

~~START~~ START: LOCAL FILESYSTEMS | STOP: UNMOUNTED-REMOTE-FILESYSTEMS

GSSD - RPCSEC - GSS PROTOCOL (NFSv4)

① LOGSS-API USED IN PROTOCOLS USING RPC (NFS)
(SECURITY API)

DFSTAB: SEC=KRBS, KRBSi, KRBSp
↳ NEED GSSD

MODPROBE

NFS
NFSD
RPCSEC-GSS-KRBS
SUNRPC

MOUNT /RPC_PIPEFS
MOUNT /RUN/~~RPC~~ RPC-PIPEFS

GSS-MOUNTING

EXEC RPC.GSSD

IDMAPD - START: LOCAL FS | STOP: UNMOUNTED-REMOTE-FS
RPC, IDMAPD: NFSv4 ID ↔ NAME MAPPING.
TRANSLATE UID AND GIDS INTO NAMES AND VICE VERSA

MODPROBE

NFS
NFSD
SUNRPC

MOUNT /RPC_PIPEFS

EXEC RPC.IDMAPD

UPSTART

STATD -

NSM STATUS MONITOR

START ON: MANUAL BY DEFAULT LOOP START

- STARTED RPCBIND ON BOOT =

OR

- (VFS AND STARTED RPCBIND ON BOOT = Y)

STOP ON:

- STOPPING RPCBIND

PRE START: STATD - PRE-START

↳ EXEC SM-NOTIFY

EXEC RPC, STATD -L \$STATDOPTS

→ /etc/default/
nfs-common

STATD - MOUNTING -

[START ON MOUNTING TYPE = NFS
STOP ON STARTED STATD OR STOPPED STATD
BLOCKS MOUNTING UNTIL STATD IS ON]

SYSTEMD / NFS - IDMAPD . SERVICE
RPC - STATD , SERVICE
NFS - UTILS . SERVICE
NFS - CONFIG . SERVICE
RPC - SVC GSSD . SERVICE
RPC - GSSD . SERVICE
AUTH - RPC GSS - MODULE . SERVICE
RPC - STATD - NOTIFY . SERVICE

NFS - CLIENT . TARGET
PROC - FS - NFSD . MOUNT
RUN - RPC - PIPEFS . MOUNT

NFS - COMMON

/etc/request-key.conf

/etc/init/gssd-mounting.conf -

/etc/init/gssd.conf -

/etc/init/ldmapd-mounting.conf -

/etc/init/ldmapd.conf

/etc/init/statd-mounting.conf -

~~/etc/init/statd-mounting.override~~

/etc/init/statd.conf -

~~/etc/init/statd.override~~

/etc/request-key.d/ld-resolver.conf -

/etc/ldmapd.conf

/etc/default/nfs-common

⊗ NFS - CLIENT, TARGET

BEFORE: REMOTE-FS-PRE, TARGET
WANTS: REMOTE-FS-PRE, TARGET

WANTS = NFS-BLK MAP. SERVICE
AFTER = NFS-BLK MAP. SERVICE

WANTS = RPC-GSSD. SERVICE
AFTER = RPC-GSSD. SERVICE

INSTALL

WANTEDBY = MULTI USER TARGET

WANTEDBY = REMOTE-FS TARGET

⊗ PROC-FS-NFSD. MOUNT

/proc/fs/nfsd

⊗ RUN-RPC_PIPEFS. MOUNT
/run/rpc-pipefs

⊗ NFS-UTILS SERVICE

↳ SERVICE SHOULD NEVER STOP

↳ RESTART: ALL "PART-OF" SERVICES

NFS-UTILS WILL RESTART TOGETHER.

↳ COULD BE A TARGET.

⊗ NFS-CONFIG. SERVICE

EXERCISE = /usr/lib/sysexecd/scripts/nfs-utils-env.sh

~~IDMAPD~~. SERVICE → MASK (DEV/NUL)

NFS-IDMAPD.SERVICE

→ AFTER: LOCAL FS

BINDTO = NFS-SERVER.SERVICE

WANTS = NFS-CONFIG.SERVICE

AFTER = NFS-CONFIG.SERVICE

REQUIRES

RPC-PIPEFS
.MOUNT

→ "REQUIRES" BUT IT
STOPS TOGETHER

RPC-STATD.SERVICE ~~(X)~~

RPC-STATD-NOTIFY.SERVICE

REQUIRES:

NSS-LOOKUP.TARGET	RPCBIND.TARGET
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AFTER:

