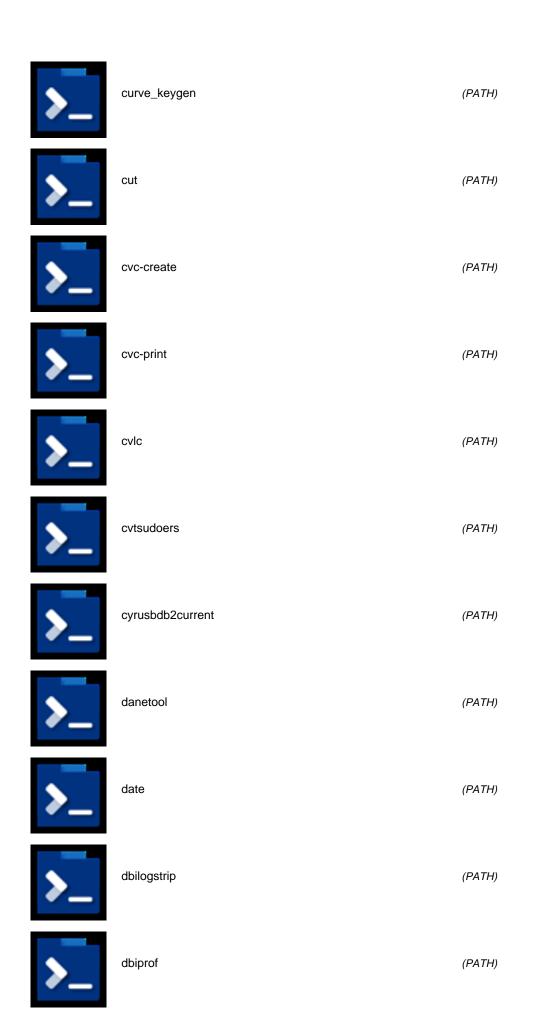




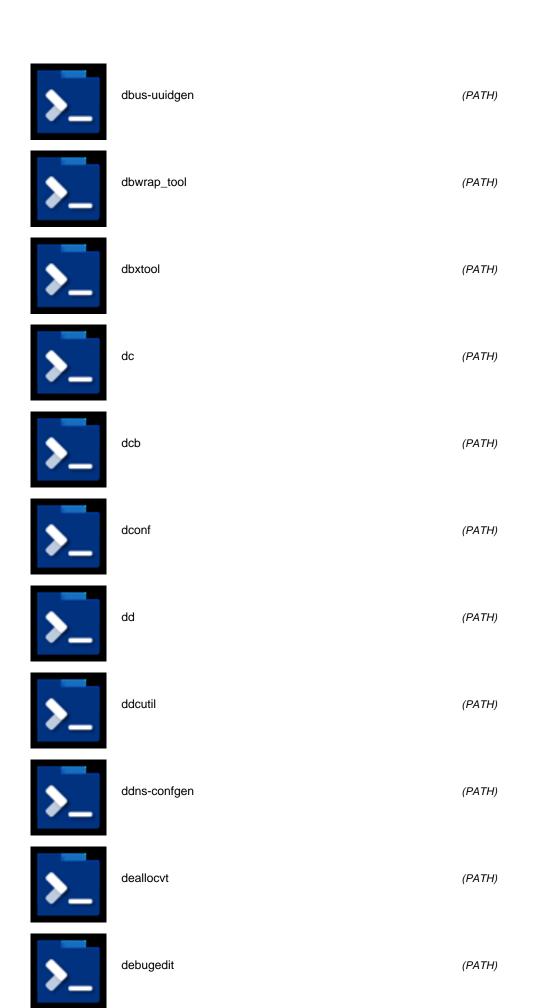




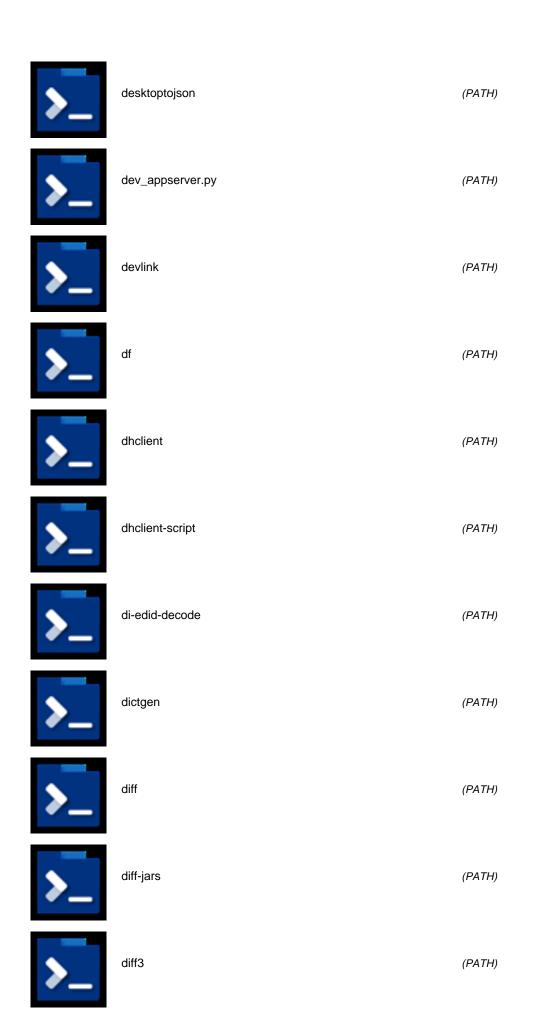


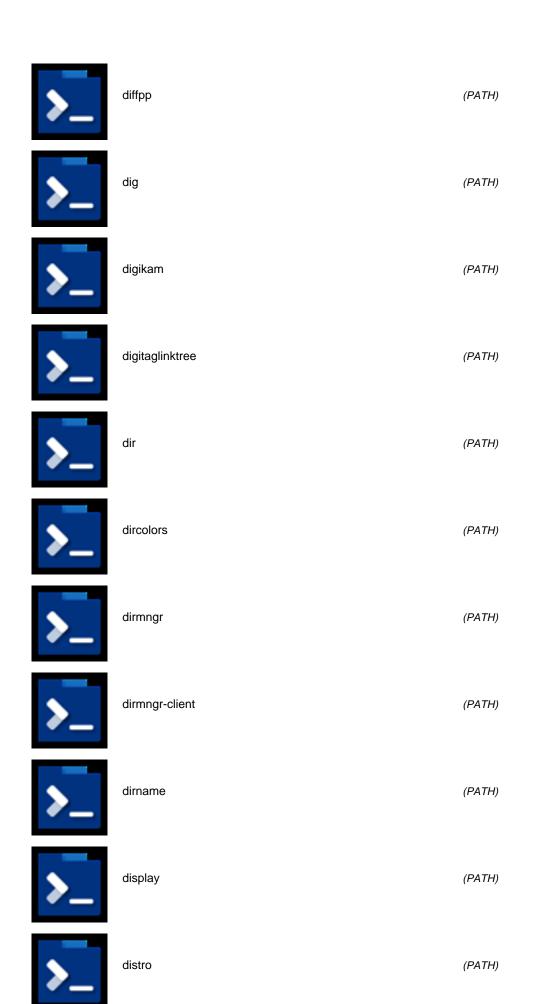


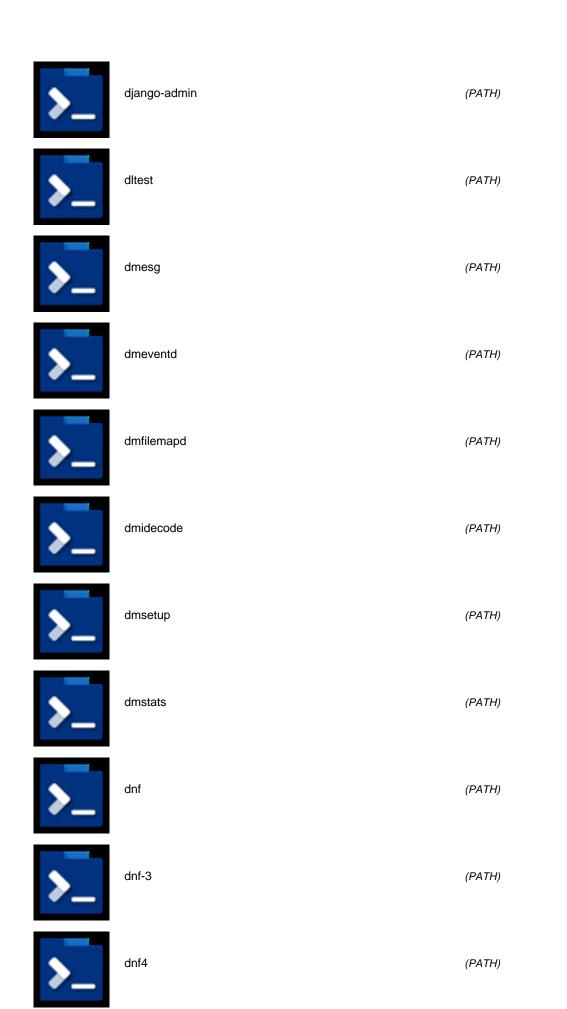
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>_	dbus-broker	(PATH)
> _	dbus-broker-launch	(PATH)
> _	dbus-cleanup-sockets	(PATH)
> _	dbus-daemon	(PATH)
> _	dbus-launch	(PATH)
> _	dbus-monitor	(PATH)
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> _	dbus-send	(PATH)
> _	dbus-test-tool	(PATH)
> _	dbus-update-activation-environment	(PATH)

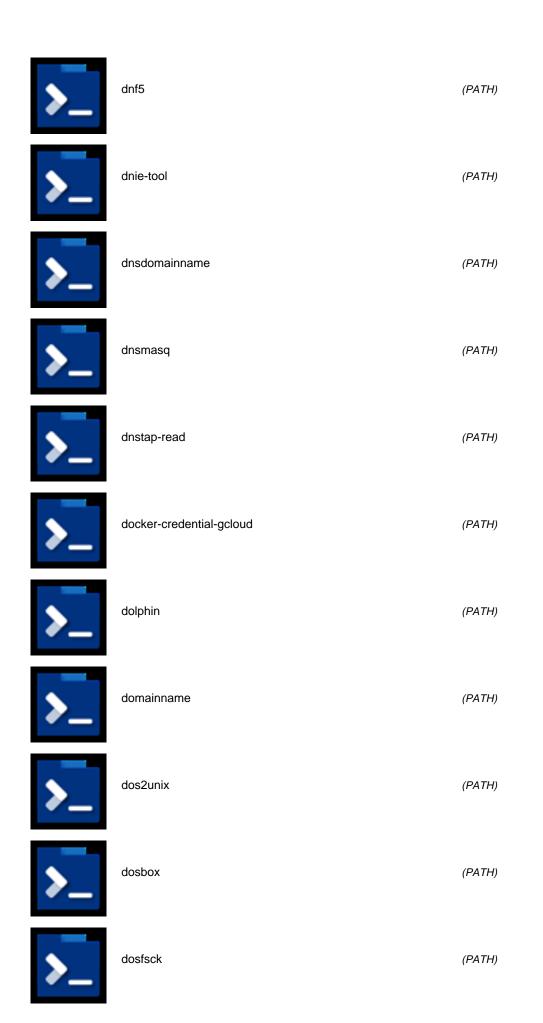


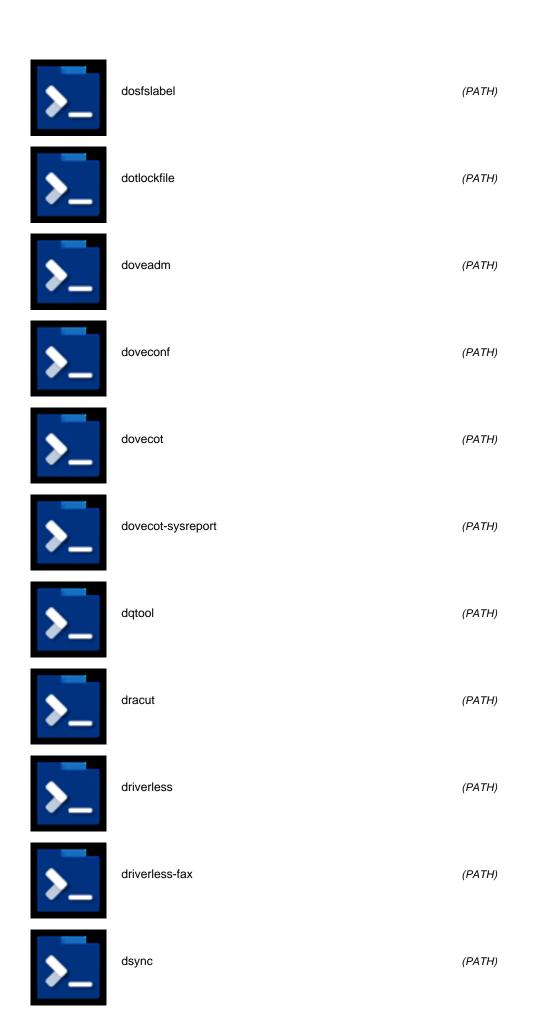


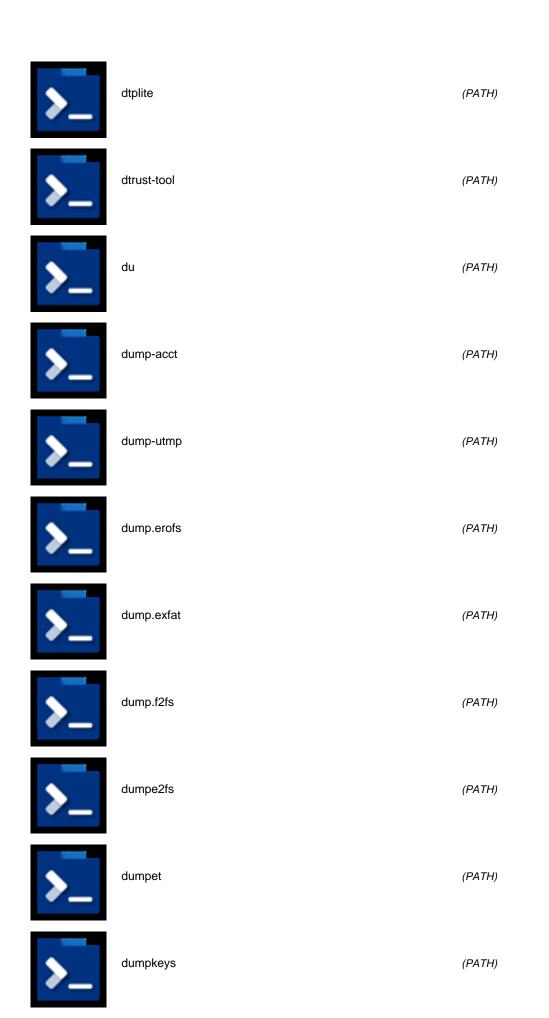


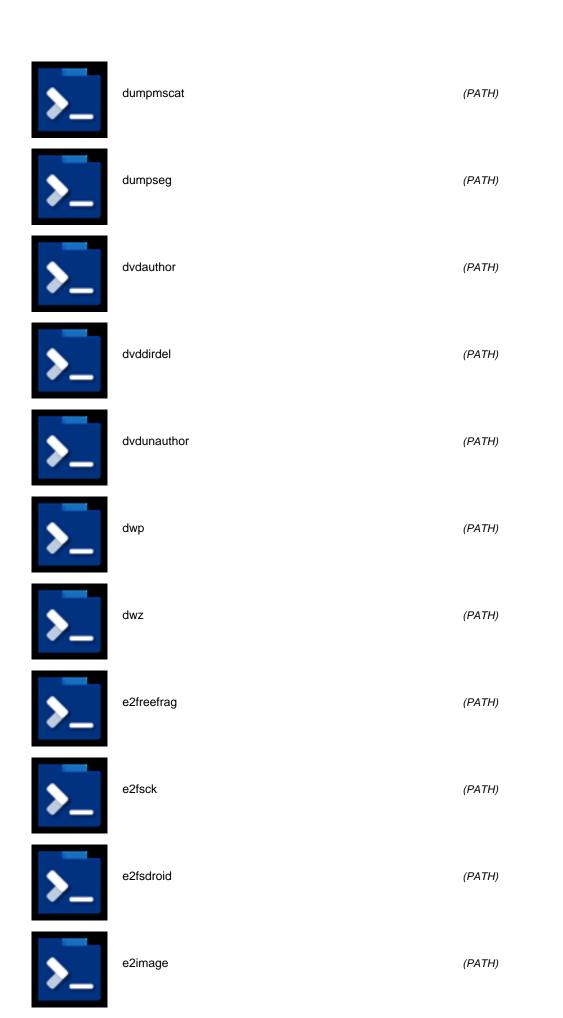




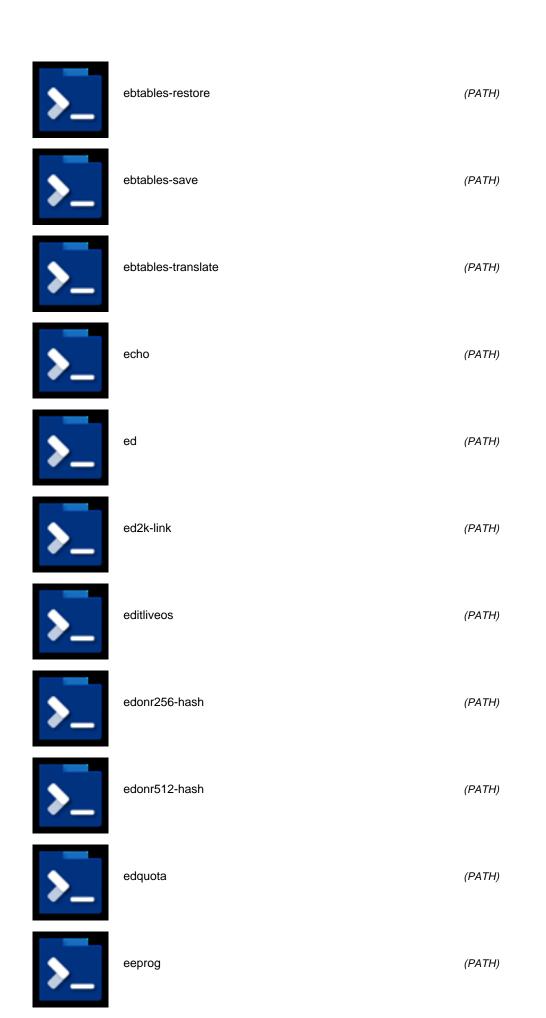


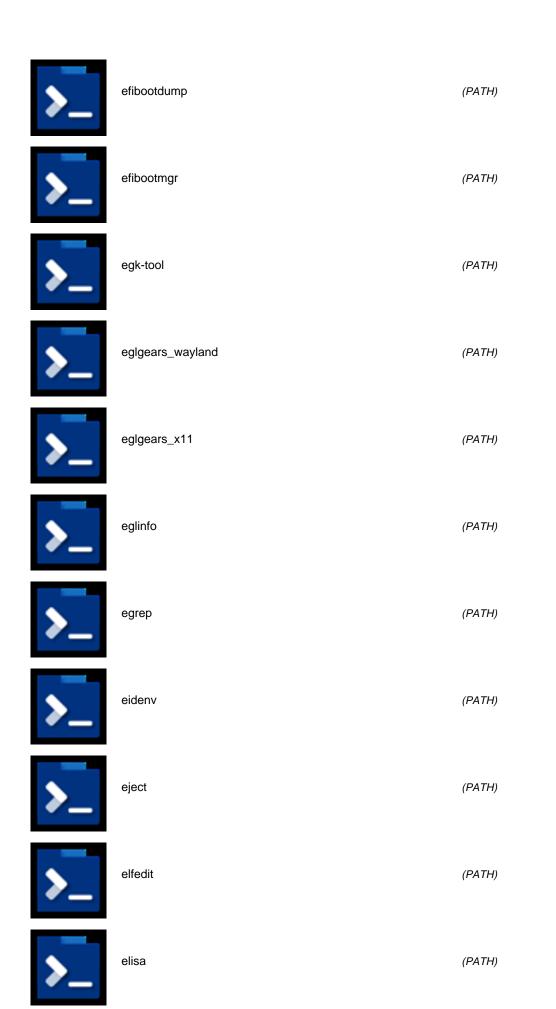


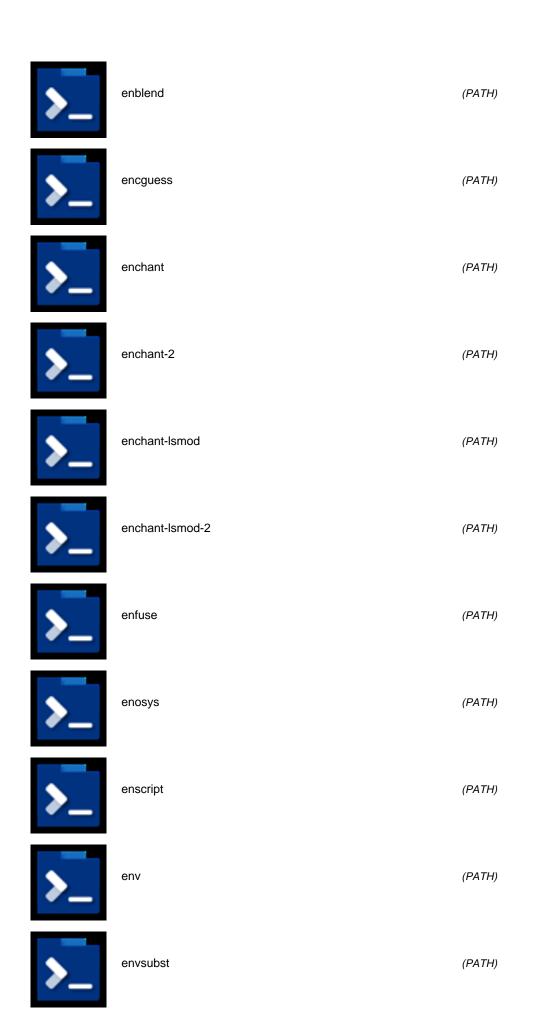


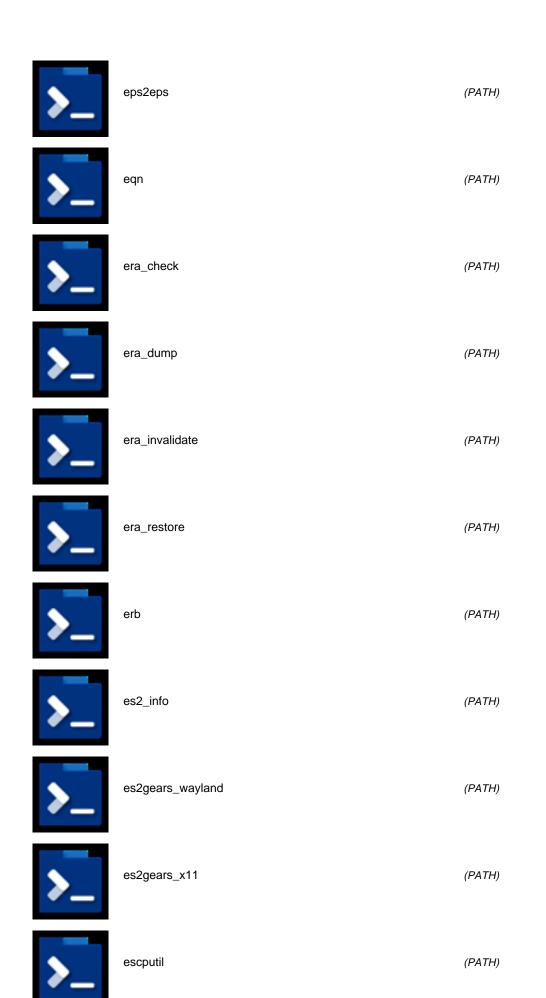




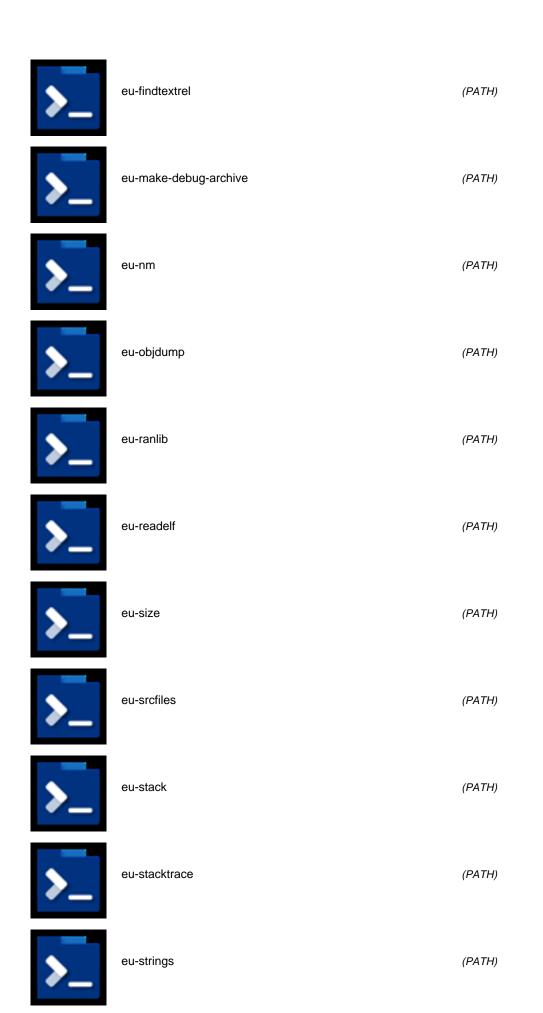


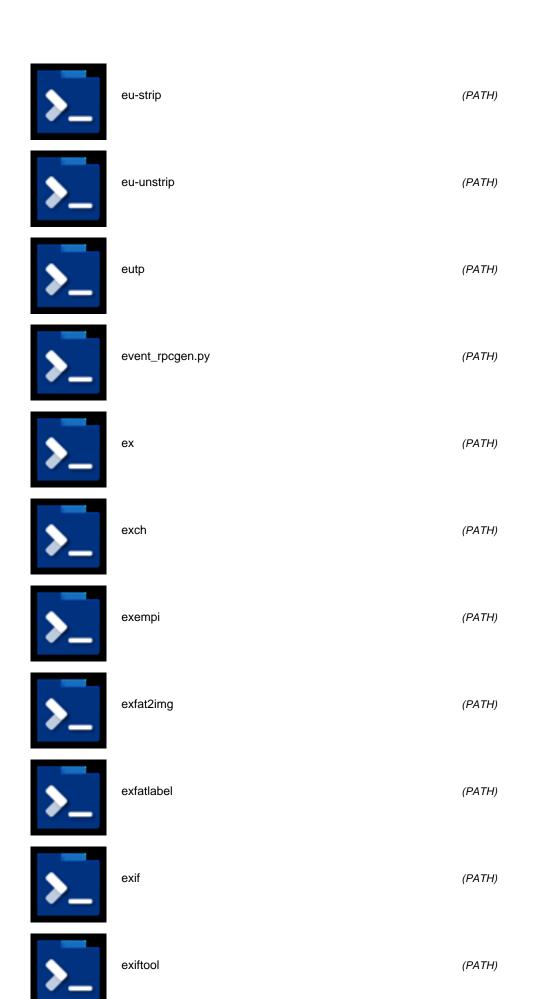


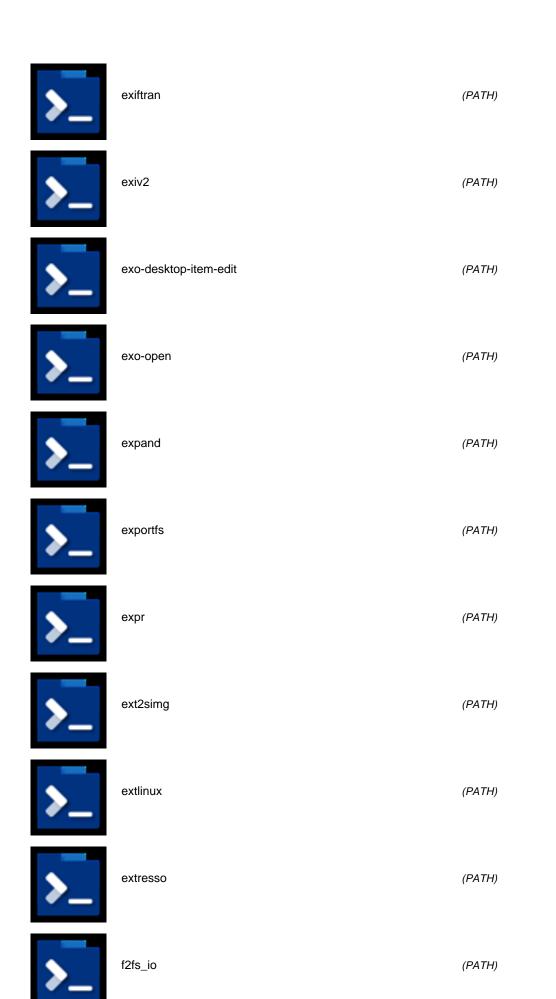




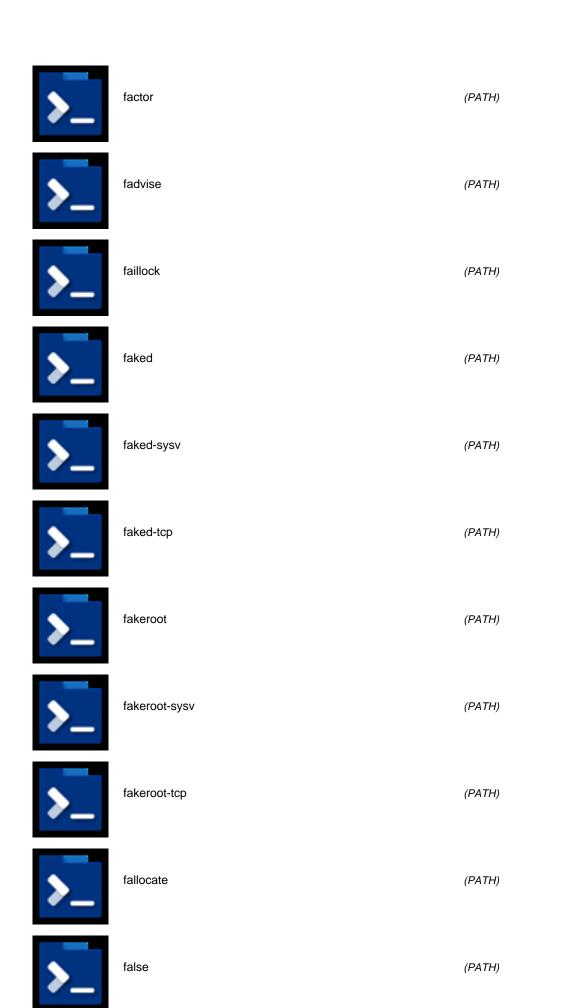


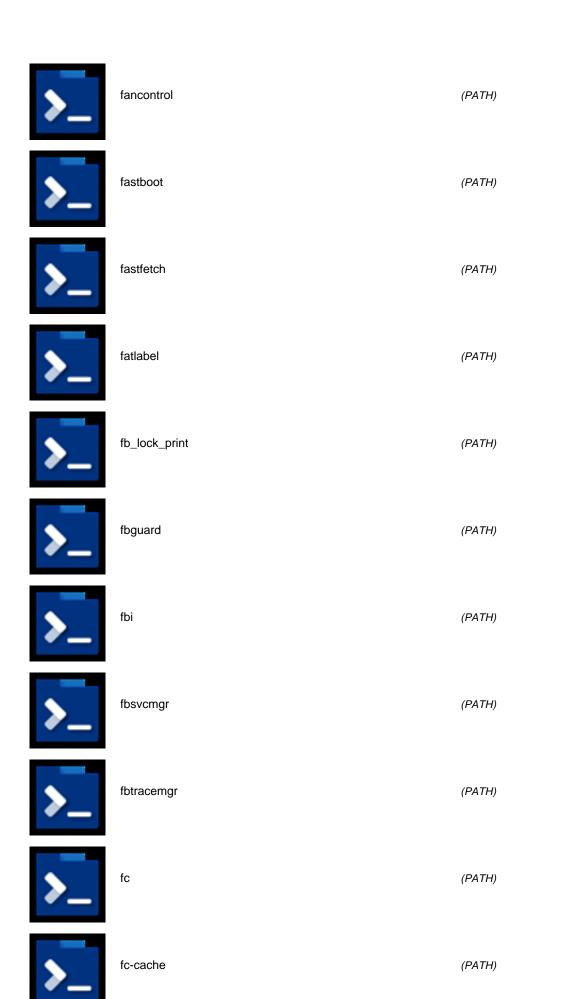


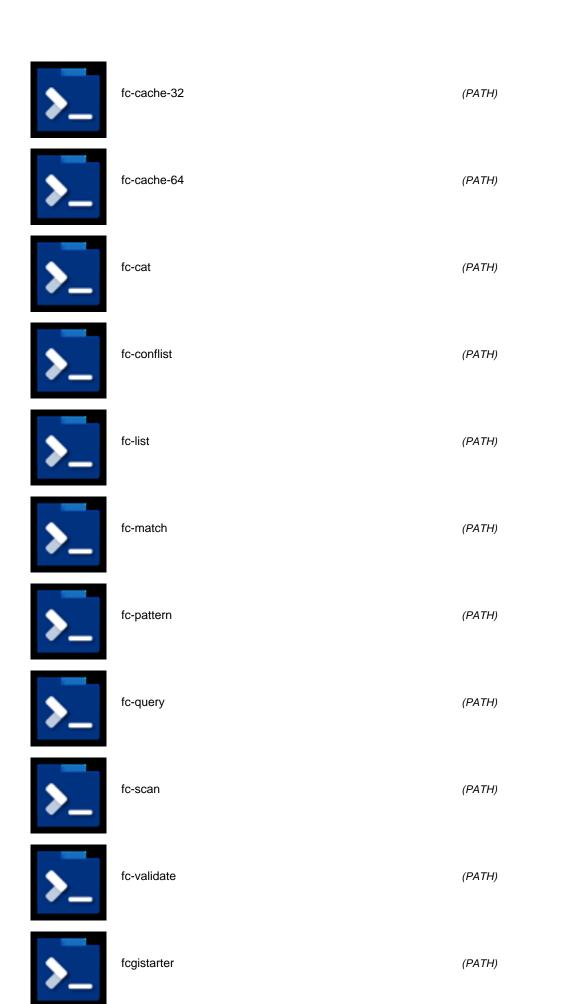


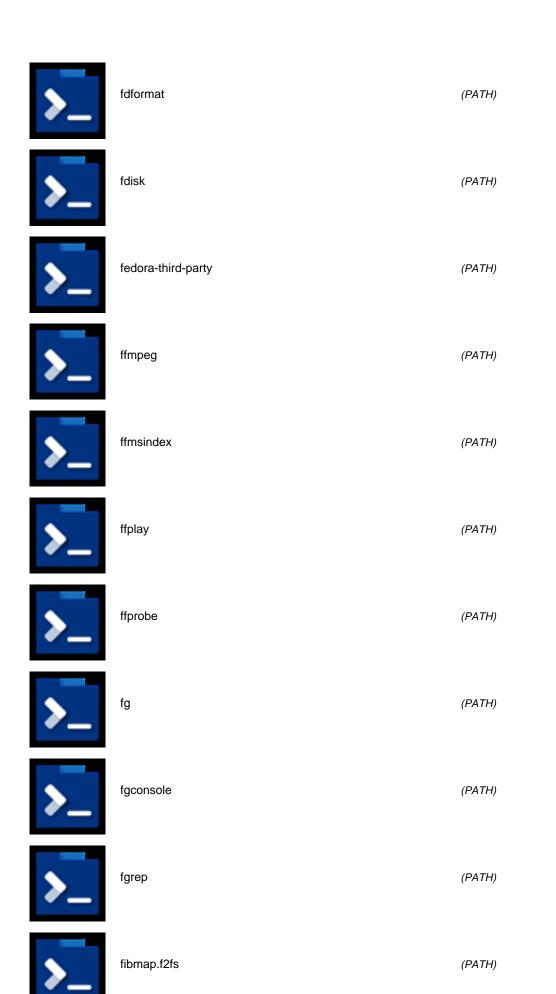


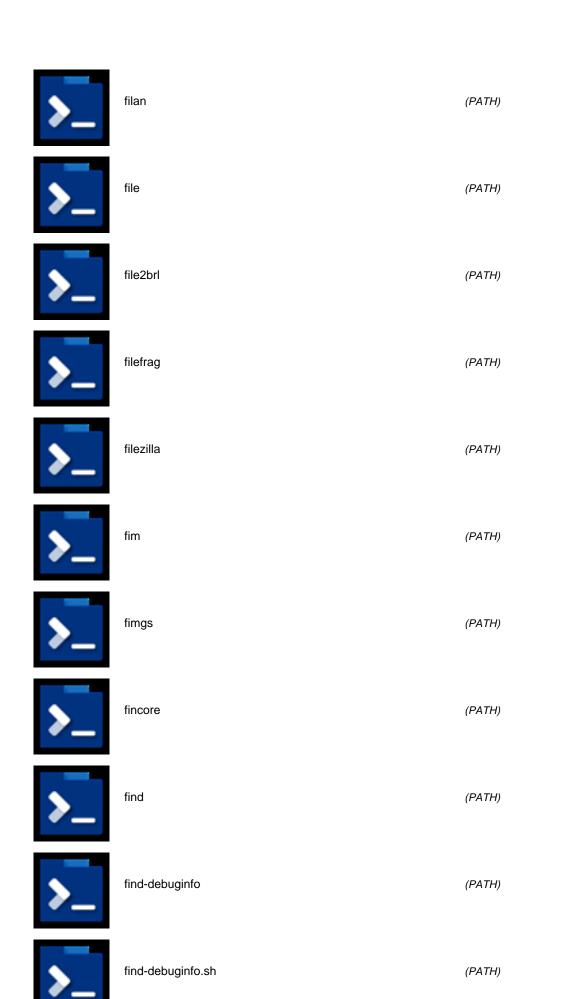


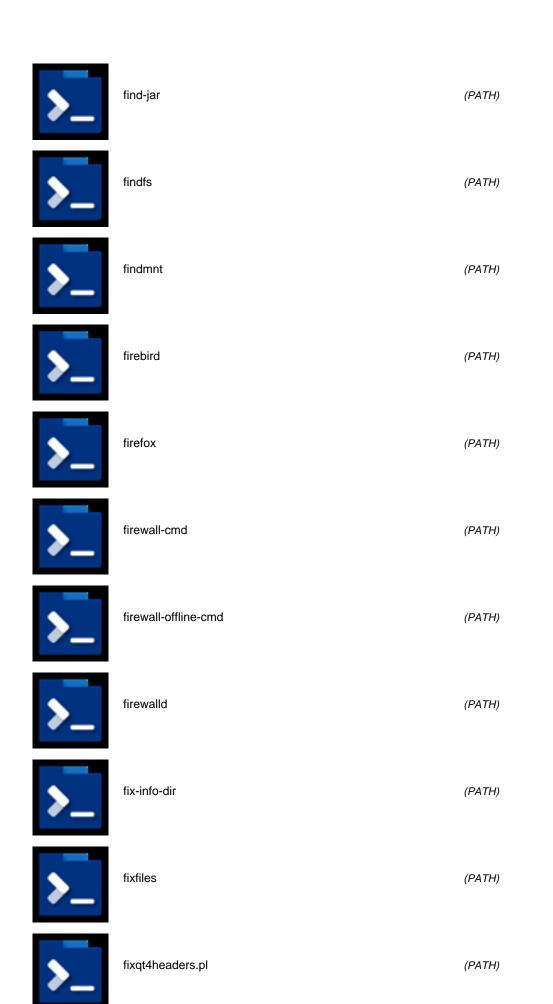


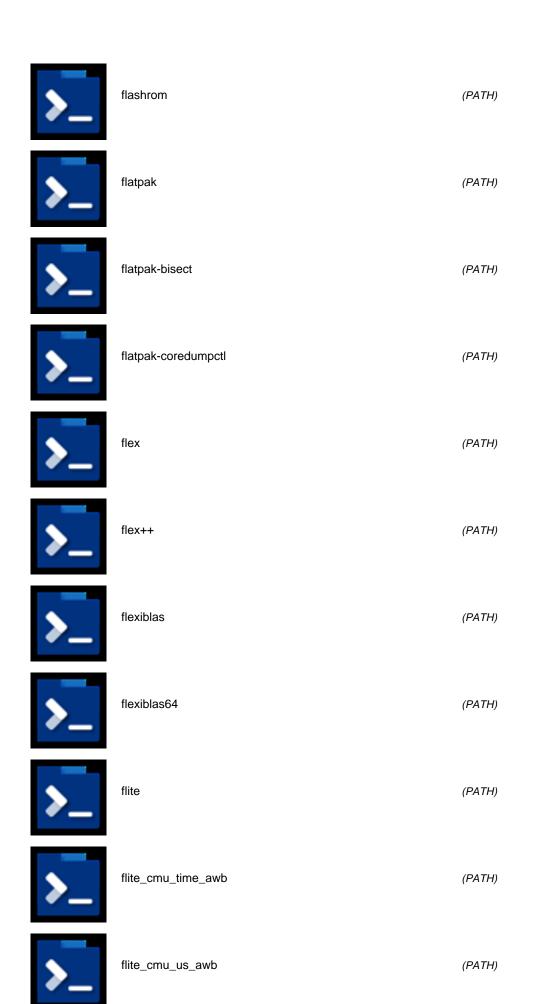




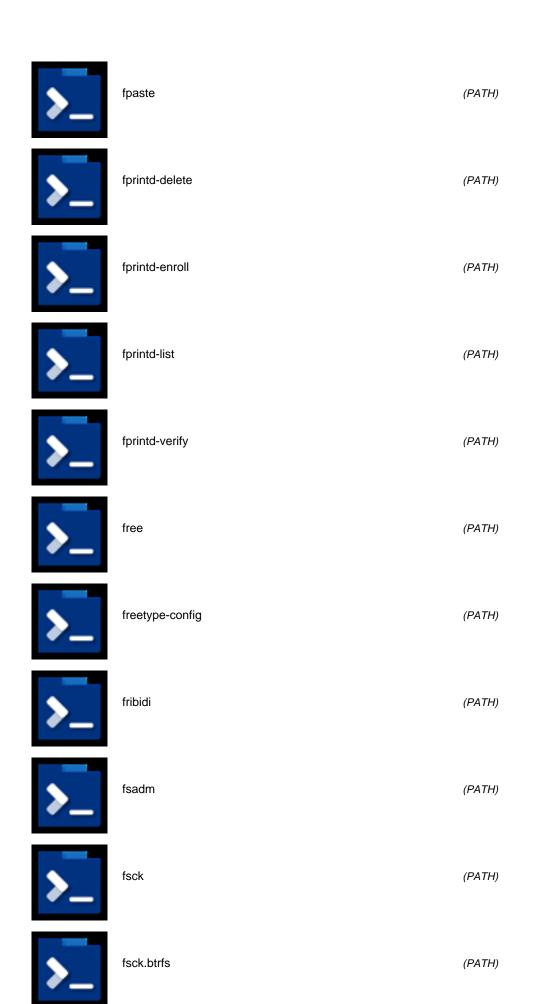


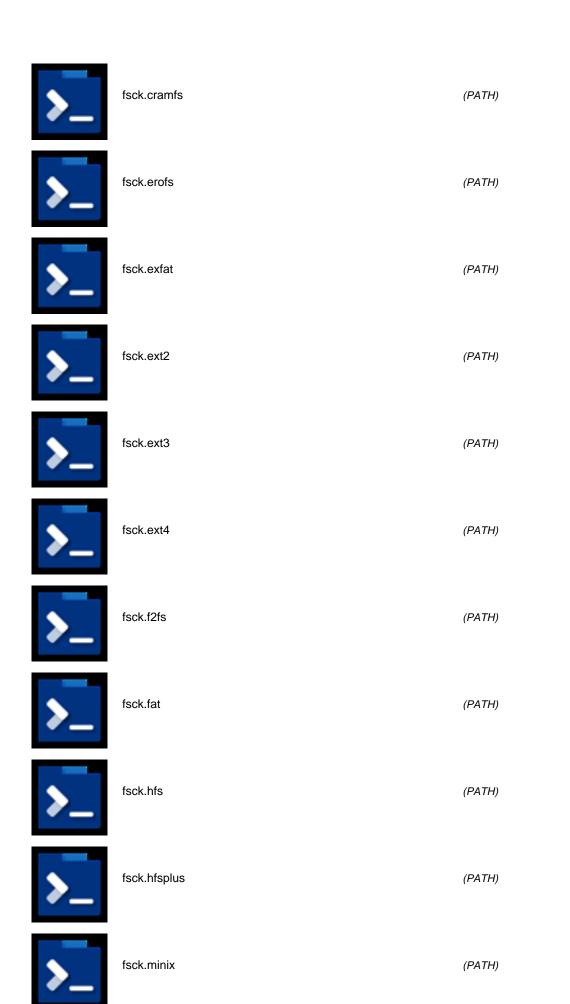


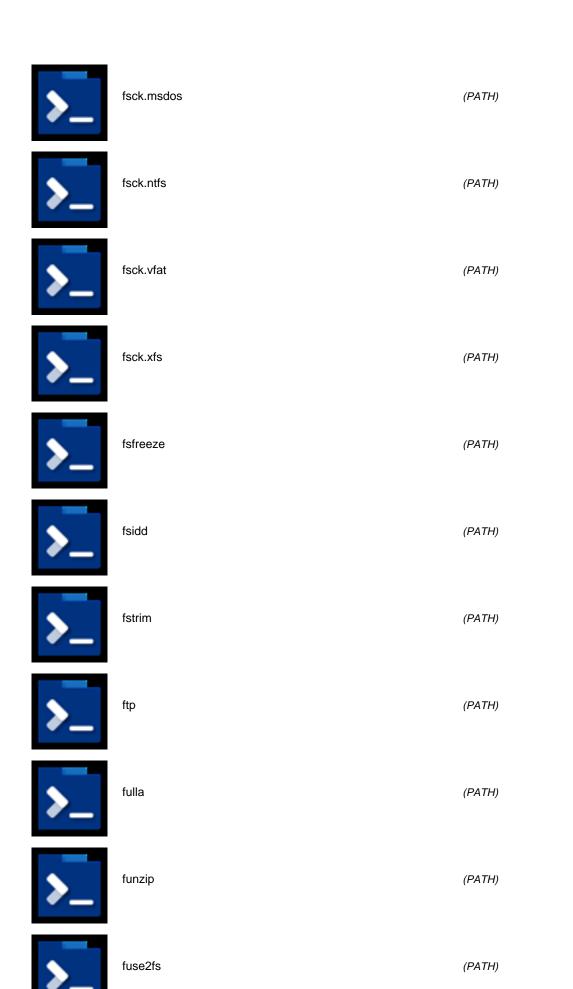


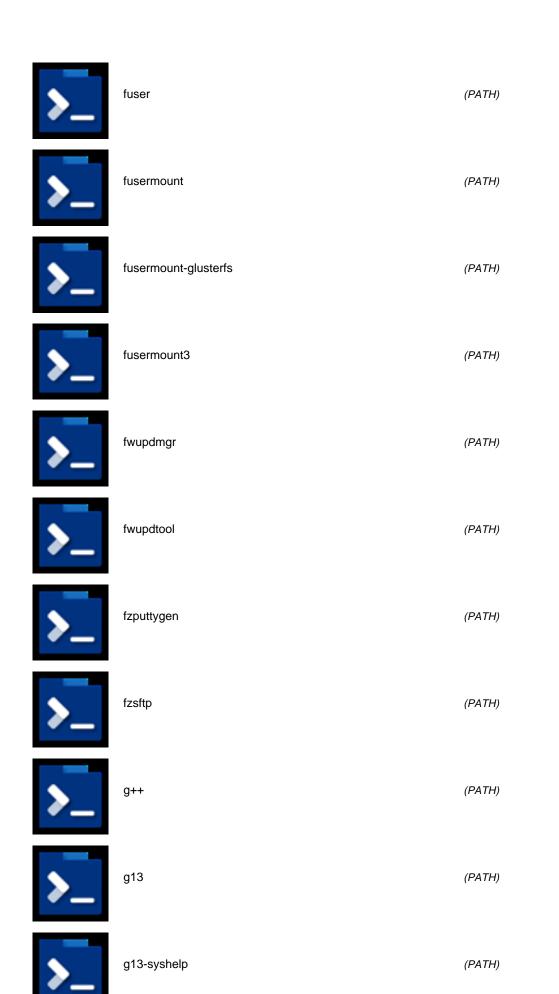


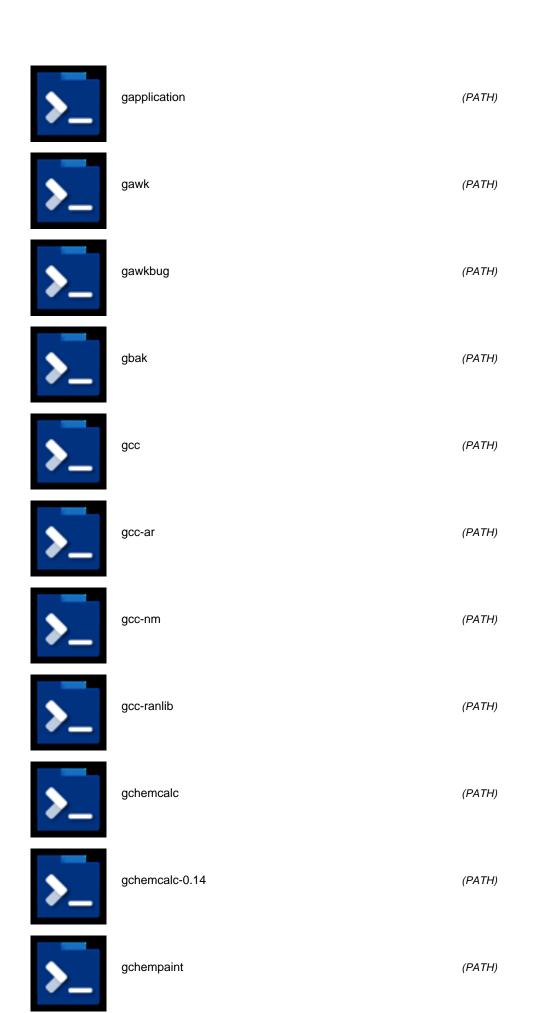


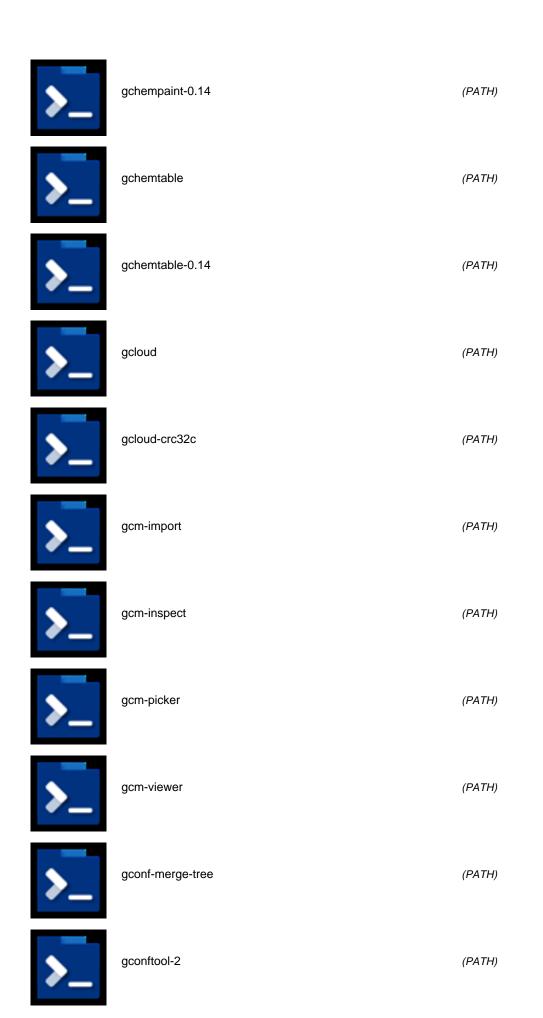


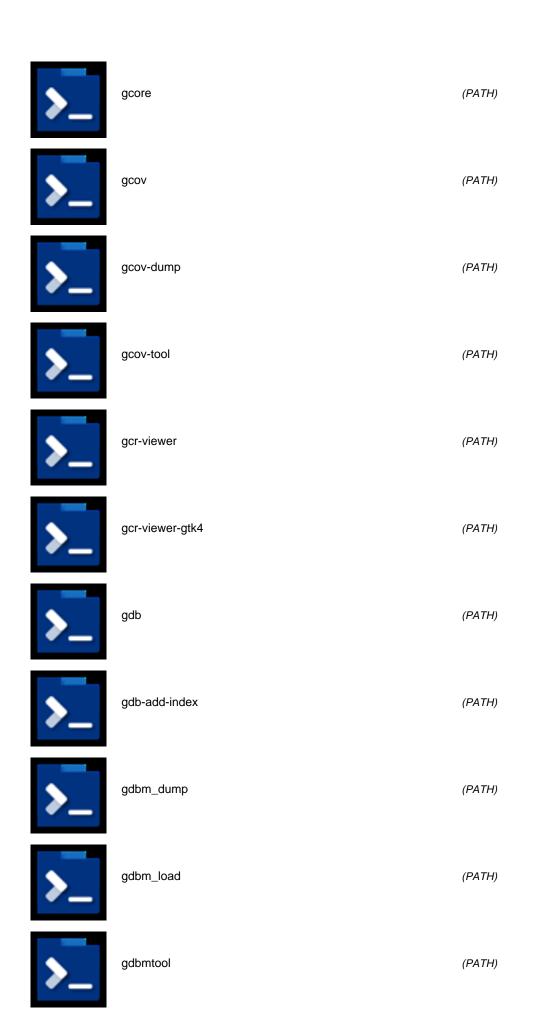


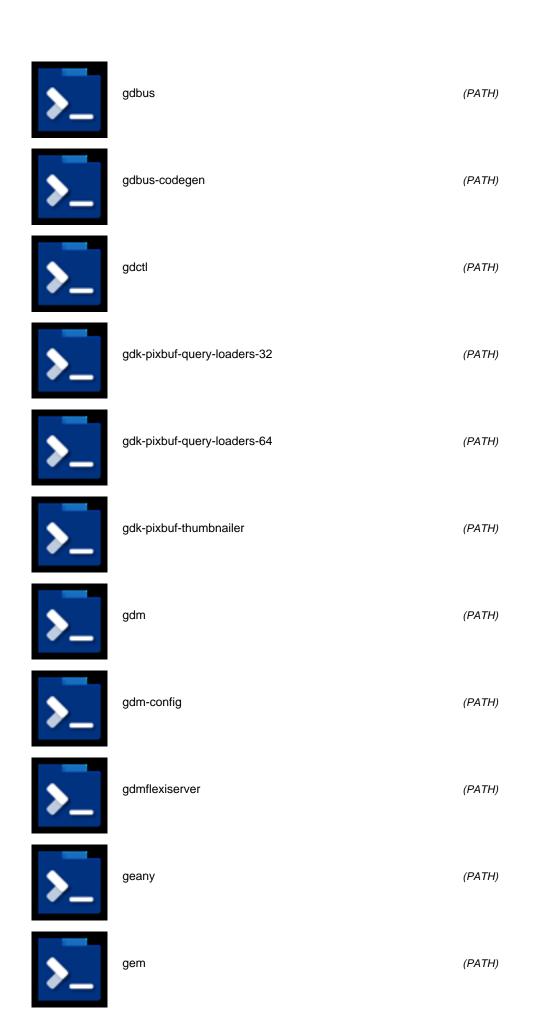


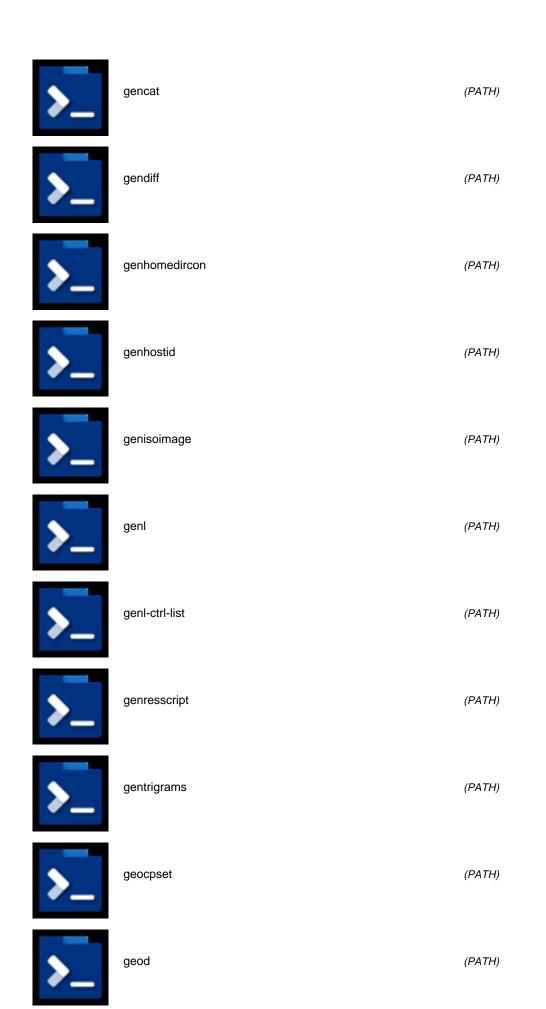


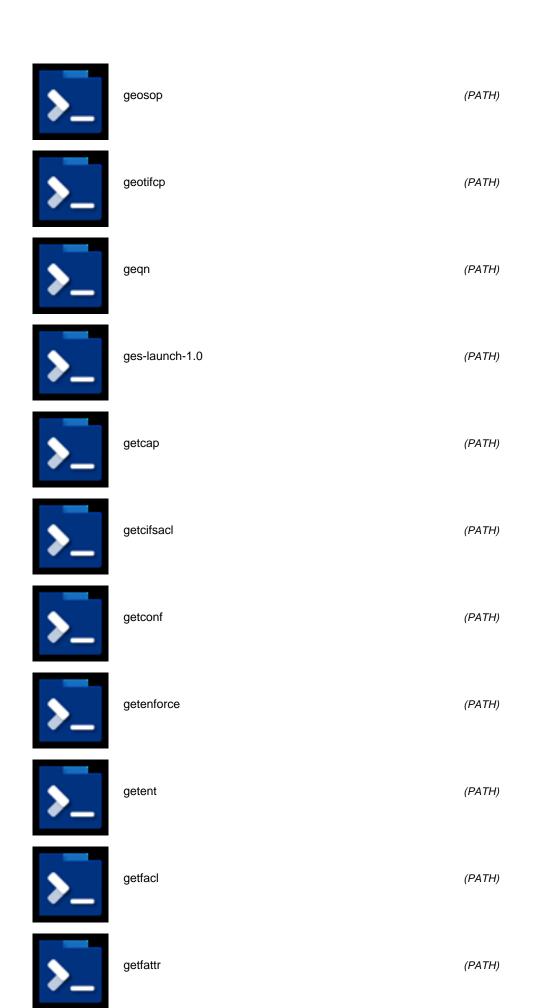


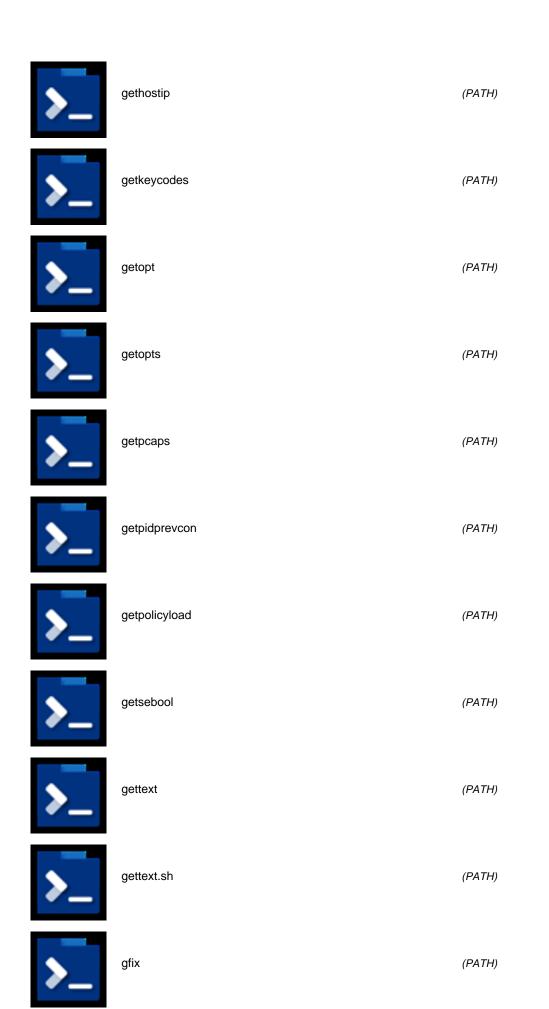




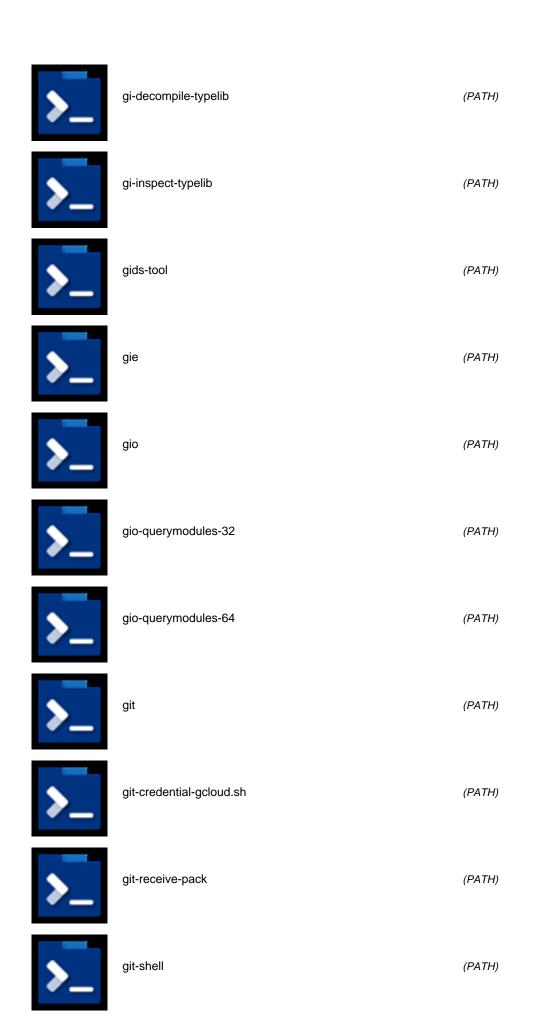




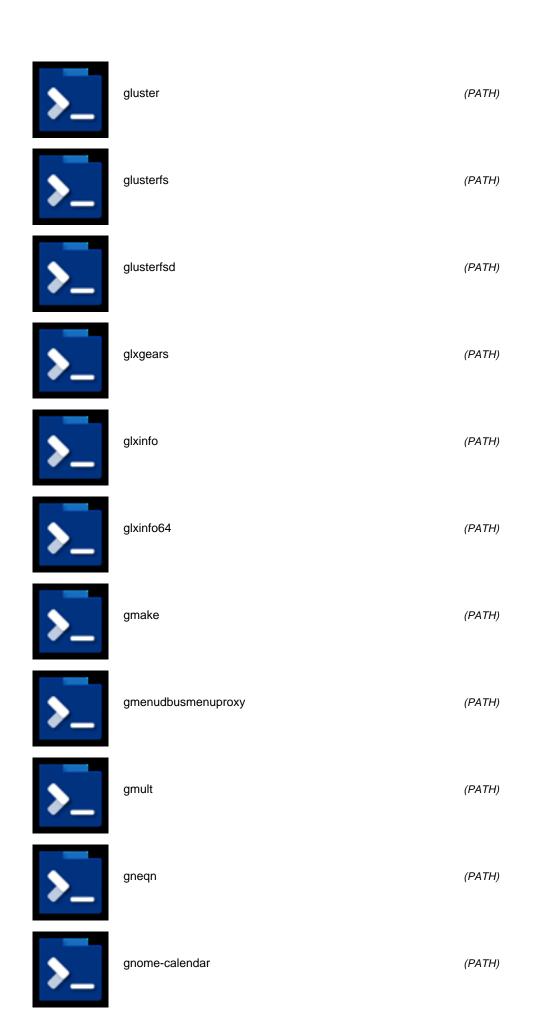


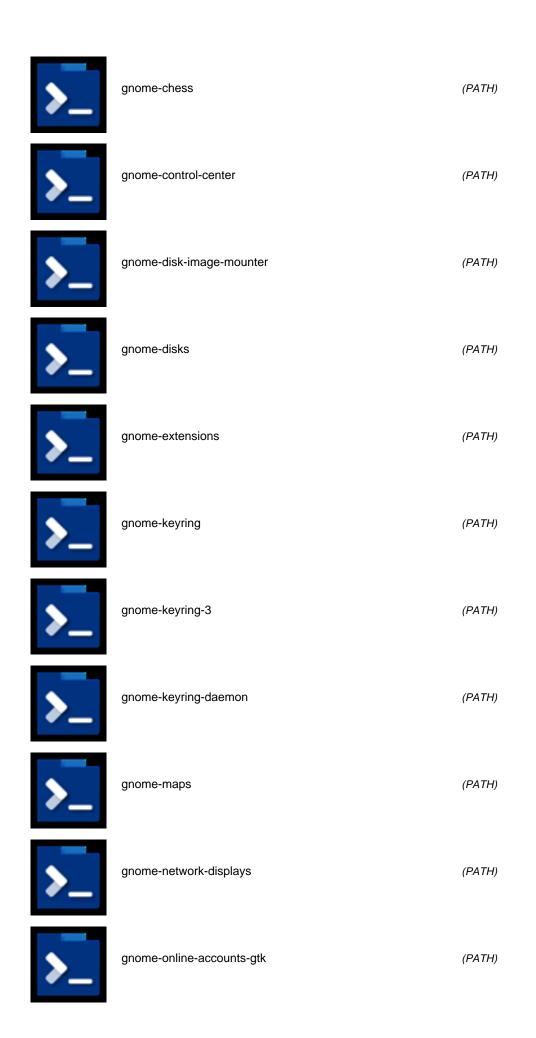


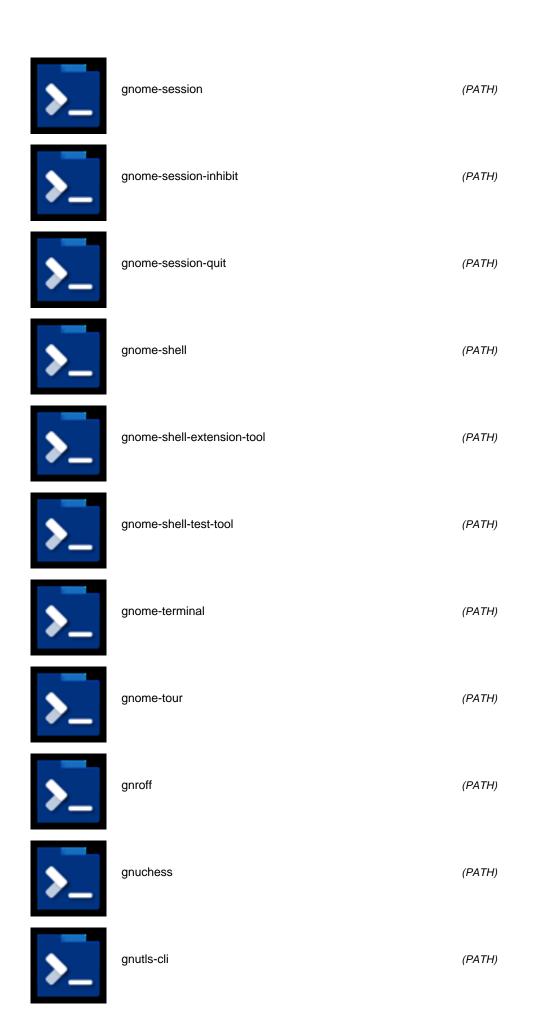


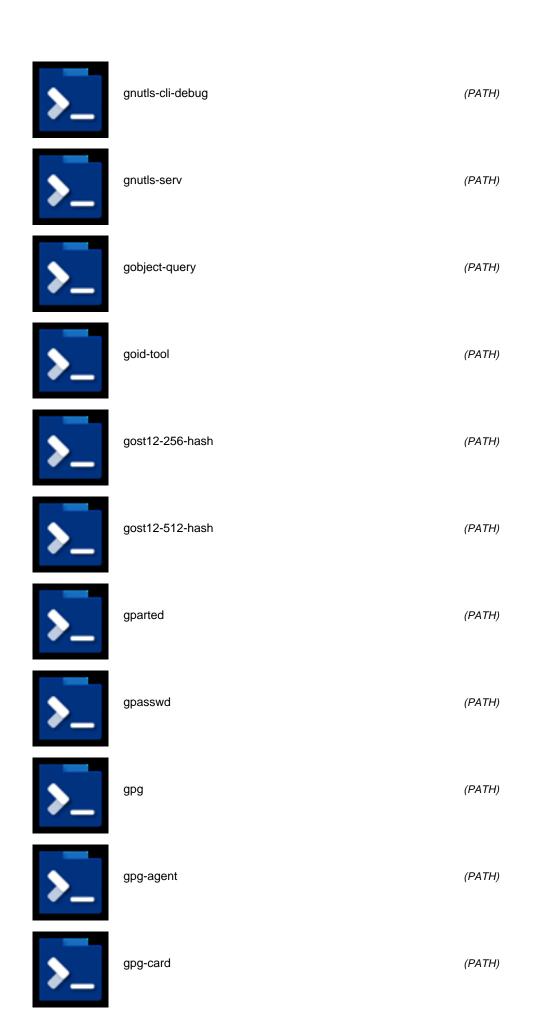




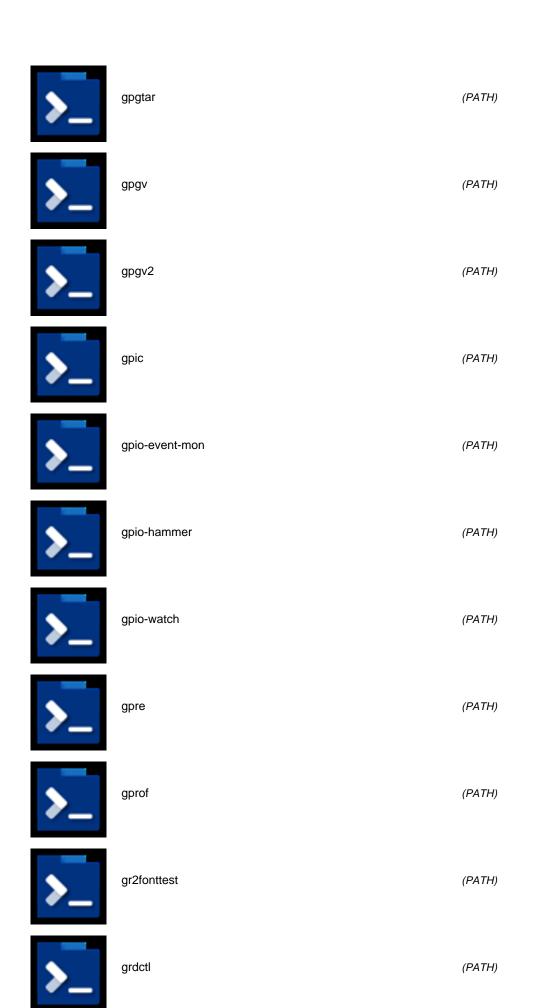


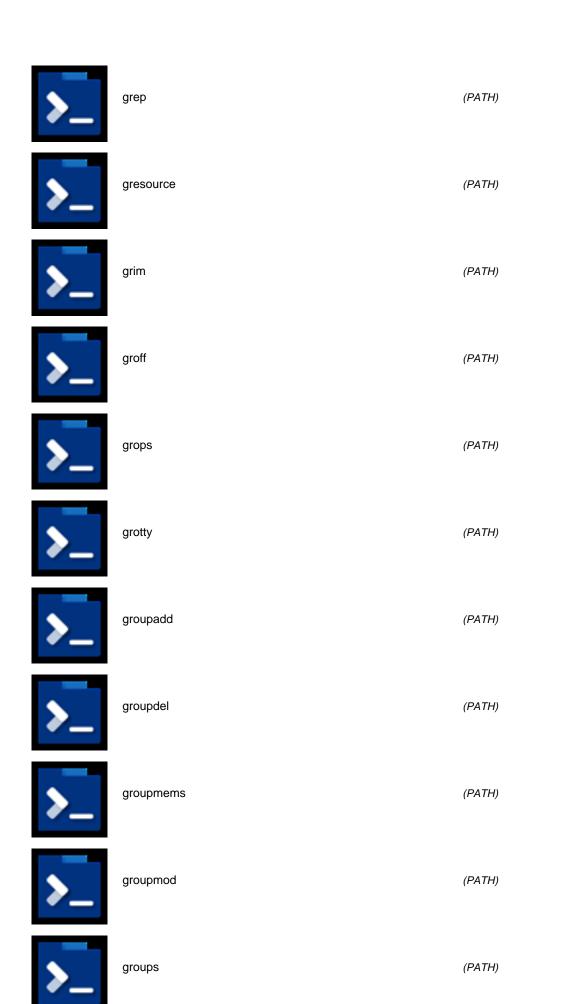






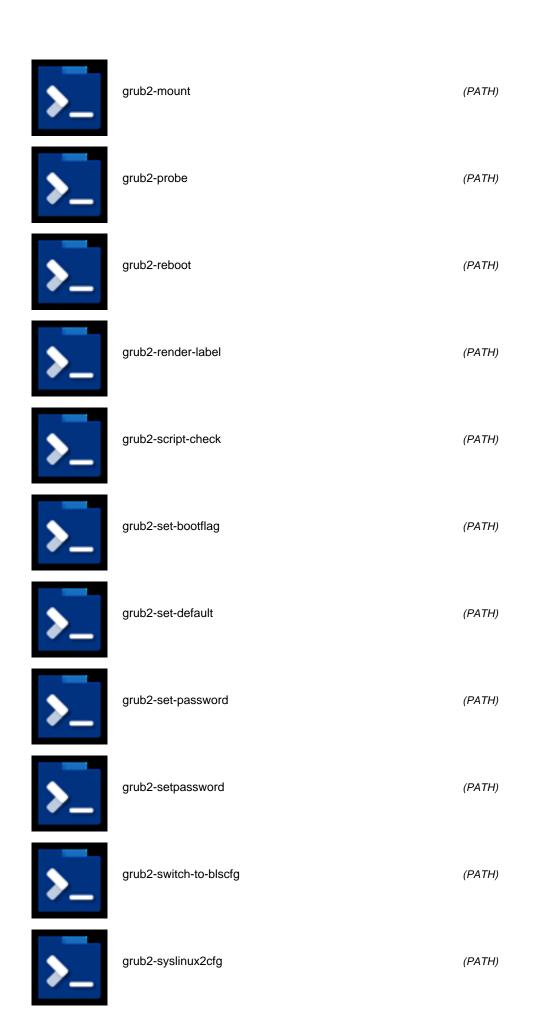


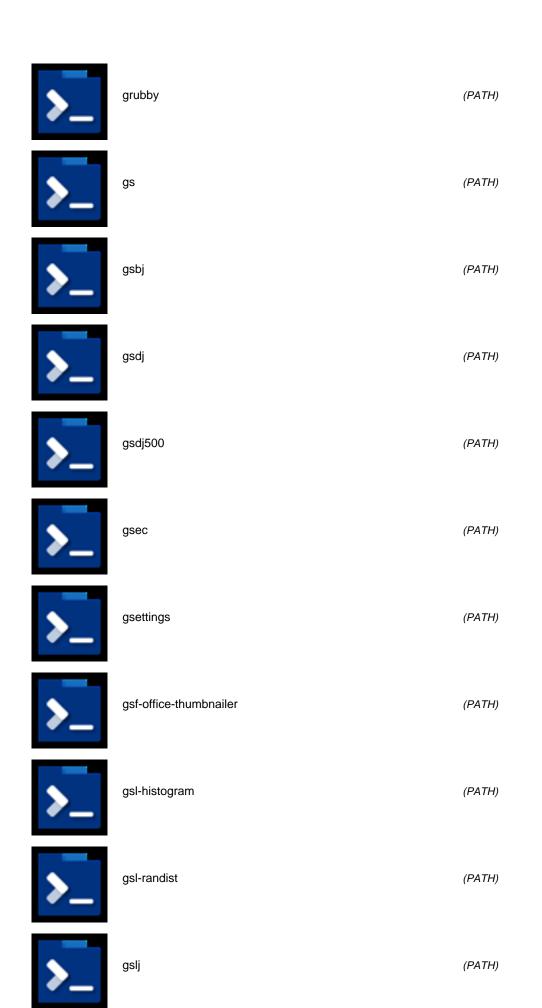


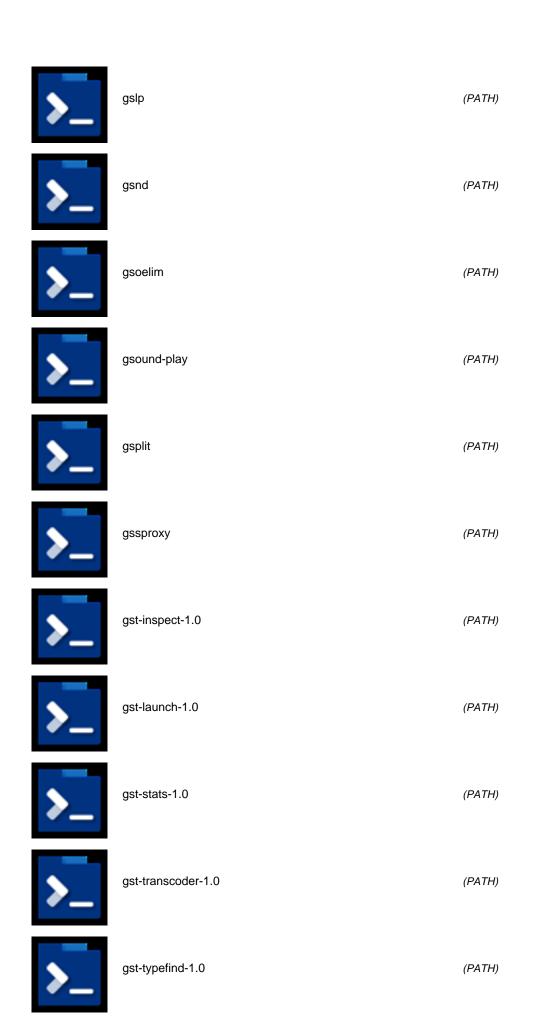


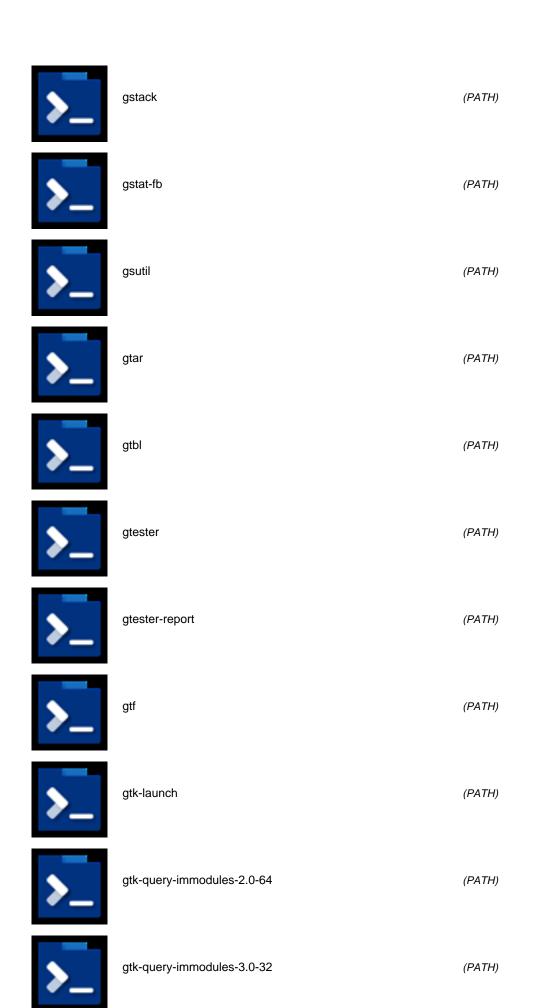


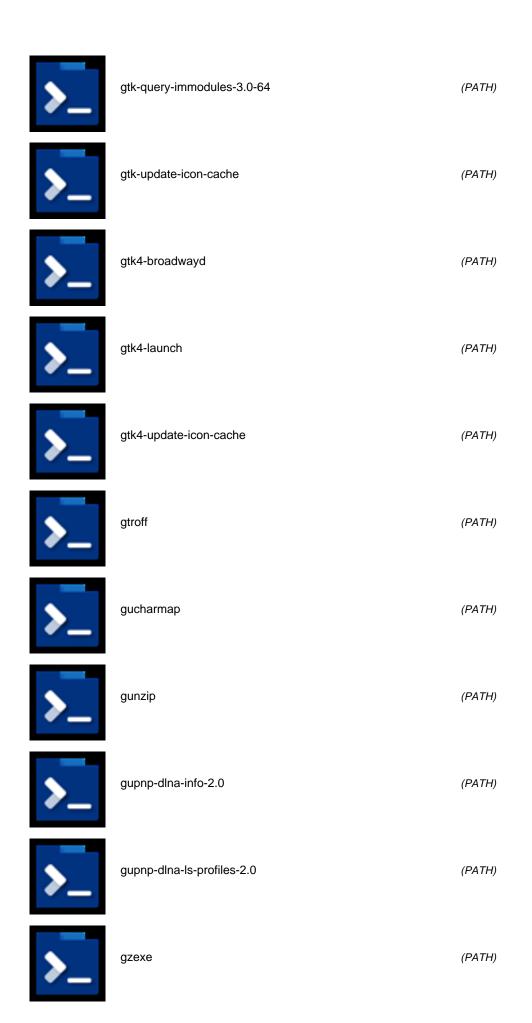


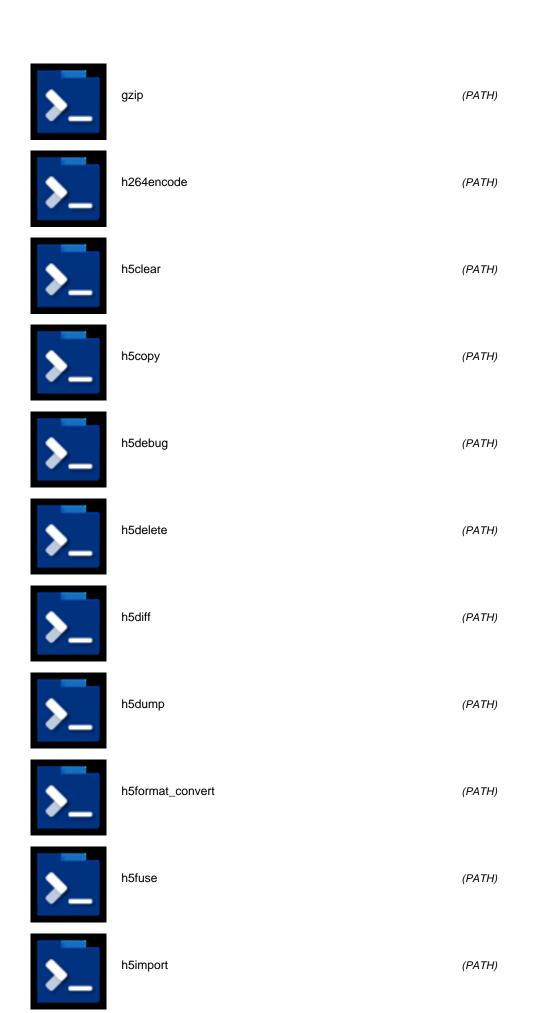




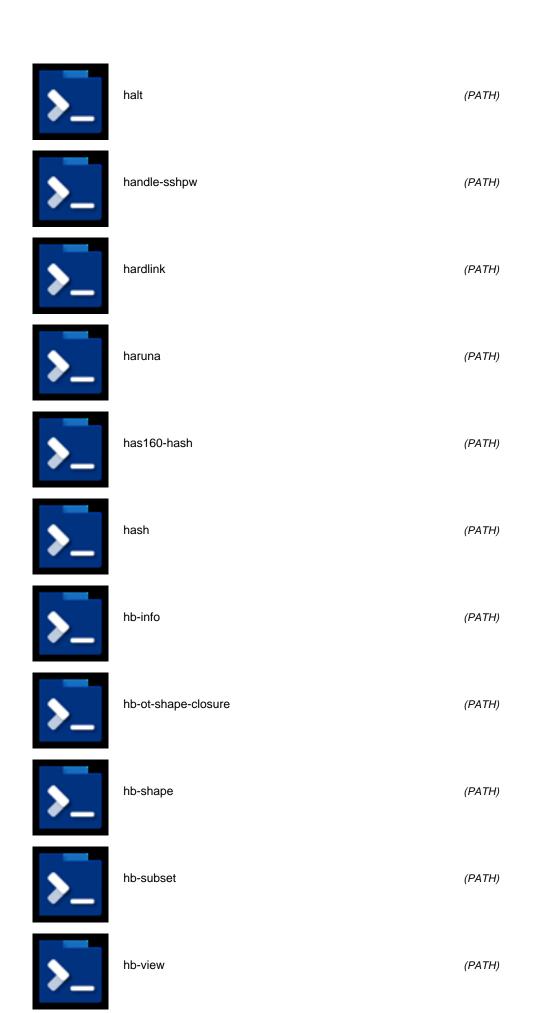


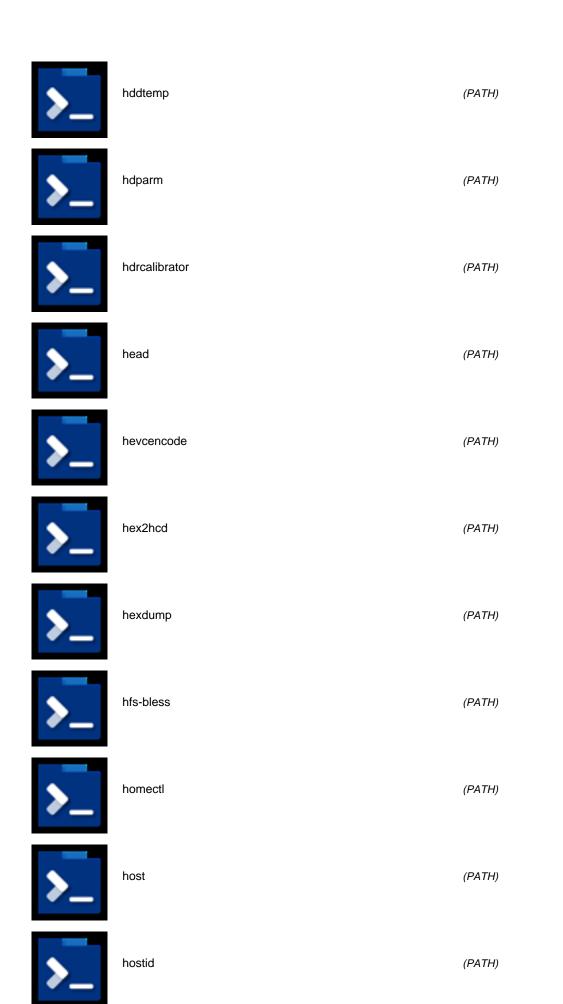




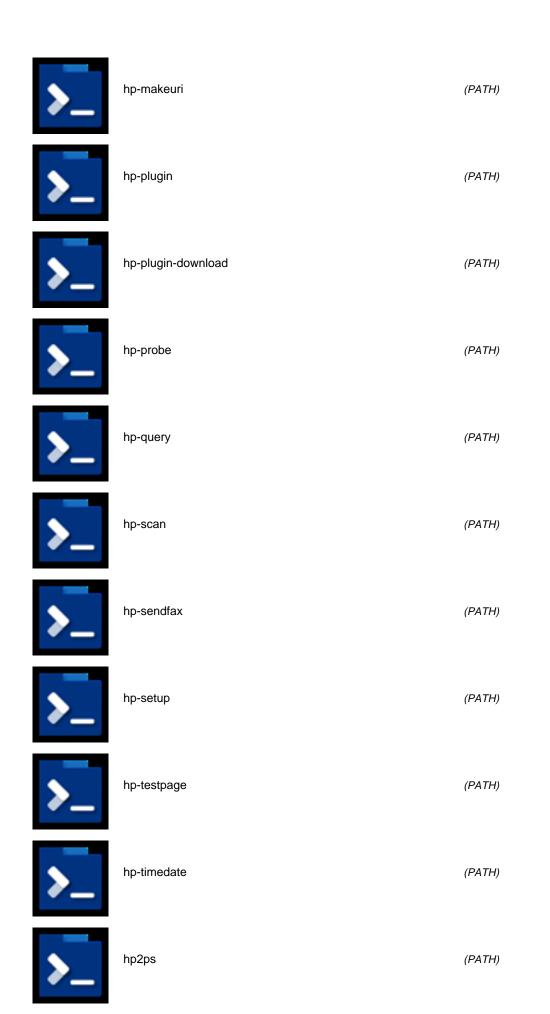


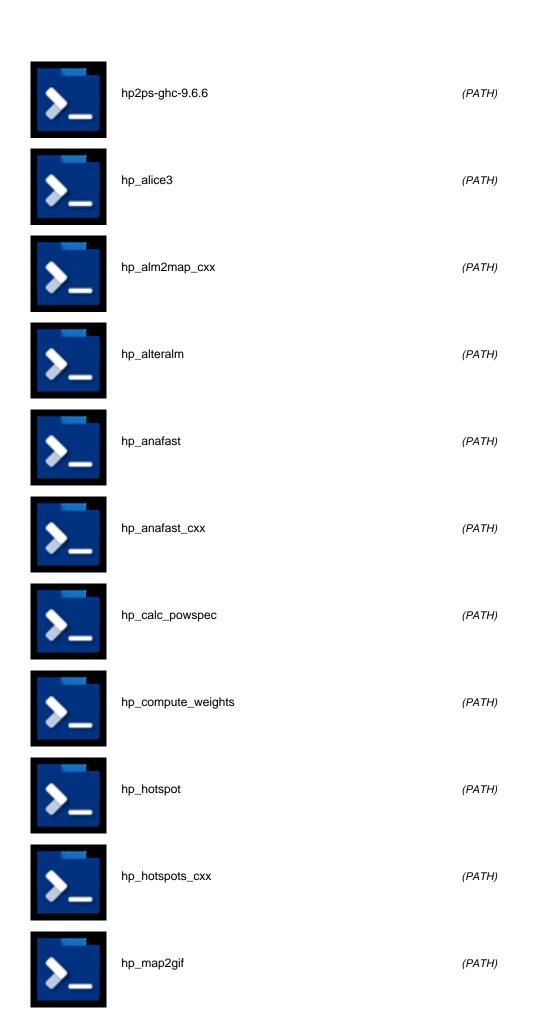


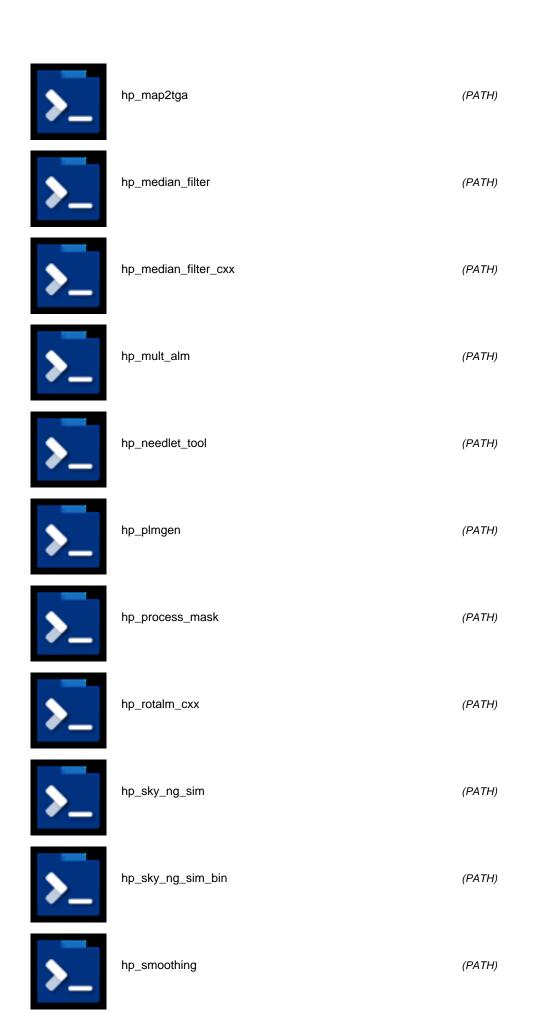


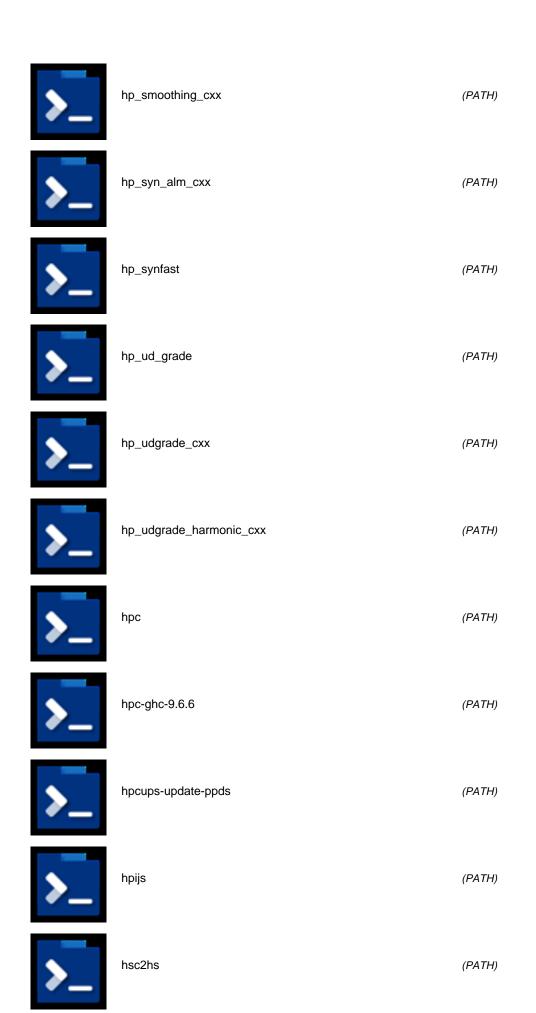


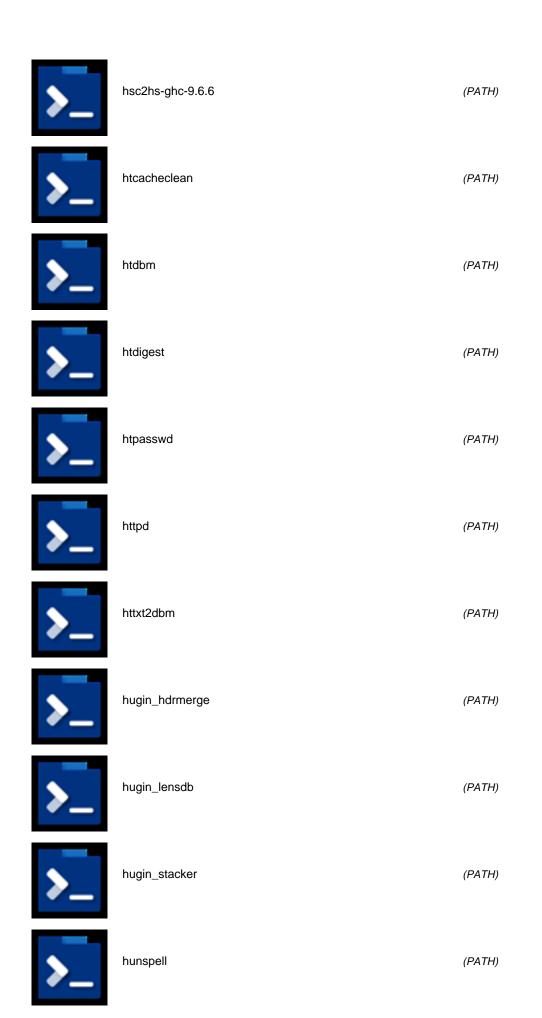


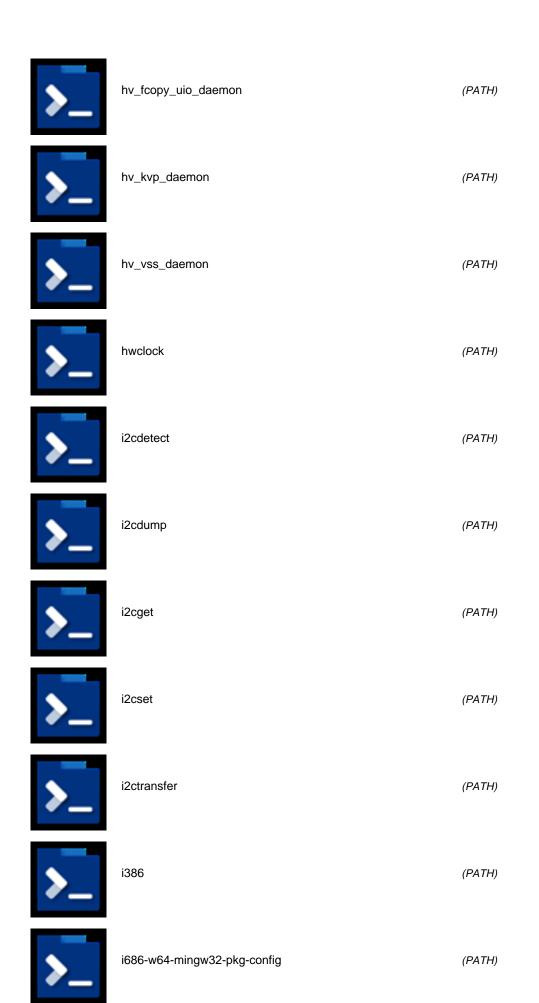


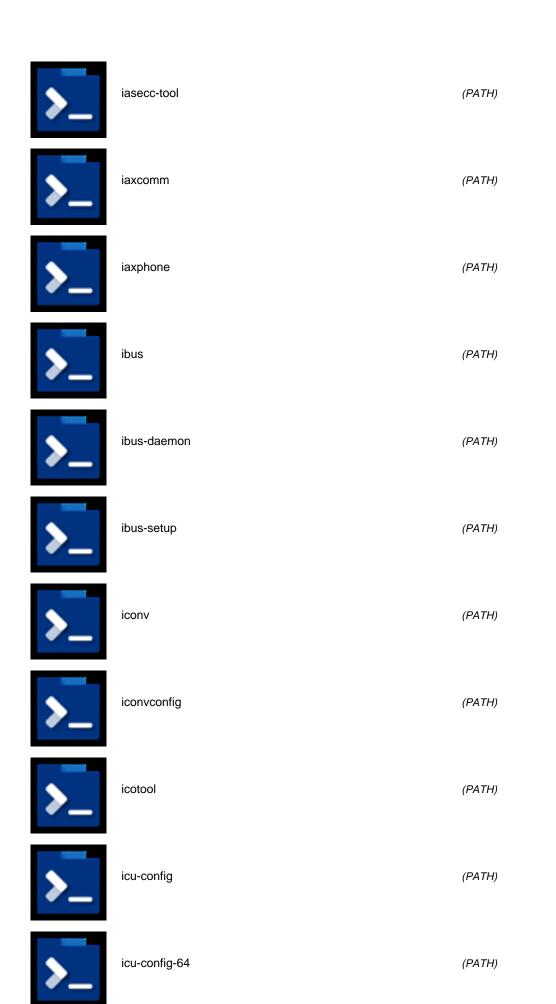


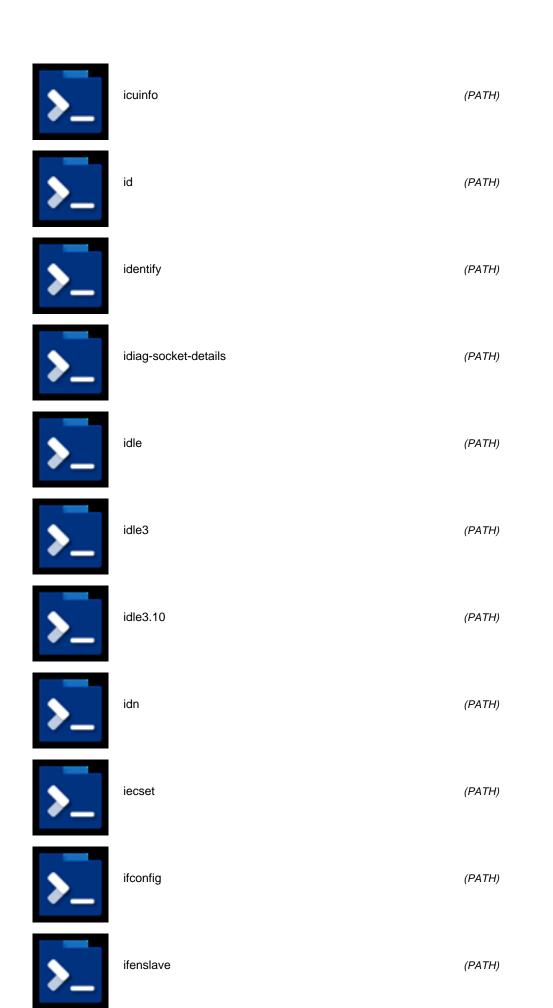


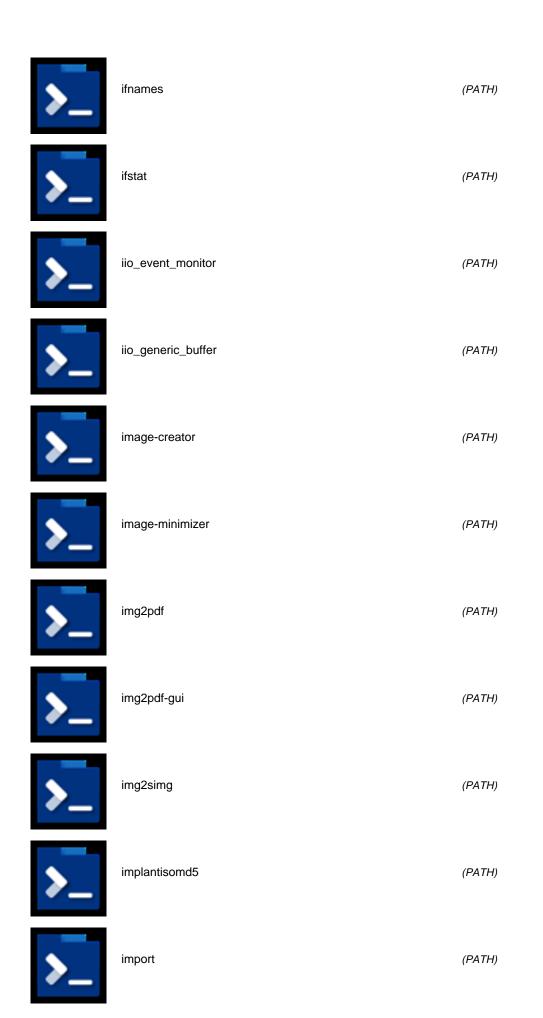


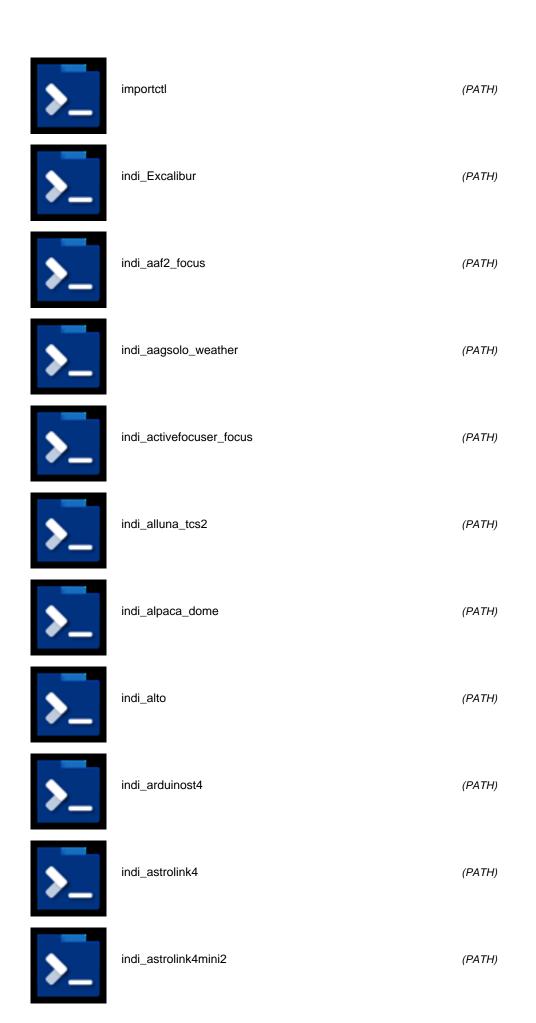


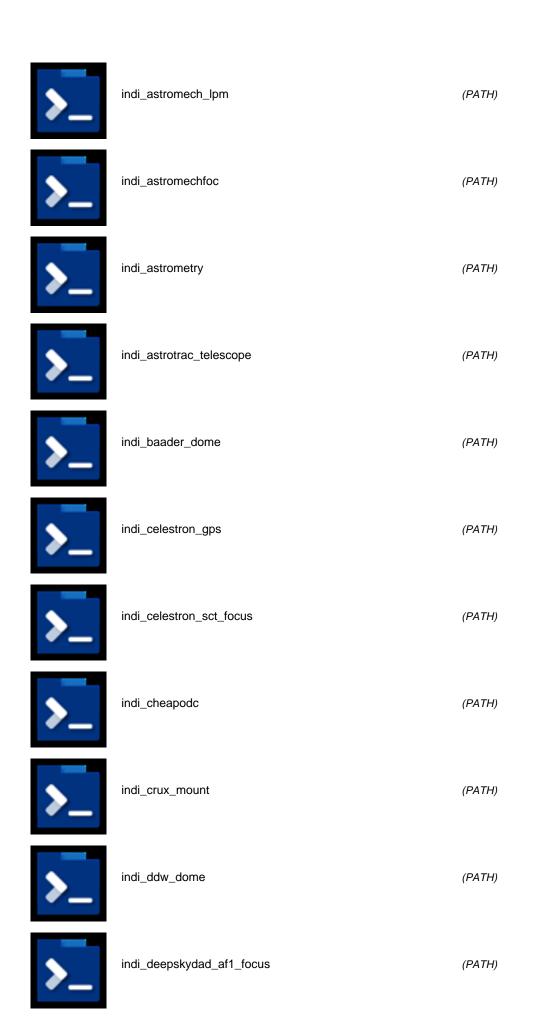


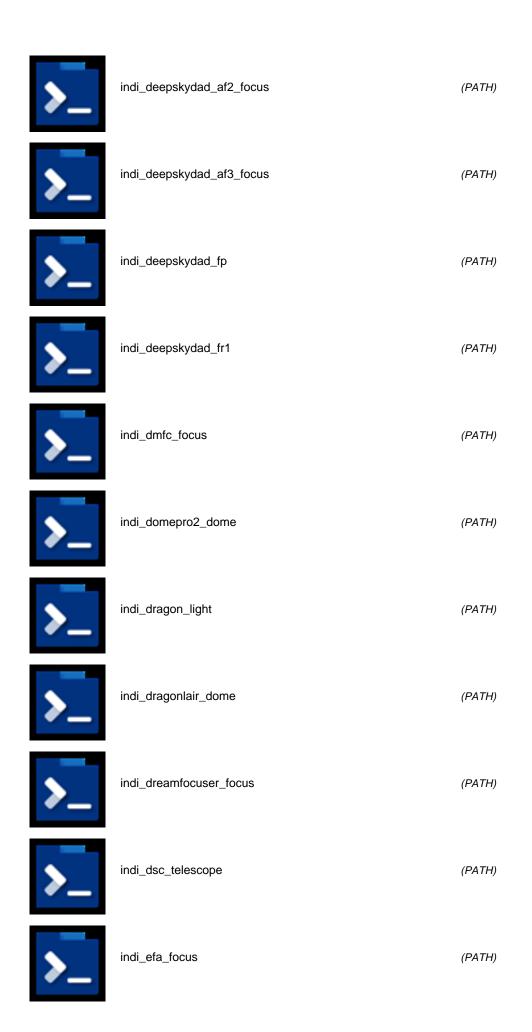


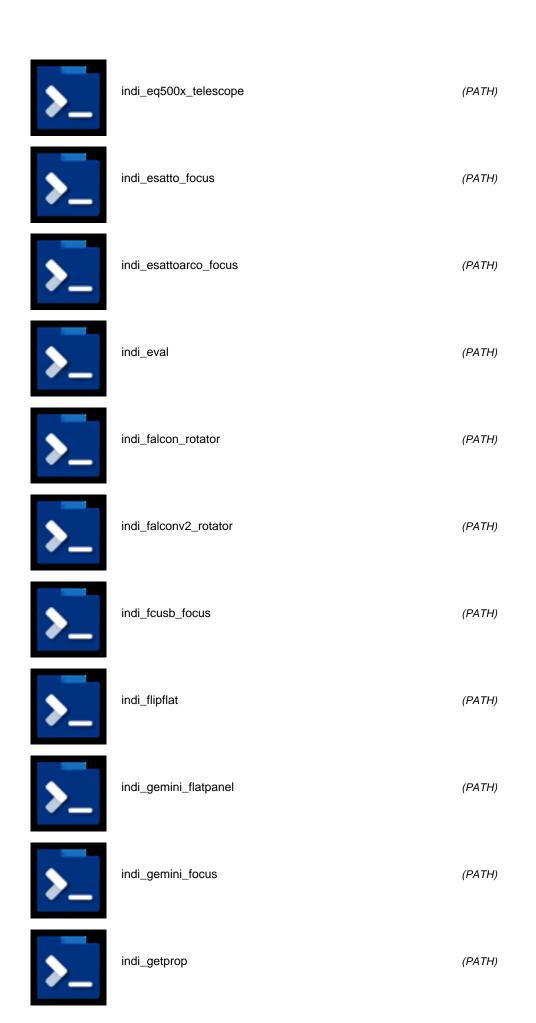






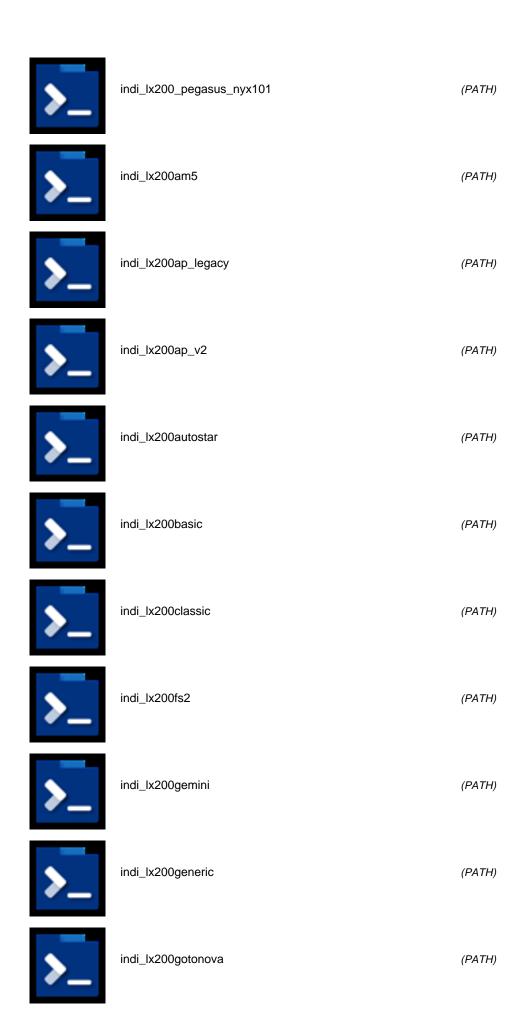










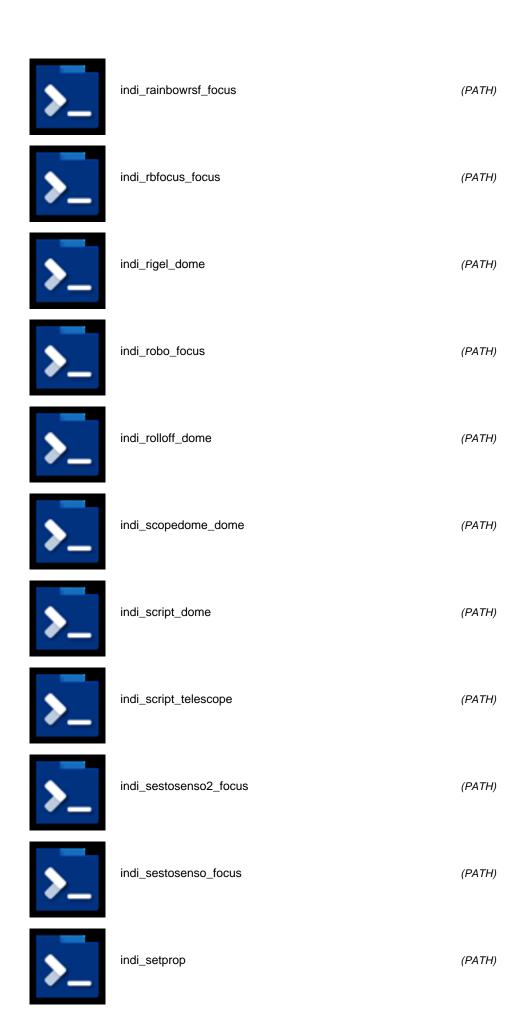


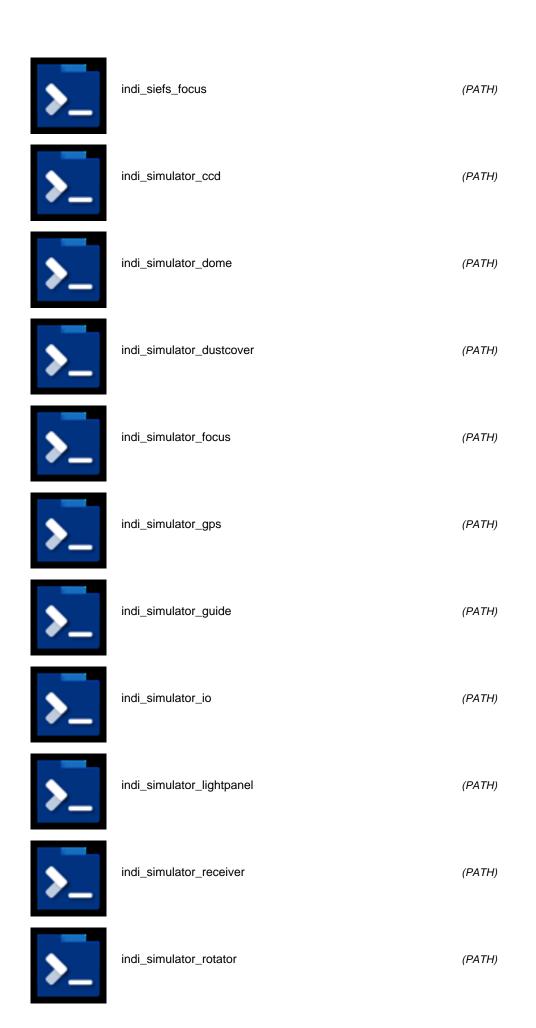
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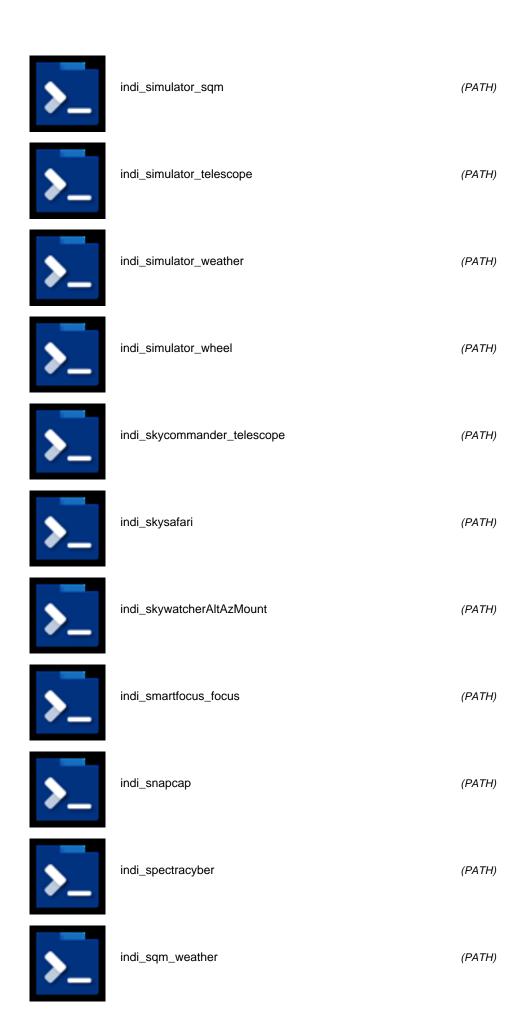
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> _	indi_nframe_rotator	(PATH)
> _	indi_nightcrawler_focus	(PATH)
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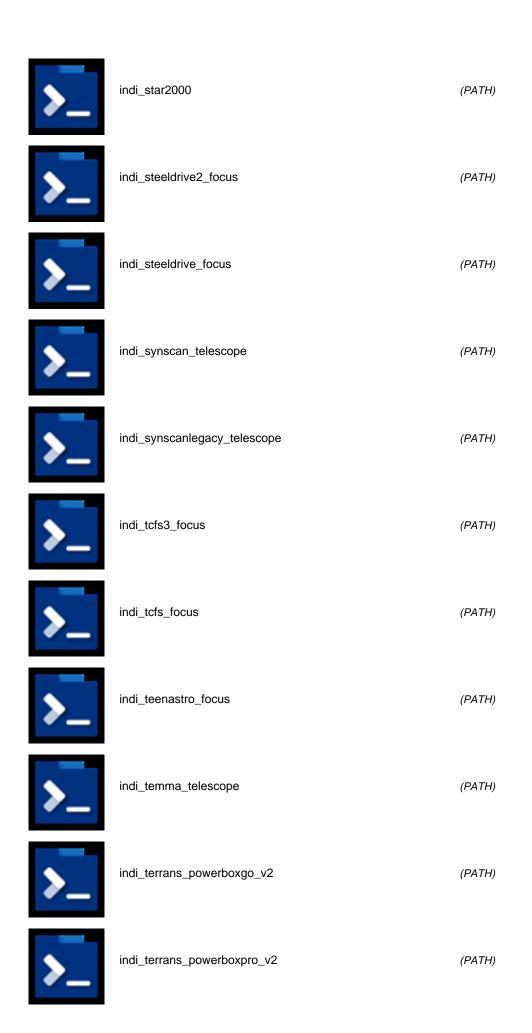
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>_	indi_pegasus_uch	(PATH)
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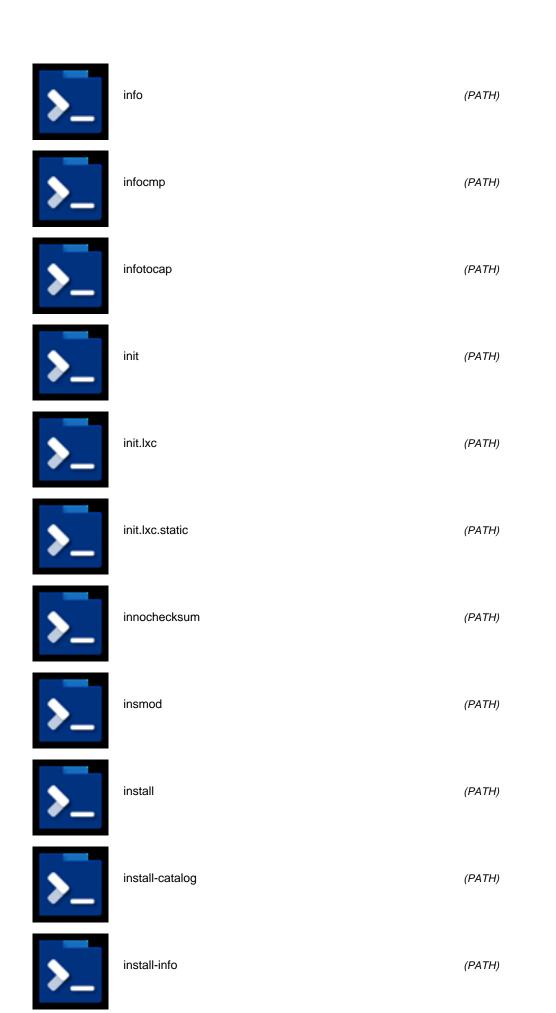


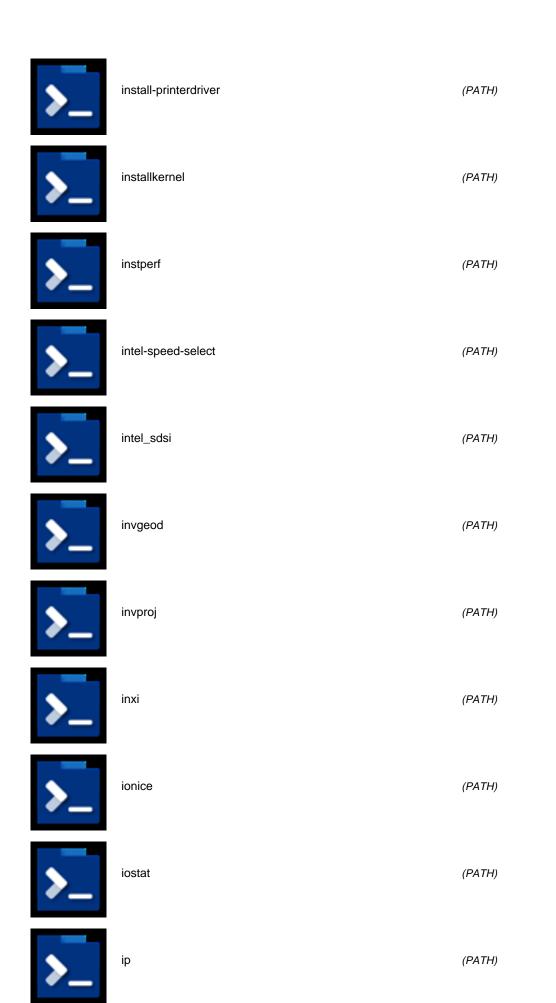


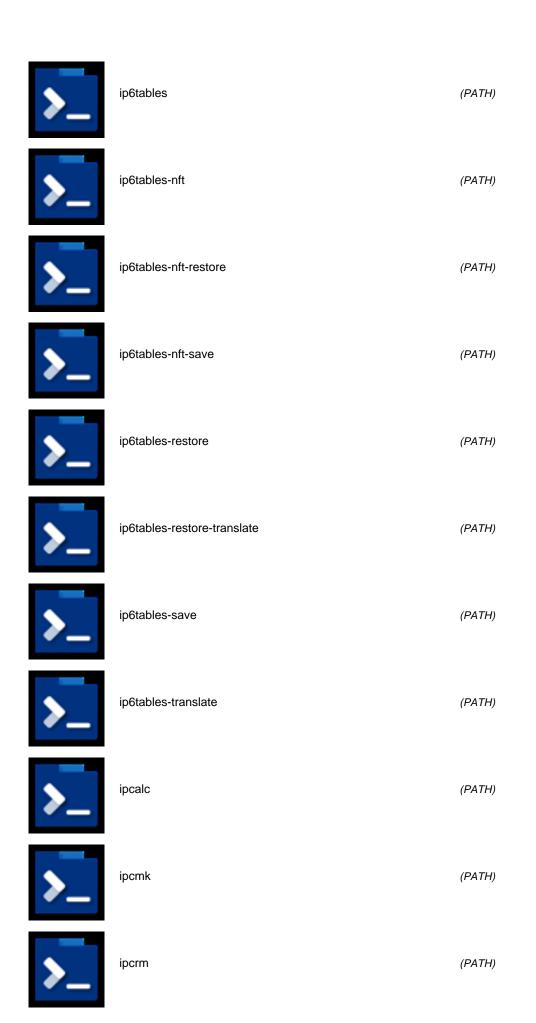


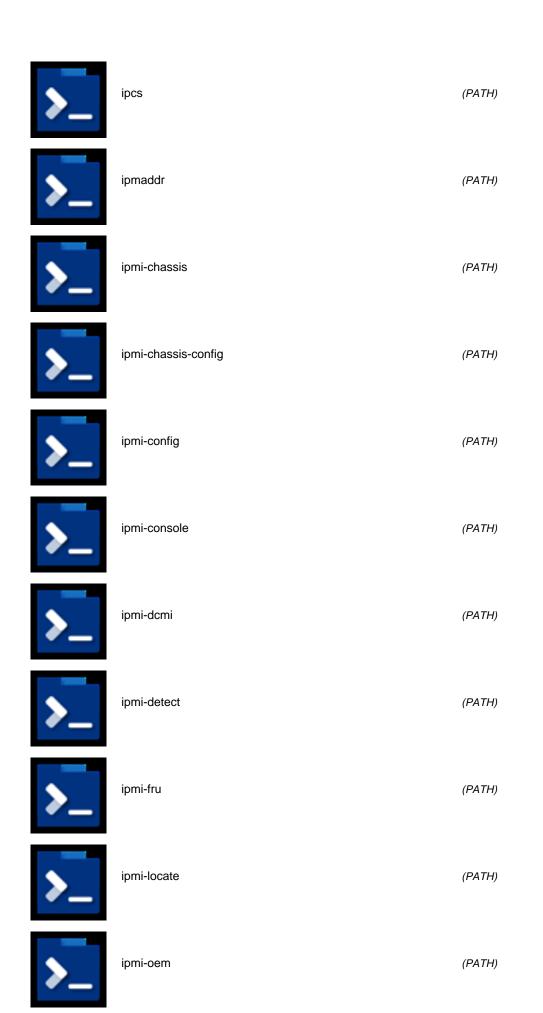


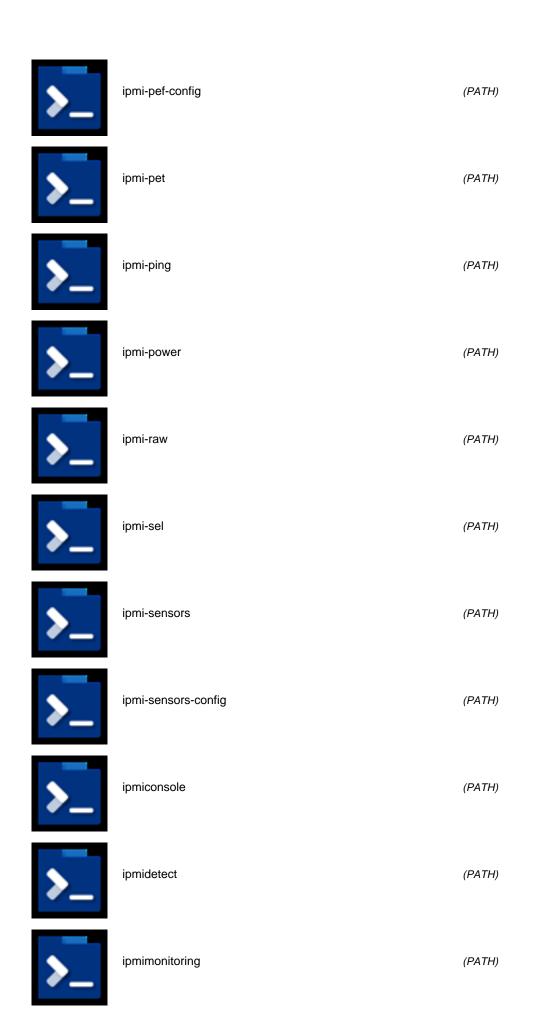


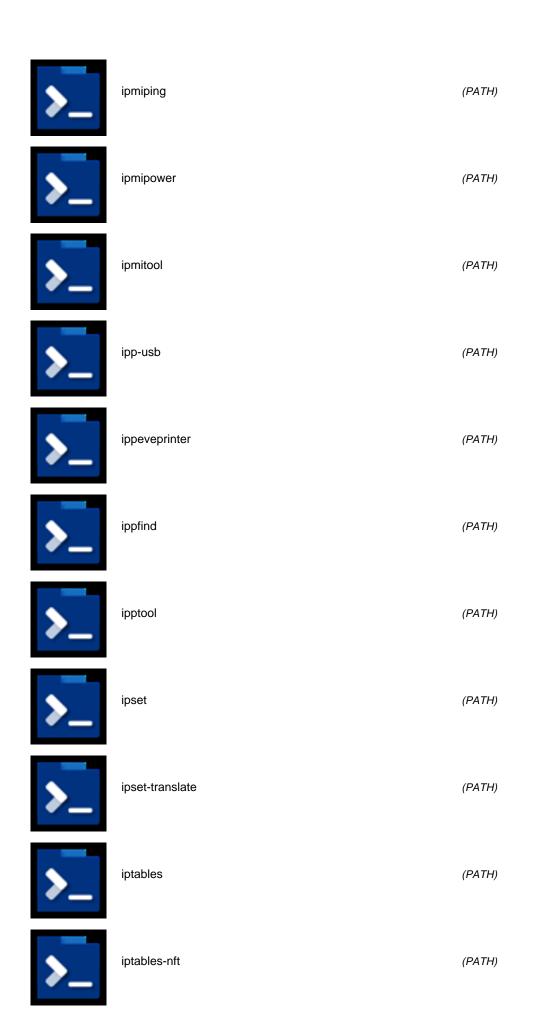


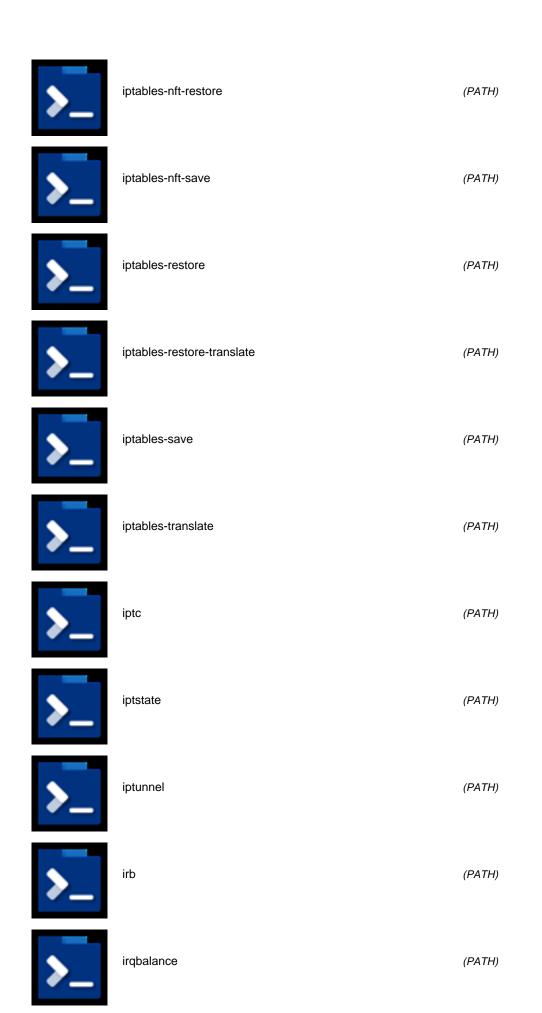


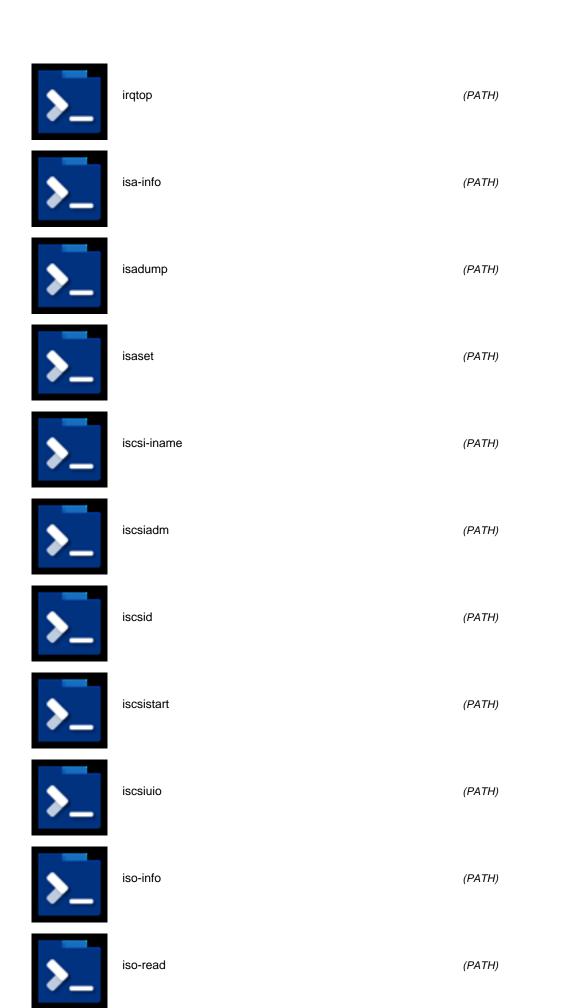


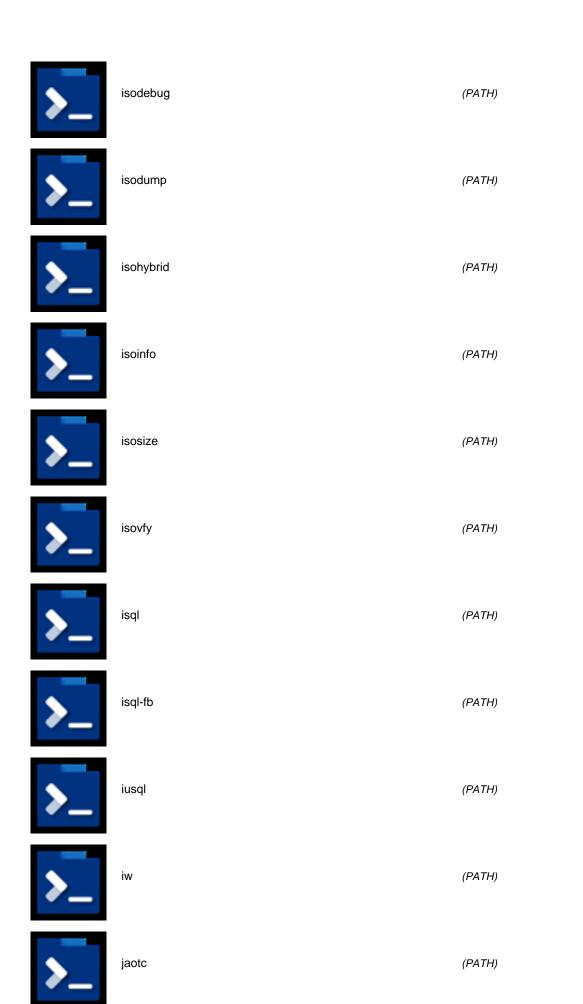


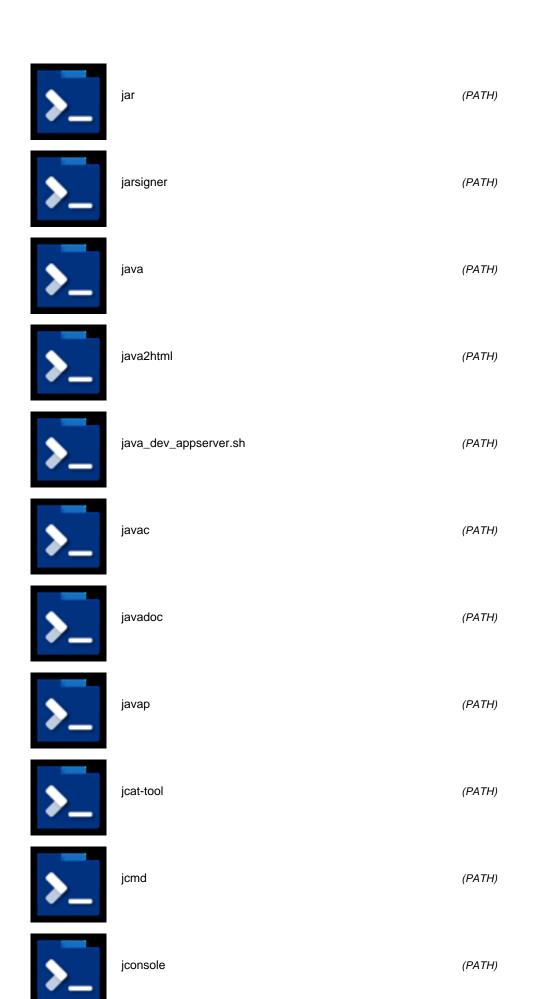


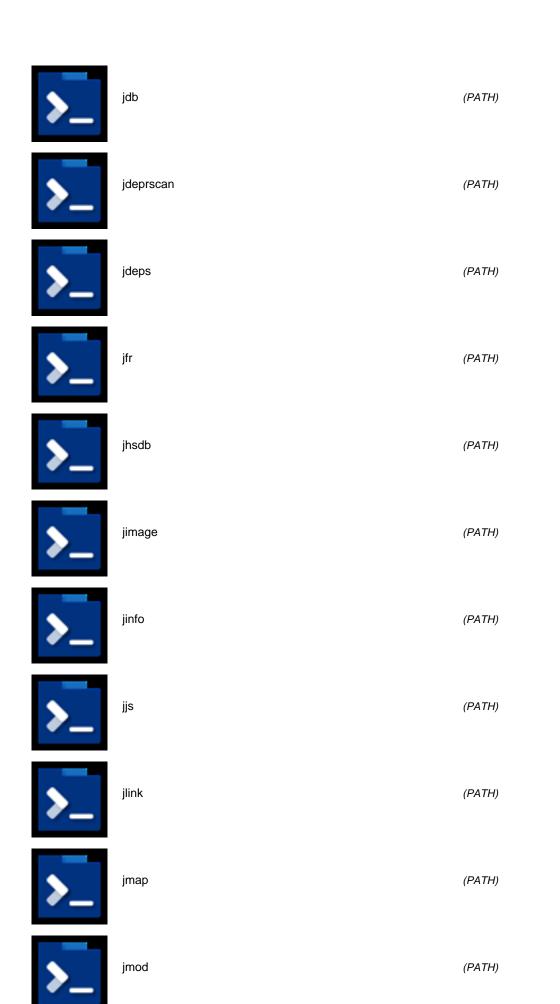


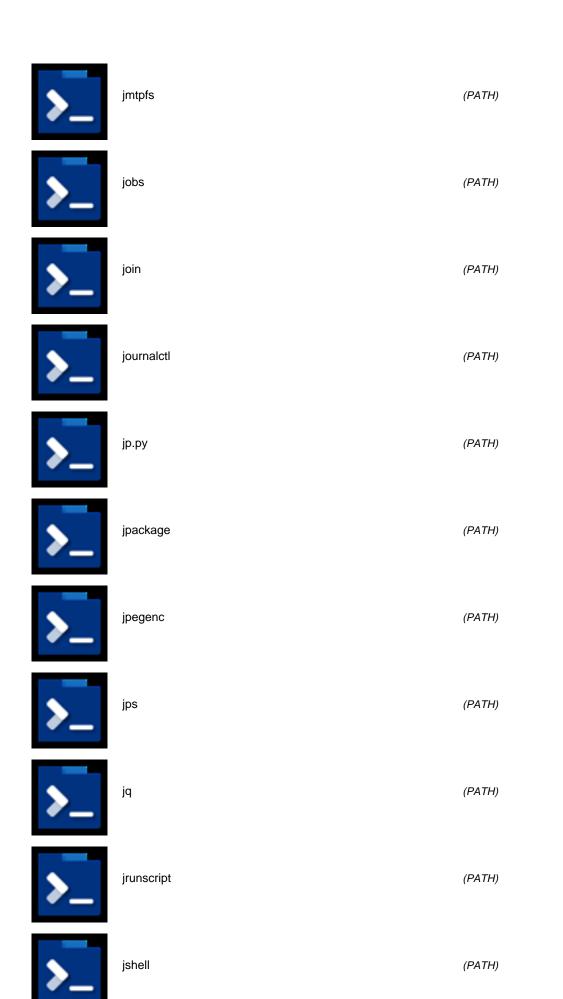


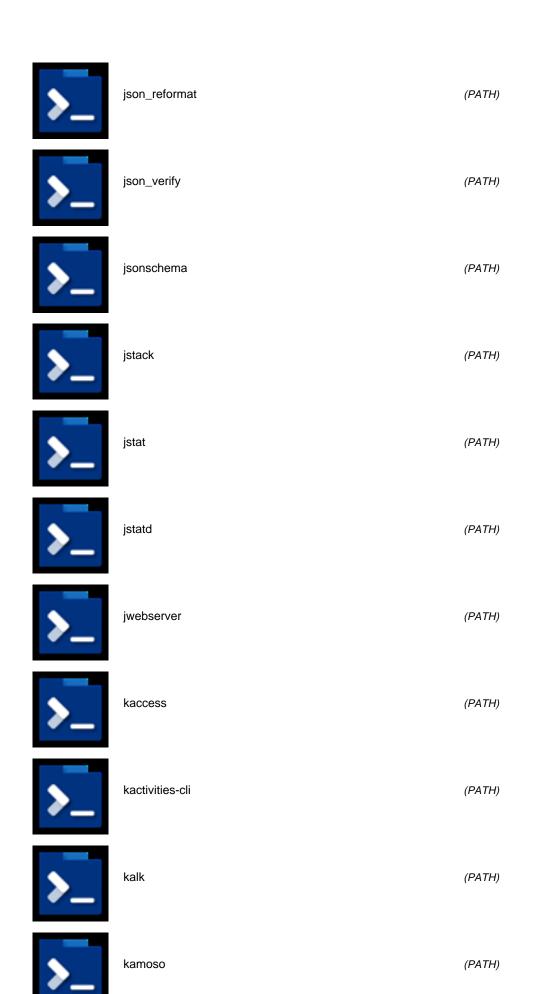


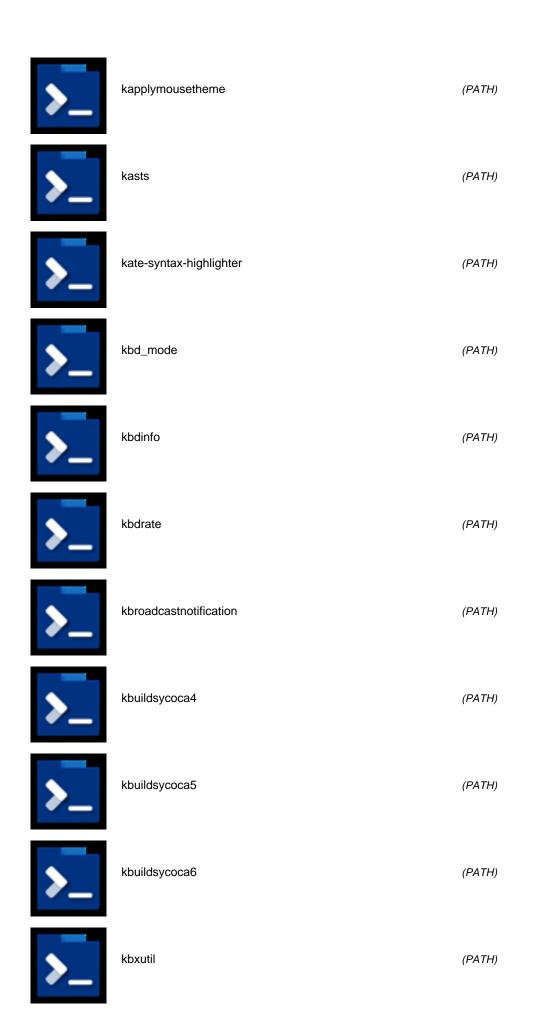


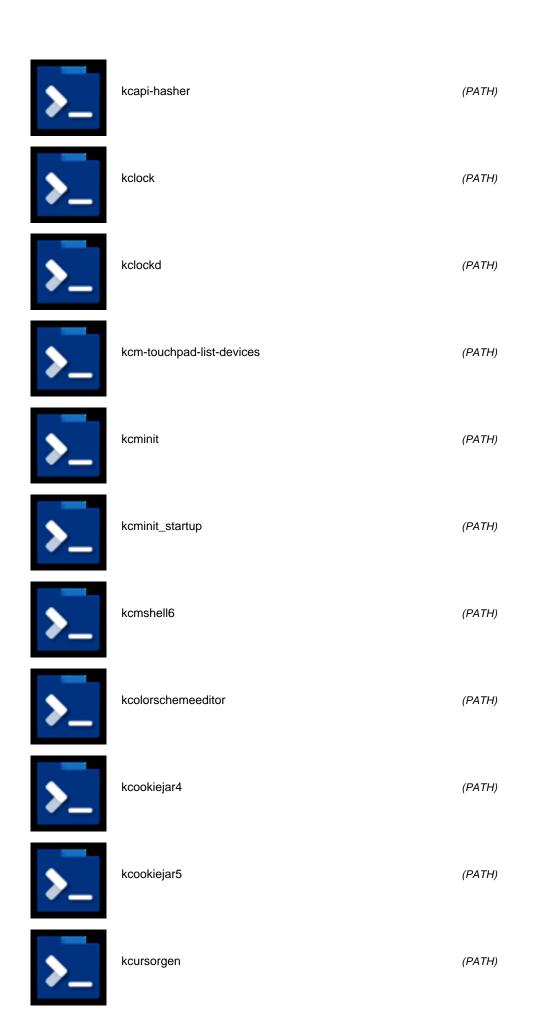




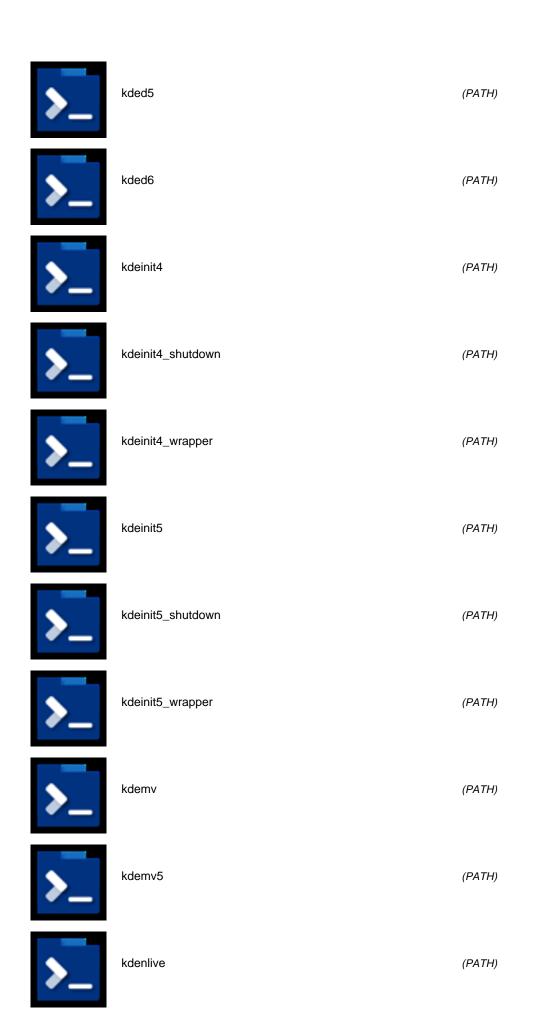


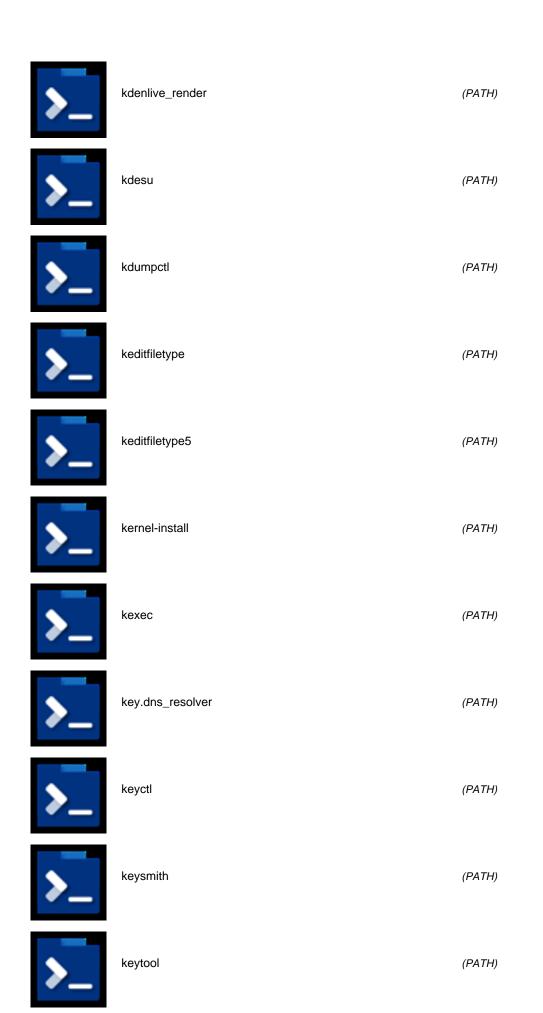


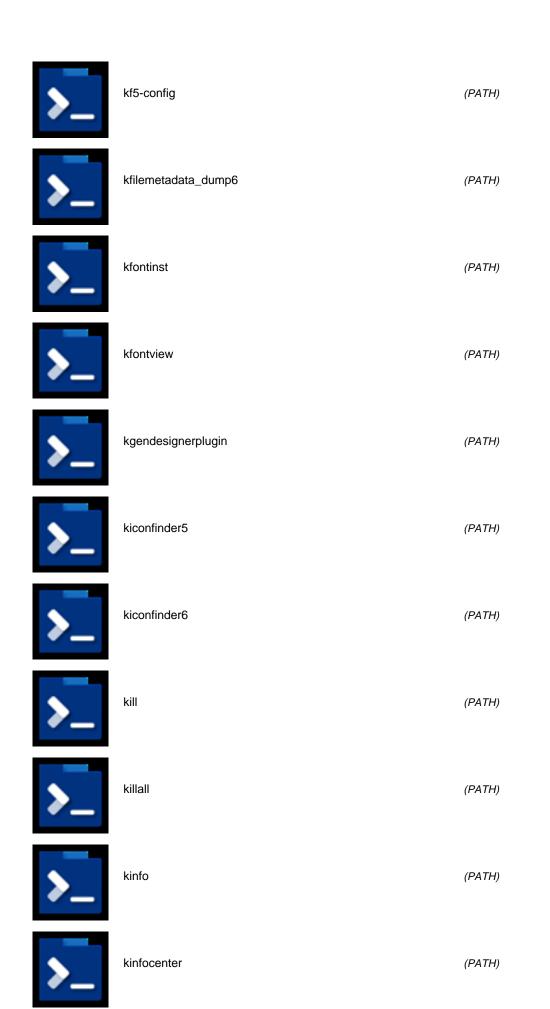


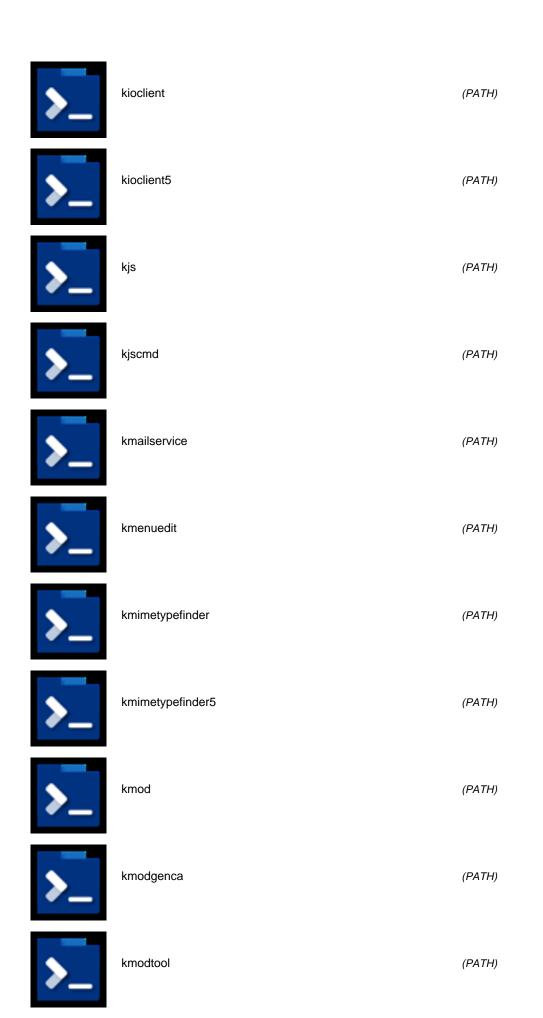


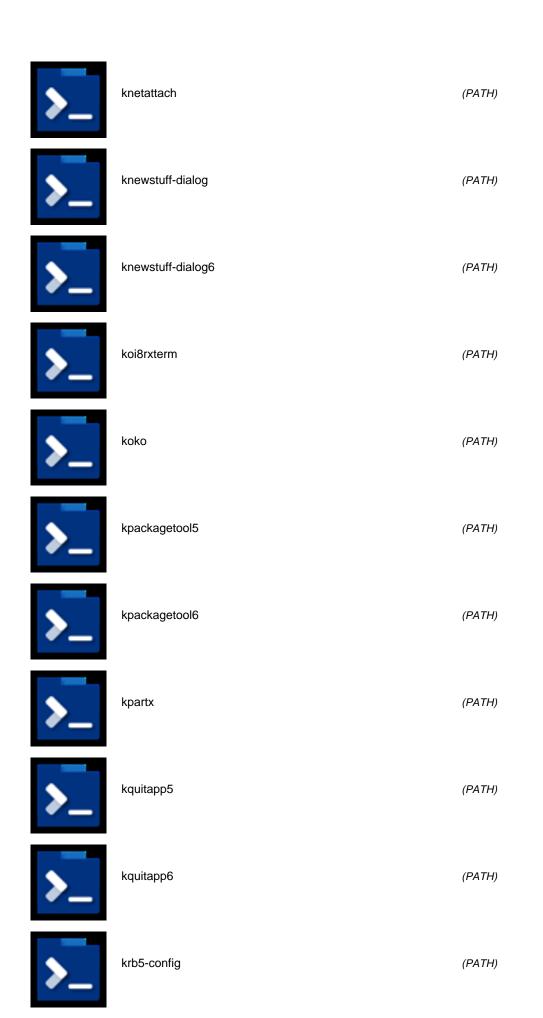


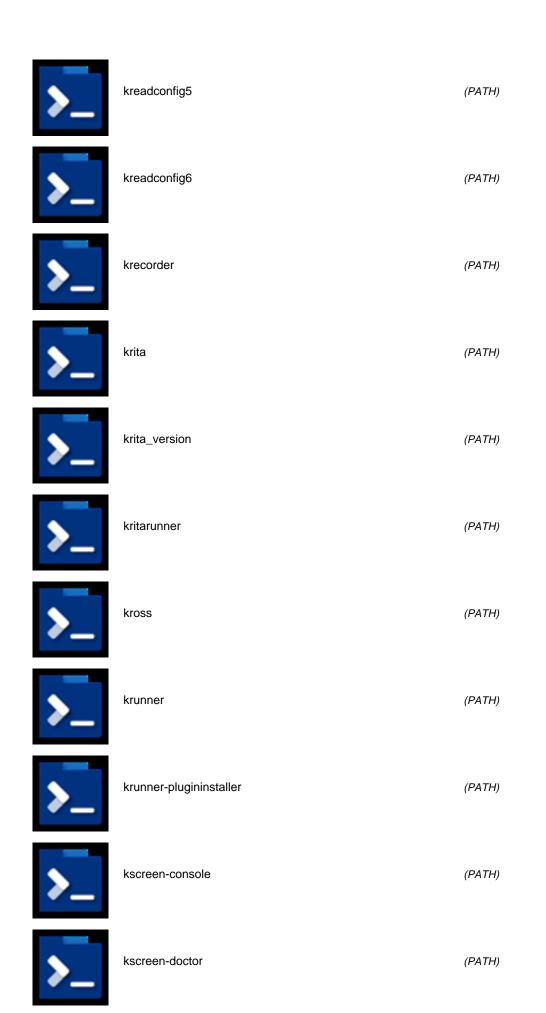


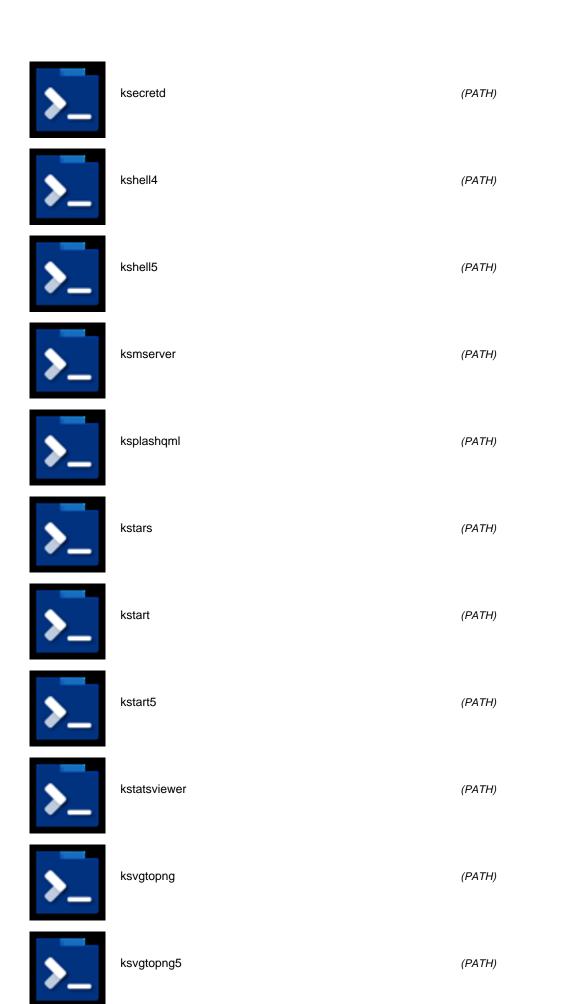


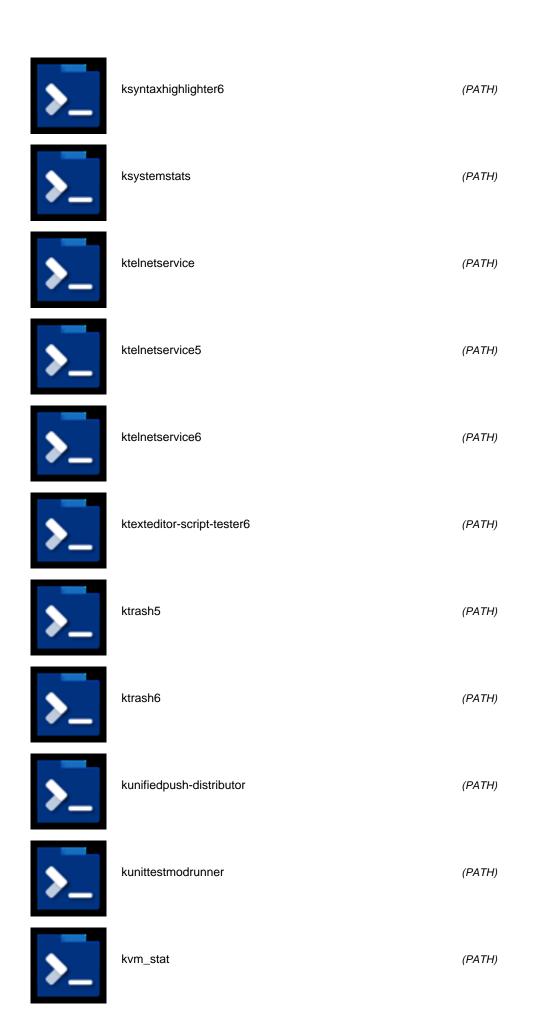


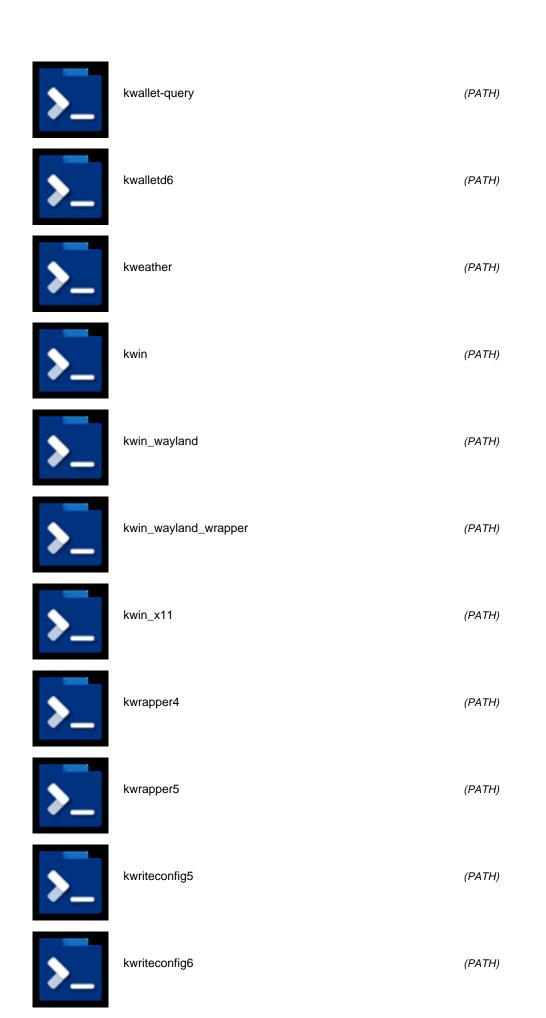


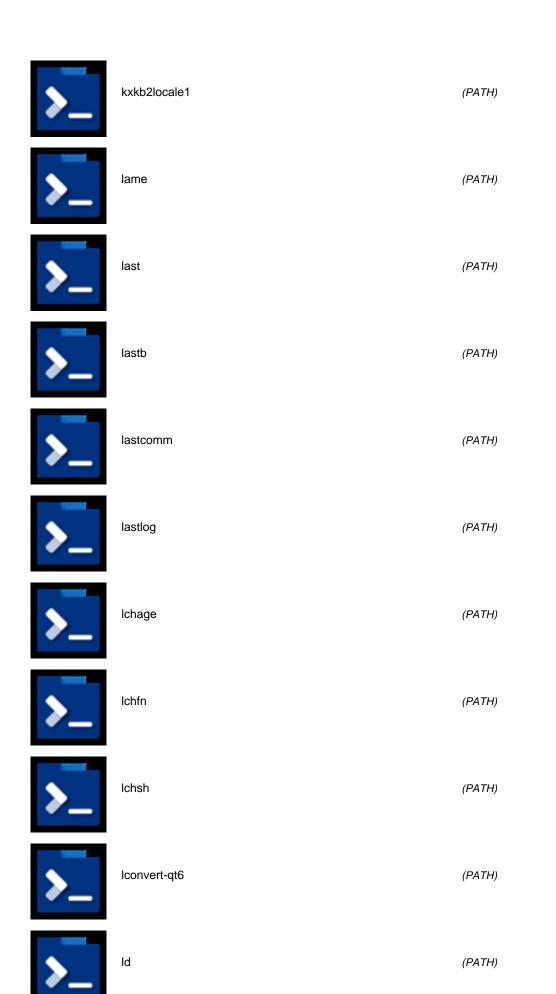


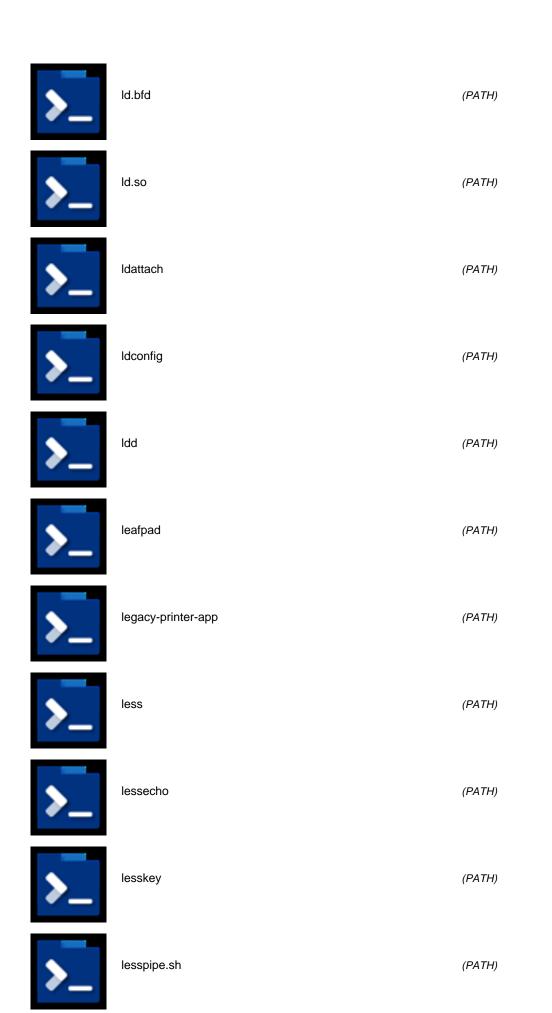


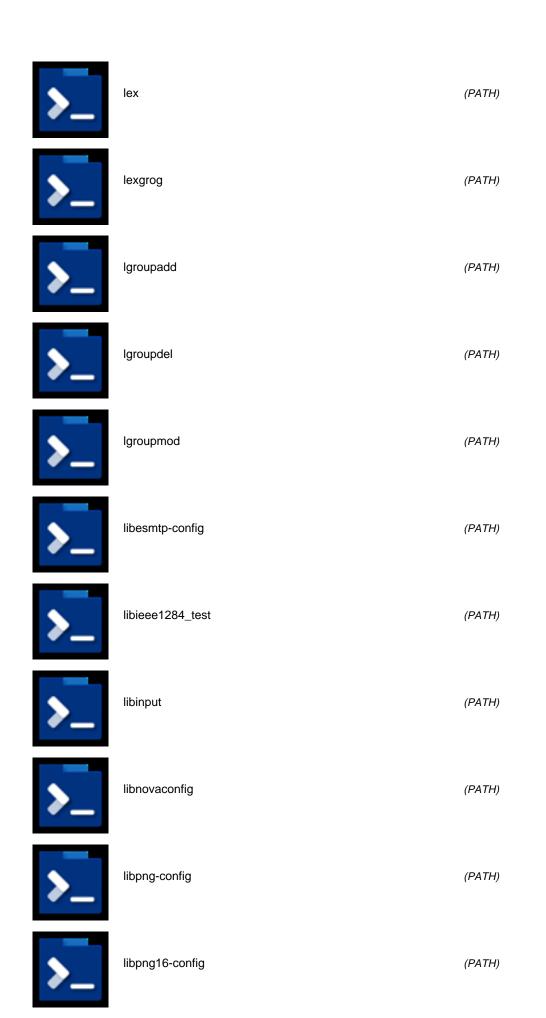


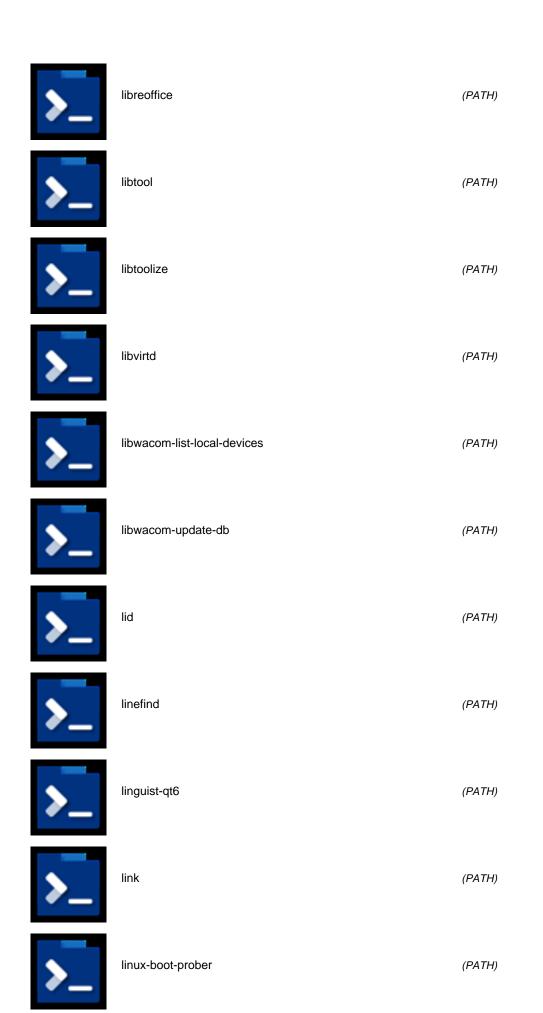


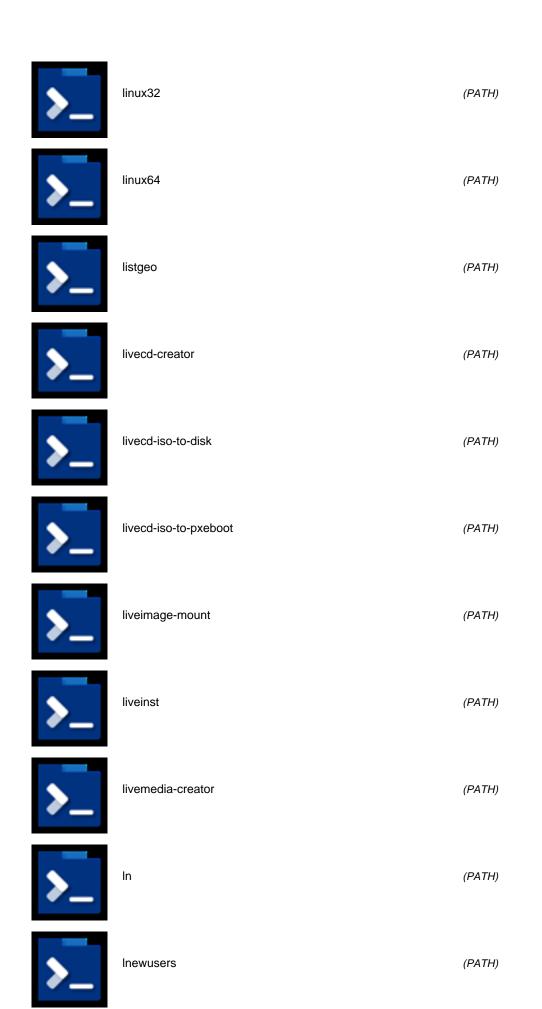


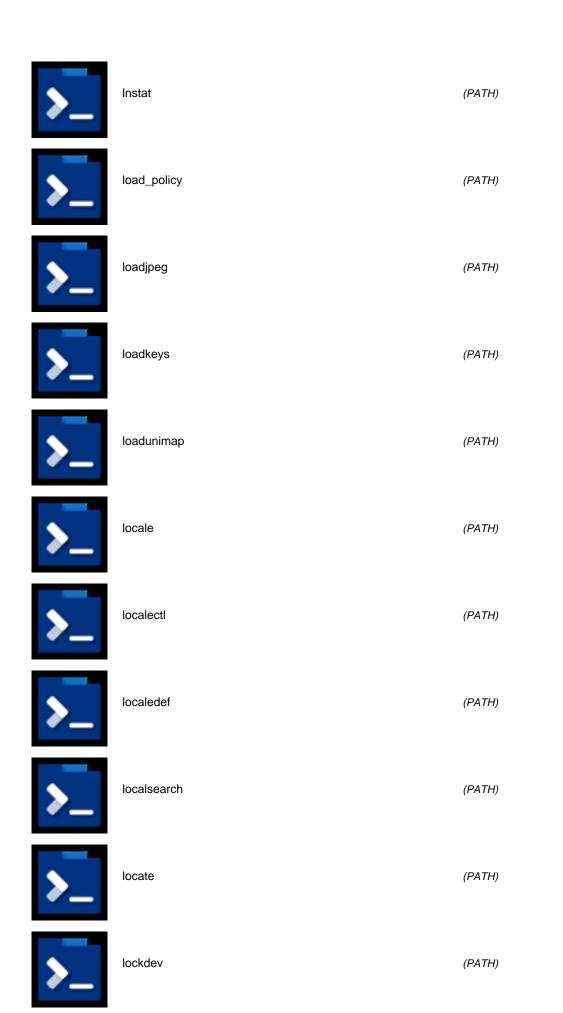


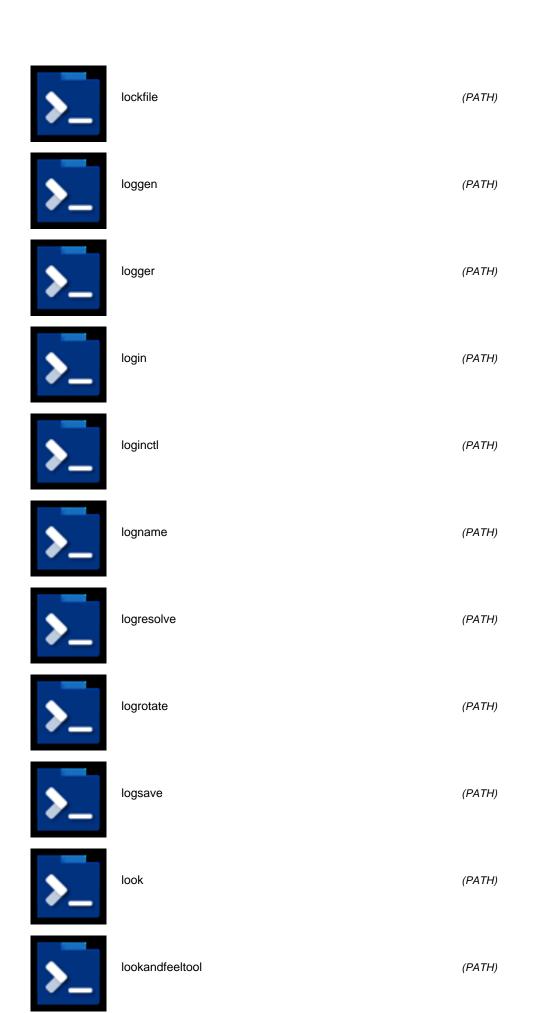


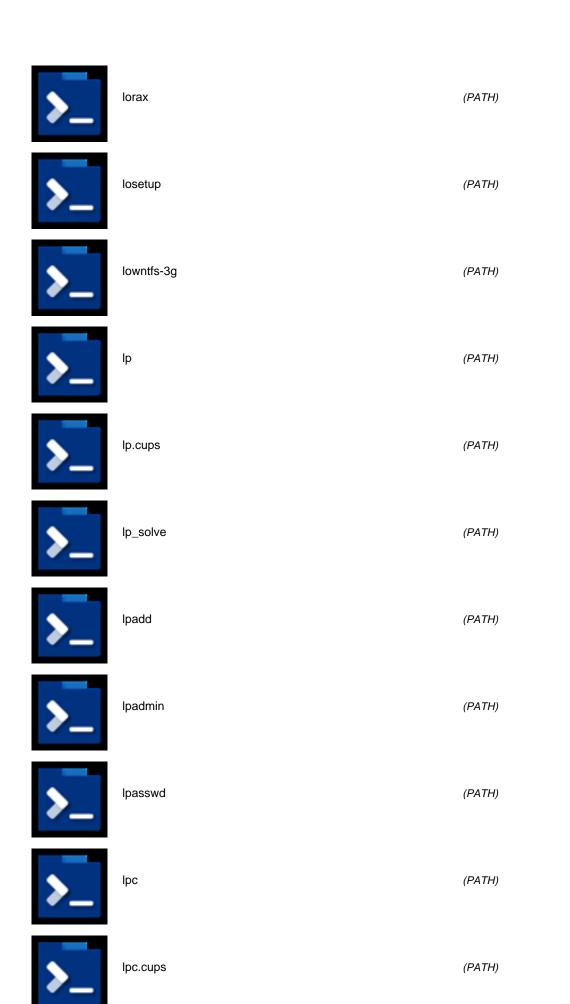


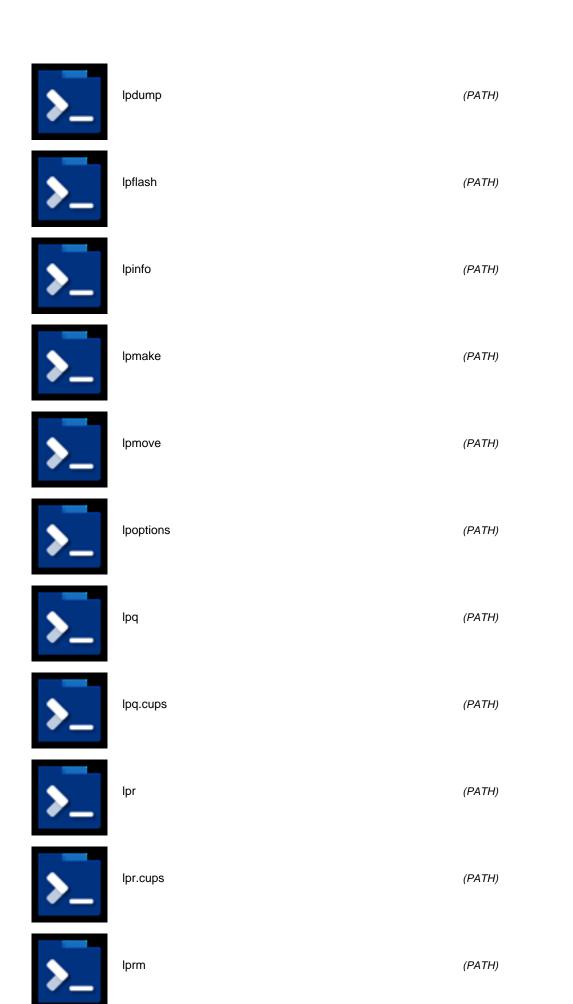


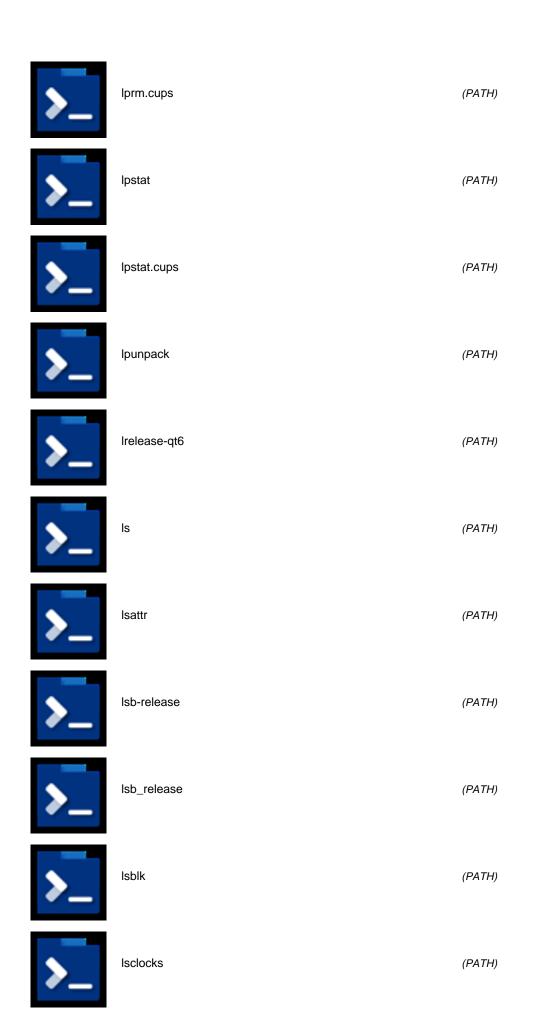




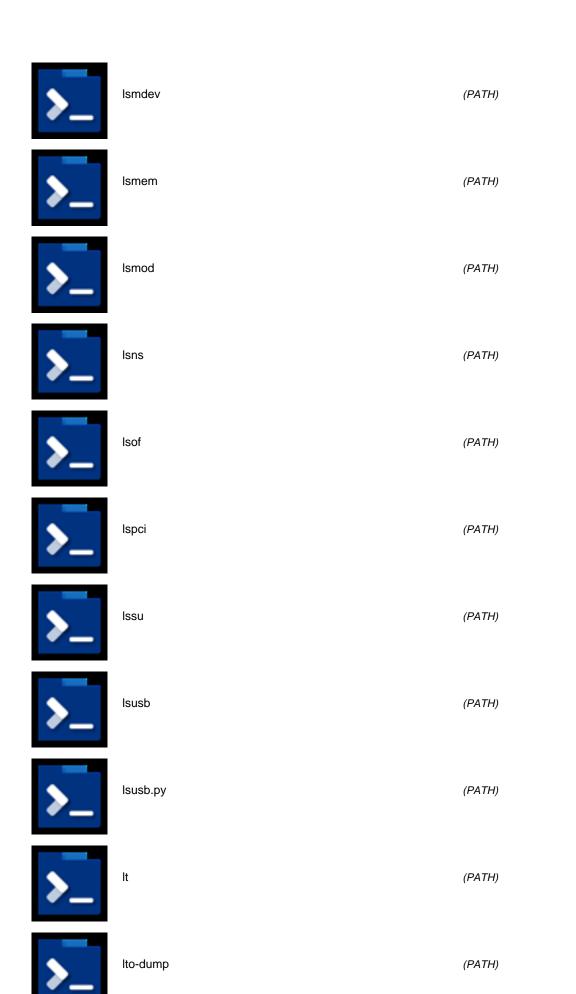


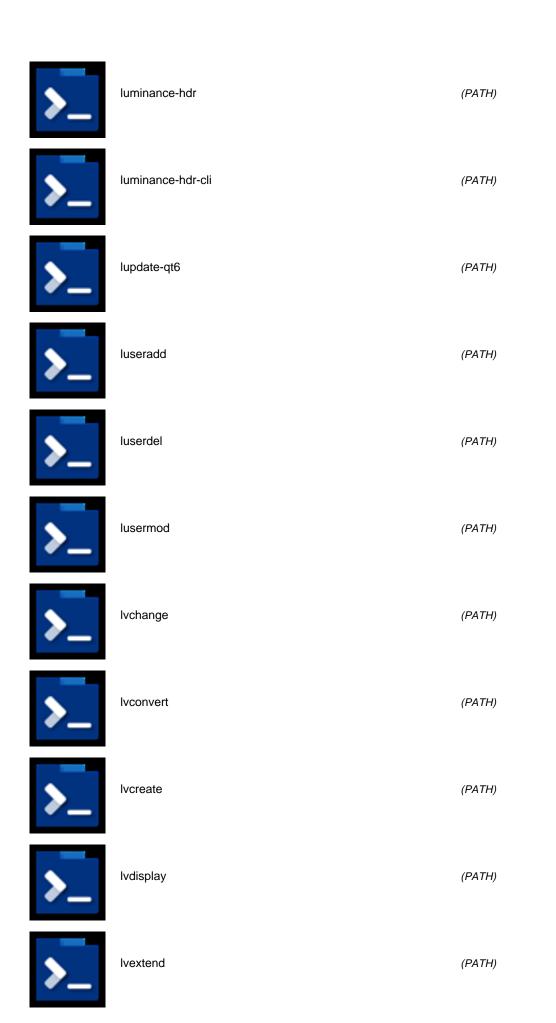


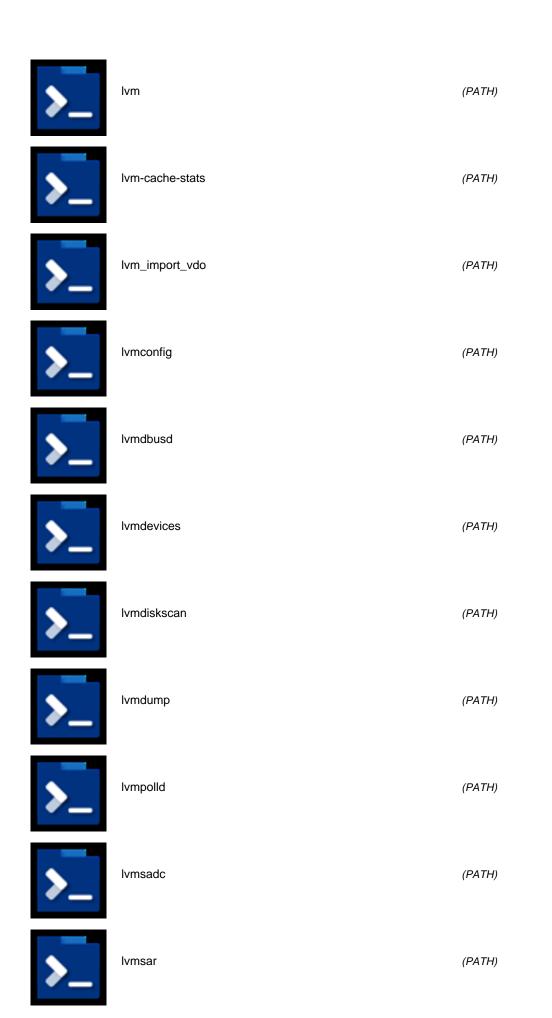


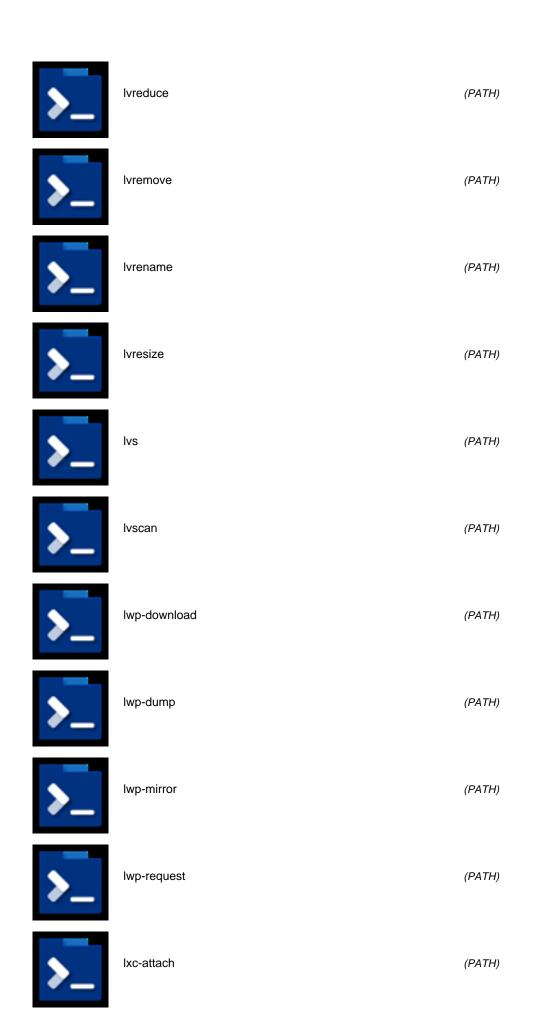


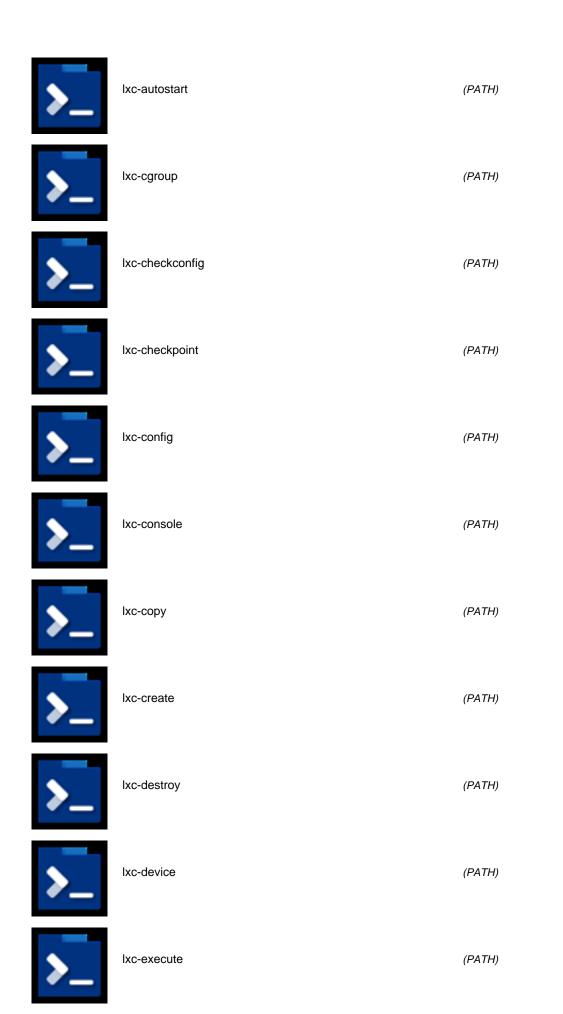


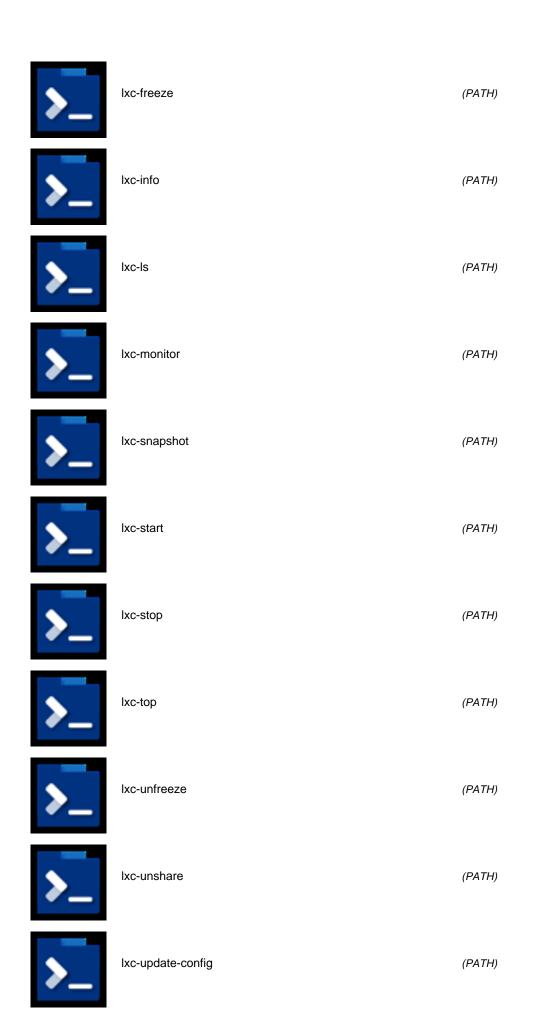


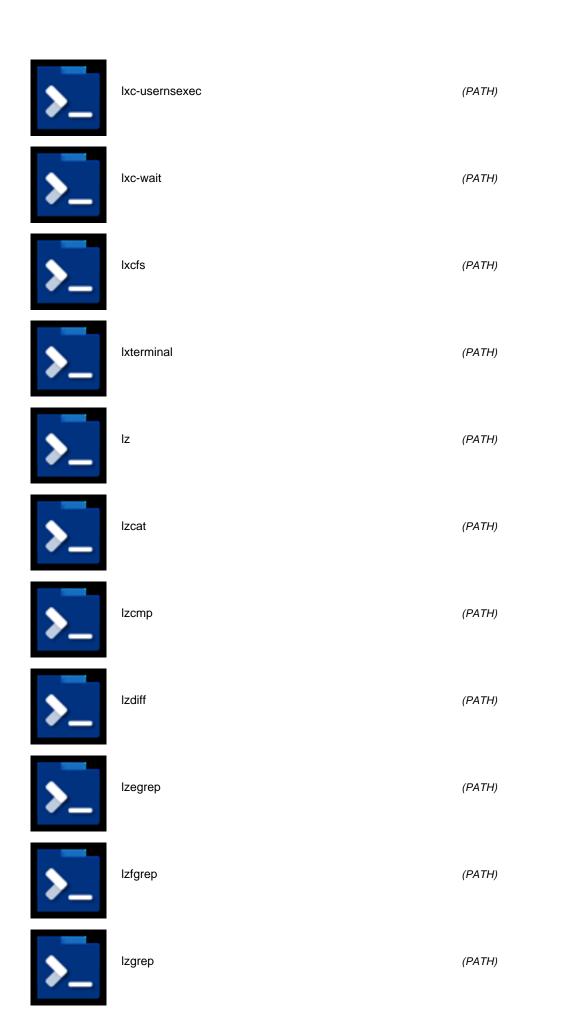


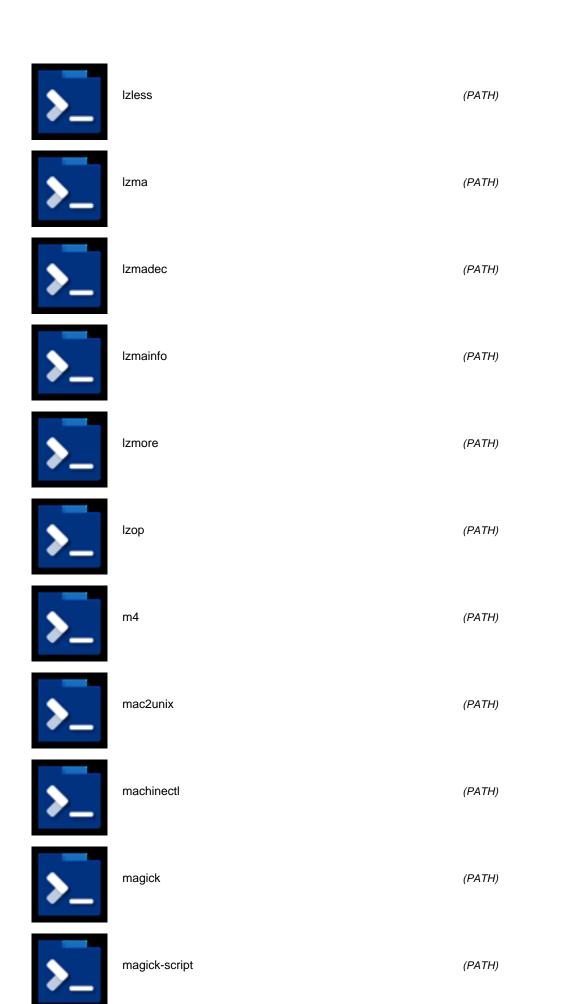


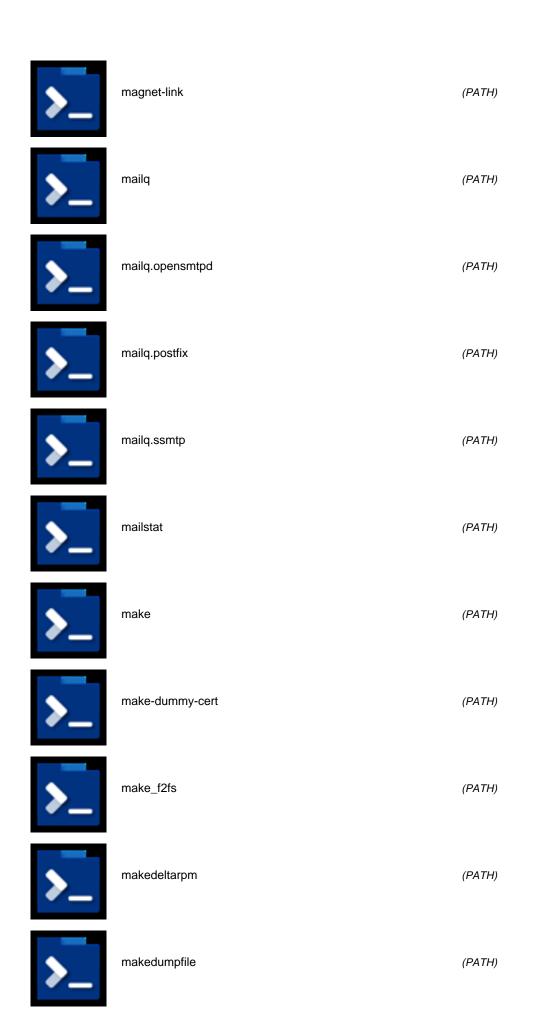


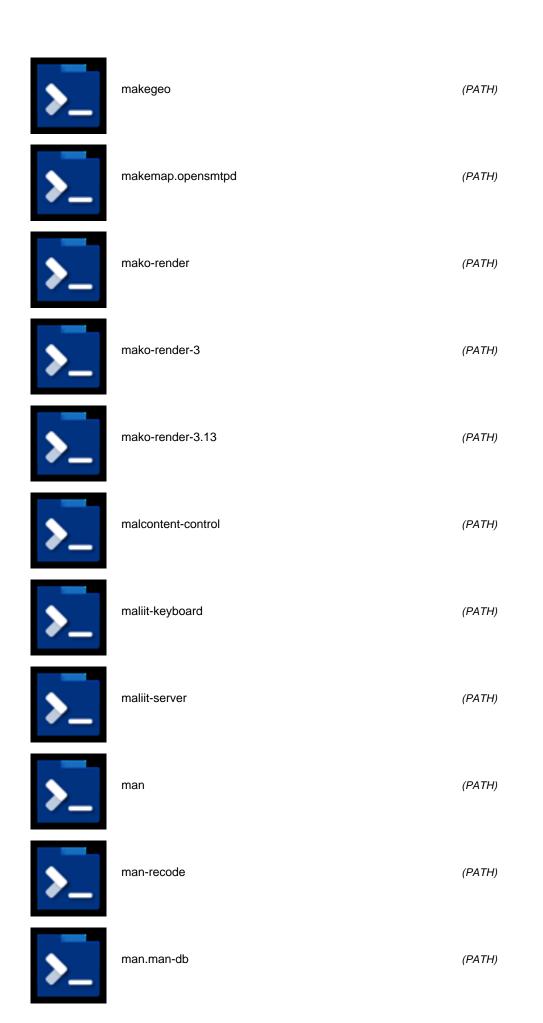


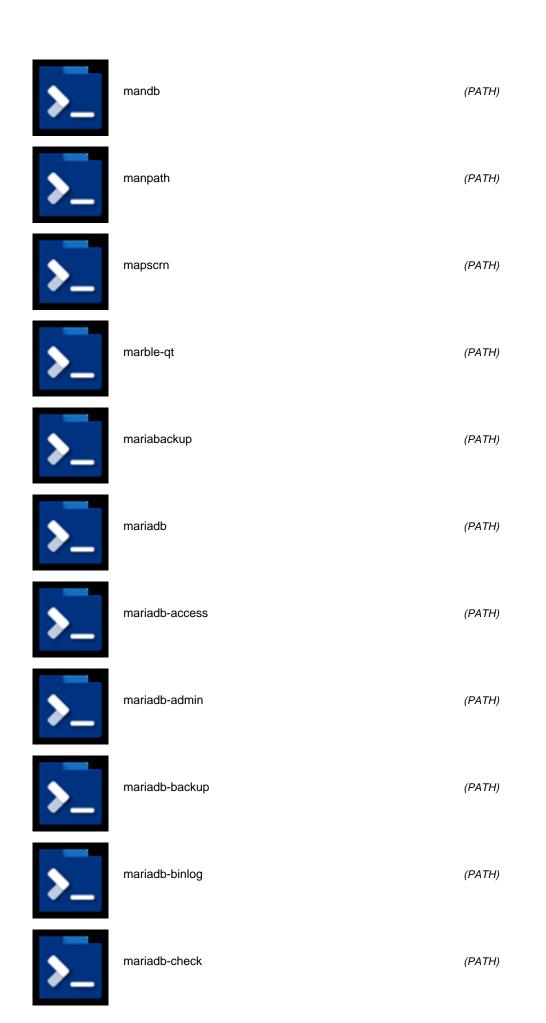






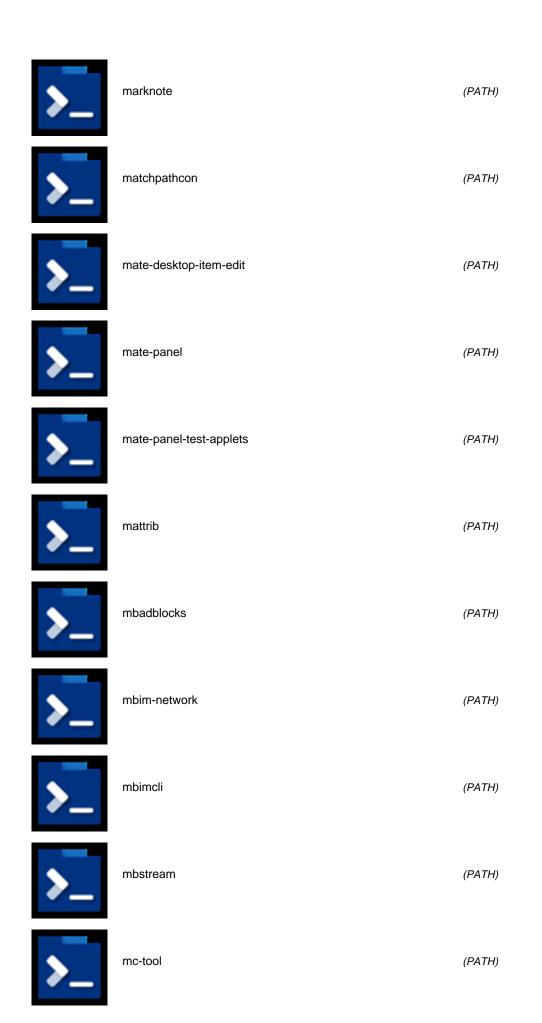


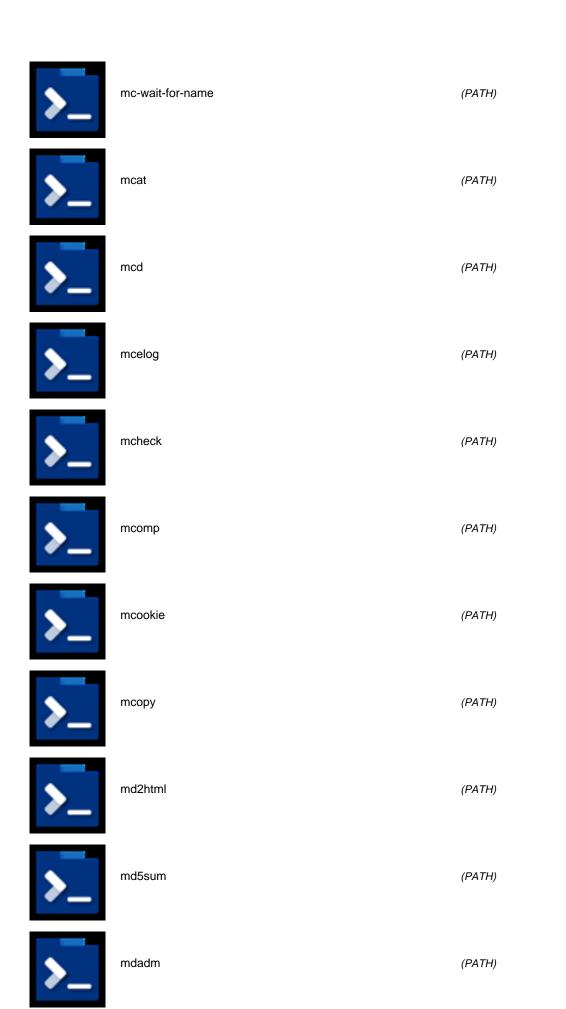


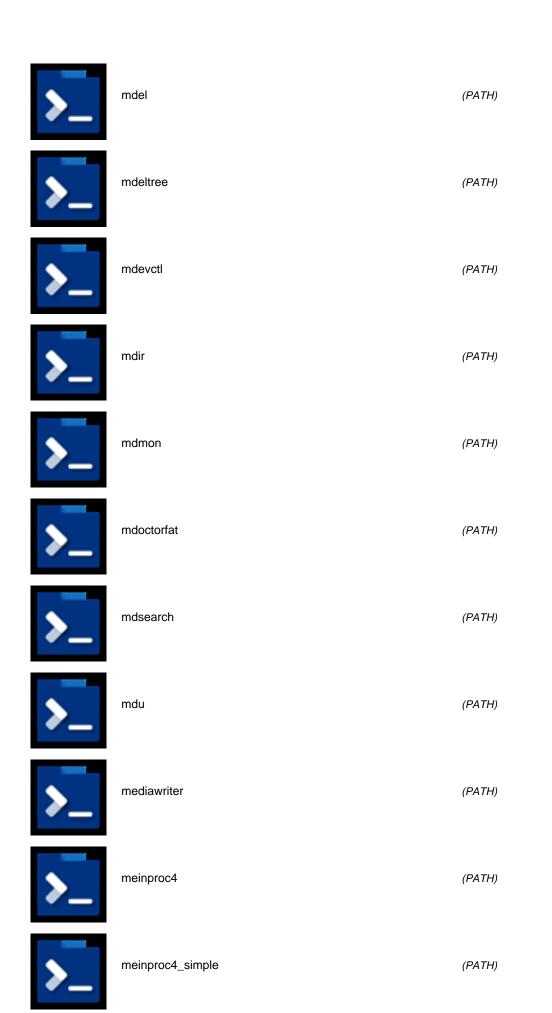


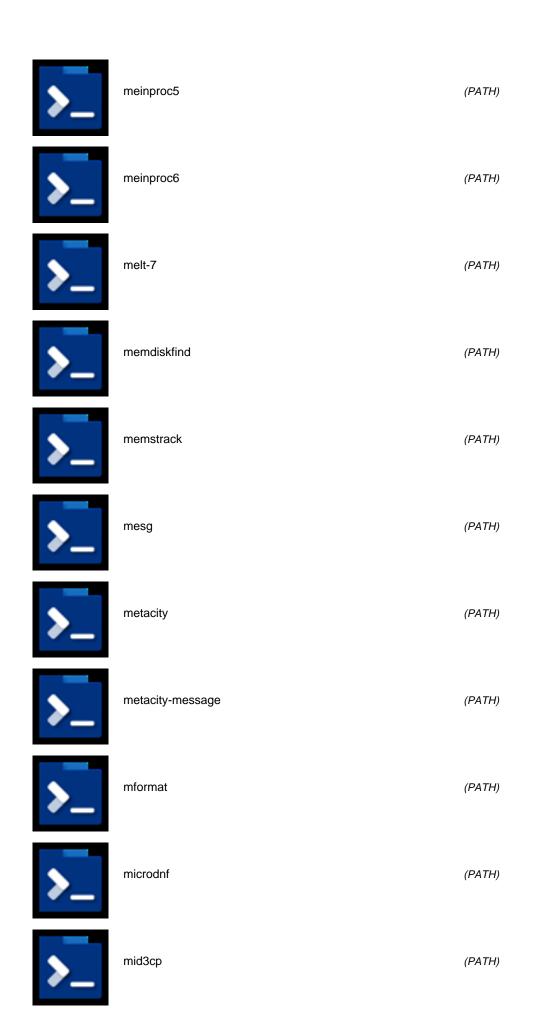
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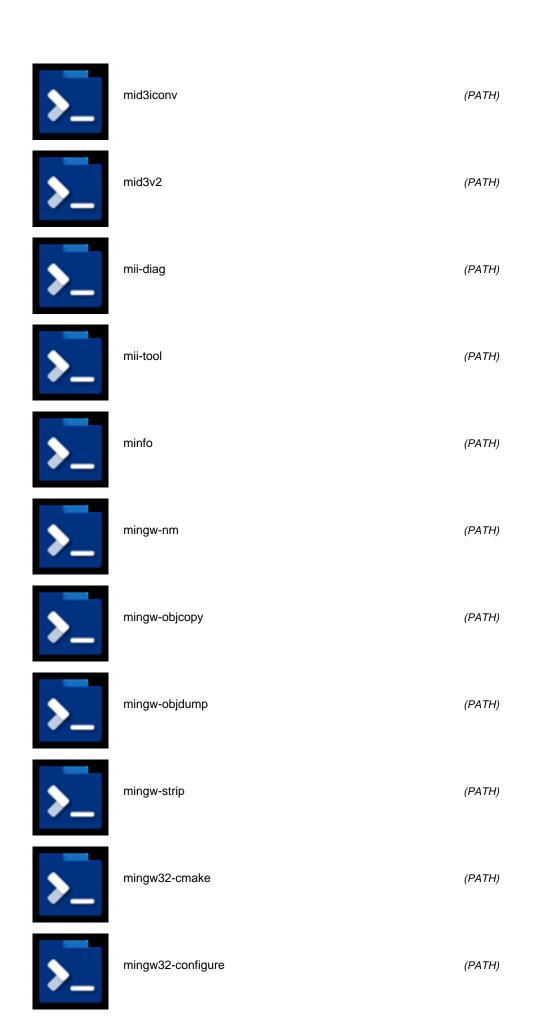
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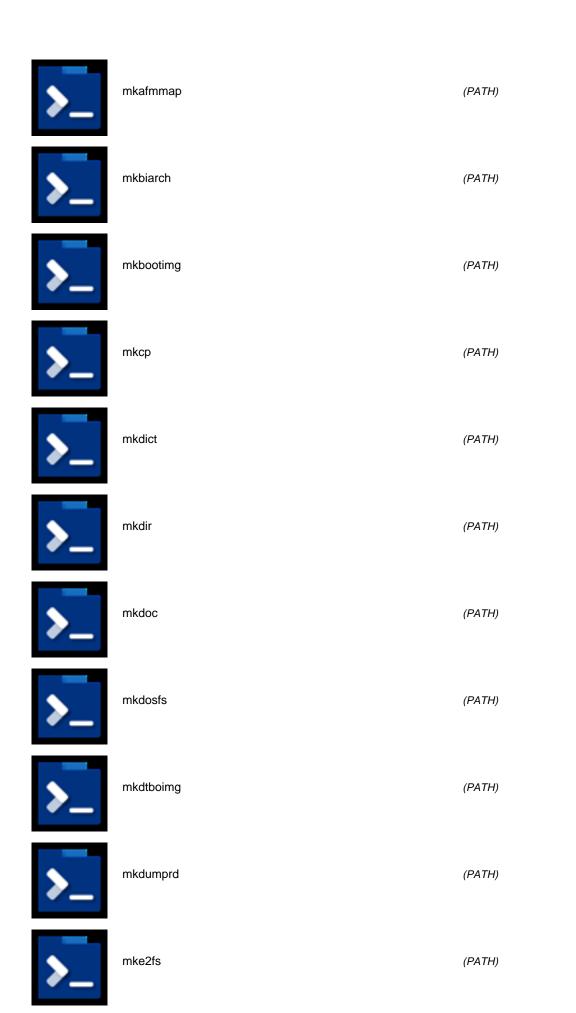


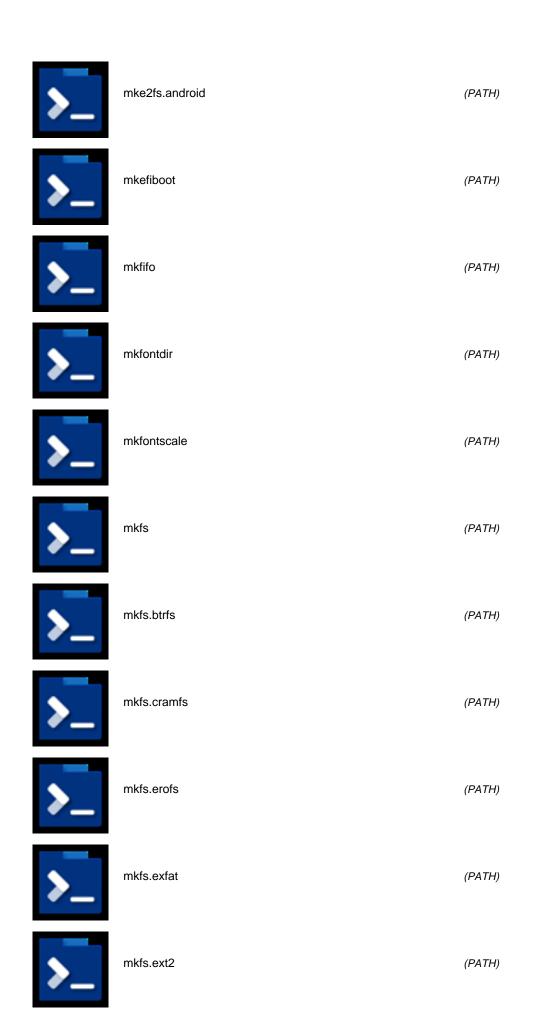


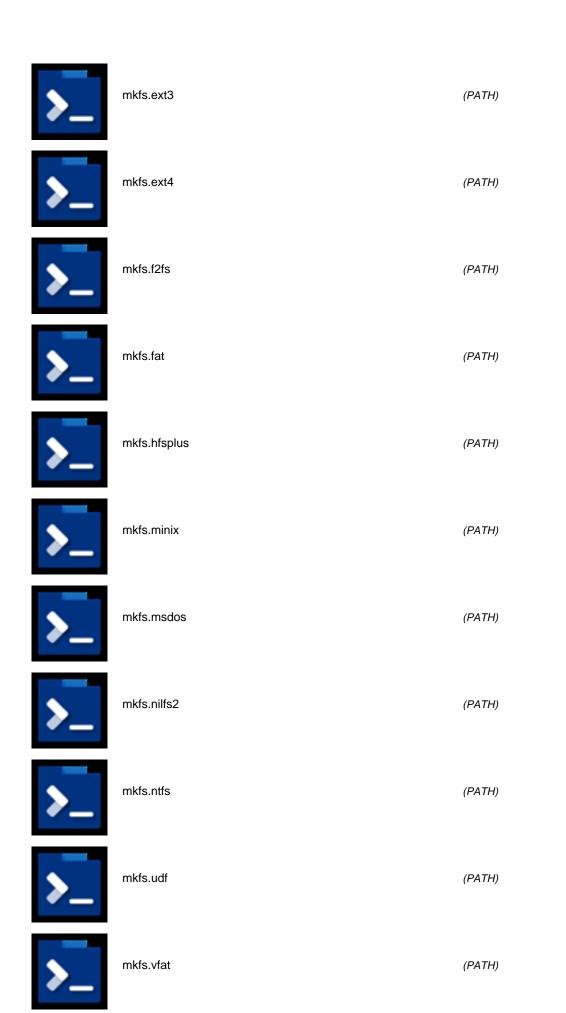


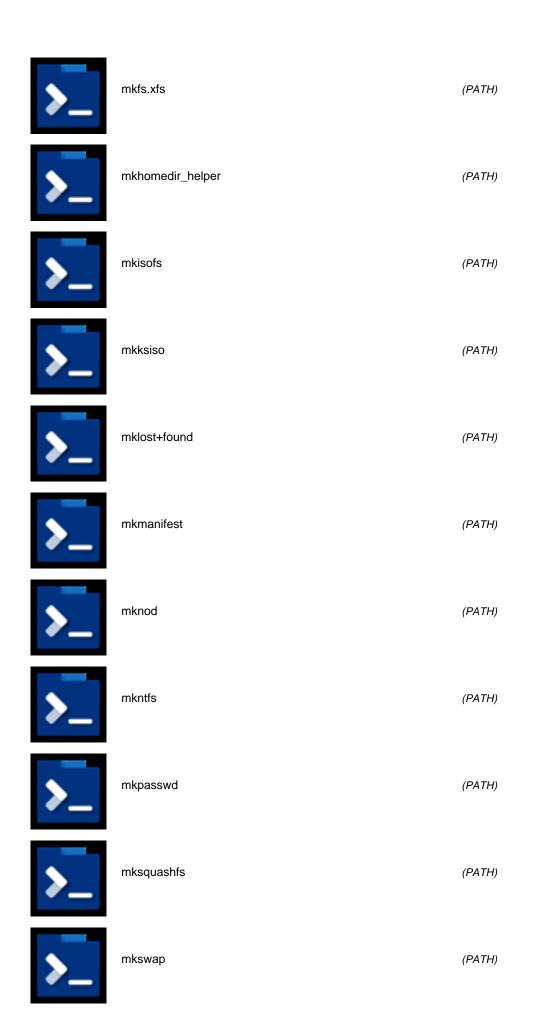


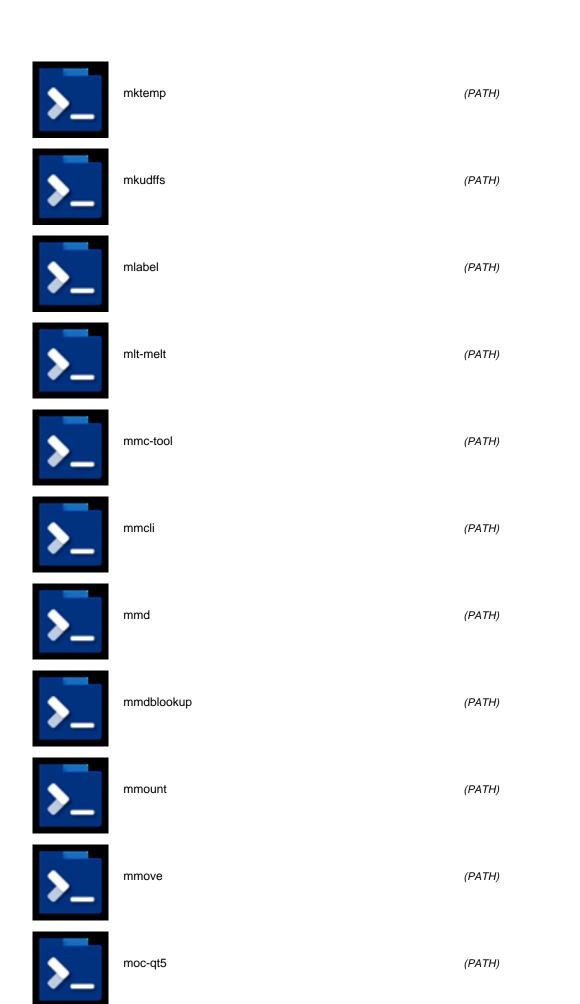


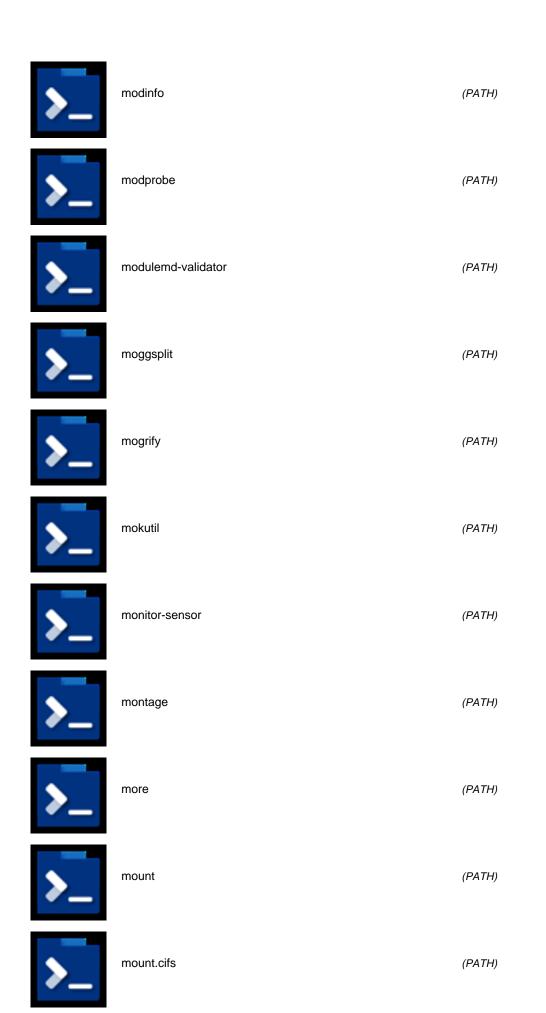


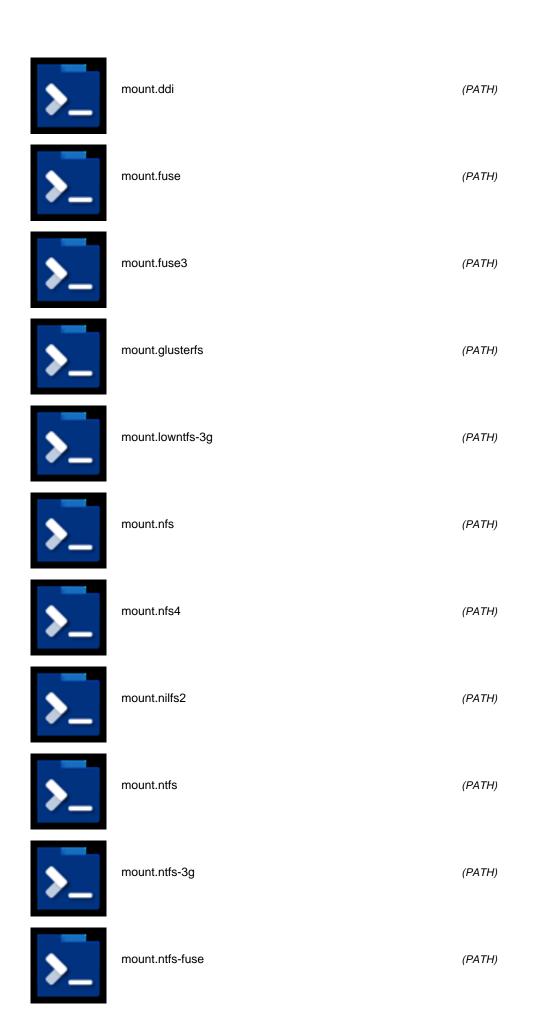


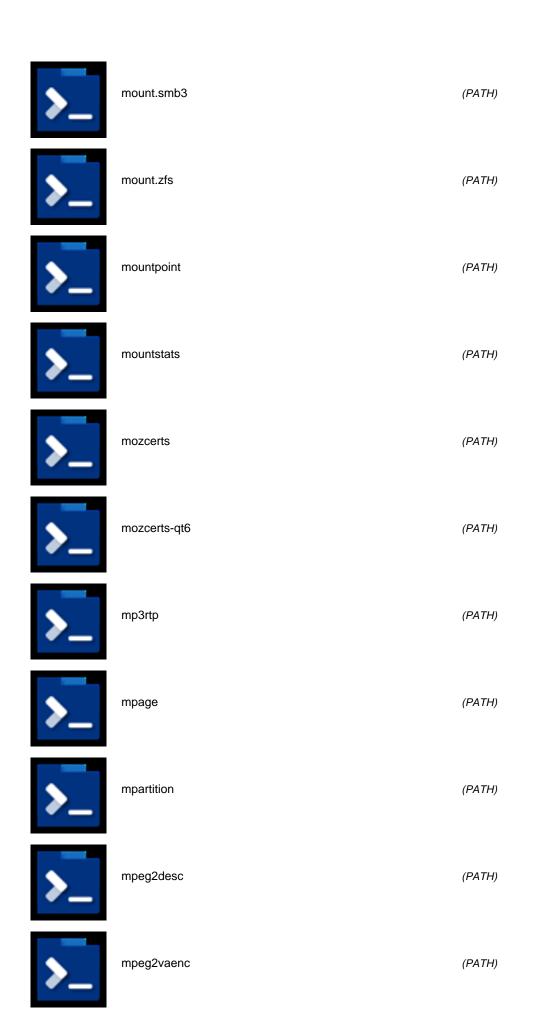


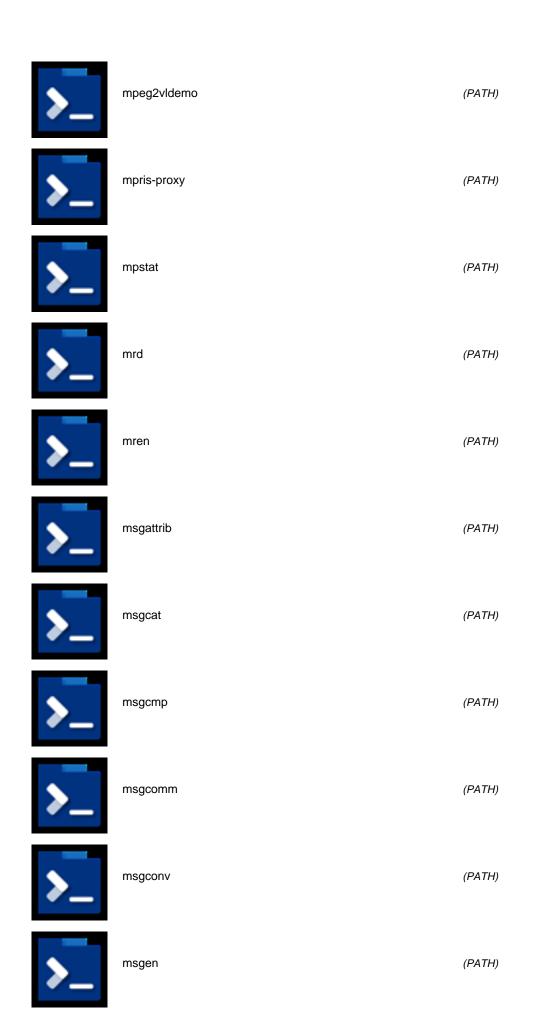


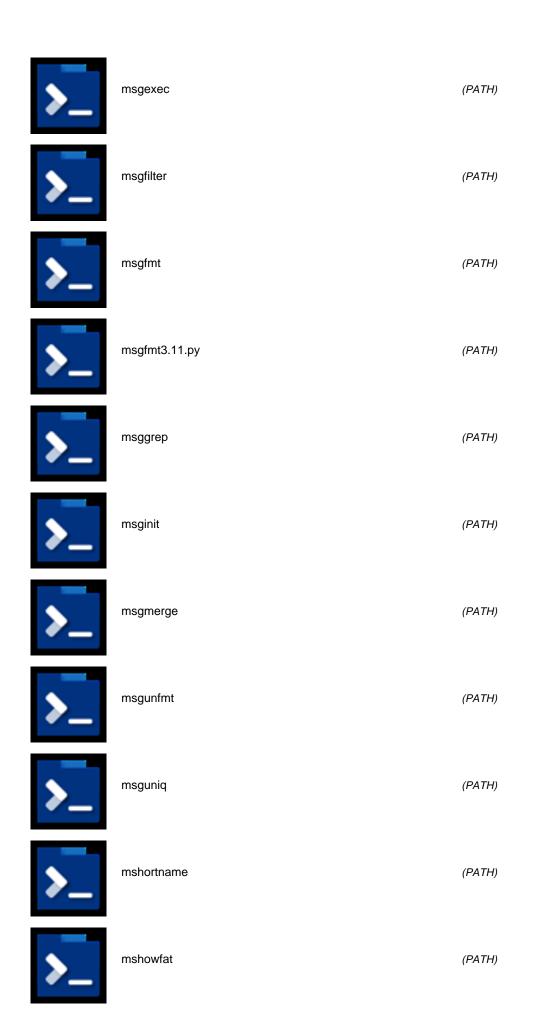


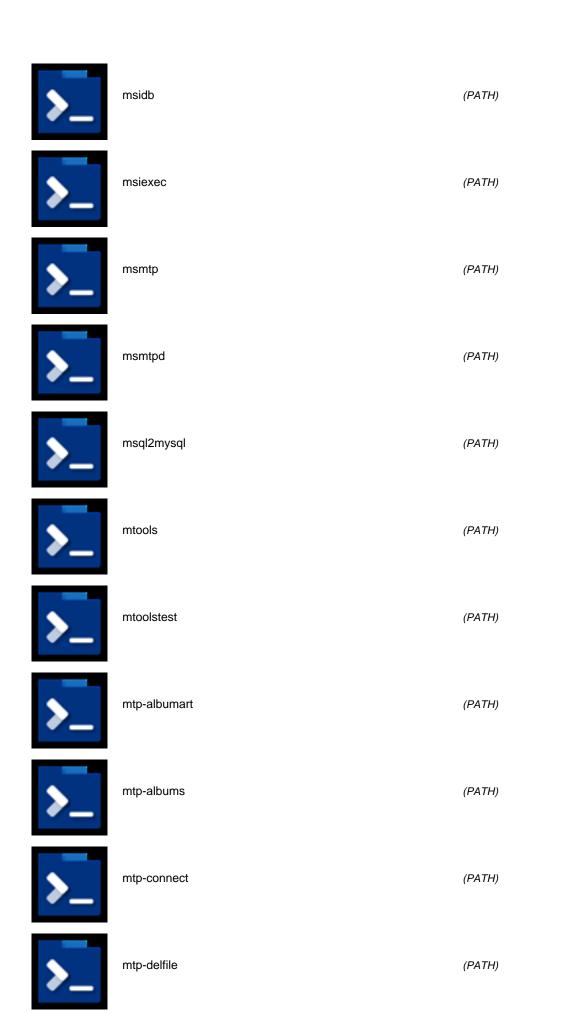


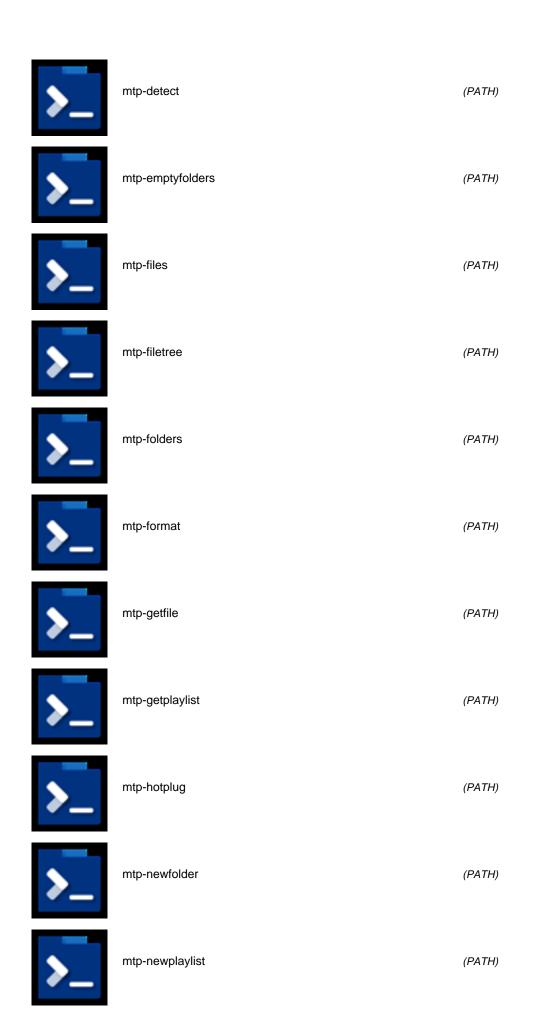


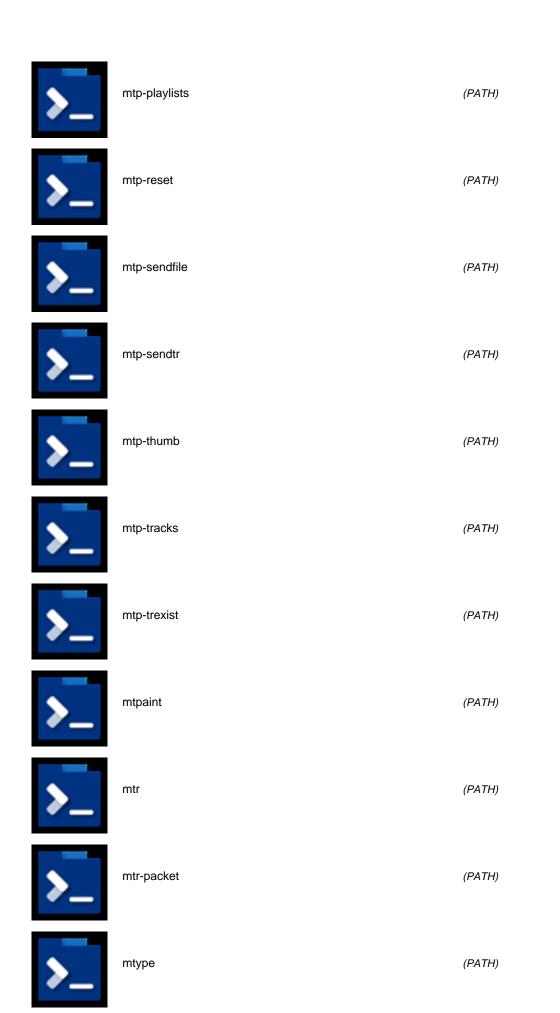


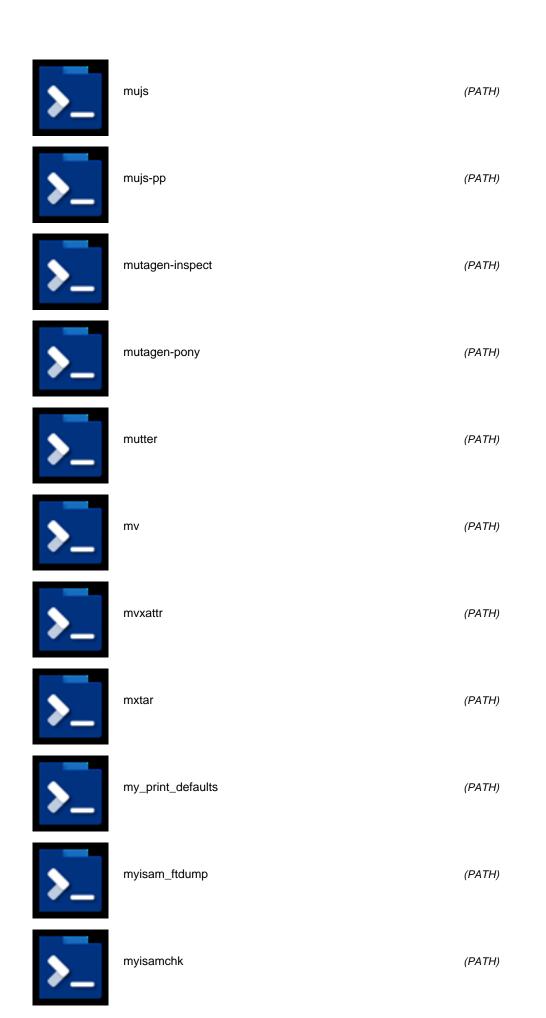


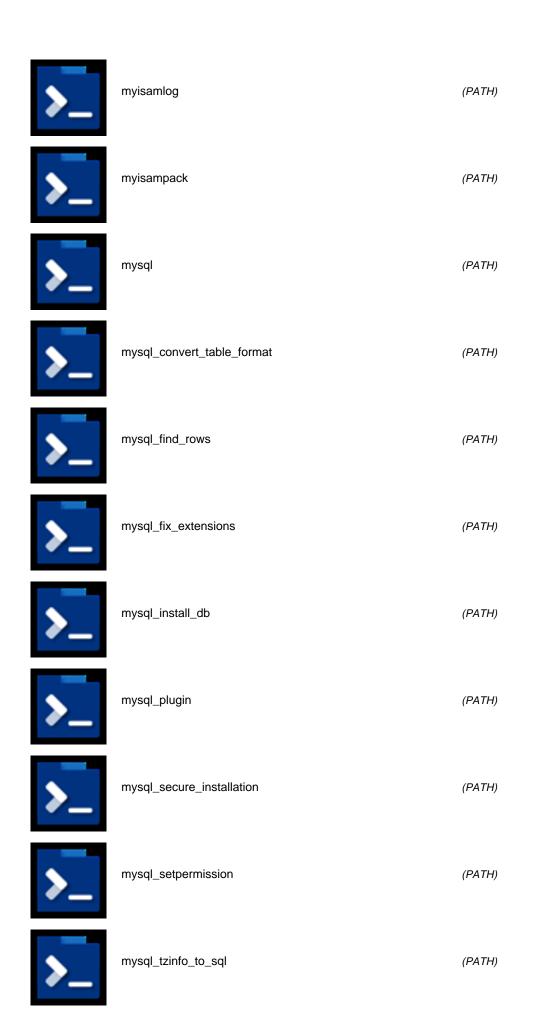


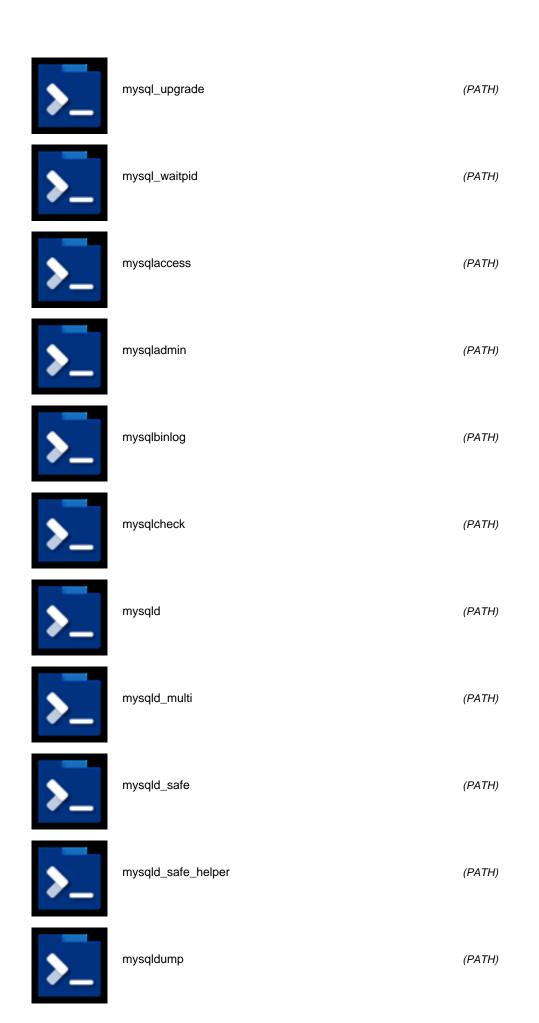


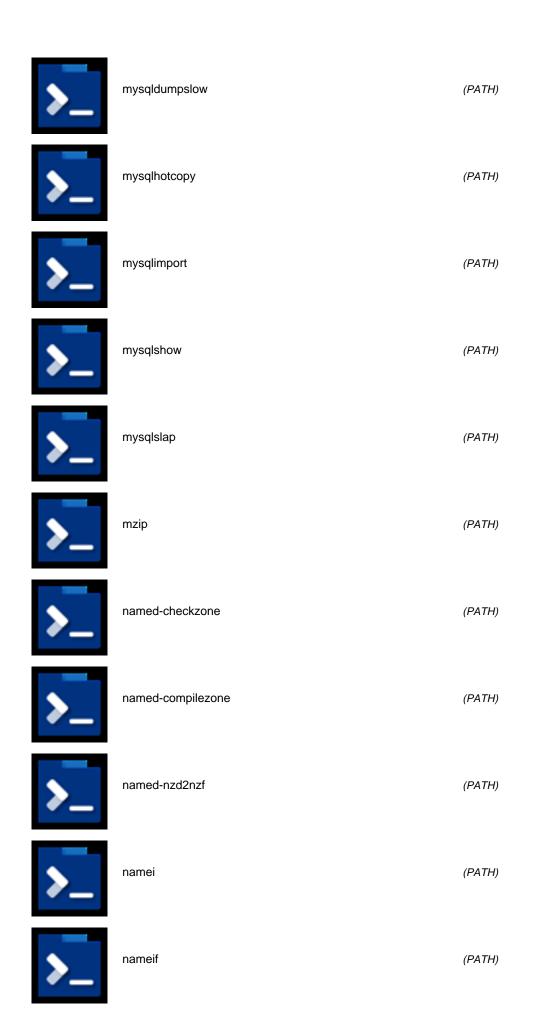


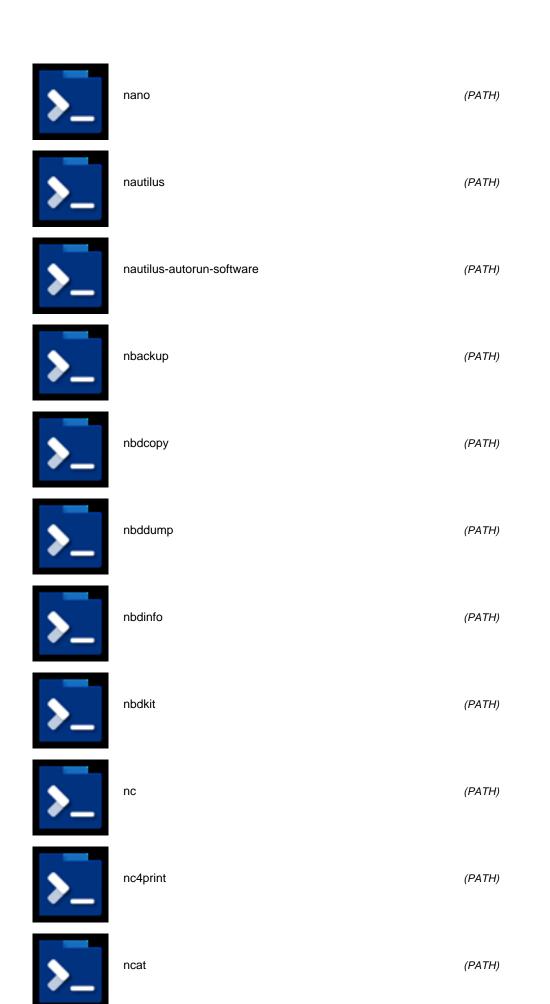


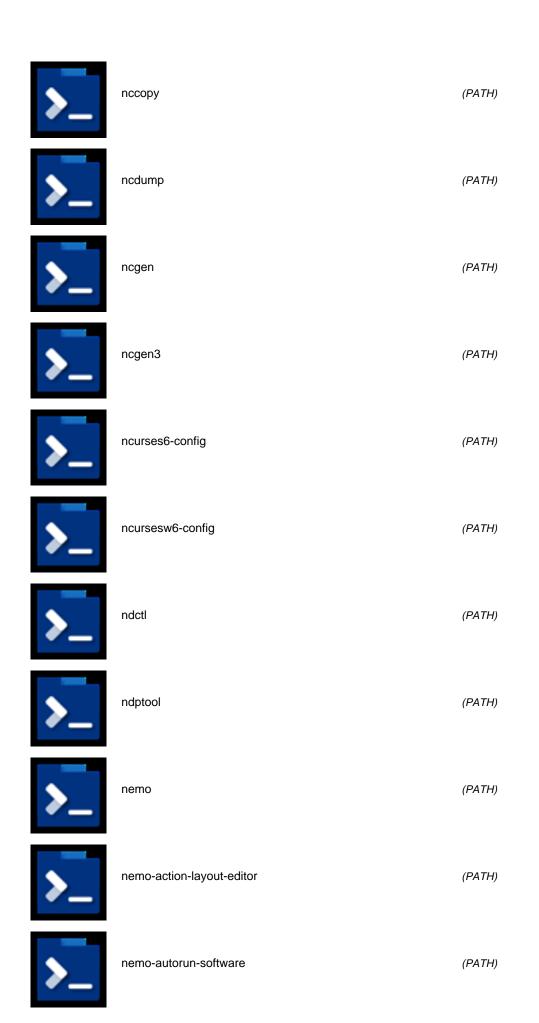


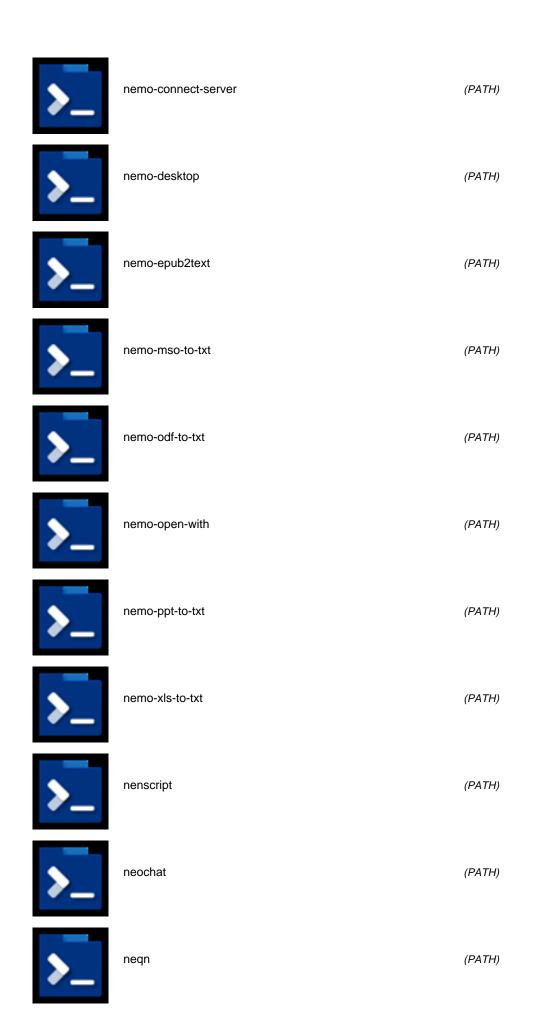


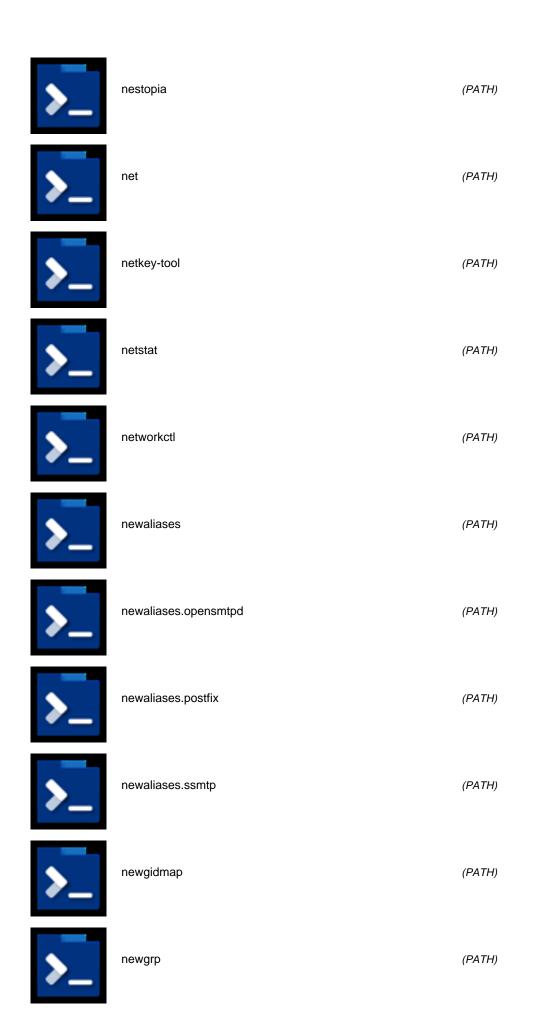


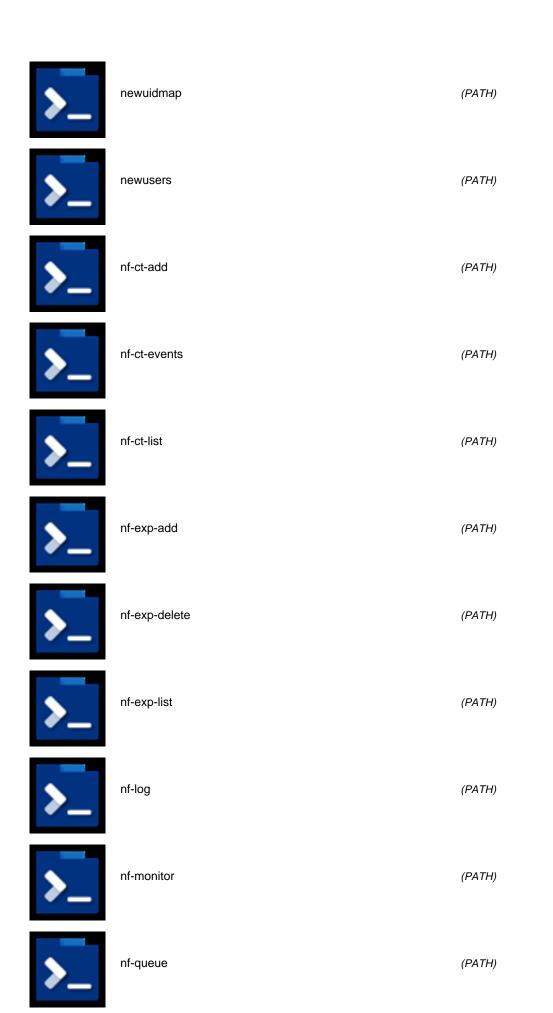


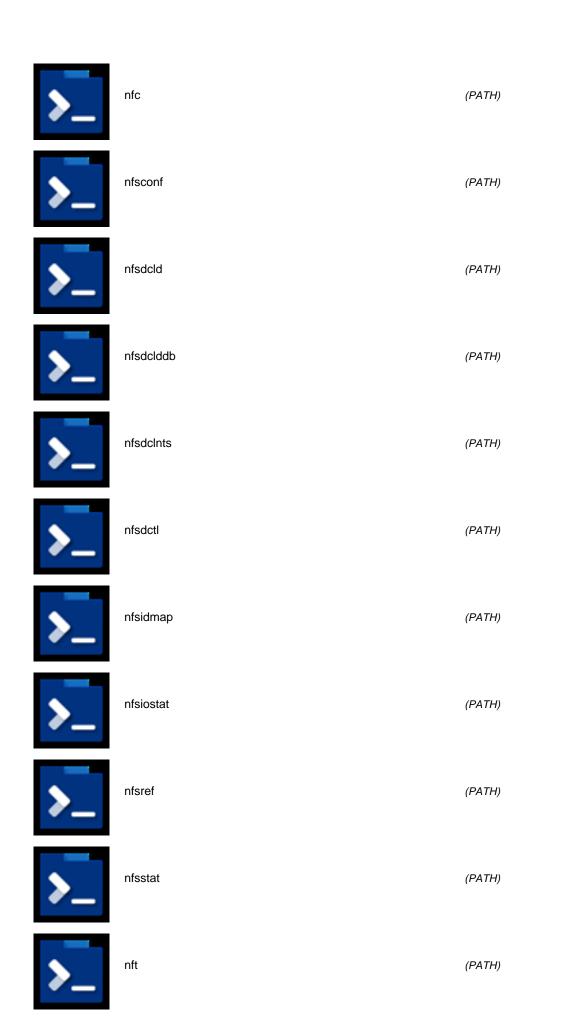




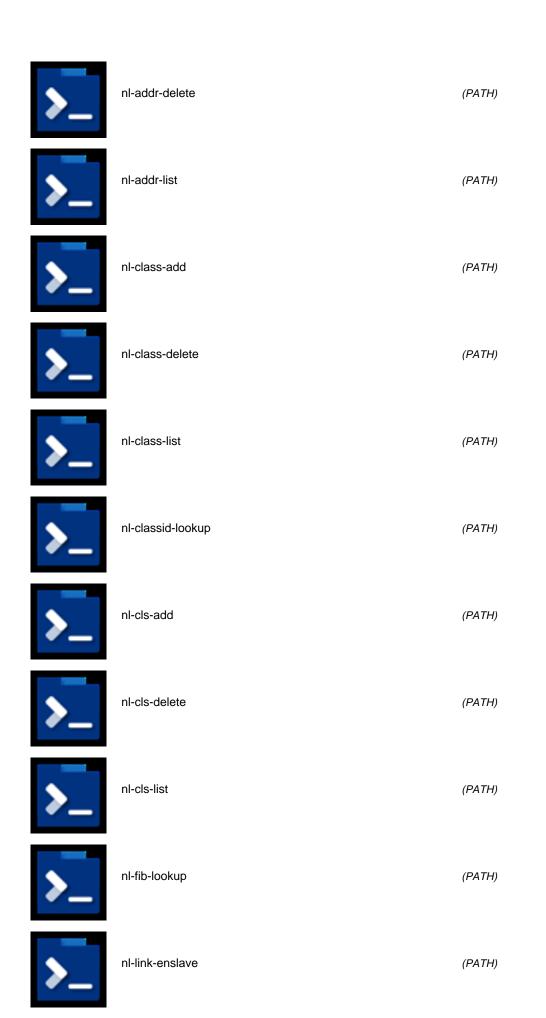




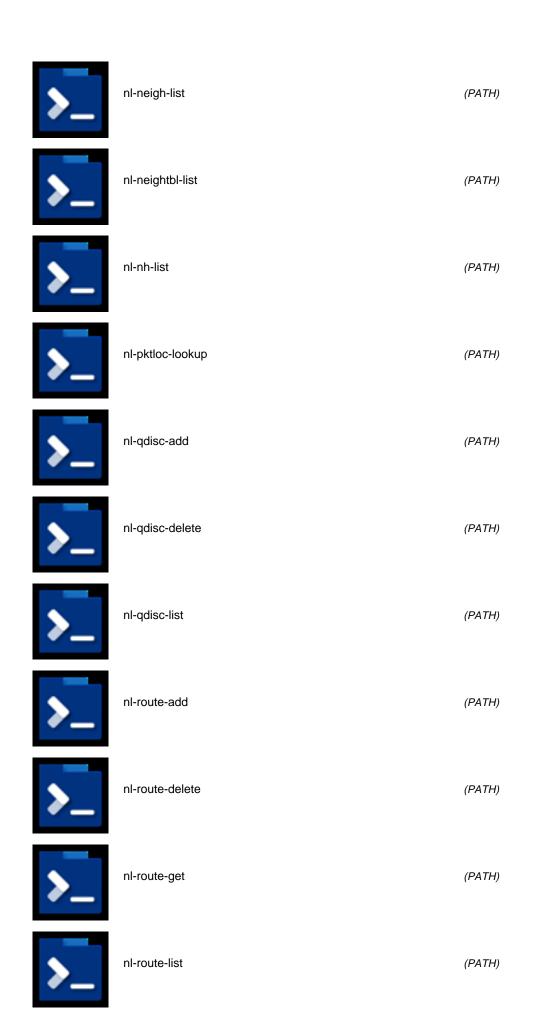


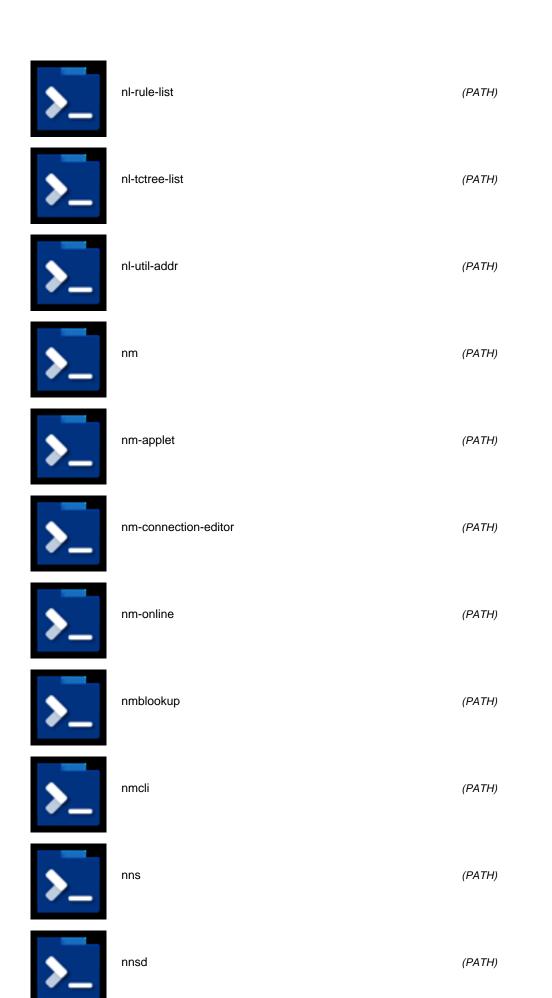


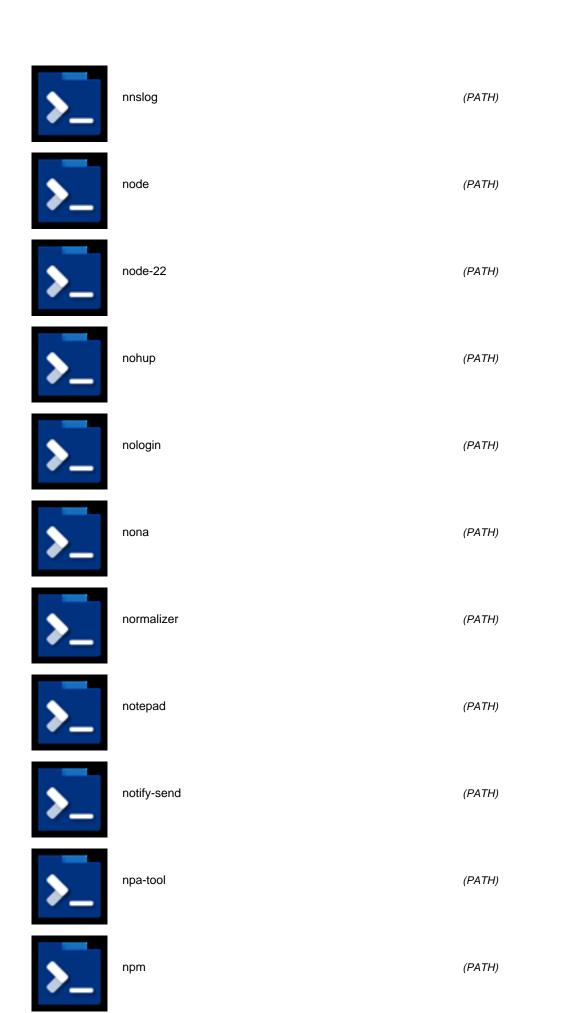


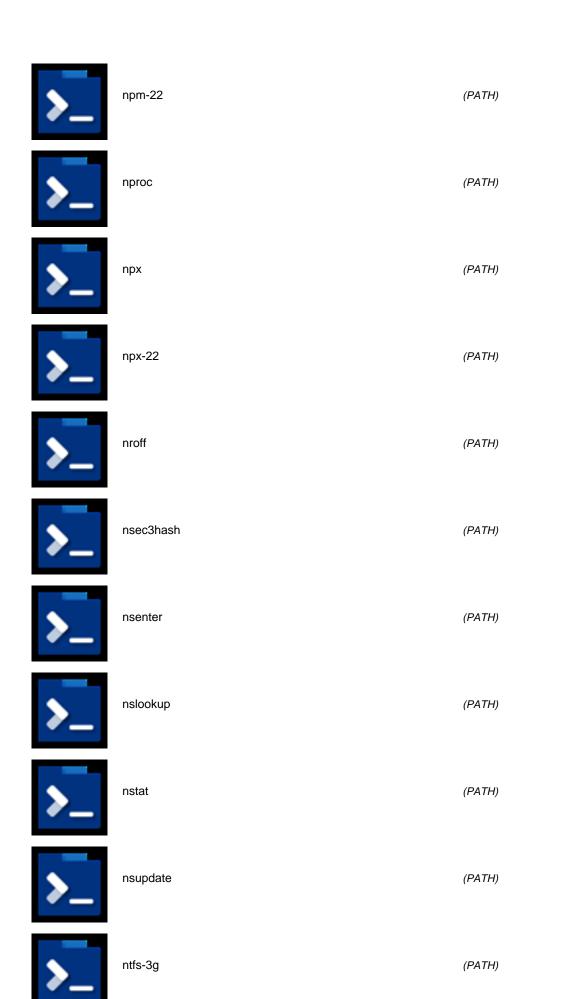


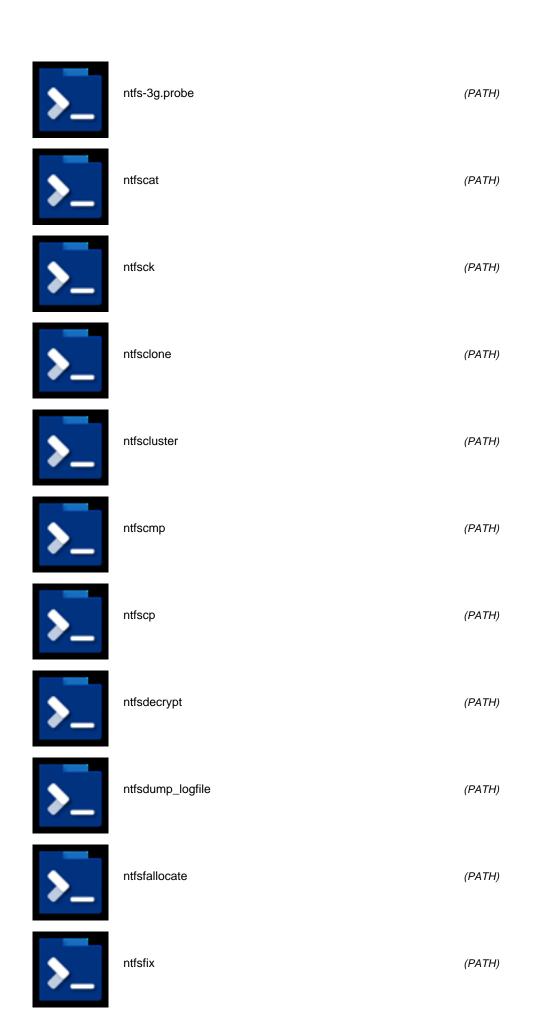
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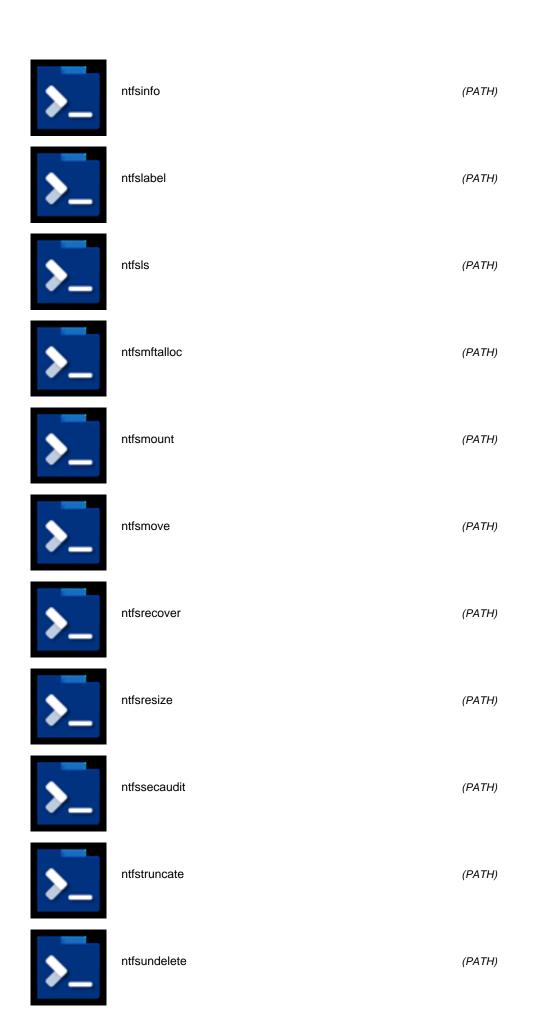


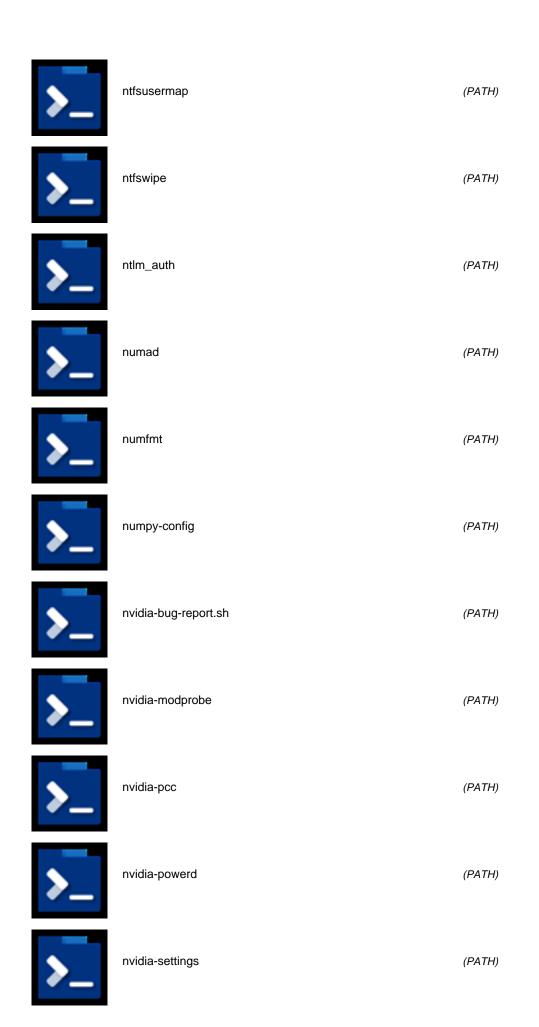


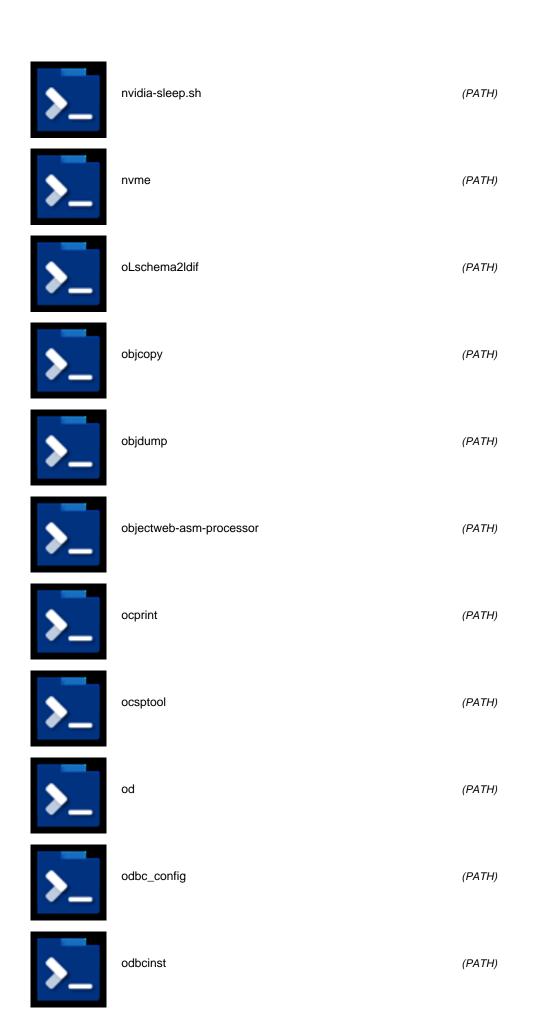


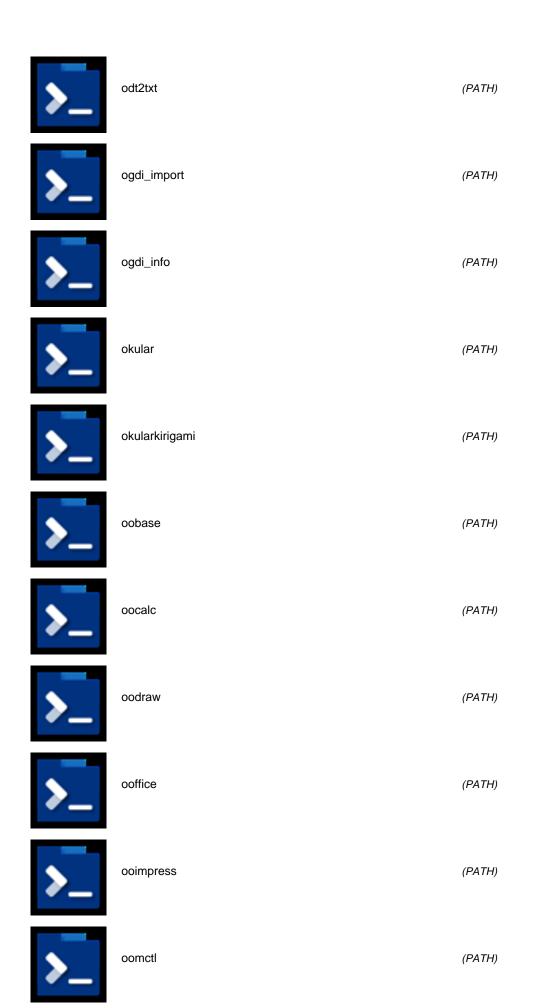


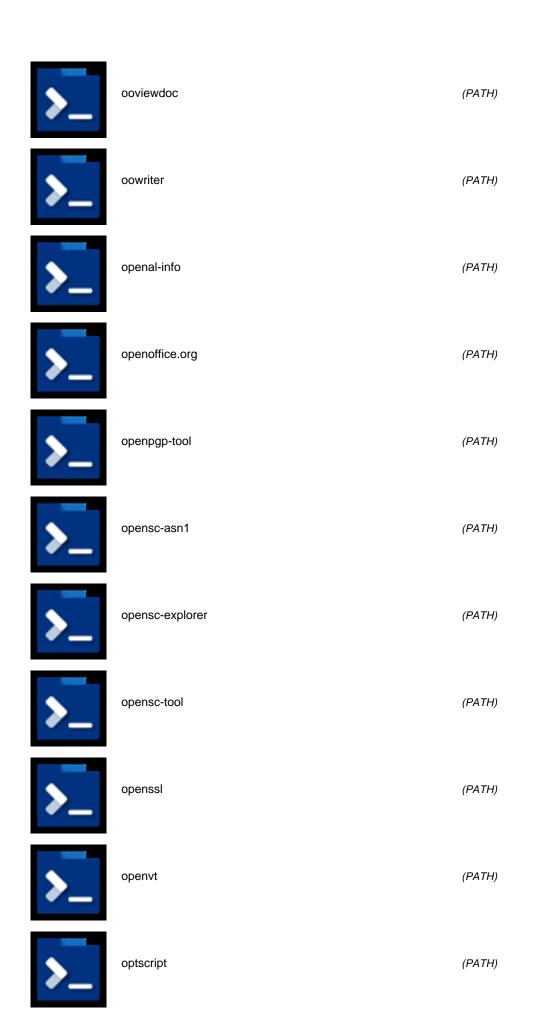


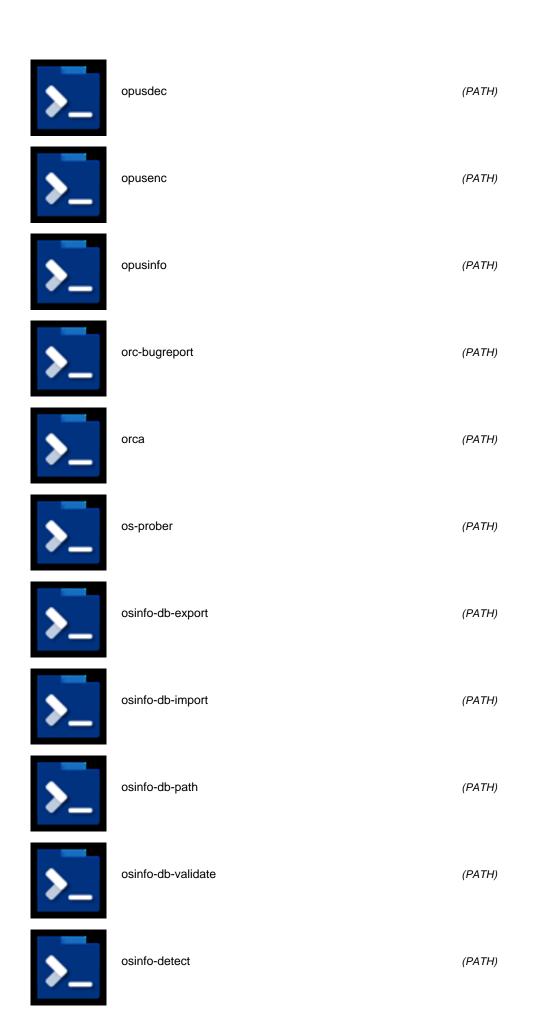


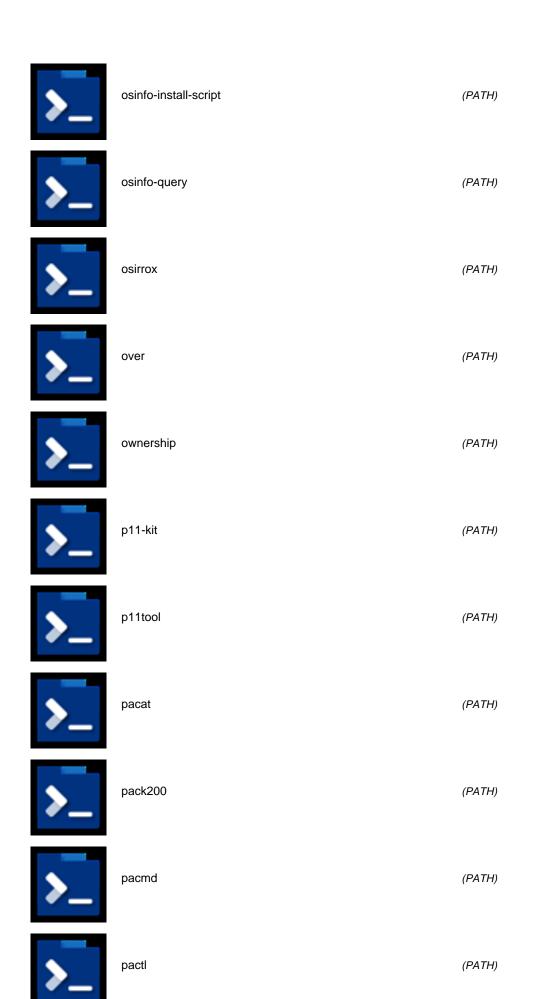


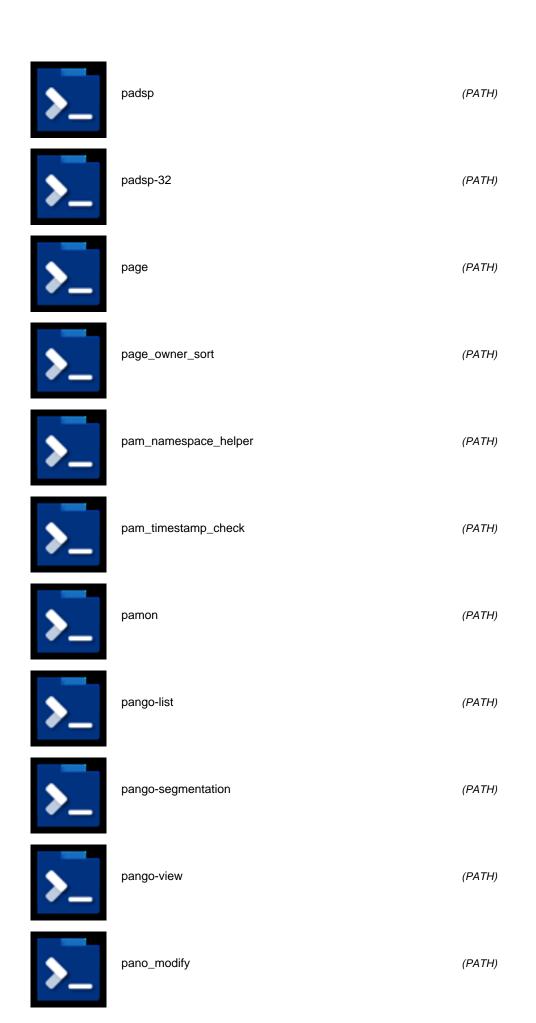


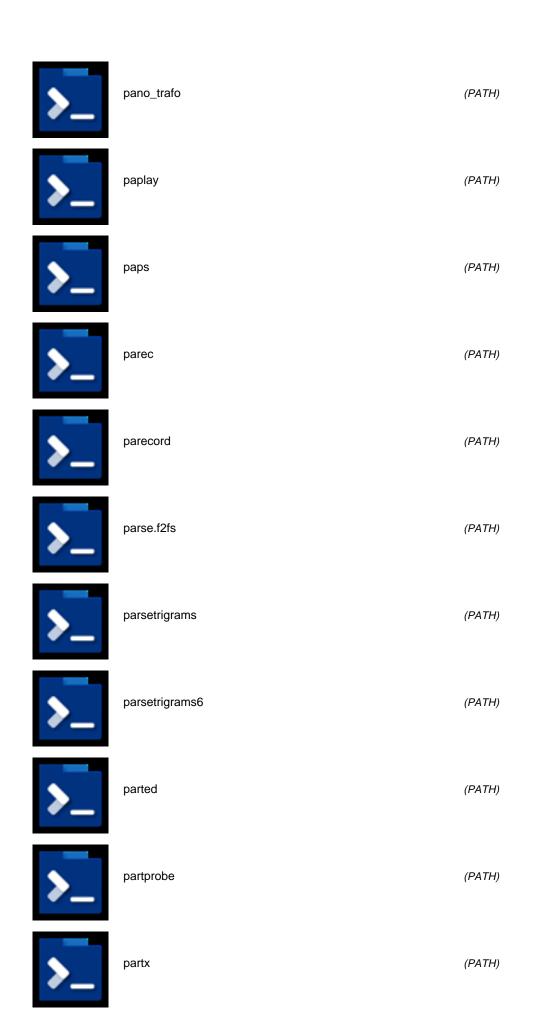


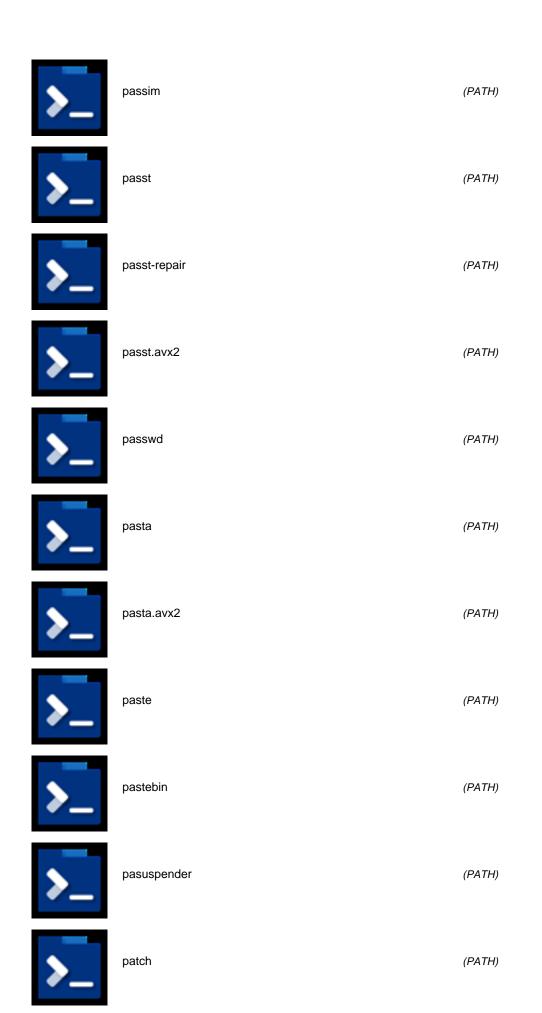


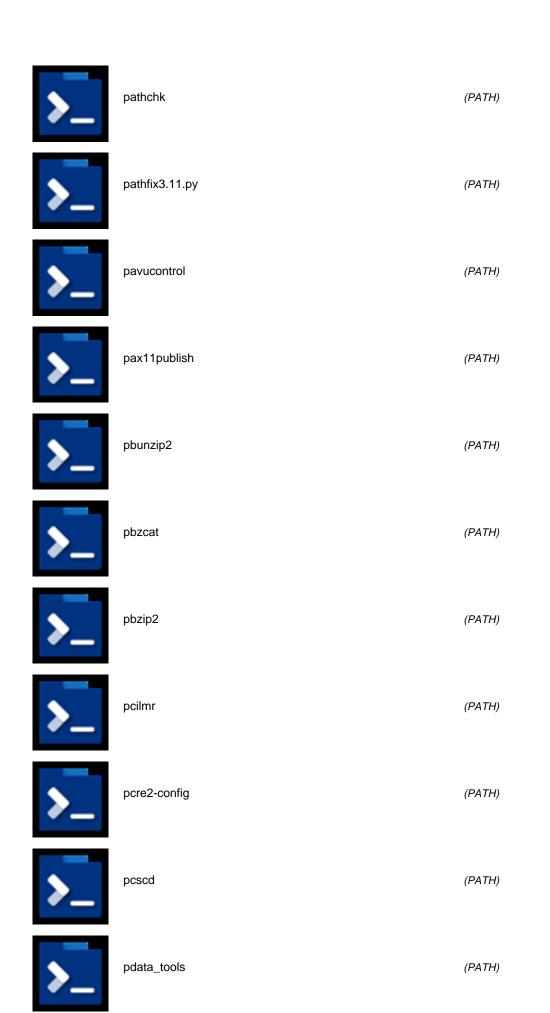


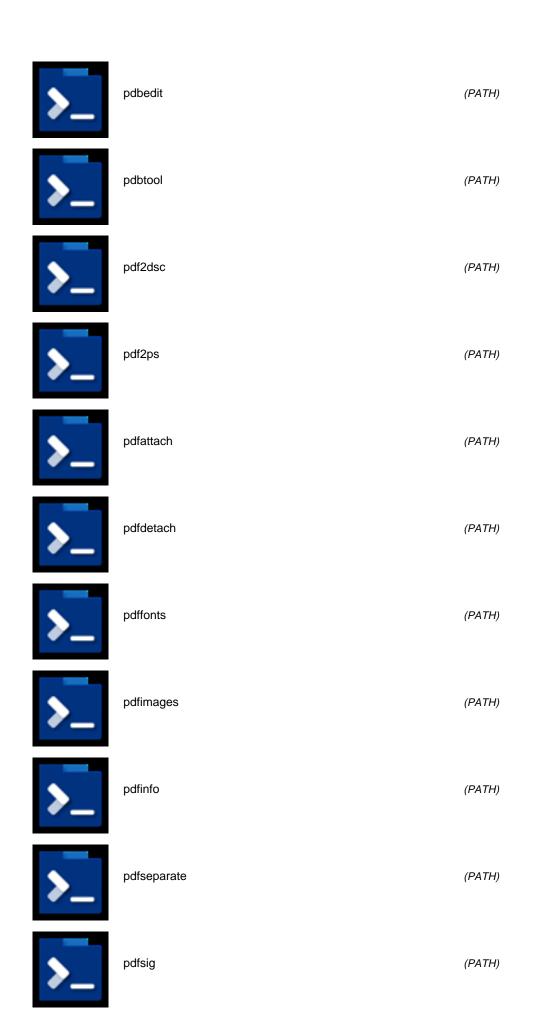


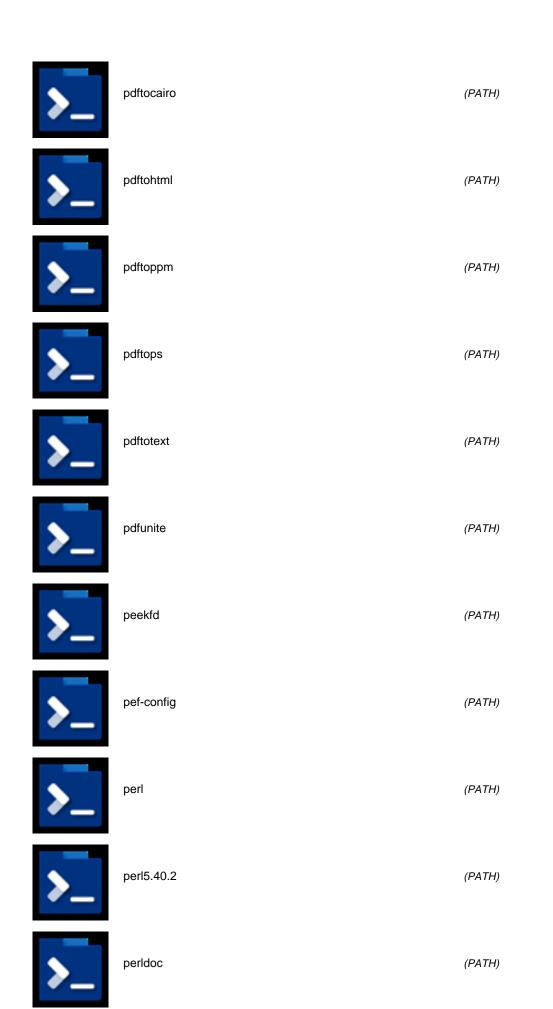




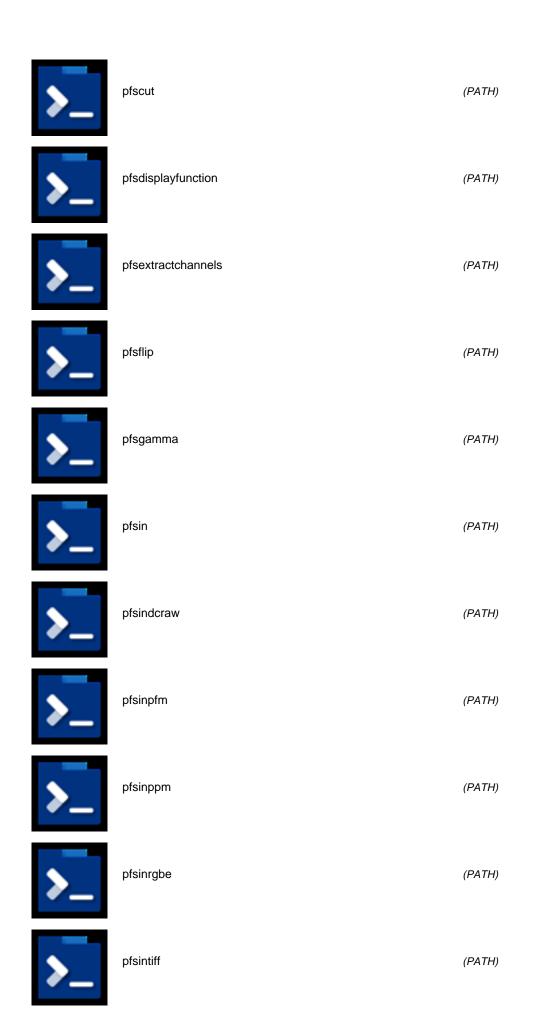


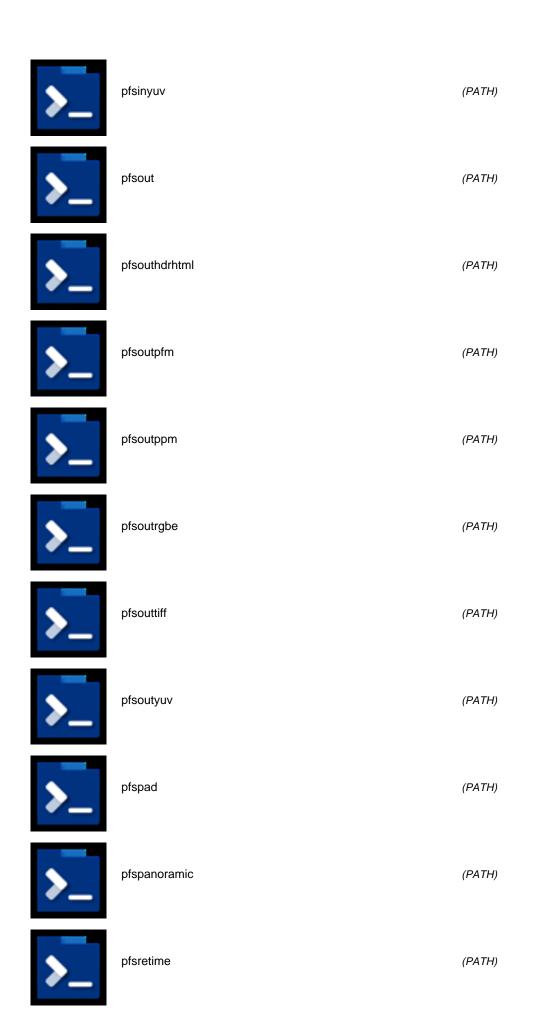


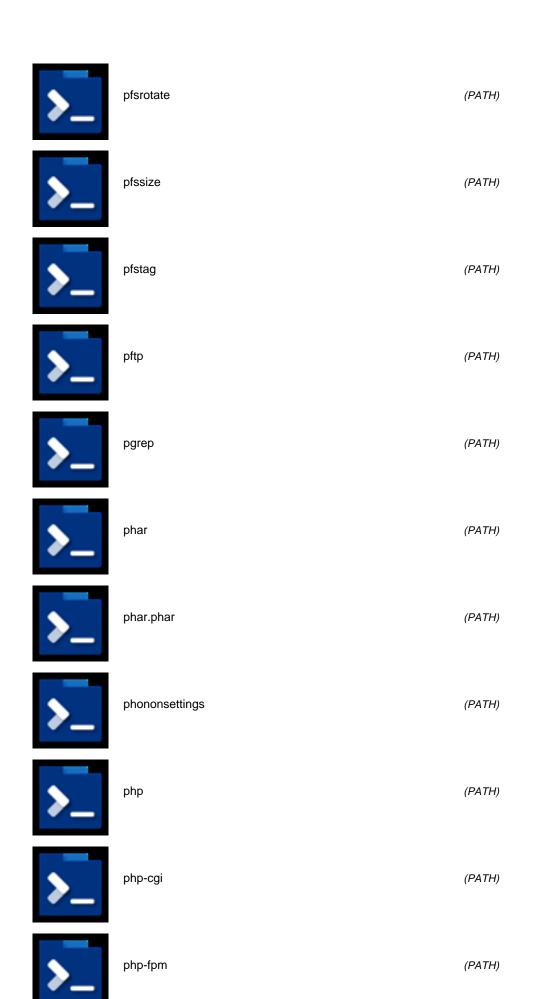


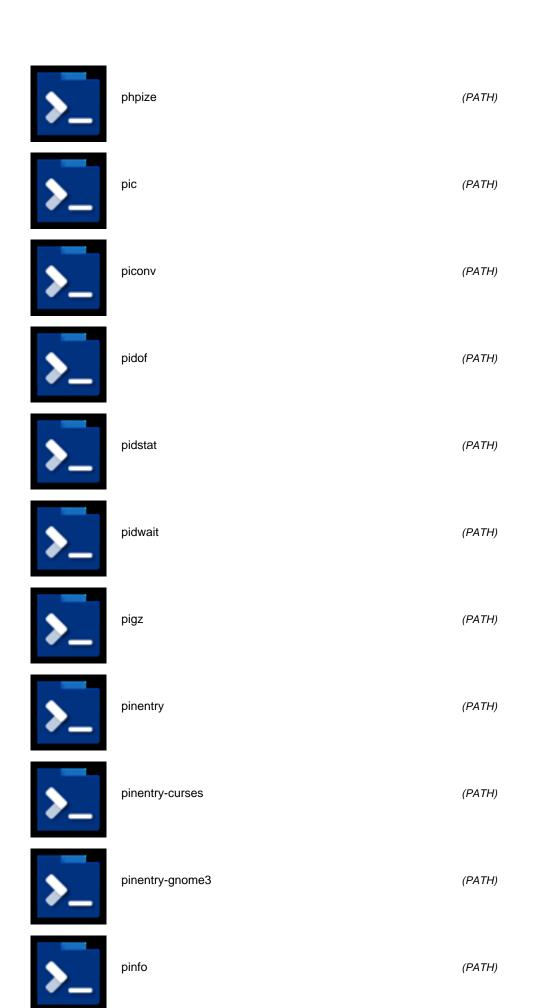


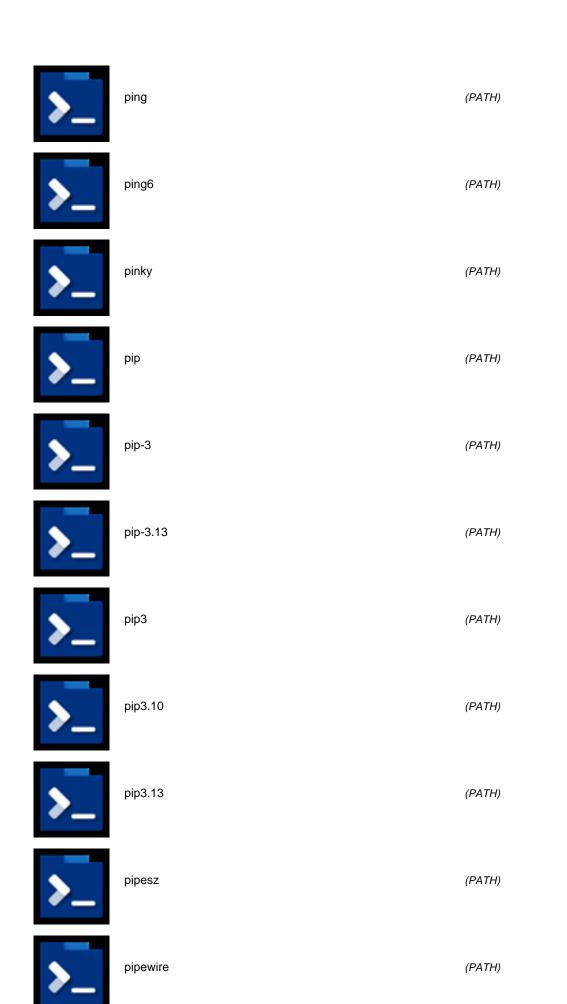




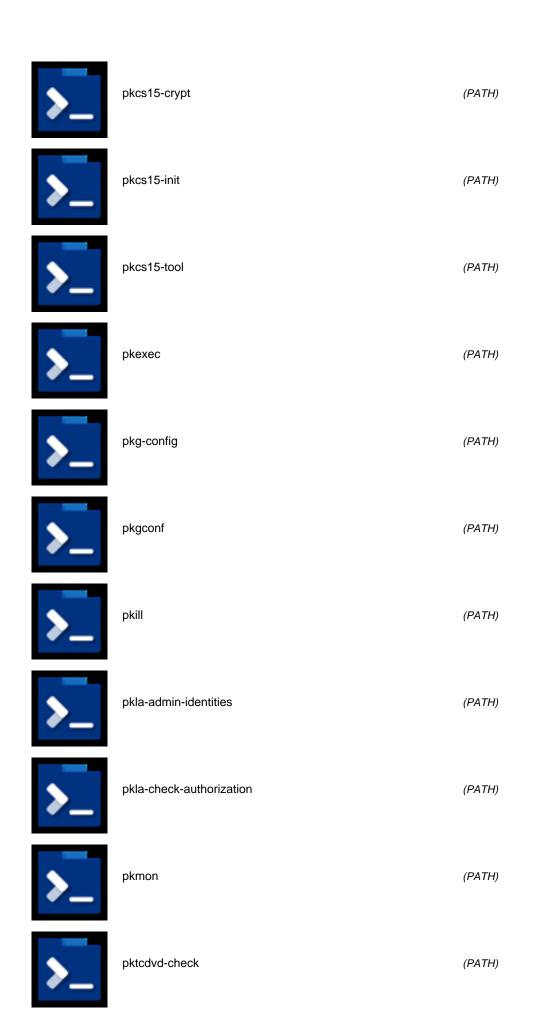






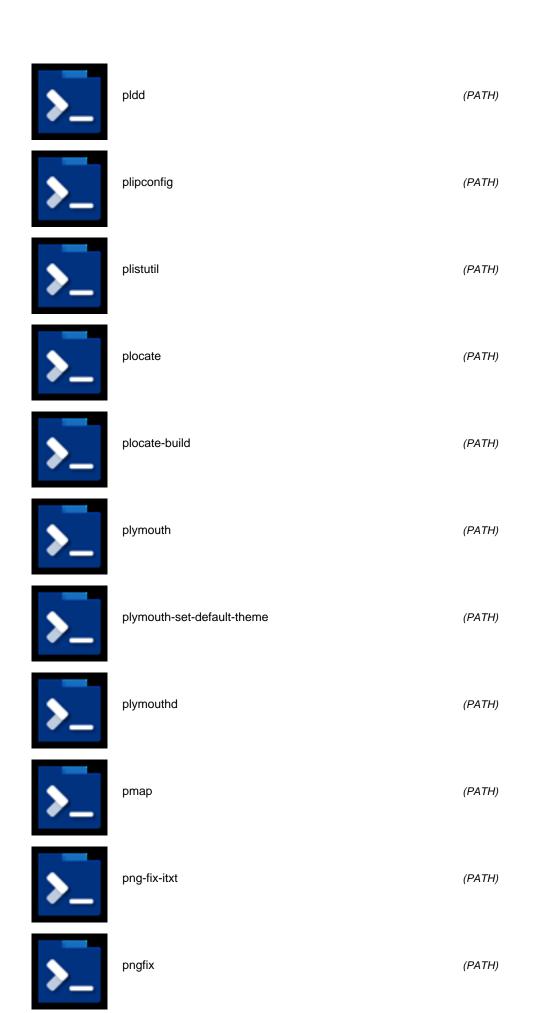


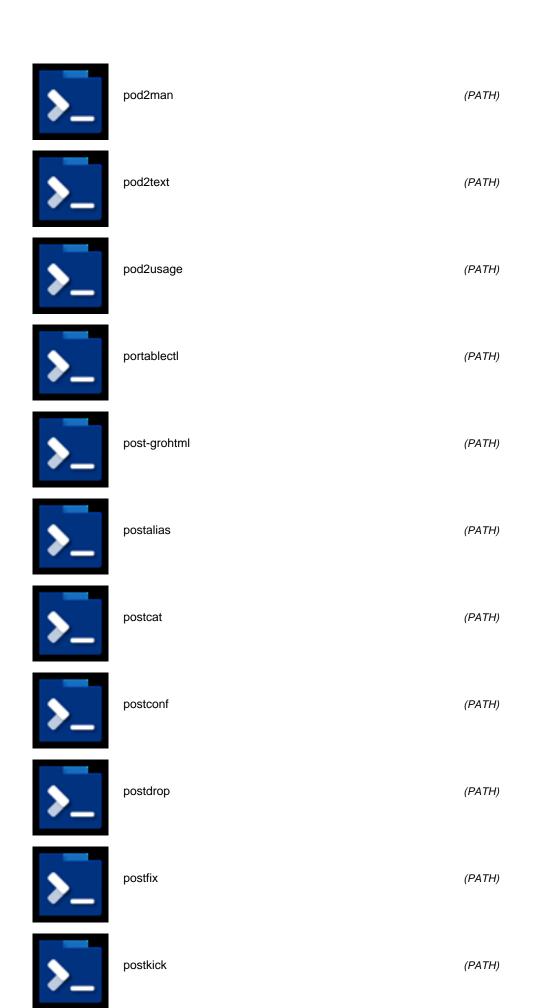


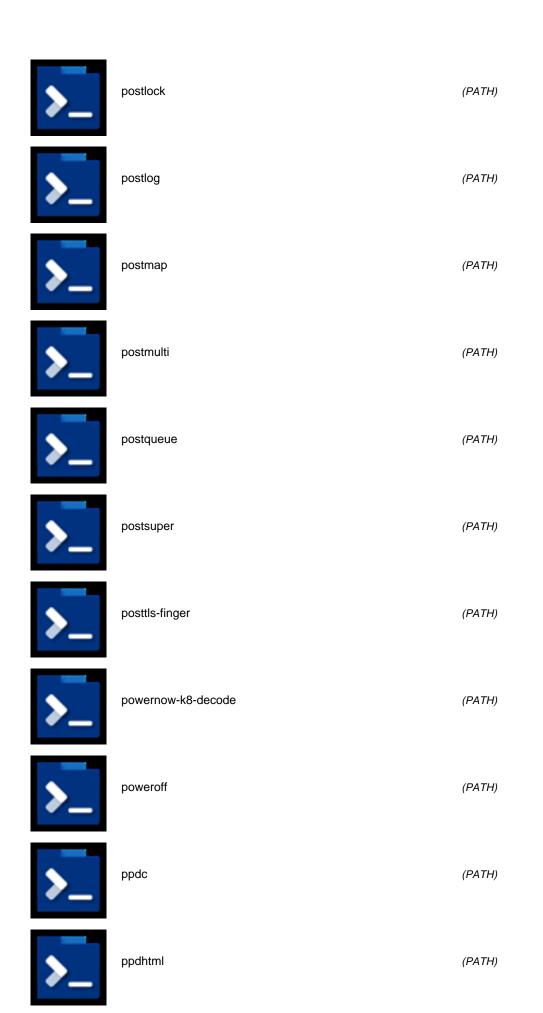


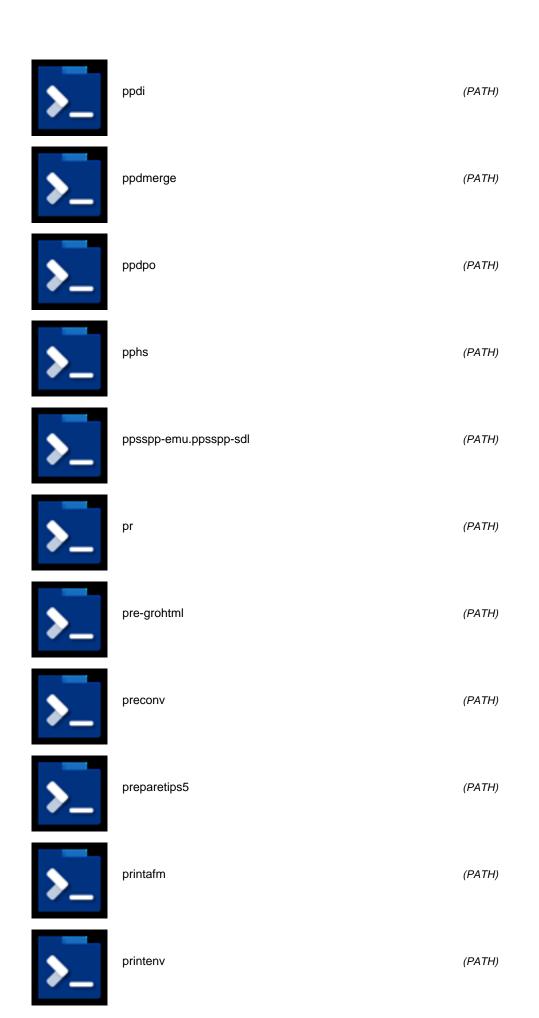
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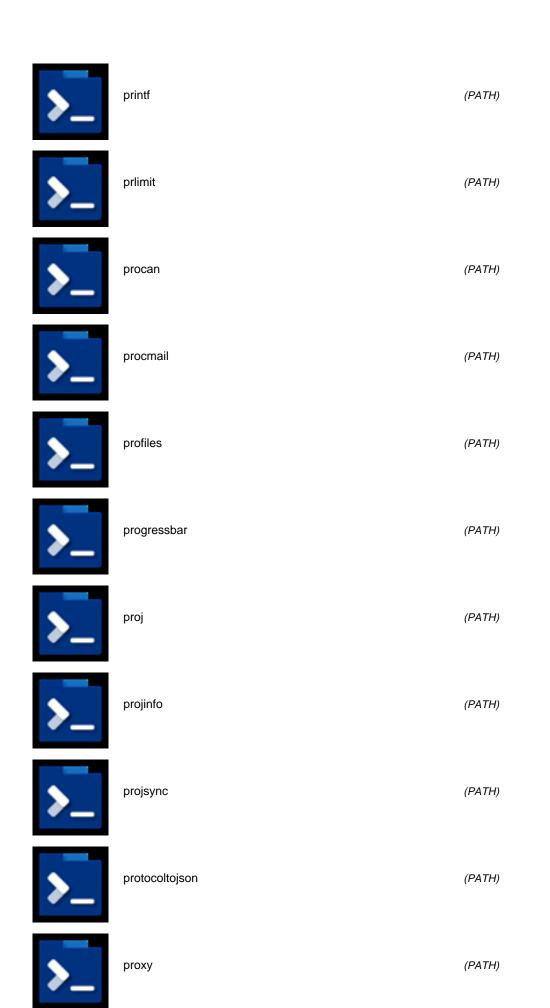
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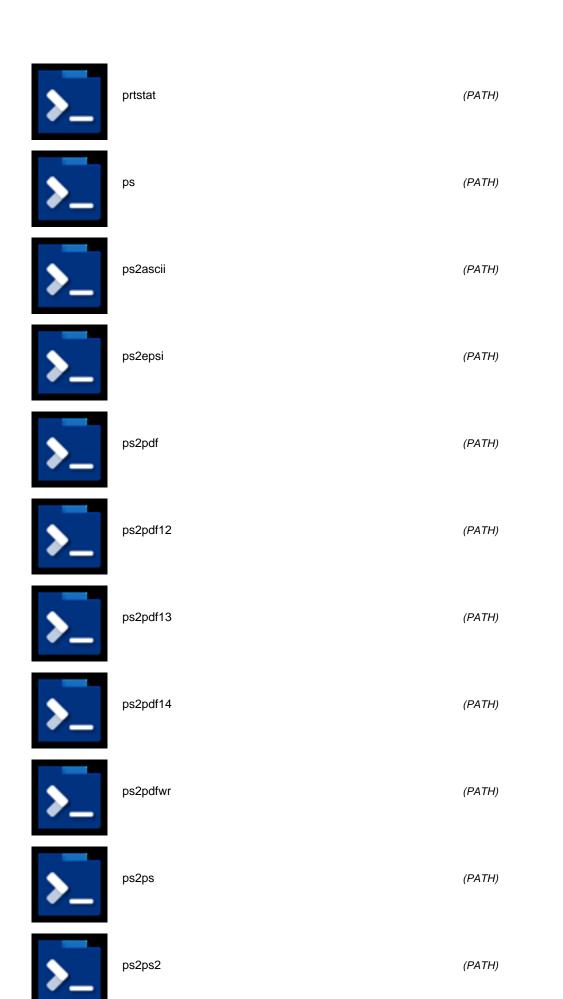


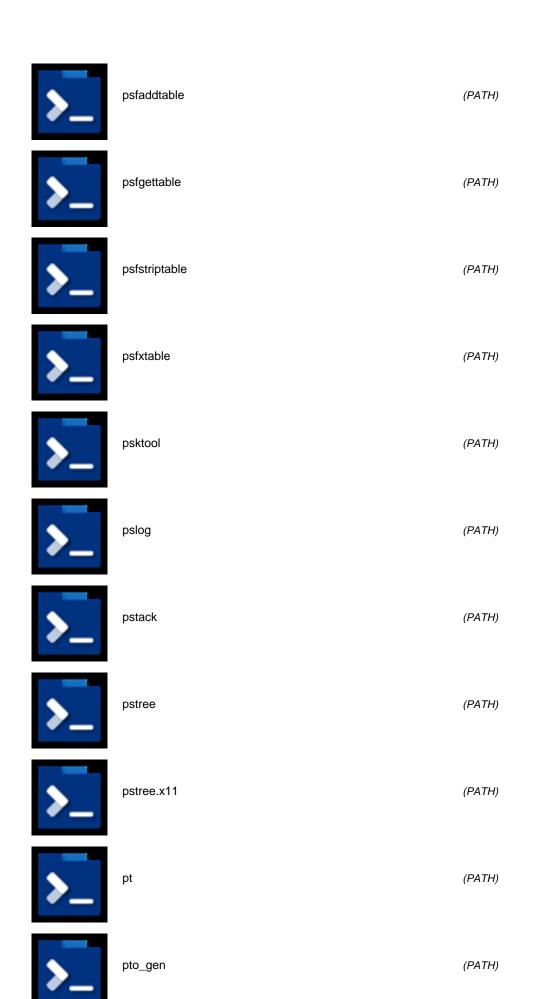


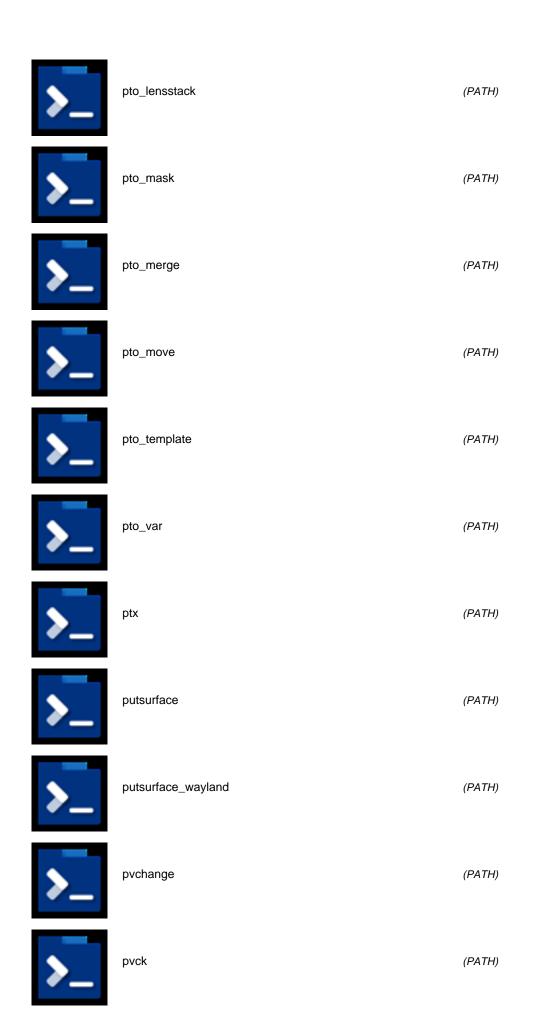


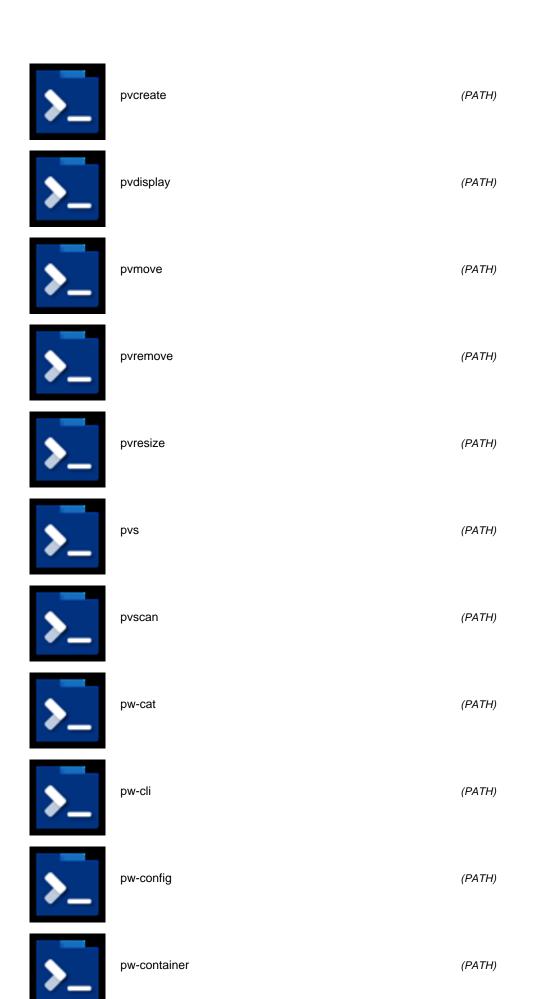


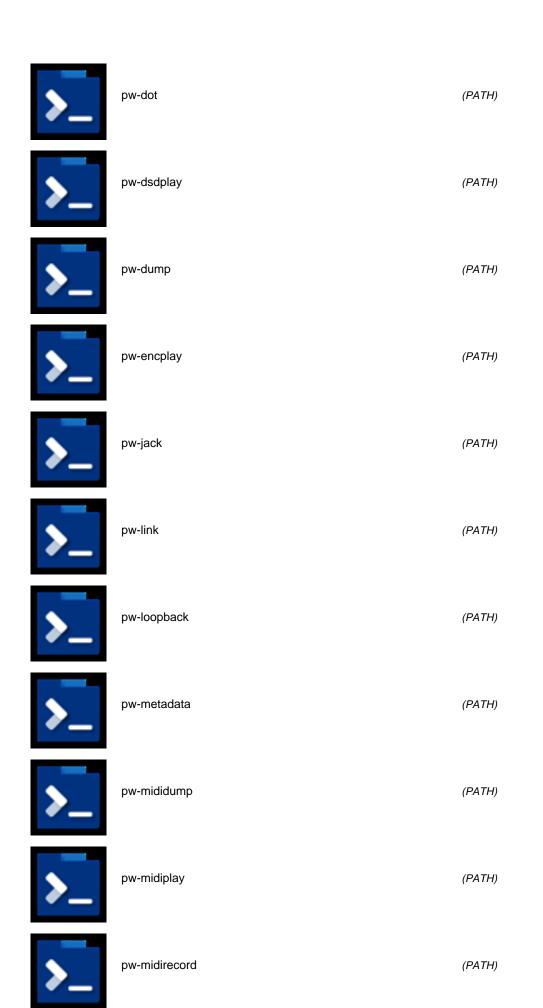


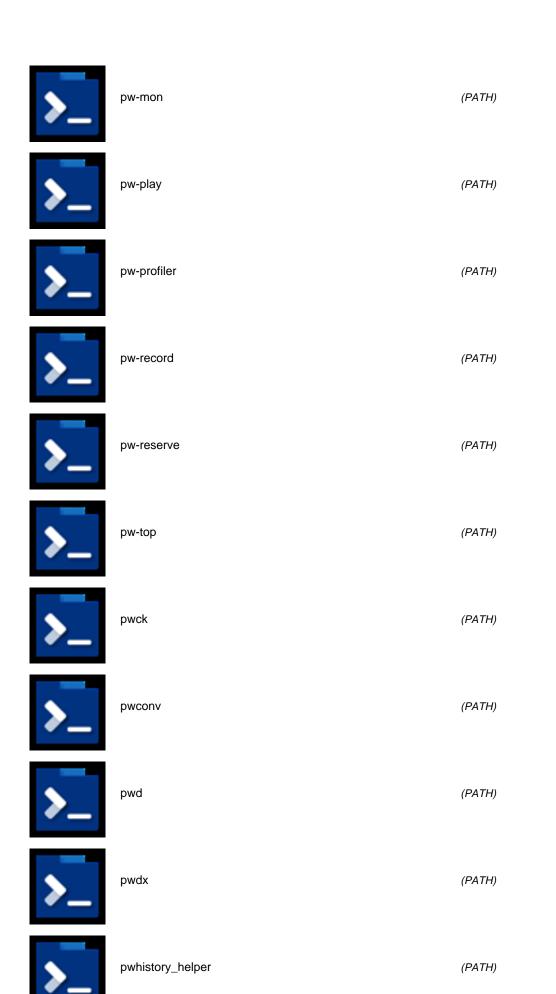


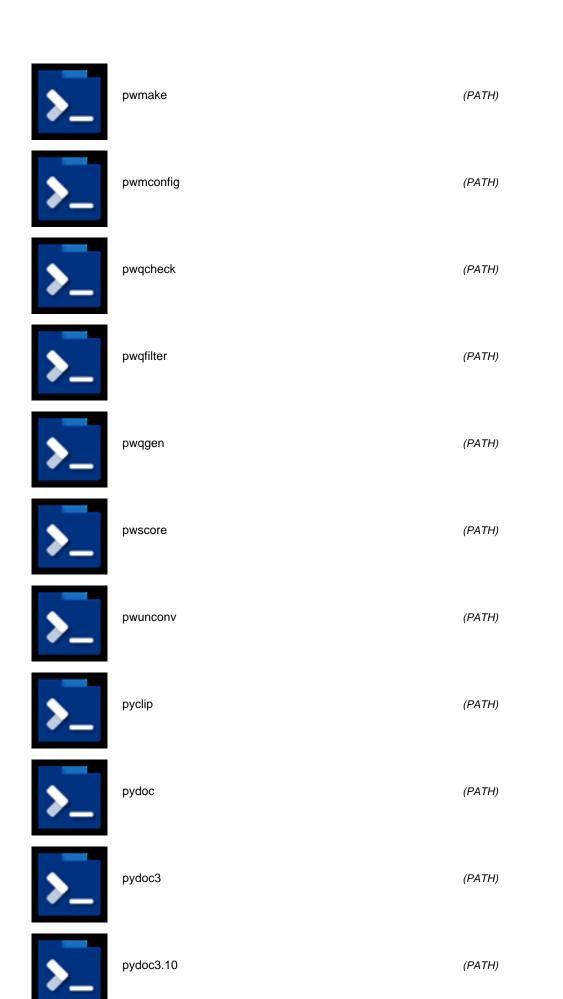


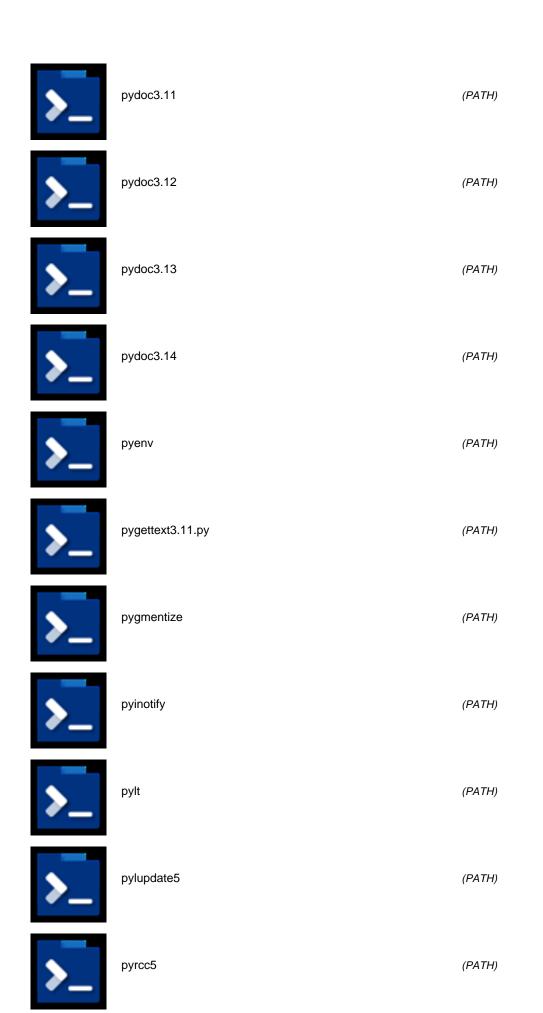


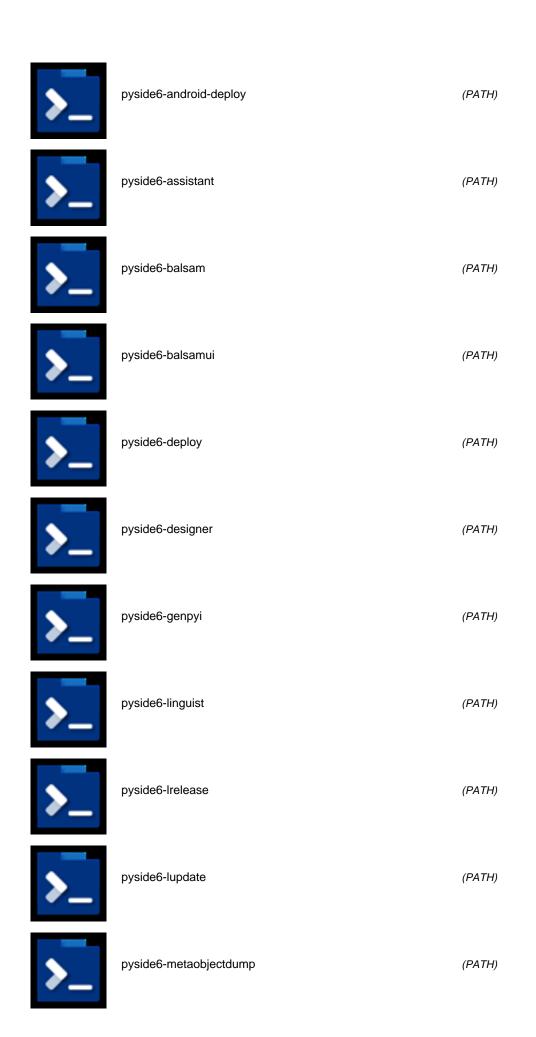


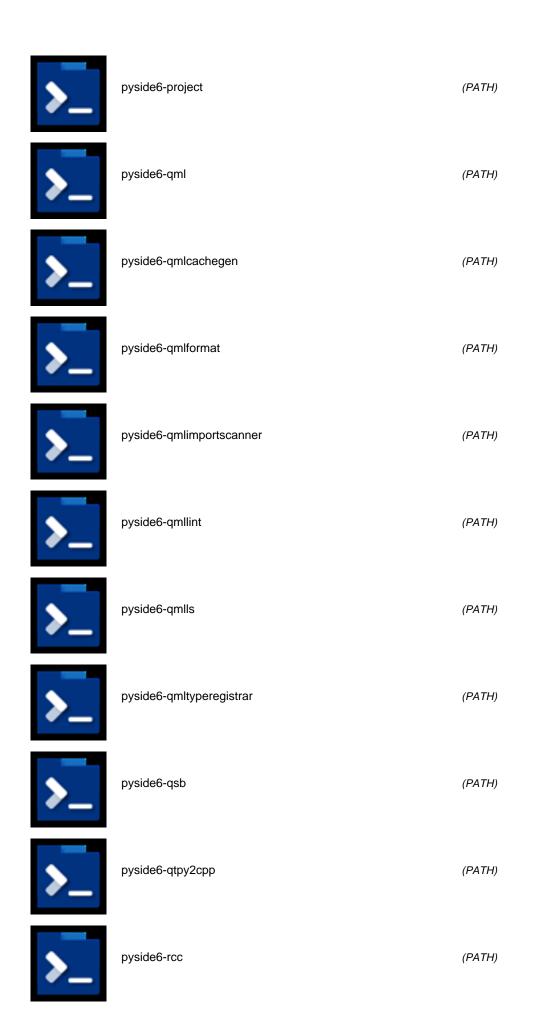


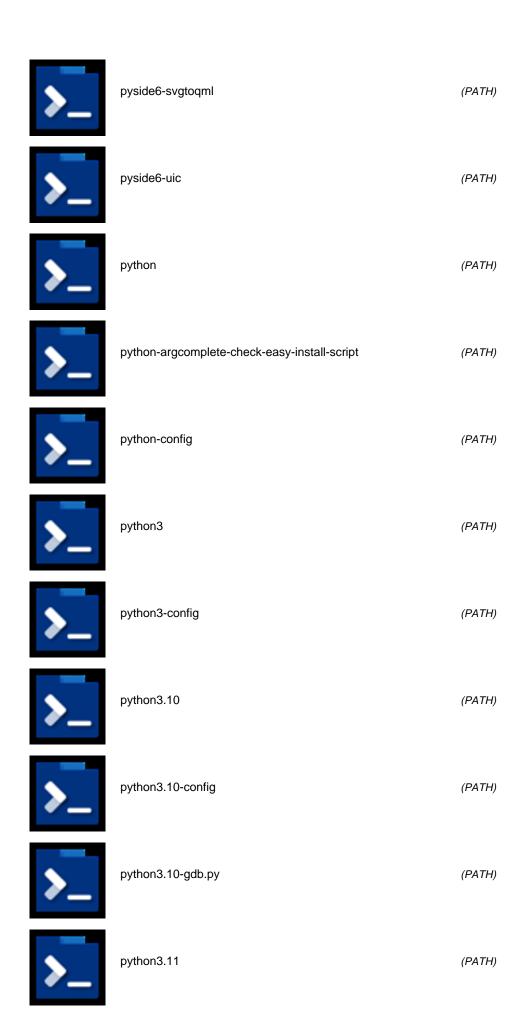


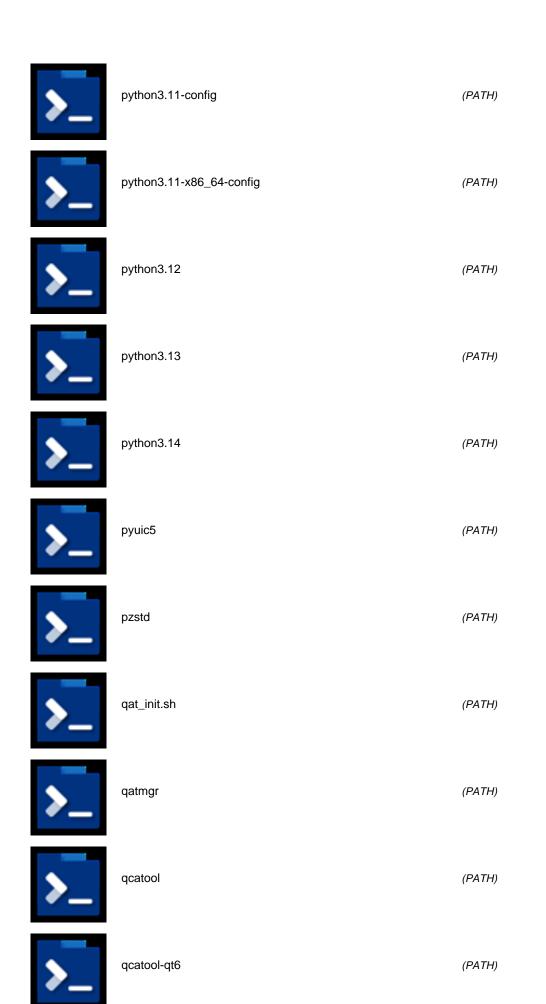




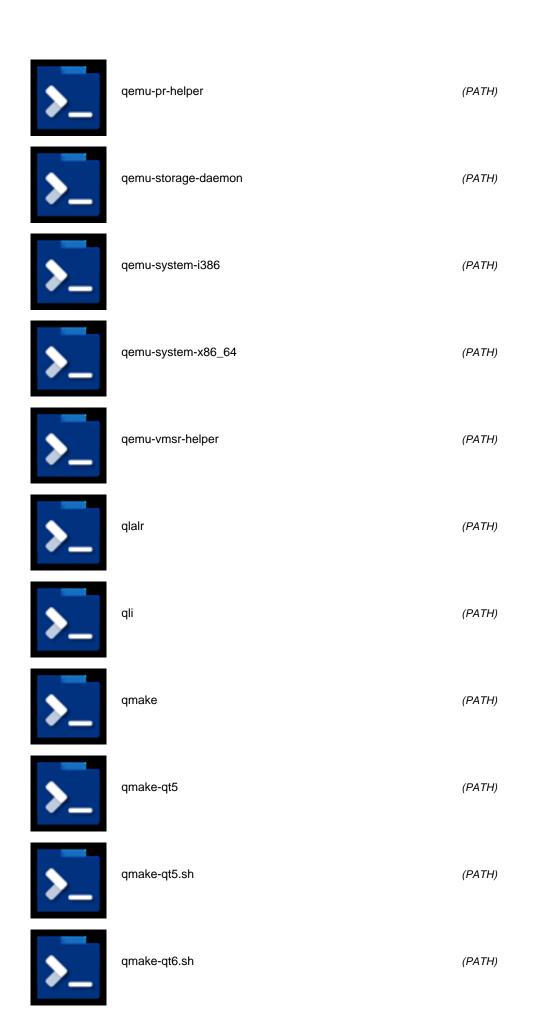


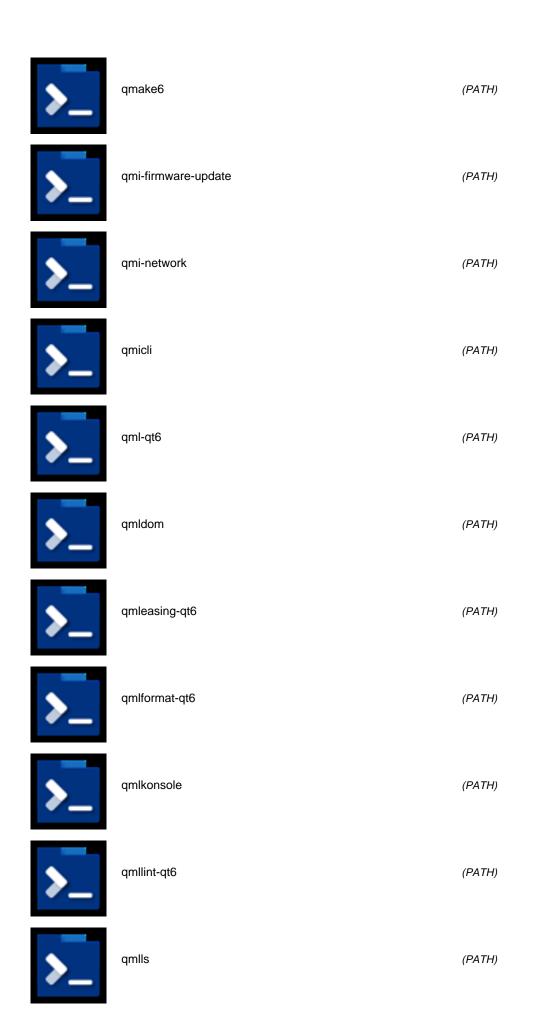


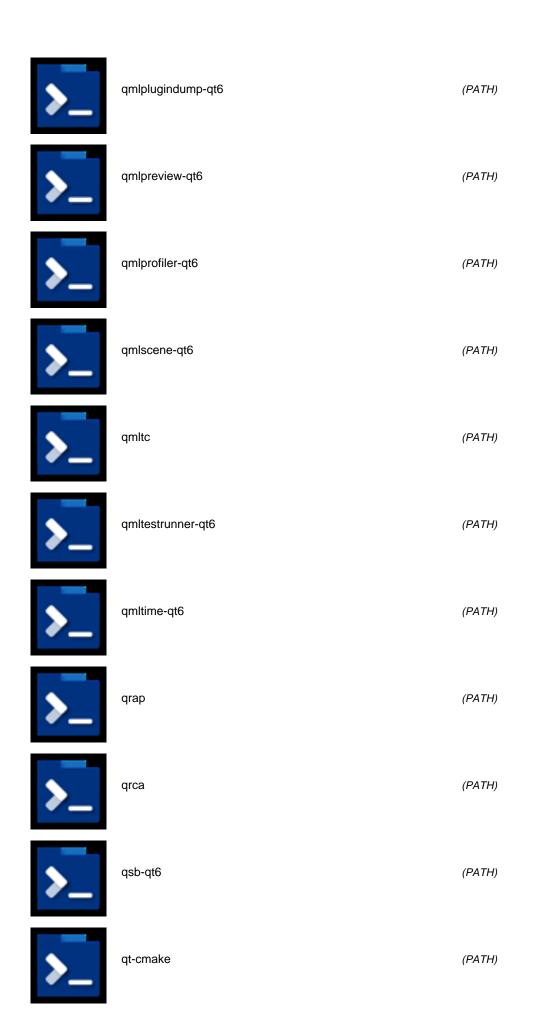


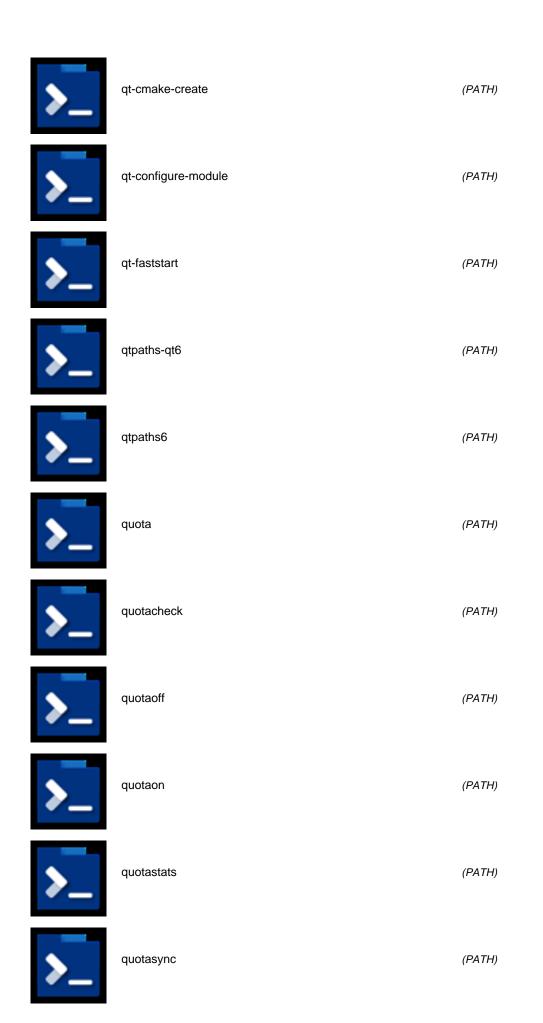


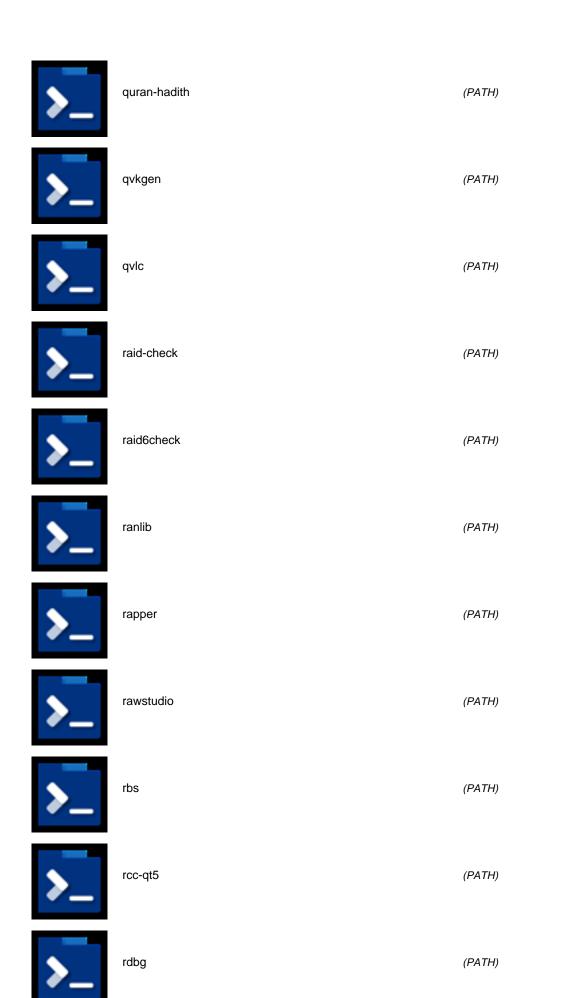


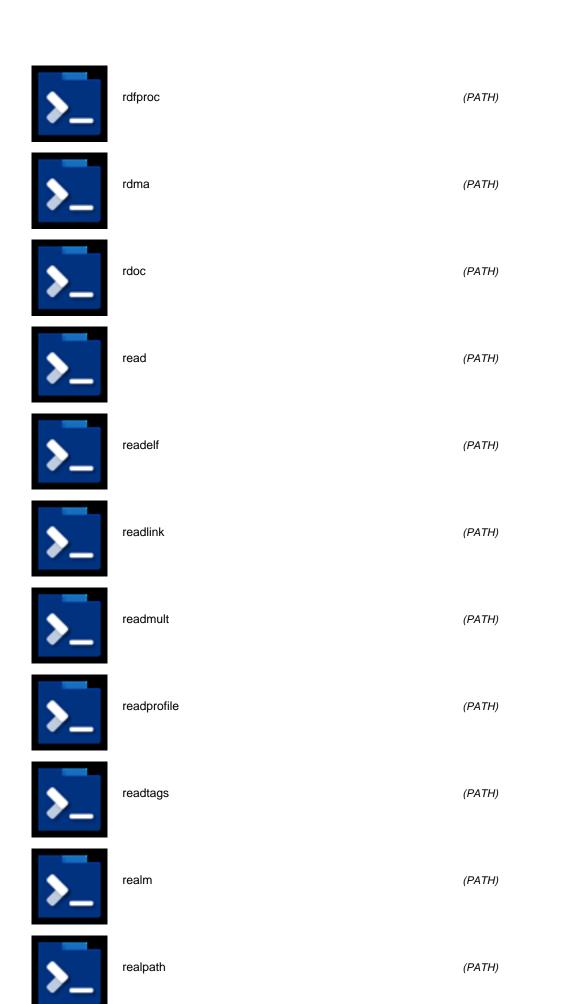


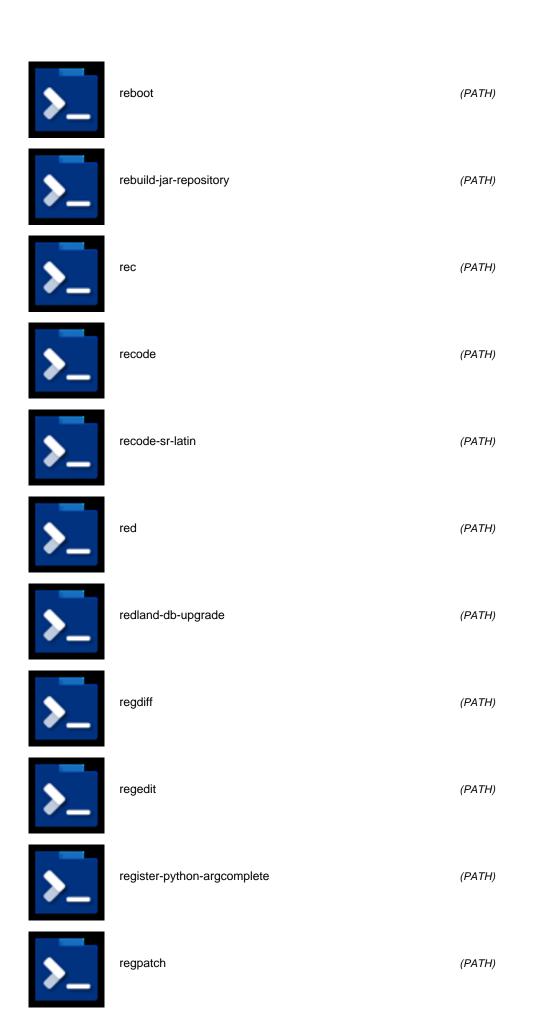


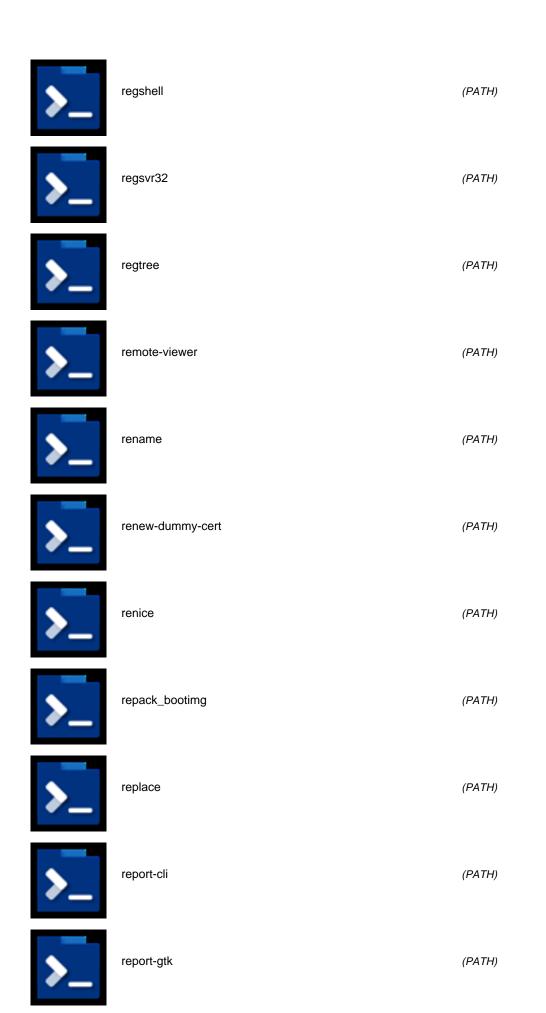


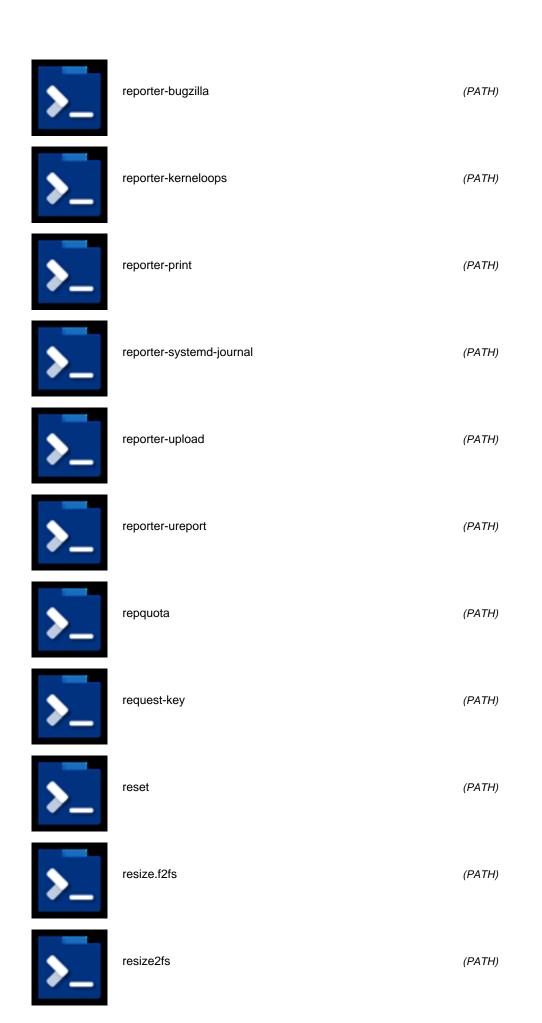




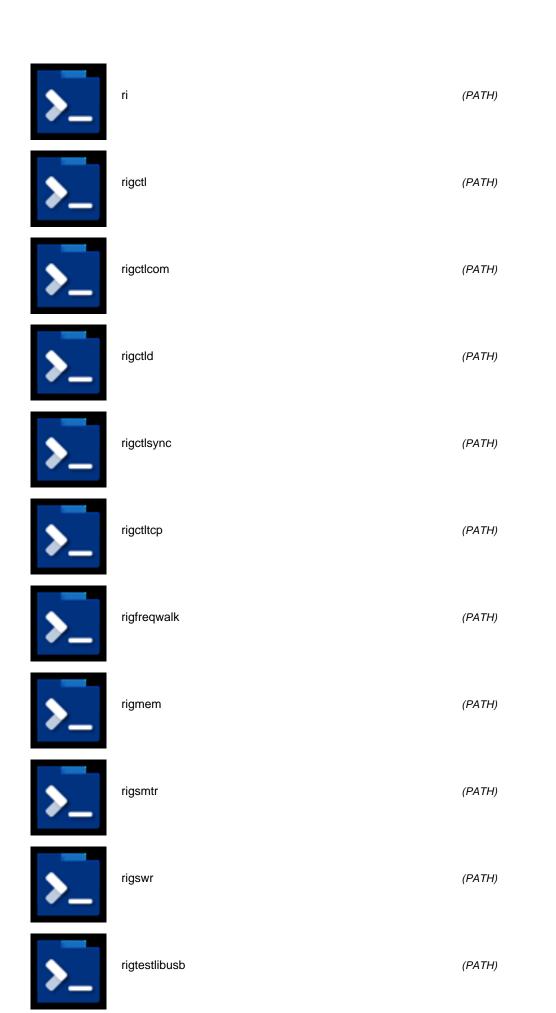


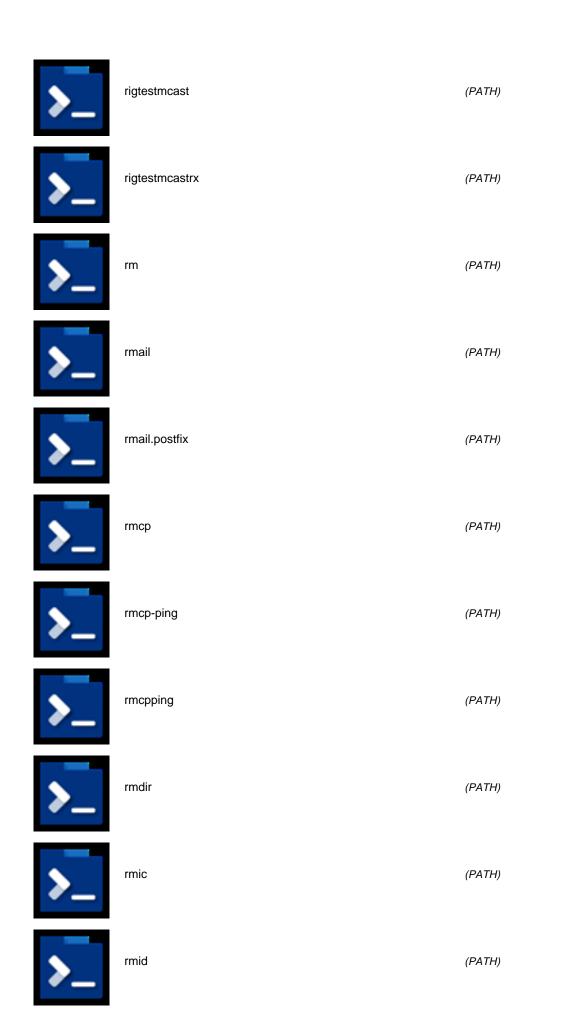


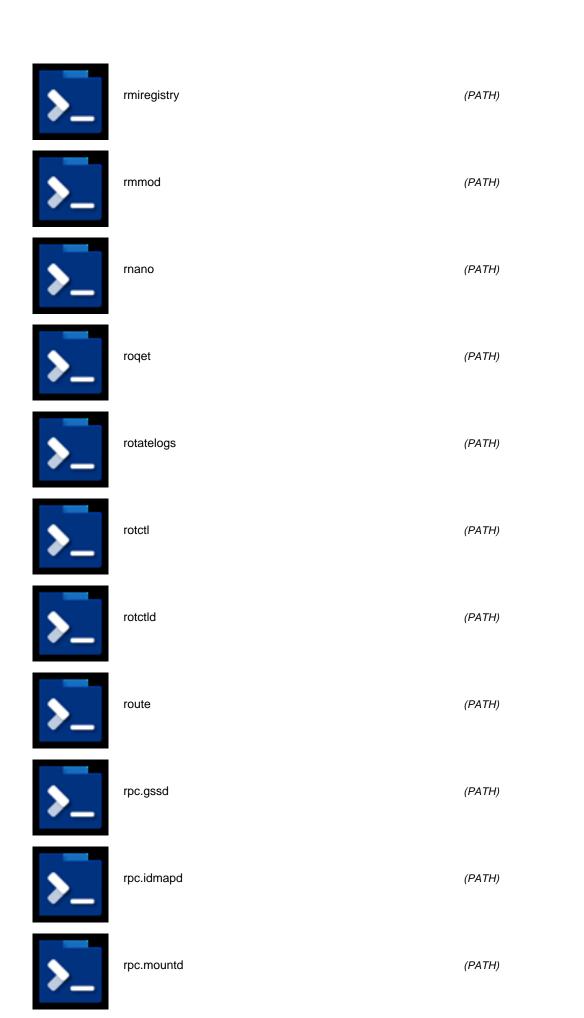


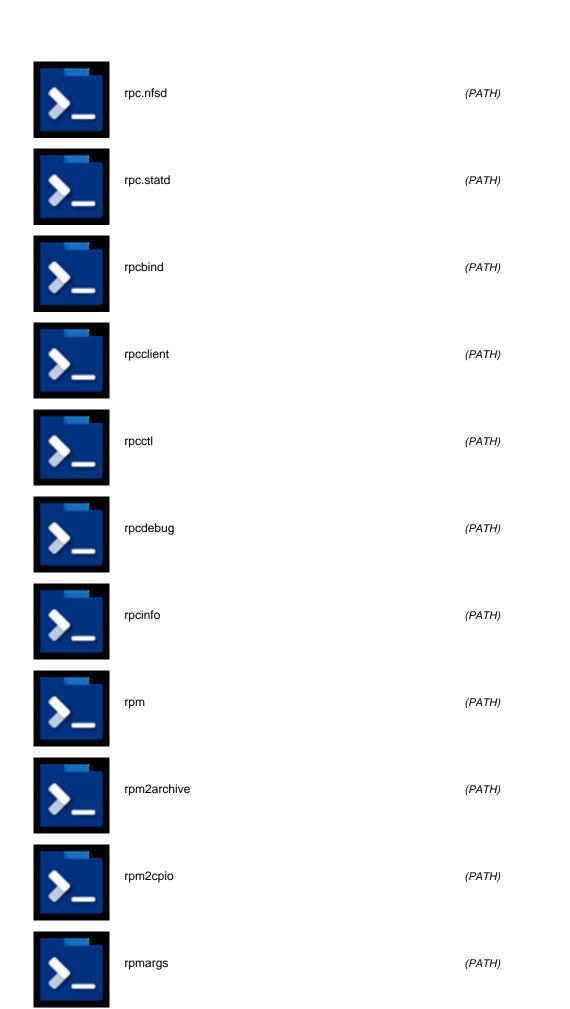


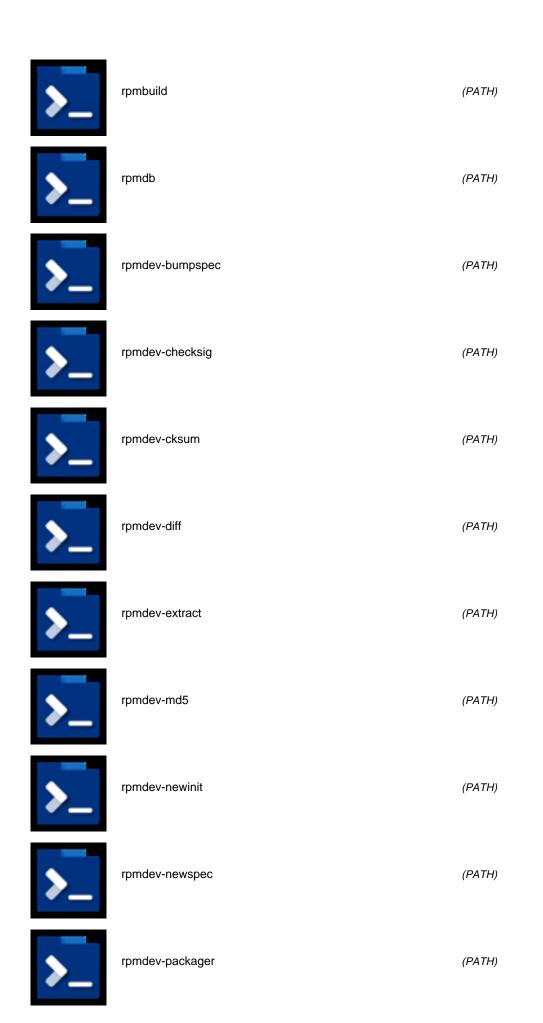


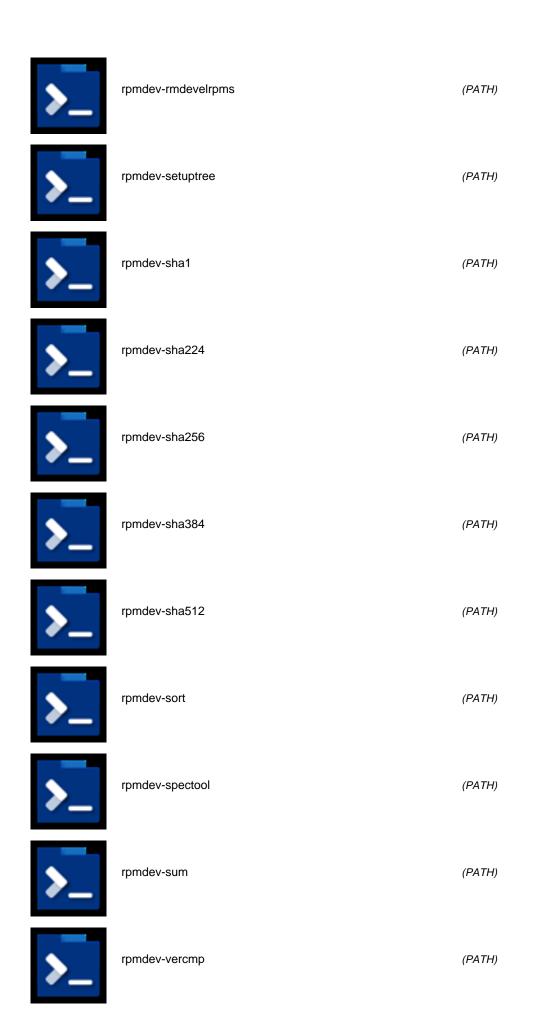


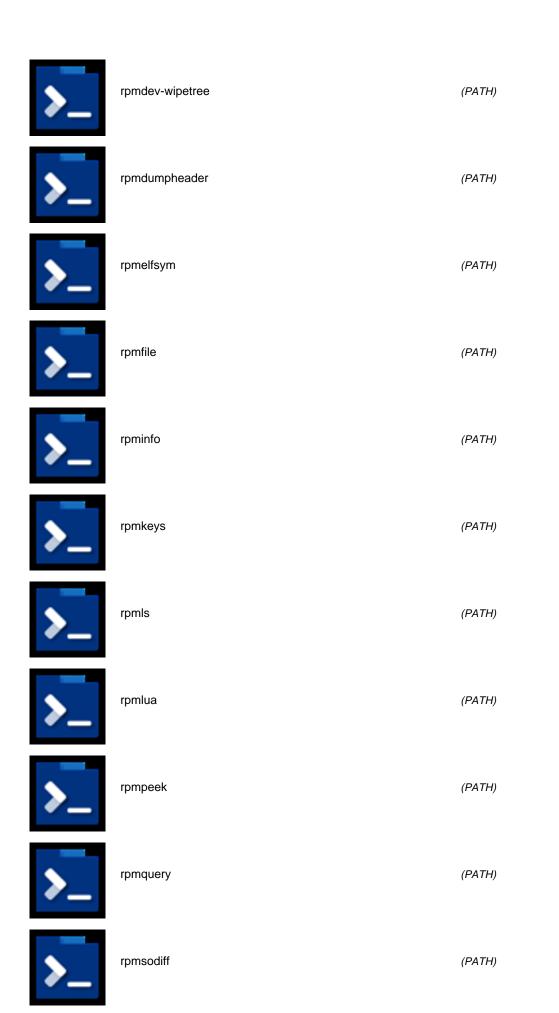


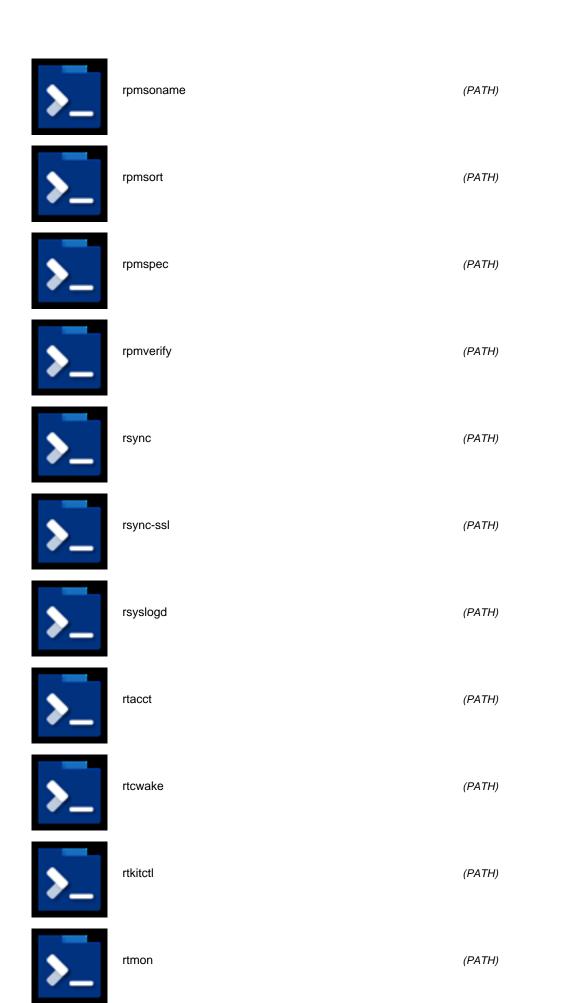


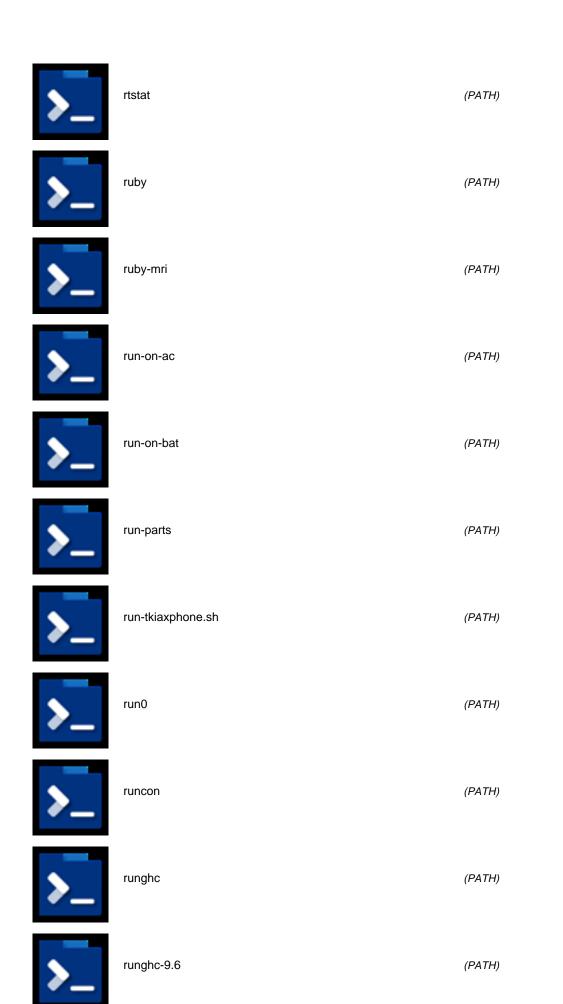


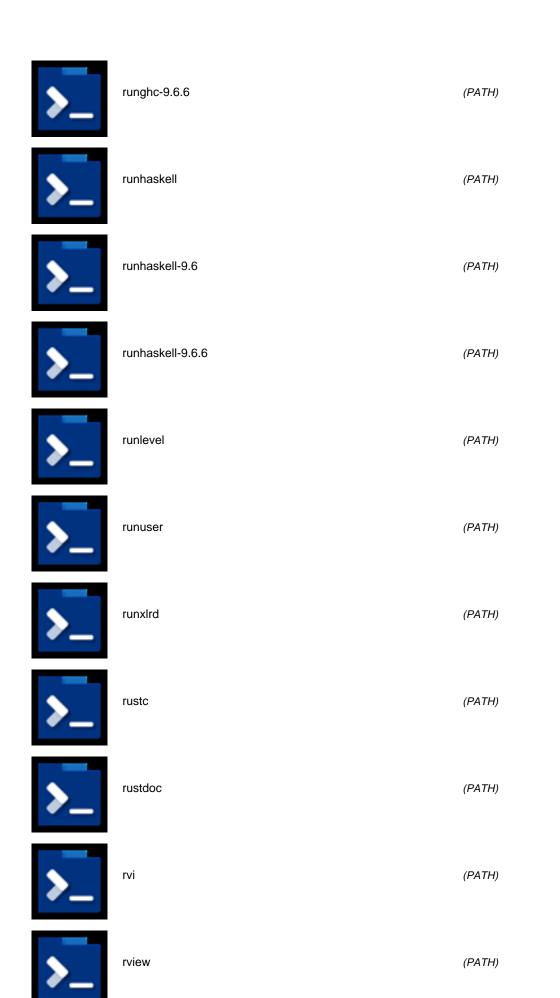


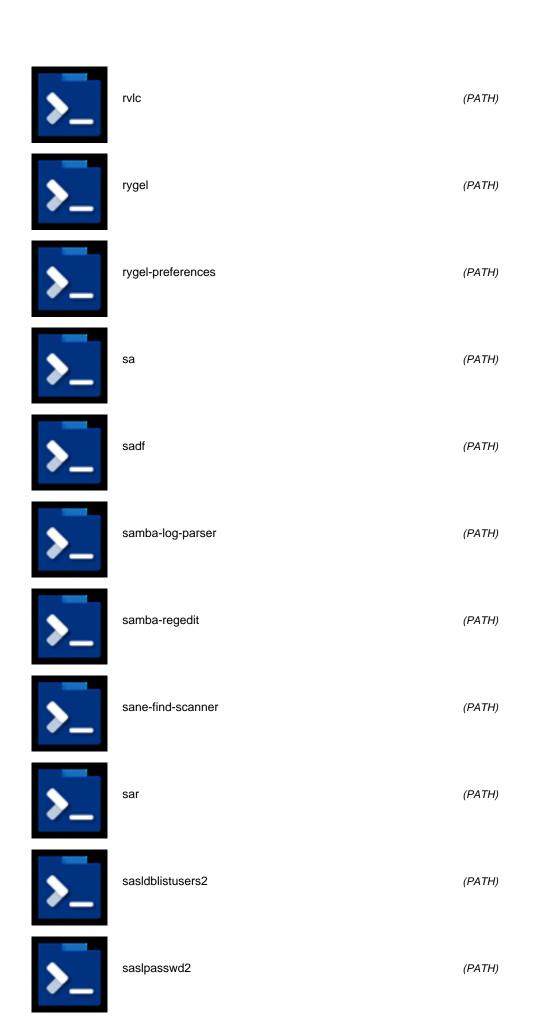




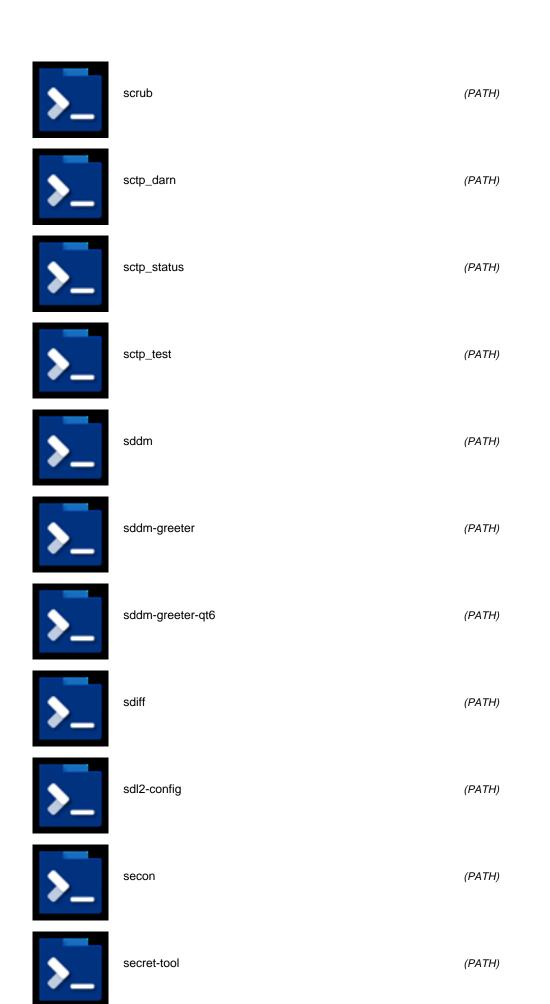


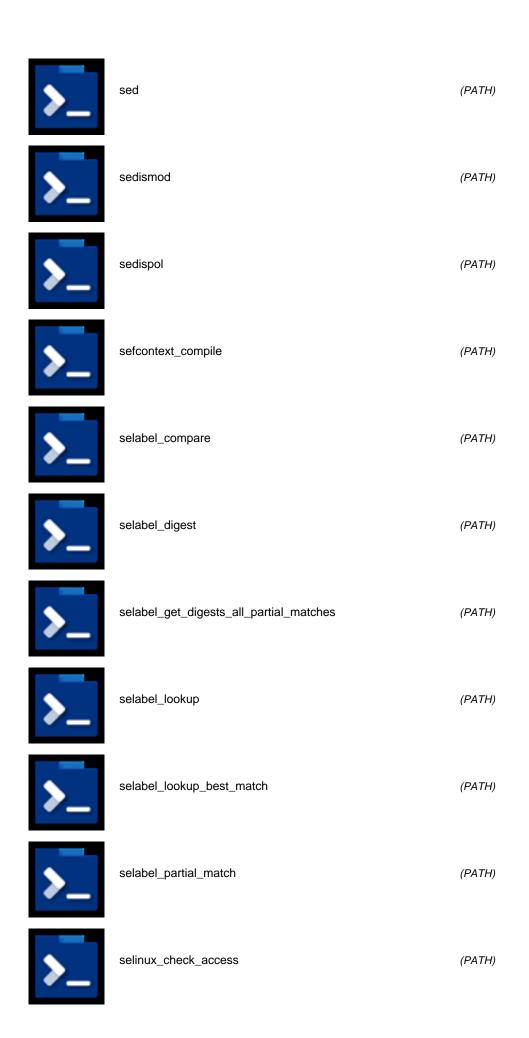


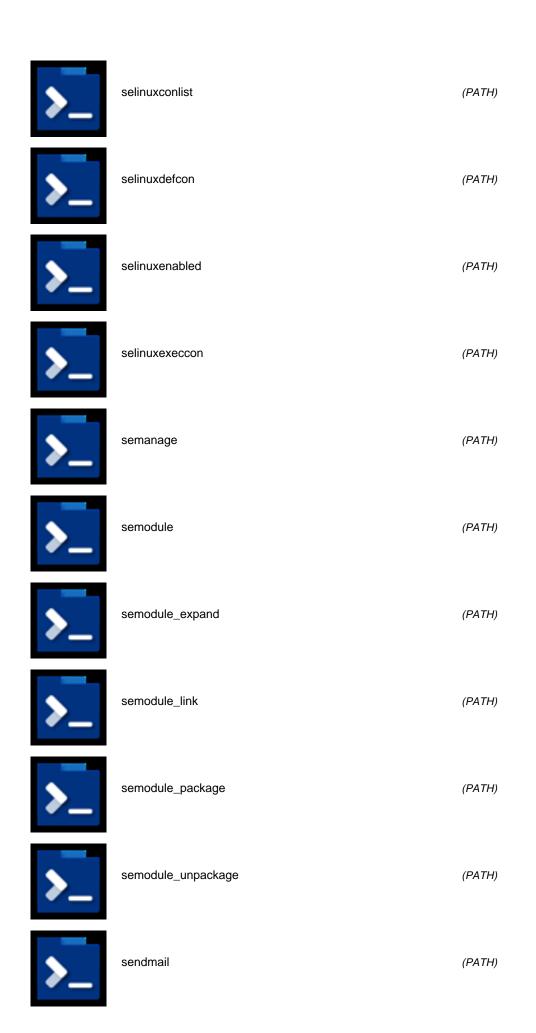


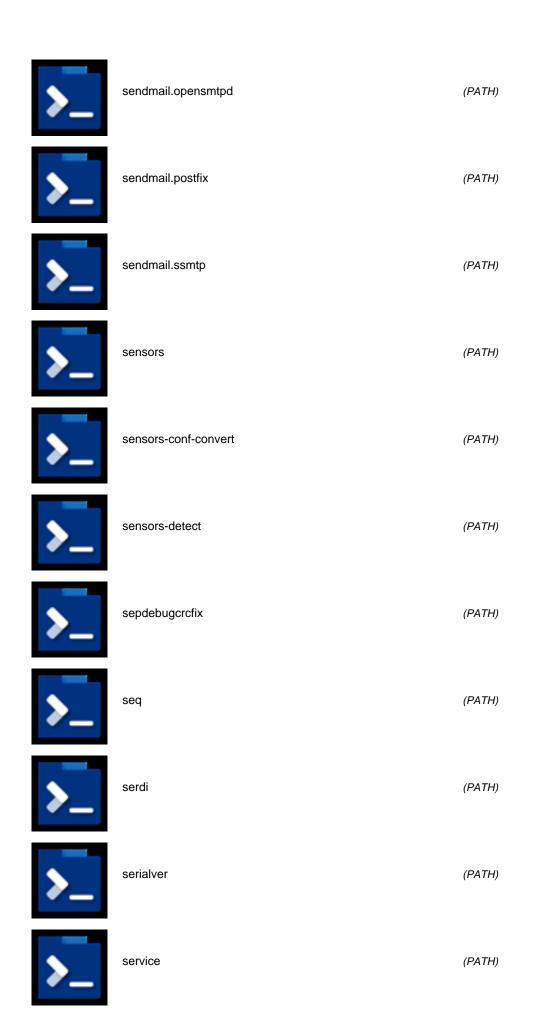


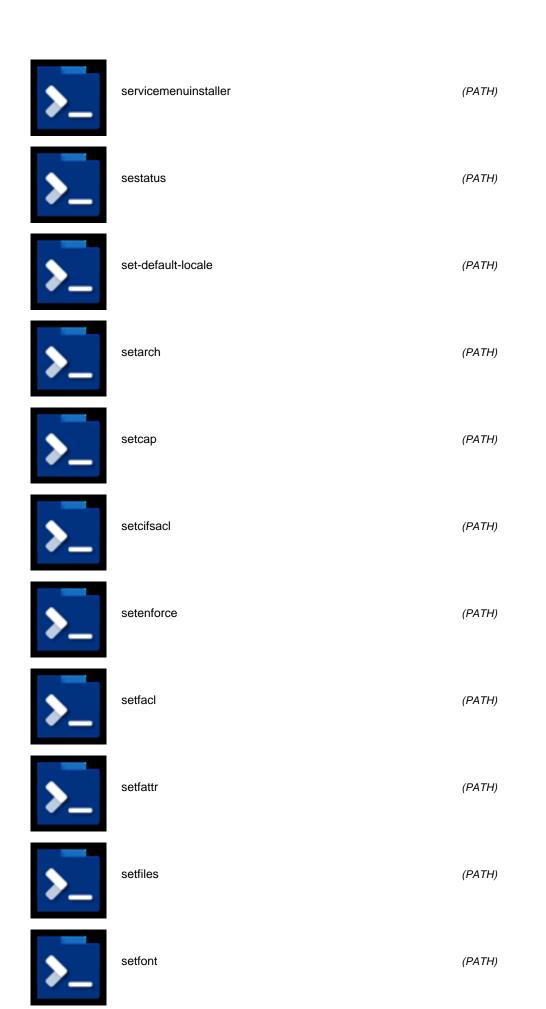


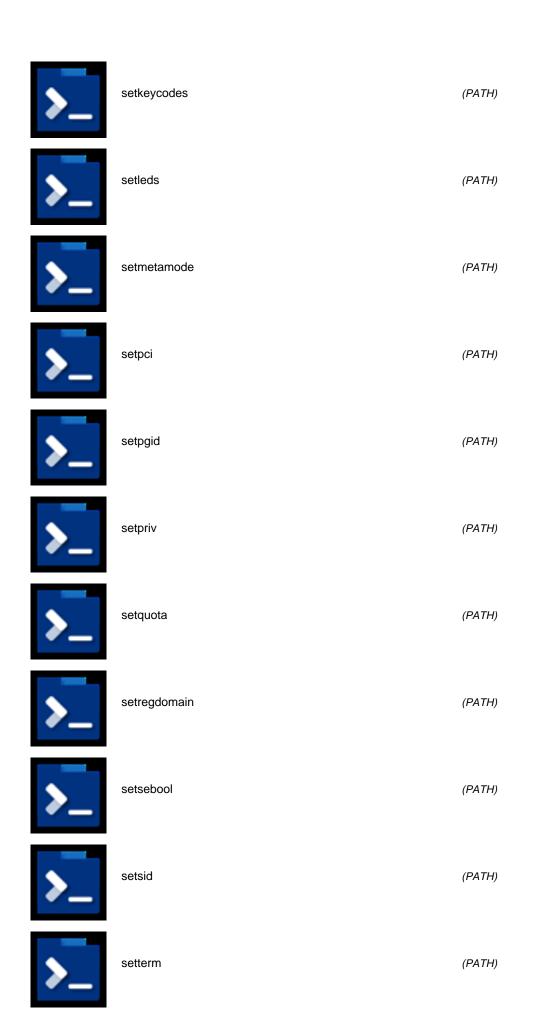


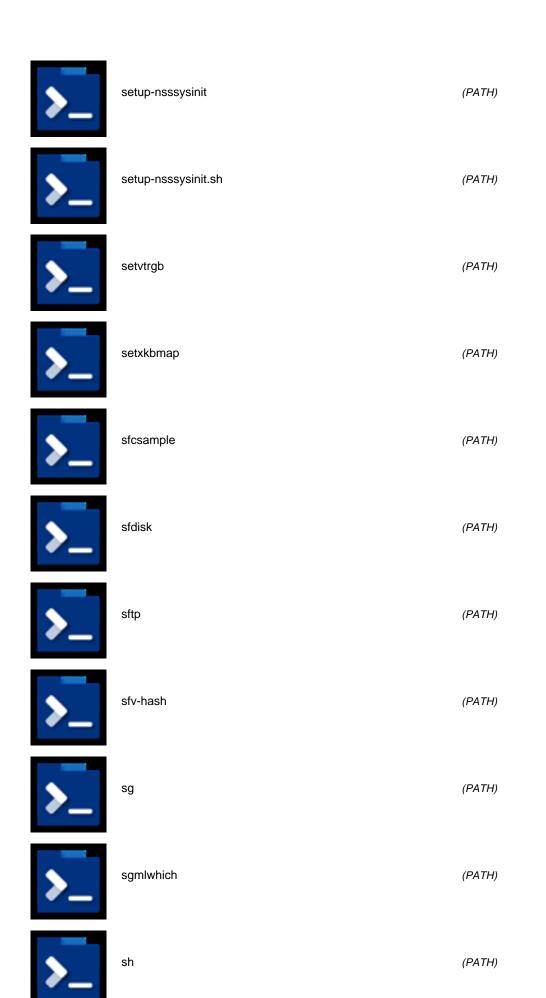


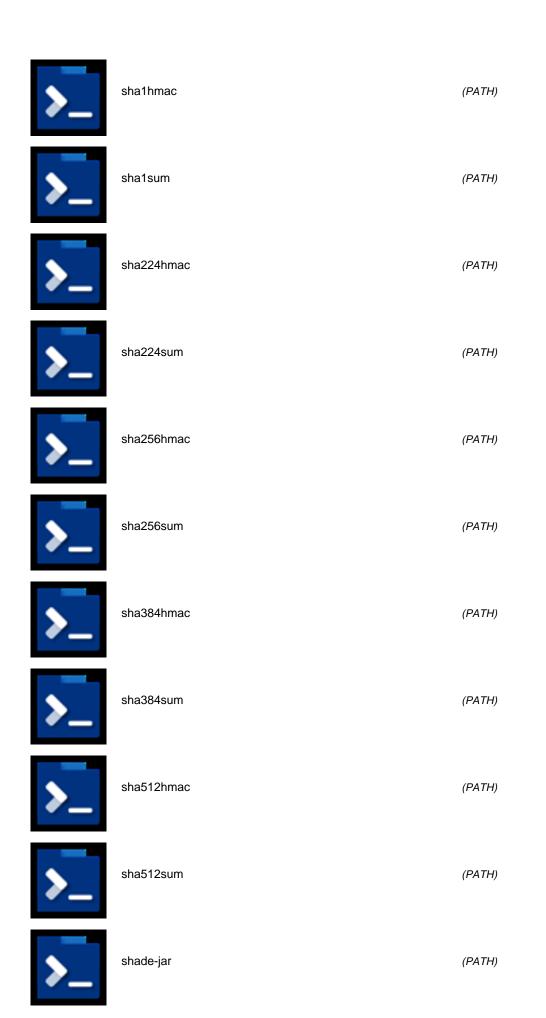


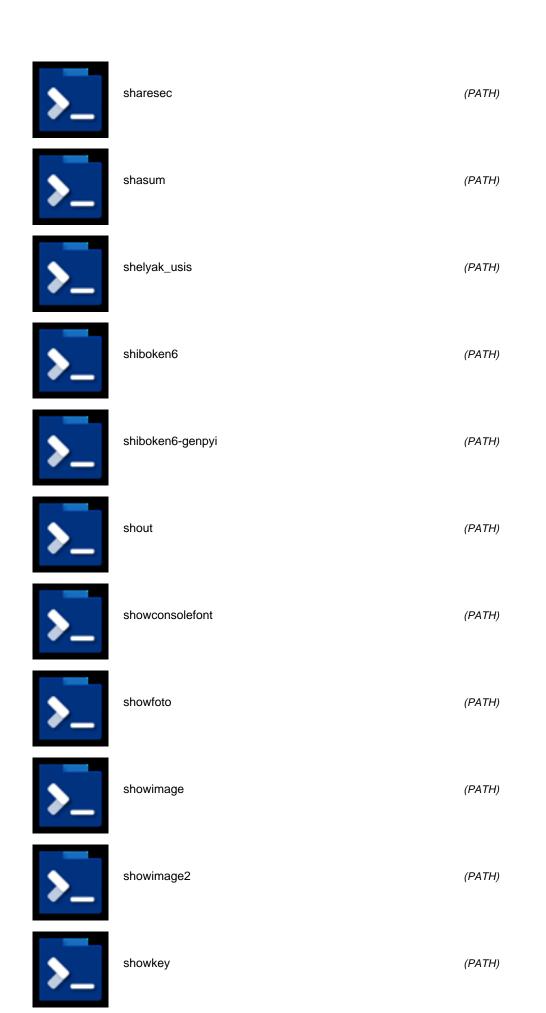




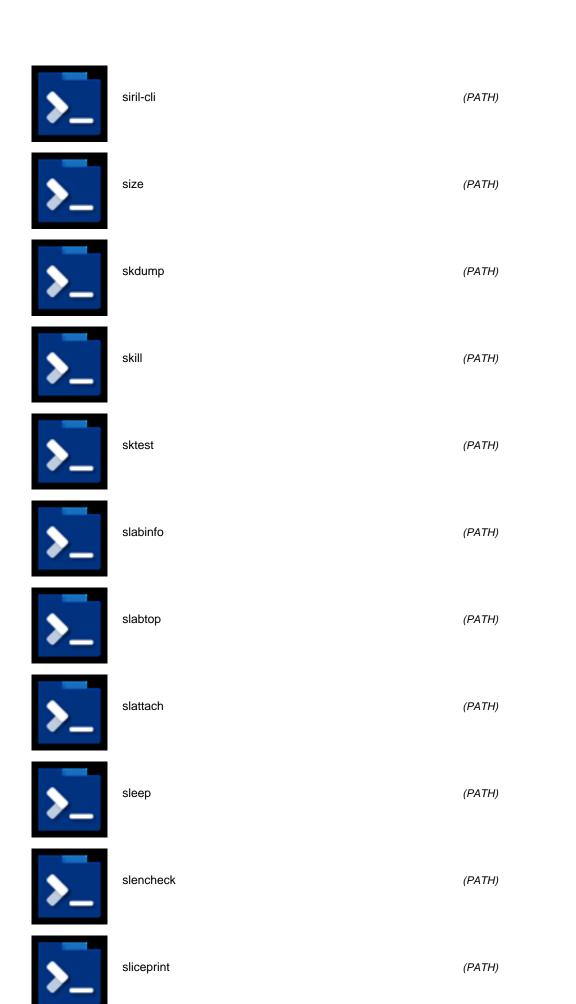


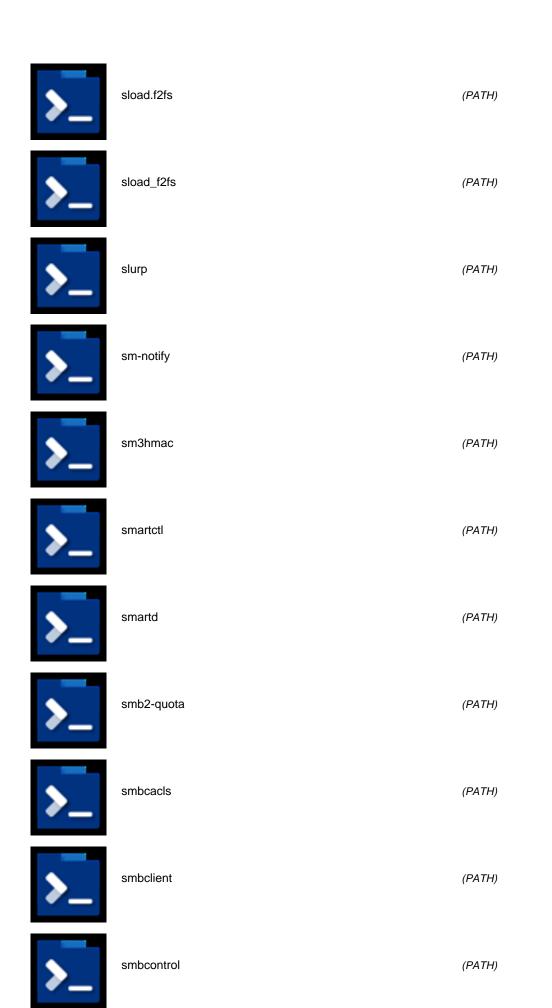


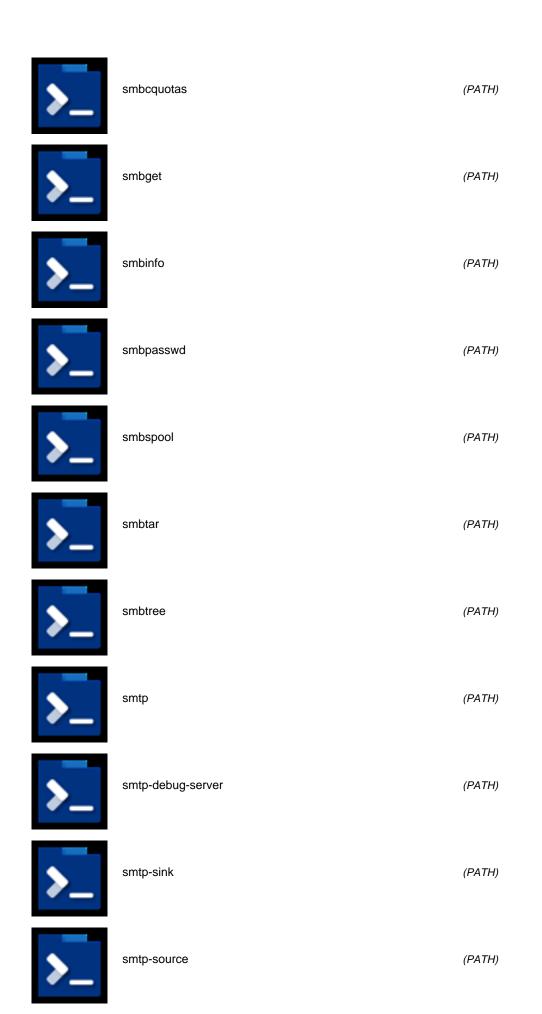


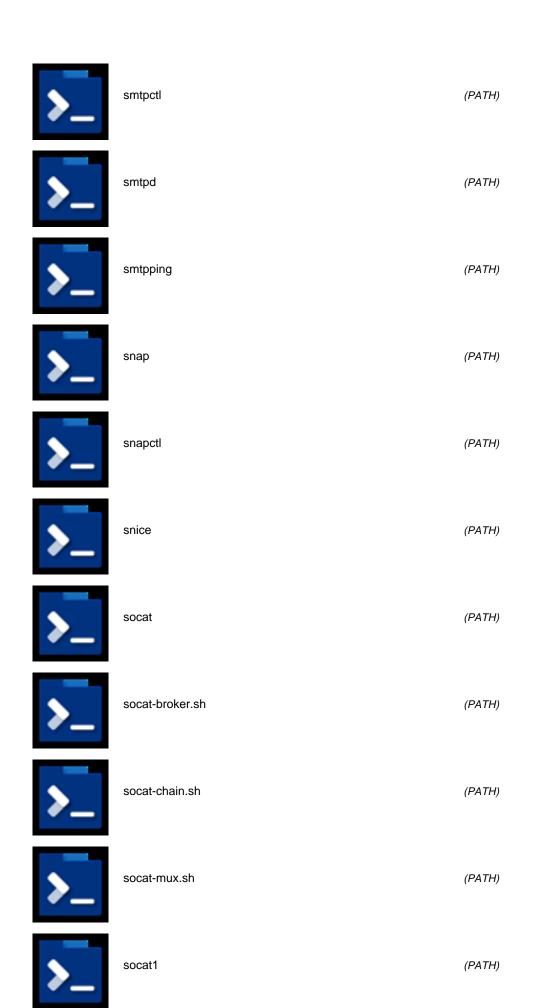




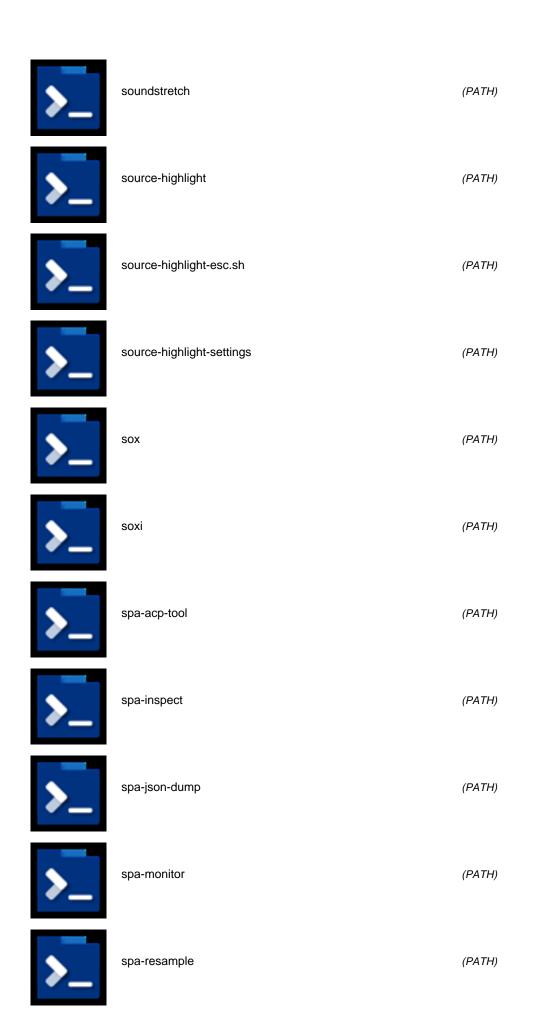


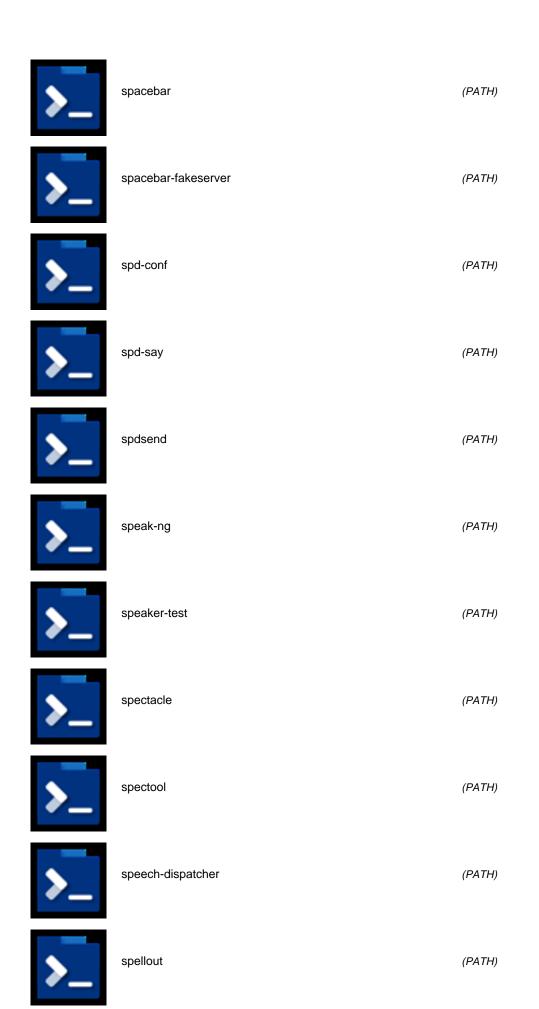


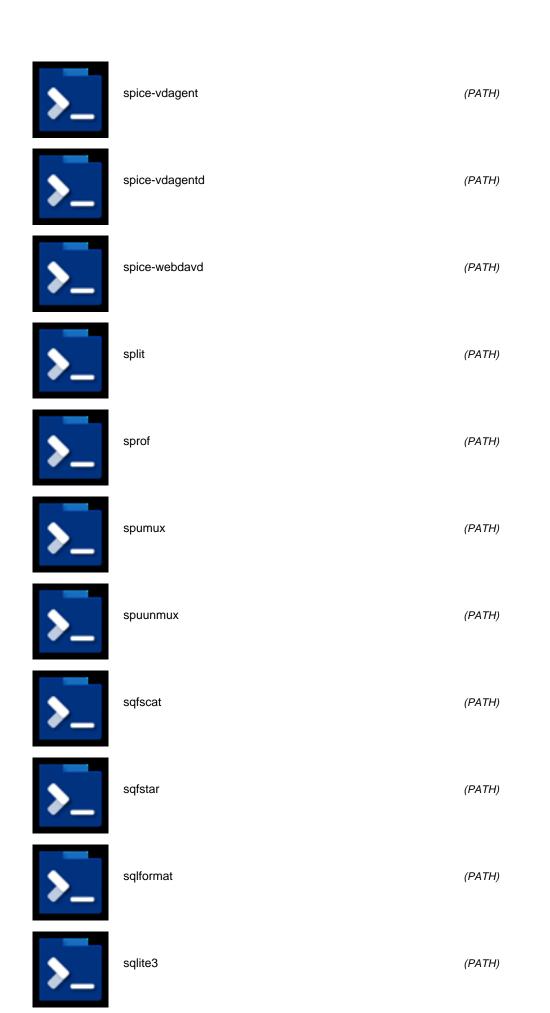




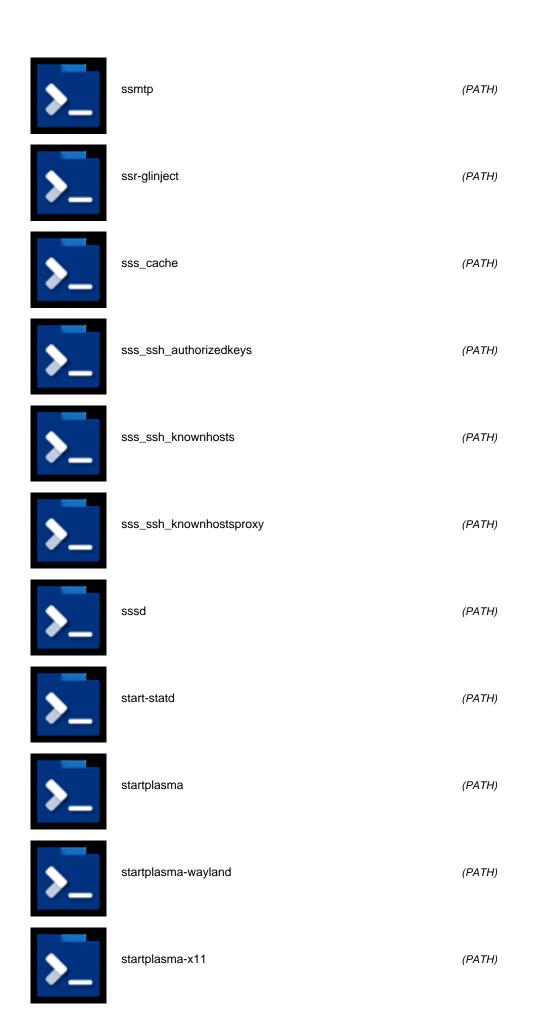


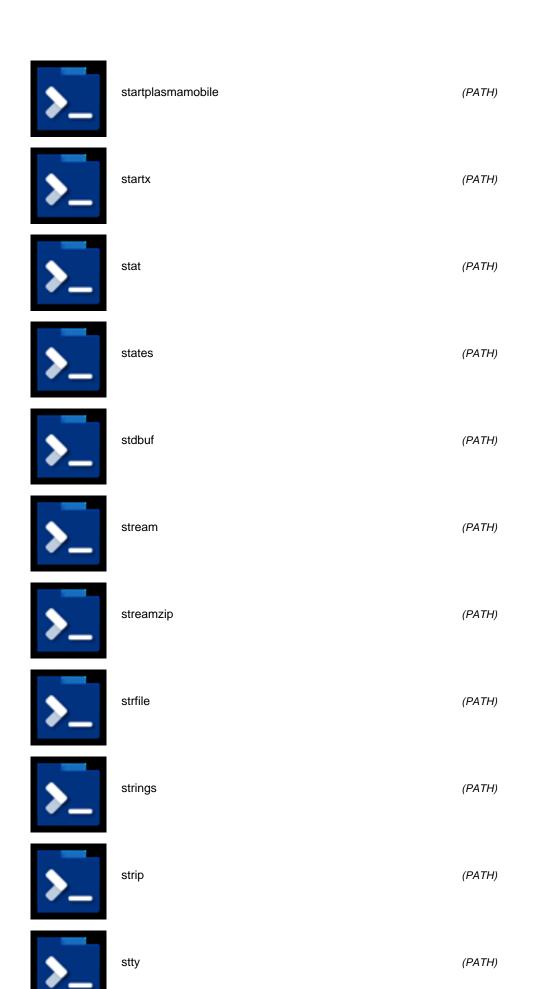


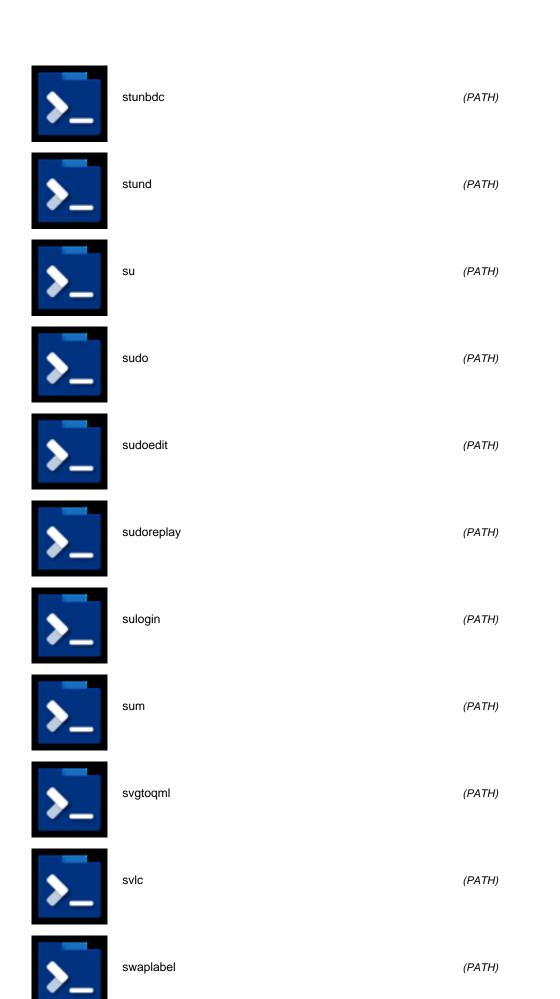


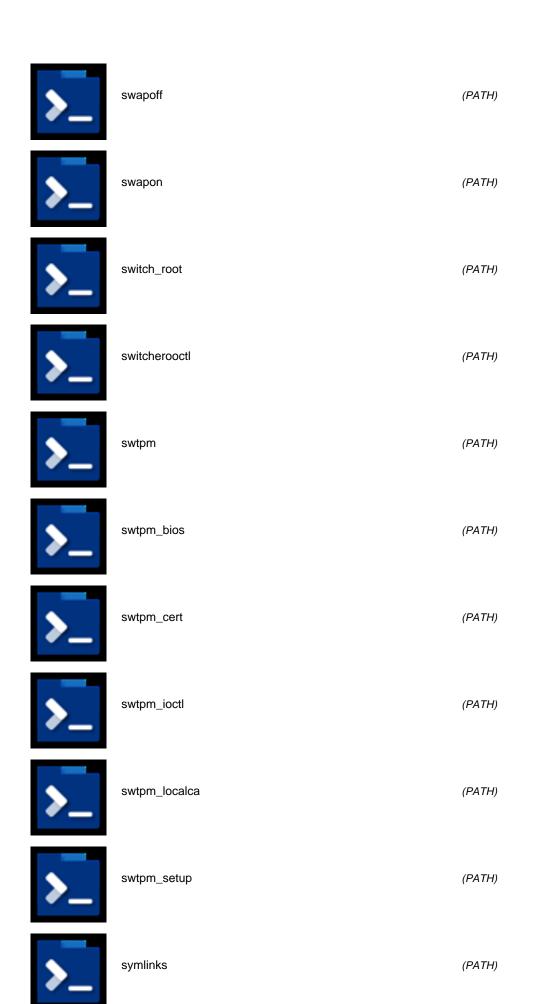


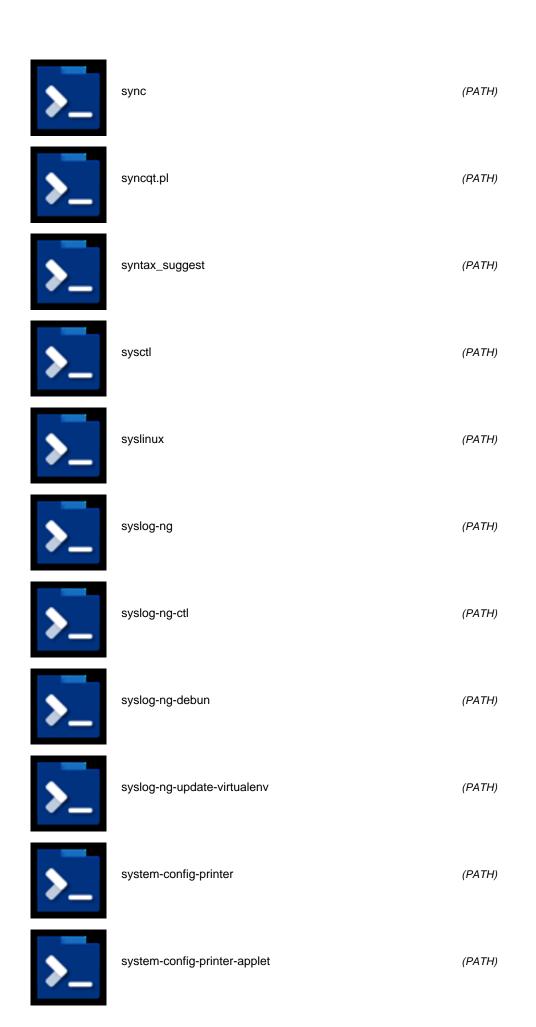


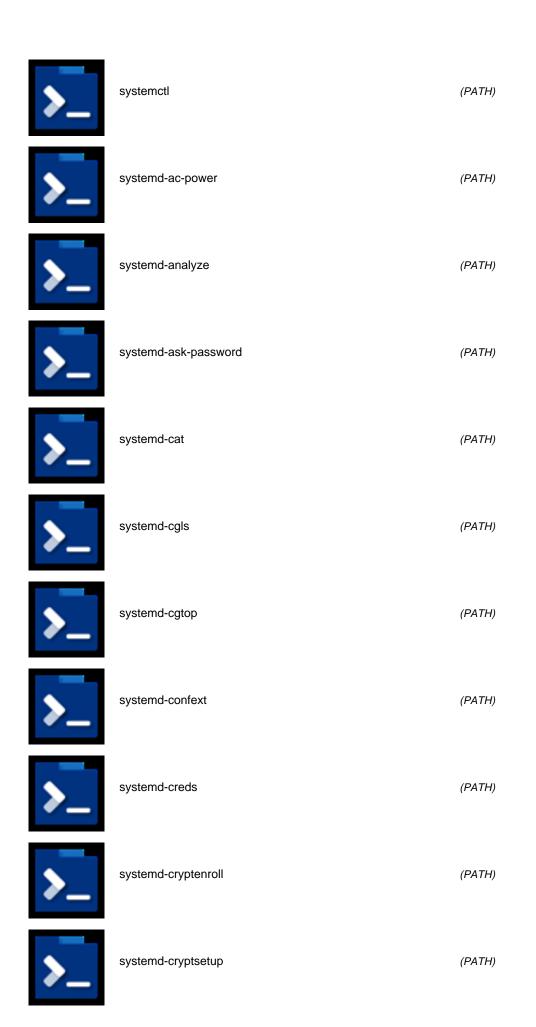


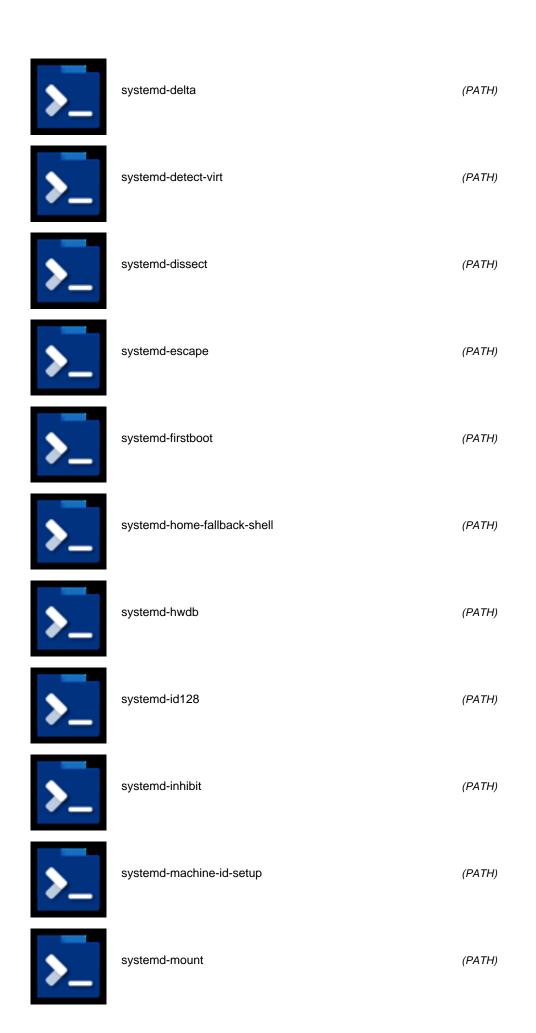


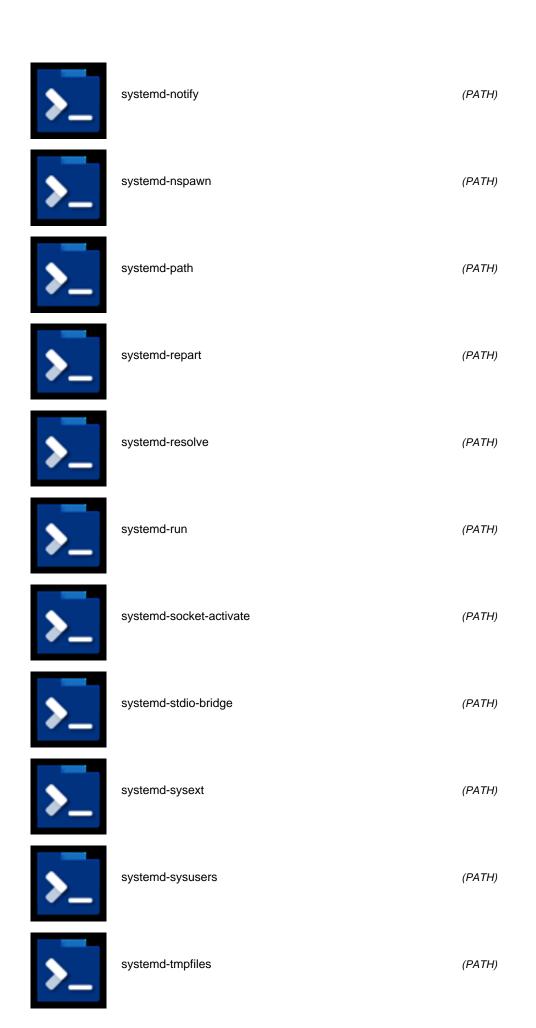


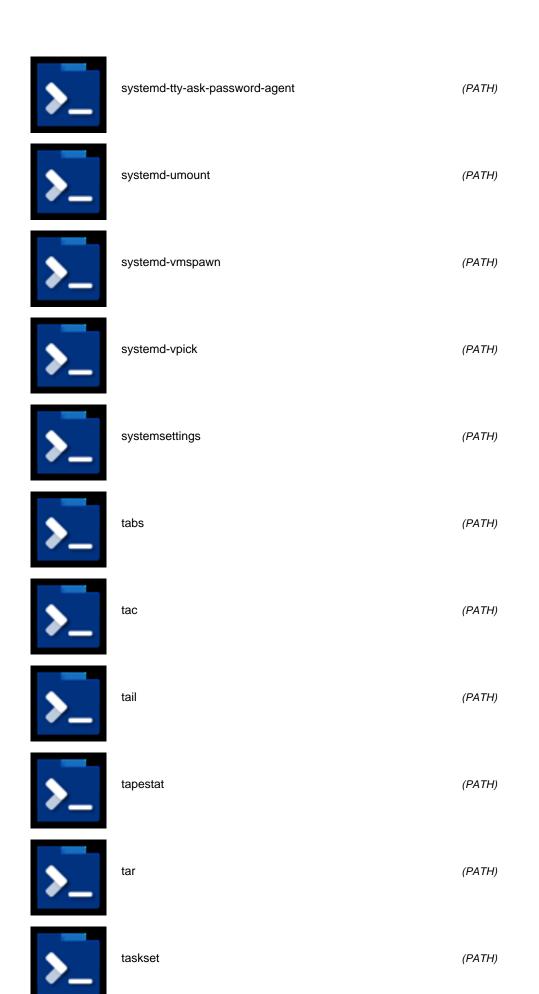


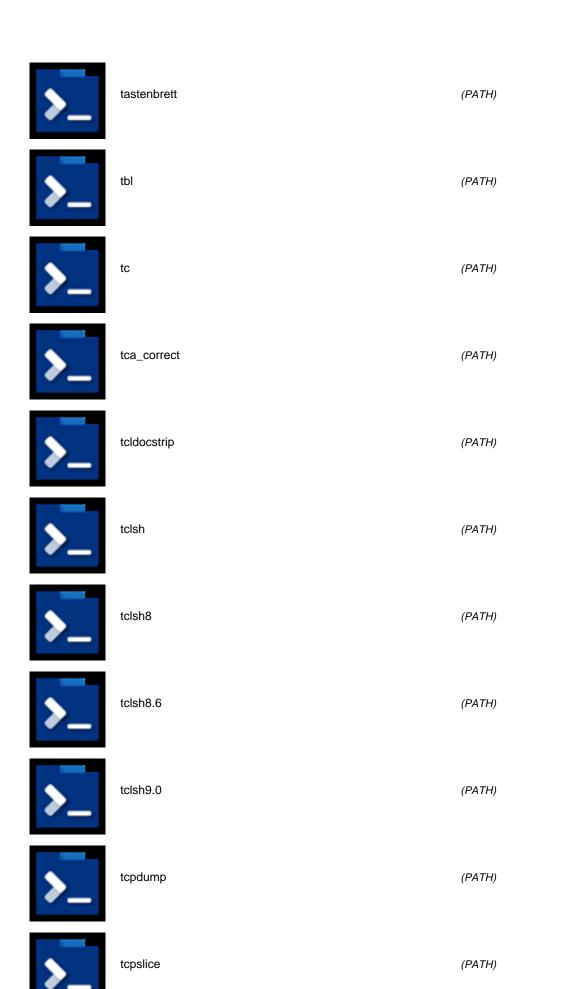


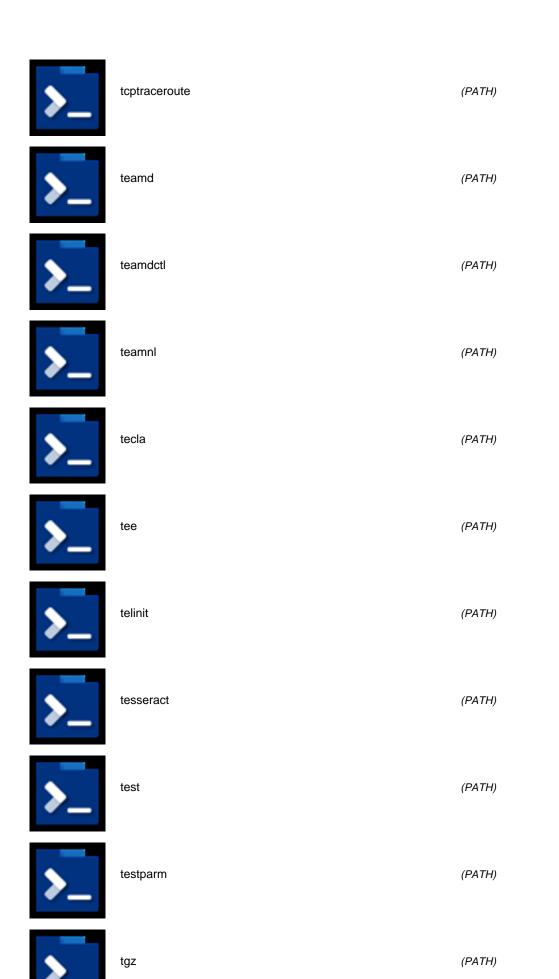




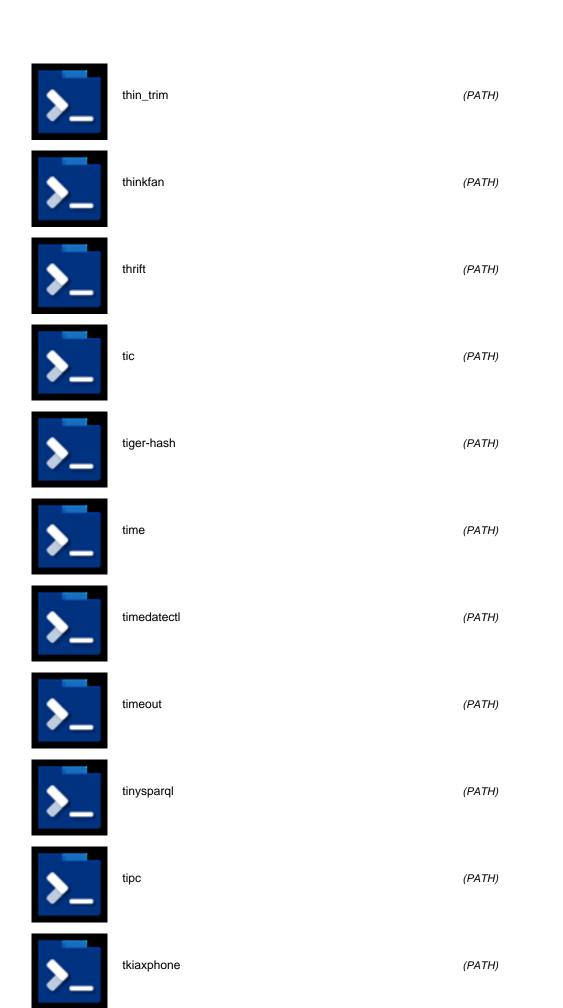


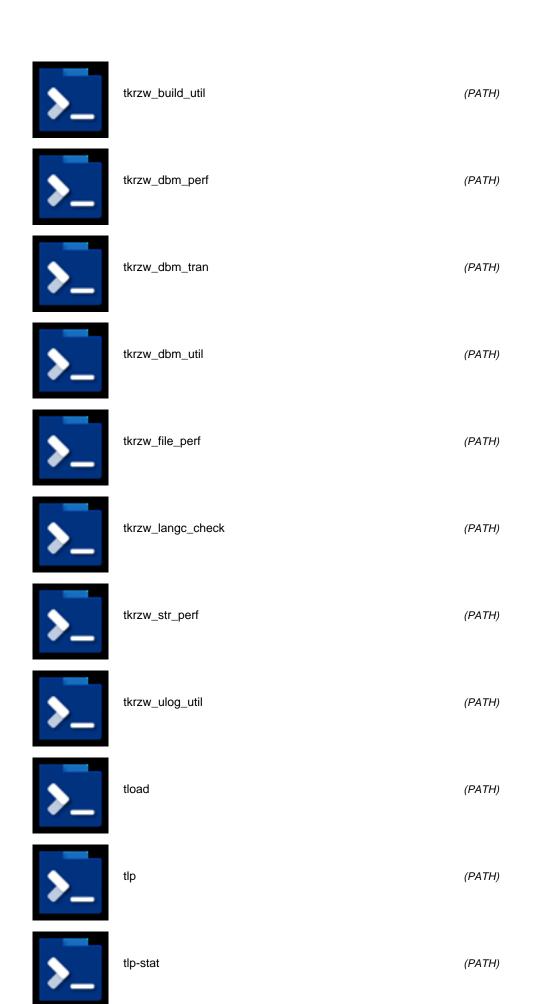


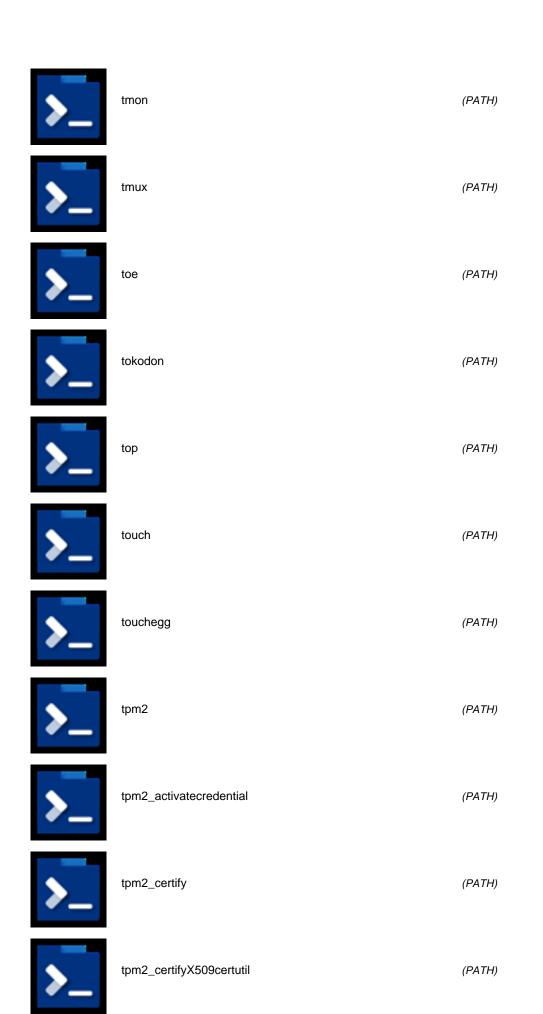


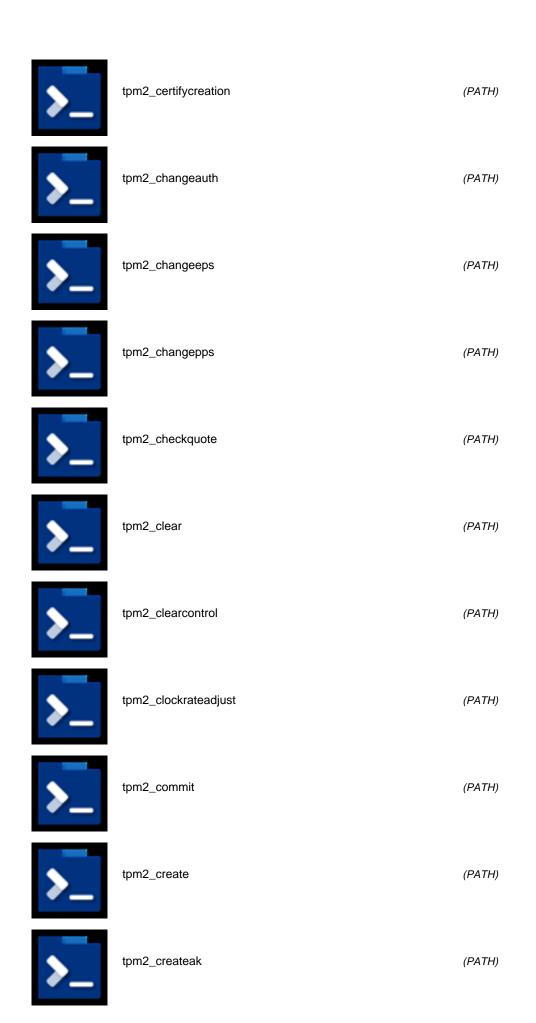








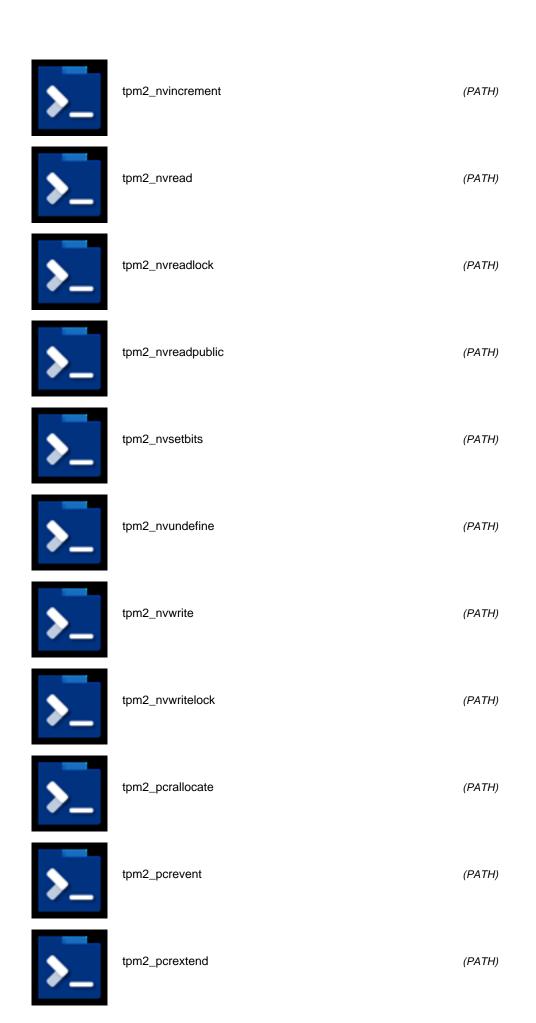






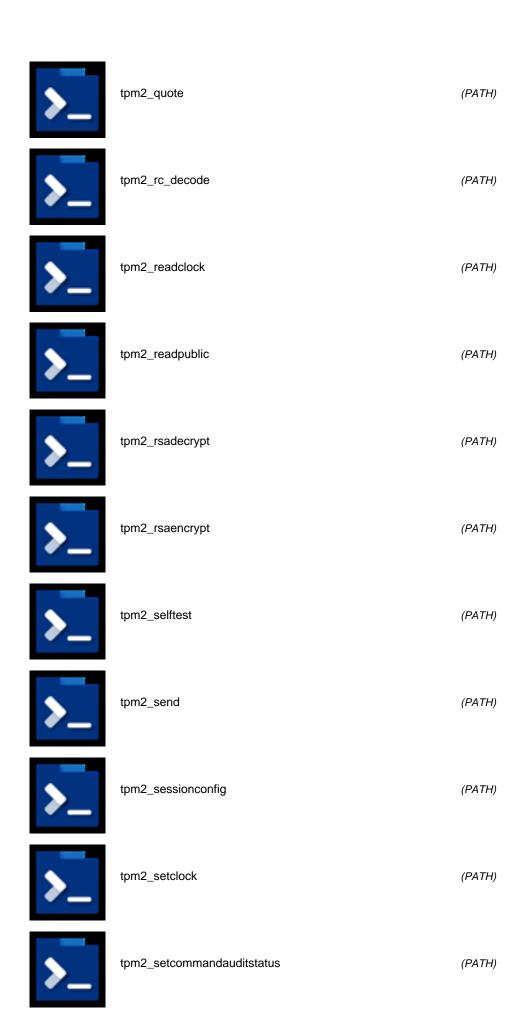
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> _	tpm2_getcap	(PATH)
> _	tpm2_getcommandauditdigest	(PATH)
> _	tpm2_geteccparameters	(PATH)
> _	tpm2_getekcertificate	(PATH)
> _	tpm2_getpolicydigest	(PATH)
> _	tpm2_getrandom	(РАТН)
> _	tpm2_getsessionauditdigest	(PATH)
> _	tpm2_gettestresult	(PATH)
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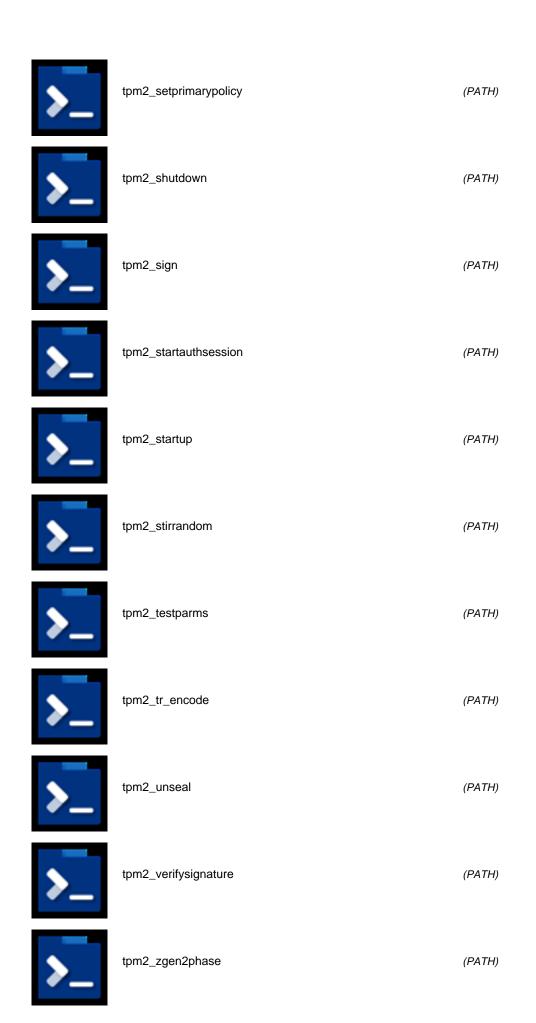


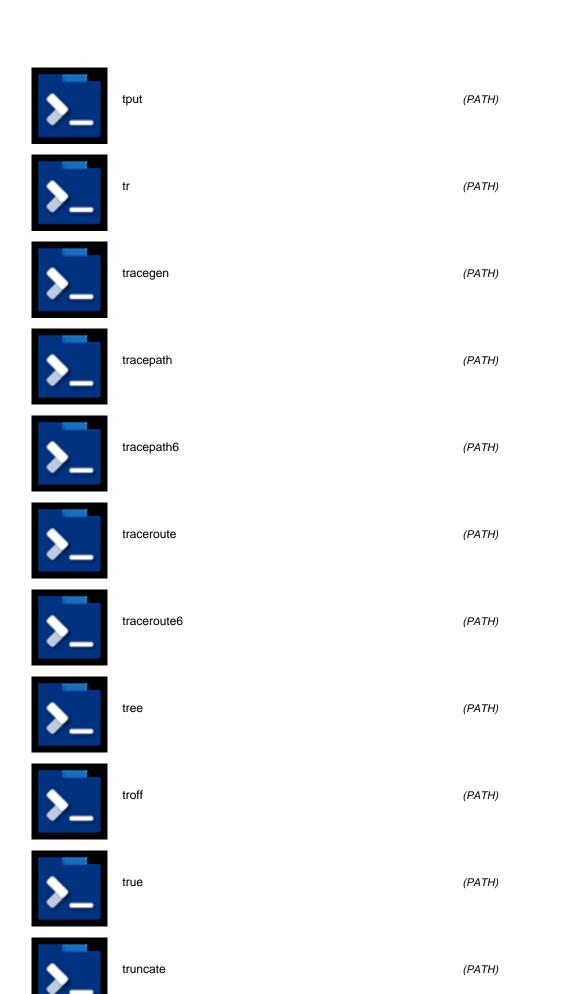


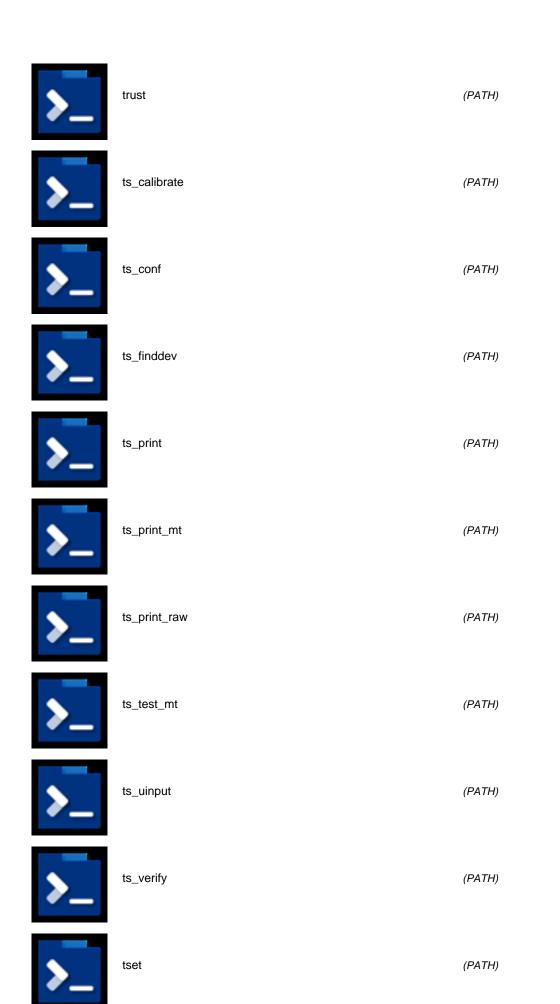
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>_	tpm2_policyauthvalue	(PATH)
>_	tpm2_policycommandcode	(PATH)
> _	tpm2_policycountertimer	(PATH)
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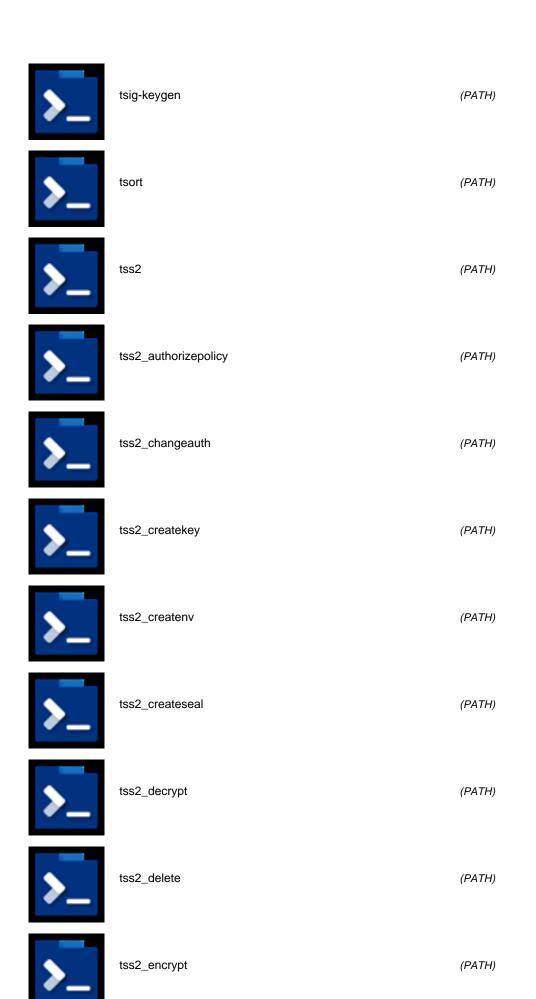


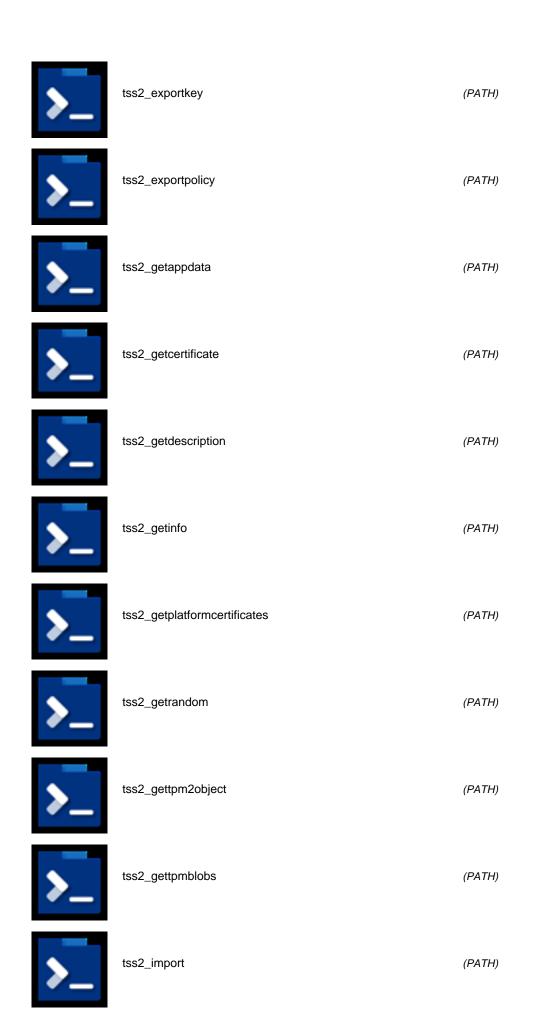




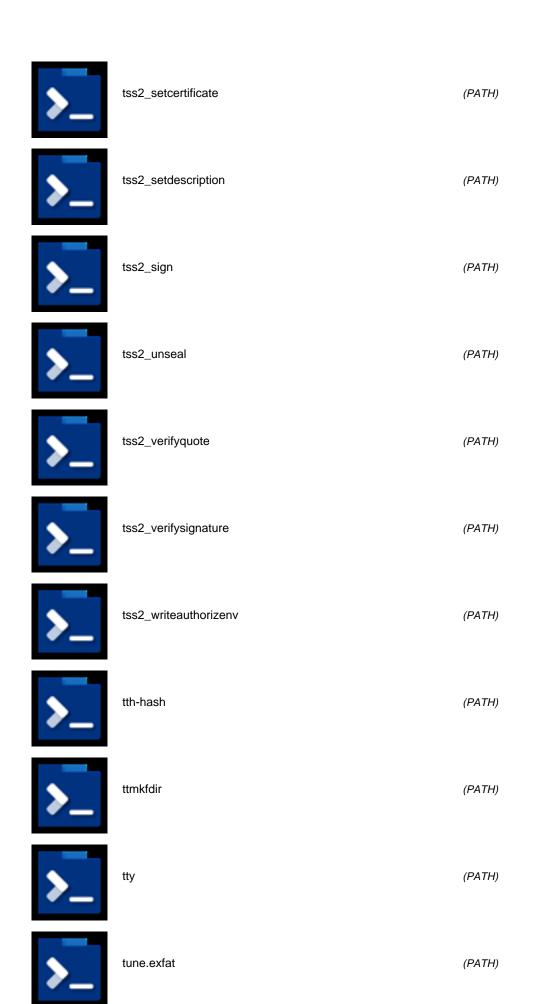


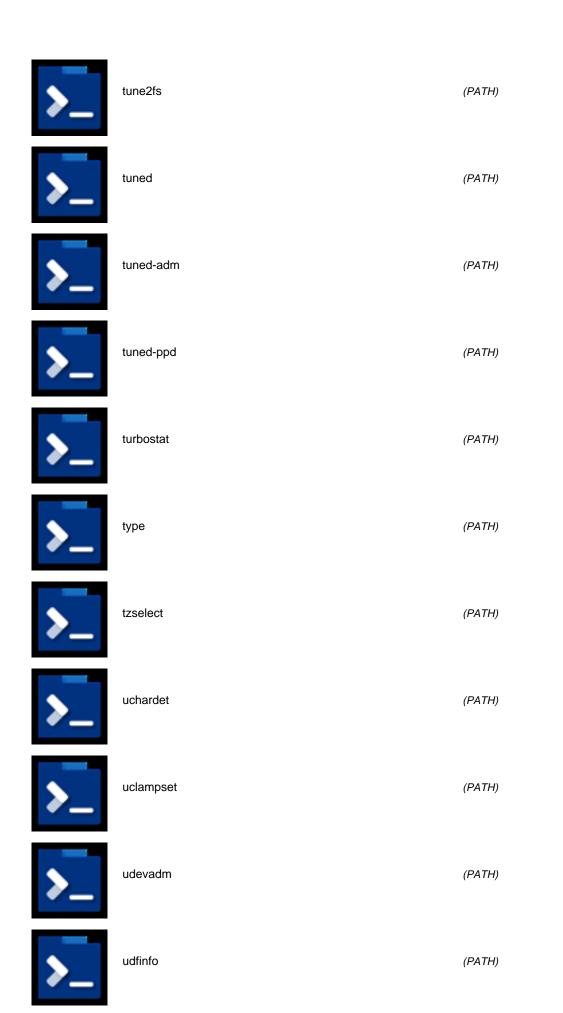




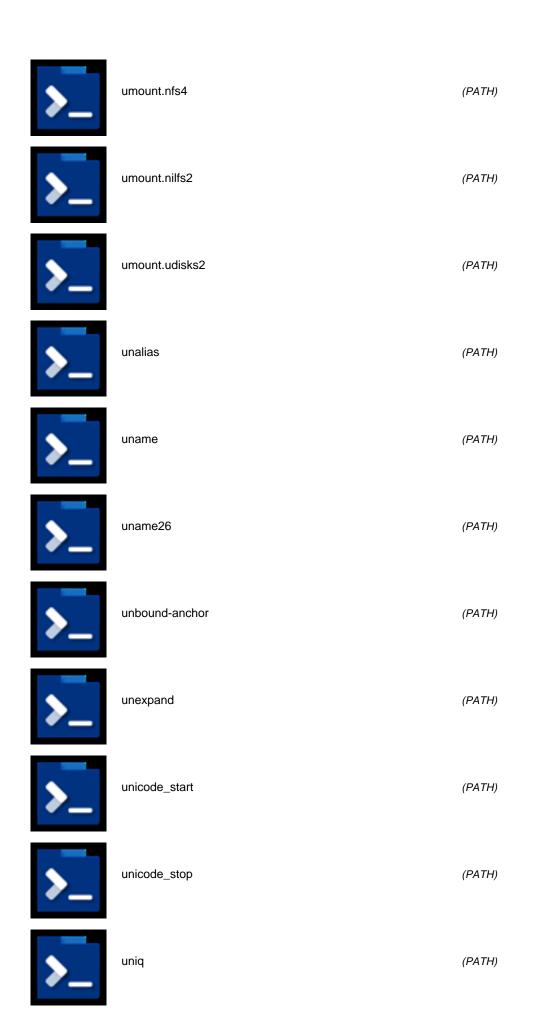


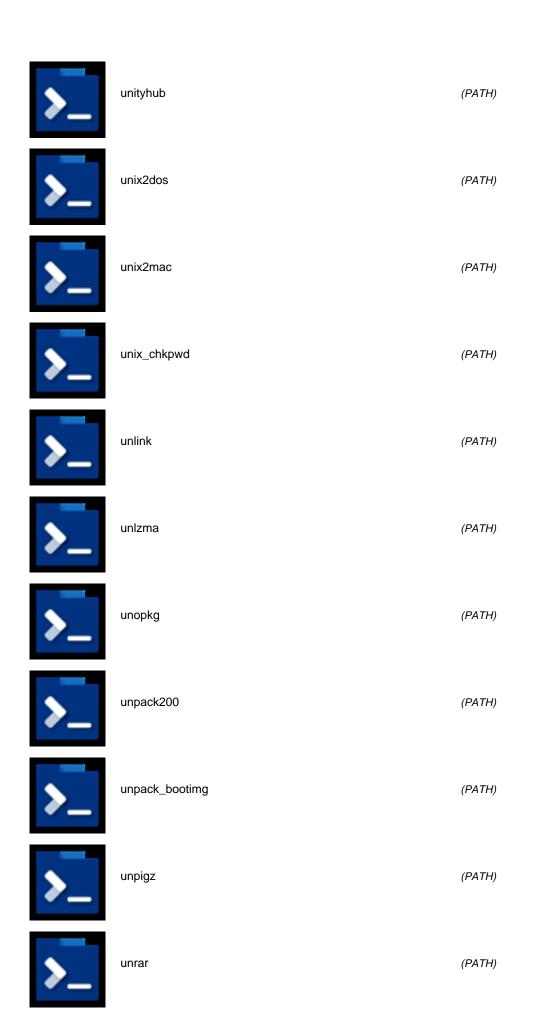


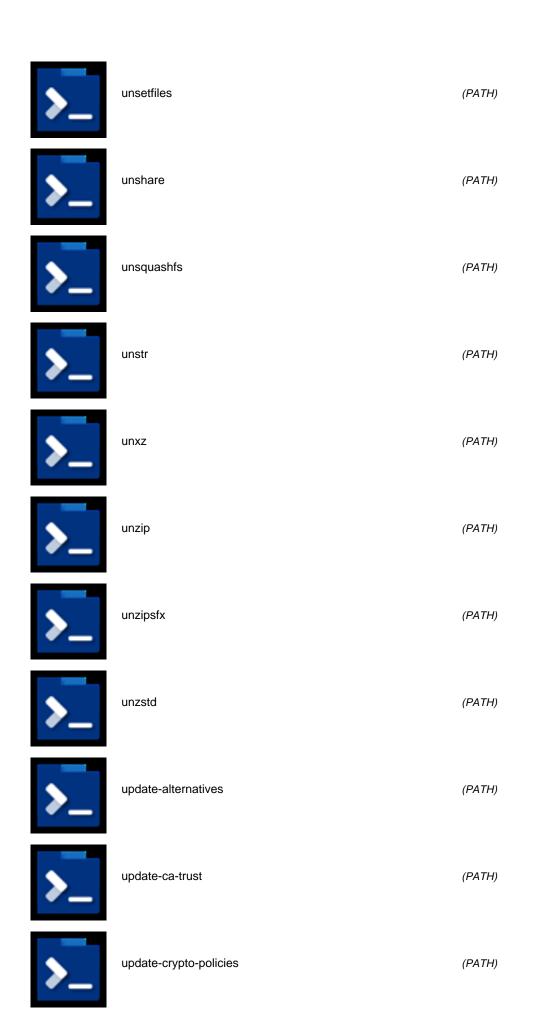












>_	update-desktop-database	(PATH)
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> _	update-mime-database	(PATH)
> _	update-patterndb	(PATH)
> _	update-pciids	(PATH)
> _	update-smart-drivedb	(PATH)
> _	updatedb	(PATH)
> _	upgrade_get_document	(PATH)
> _	upload-system-info	(PATH)
> _	upower	(PATH)
>_	uptime	(PATH)