NETWORK.TARGET	NSS-LOOKUP.TARGET
RPCBIND.TARGET	

PART OF : NFS-UTILS.SERVICE

WANTS : NFS-CONFIG.SERVICE RPC-STATD-NOTIFY.SERVICE

AFTER : NFS-CONFIG.SERVICE

EXEC : ~~X~~

/sbin/rpc.statd

RPC - STATD - NOTIFY. SERVICE

AFTER: LOCAL-FS.TARGET NETWORK.TARGET NSS-LOOKUP.TARGET

AFTER: NFS-SERVER. SERVICE

WANTS: NFS-CONFIG. SERVICE

AFTER: NFS-CONFIG. SERVICE

PORTOF: NFS-UTILS. SERVICE

EXEC: /sbin/sm-motify

⊗ (RPC) GSSD.SERVICE

⊗ RPC-SVCGSSD.SERVICE

⊗ AUTH-RPCGSS-MODULE.SERVICE

REQUIRES

RUN-RPC PIPEFS

↳ MOUNT

↳ AFTER

▷ PARTOF = nfs-utils.service

WANTS = nfs-config.service

AFTER = nfs-config.service

EXEC = /usr/sbin/rpc.gssd

NFS-UTILS

▷ AFTER = LOCAL FS

PARTOF = NFS-SERVER.SERVICE

PARTOF = NFS-UTILS.SERVICE

WANTS = NFS-CONFIG.SERVICE

AFTER = NFS-CONFIG.SERVICE

EXEC = /usr/bin/rpc.svcgssd

NFS-UTILS
NFS-SERVER

▷ BEFORE = RPC-SVCGSSD RPC-GSSD

WANTS = || ||

EXEC = MODPROBE AUTH-RPCGSS

RPC BIND

/etc/netconfig

/etc/init.d/rpcbind

/etc/init/portmap-wait.conf

/etc/init/rpcbind-boot.conf

/etc/init/rpcbind.conf

/etc/insserv.conf.d/rpcbind

inservo
used
by
update-run

X

SYSV

↳ PROVIDES RPCBIND

REQUIRED START	\$NETWORK	\$LOCAL-FS
REQUIRED-STOP	\$NETWORK	\$LOCAL-FS
DEFAULT START	S	
DEFAULT STOP	036	

↳ CMD = "RPCBIND -w"

ENABLED BY DEFAULT

rc5.d

DISABLED rc 1 rc 6

UPSTART

PORTMAP-WAIT → INFINITE LOOP
~~waiting~~ WAITING RPCBIND

~~PROGRAM~~

RPCBIND-BOOT.CONF → EDIT
"START-RPCBIND ON_BOOT=Y"
ON
UFS AND NET-DEVICE-UP
INTERFACE=lo

RPCBIND.CONF → STARTS ON
"START-RPCBIND"

CHBRS /etc/default/rpcbind
/etc/rpcbind.conf

LOCMD = "RPCBIND -w"

SYSTEM D RUNS FROM UNIT FILE

RPCBIND.SERVICE → ^{link} PORTMAP.SERVICE
RPCBIND.SOCKET

RPCBIND.SERVICE =

INDIRECT

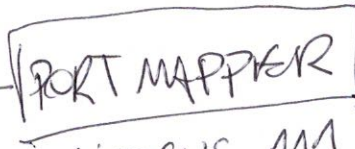
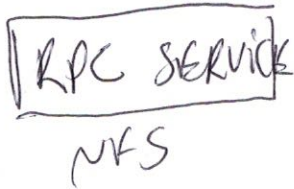
ALSO = /etc/rpcbind.conf

NOT SURE
DEPENDENCY OF
SOME OTHER
SERVICE.
MISSING "Install"

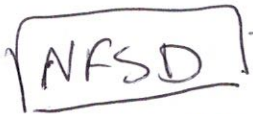
CAN'T
ENABLE
OR
DISABLE



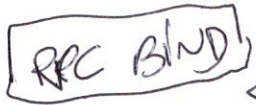
OPEN NETWORK COMPUTING
REMOTE PROCEDURE CALL



LISTENS 111 (UDP OR TCP)

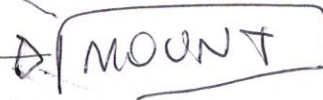


xxx PORT



xxx

PORT?



SERVER

CLIENT

SYSTEMD - INSSERV - GENERATOR!?

↳ CREATES `50-RPCBIND-$PORTMAP.conf`

①

WHEN ~~RPC~~BIND
RUNS FROM
SYSV SCRIPTS
WITHIN SYSTEMD

[UNIT] "REQUIRES"
WANTS=RPCBIND.TARGET
BEFORE=RPCBIND.TARGET

↳ NOT STARTED UNTIL
THIS INSTANCE IS
STARTED

`/etc/rc.d/rpcbind`

ALSO CREATES

`50-RPCBIND-$PORTMAP.conf`

② WHEN ~~RPC~~BIND
RUNS FROM
SYSTEMD

`/lib/systemd/system/rpcbind.service`

[UNIT]

WANTS=RPCBIND.TARGET

BEFORE=RPCBIND.TARGET

IF THE ~~SYSV~~ SCRIPT
CONTINUES INSTALLED

RPCBIND, TARGET

↳ PORTMAPPER/RPCBIND STARTS BEFORE
↳ SYSTEMD CONFIGS SYS V SCRIPTS:

AFTER = ⊗ IN RPCBIND, TARGET
WHEN REFERRING TO \$PORTMAP FACILITY

UNIT TYPES

- .SERVICE
- .TARGET (GROUP OF UNITS)

SYSTEMD

TARGET RPCBIND } SPECIAL UNIT TO
REFUSE MANUAL START } SYSTEMD

↳ portmapper/rpcbind [pulls this target]

↳ RUNS BEFORE RPCBIND, TARGET

SYSTEMD ADDS "AFTER: RPCBIND.TARGET"
TO ALL SYSV INIT SCRIPTS WITH
LSB HEADER REFERRING TO
"PORTMAP" FACILITY.

INS SERV

```
### BEGIN init INFO FACILITY1 FACILITY2
# PROVIDES:
# REQUIRED-START:
# ... RUN LEVEL 1 RUN LEVEL 2
# DEFAULT-START:
# DESCRIPTION: LALALALA
### END init INFO
```

REQUIRED-STOP: FAC #1 FAC #2
↳ services must be running during (service) shutdown
↳ declared in "PROVIDES"

SHOULD-STOP:
↳ same

X-START-BEFORE: FAC #1 FAC #2
↳ script should be started before ~~these~~ these services

X-STOP-AFTER: FAC #1 FAC #2
↳ script should be stopped after these services.

FACILITIES →

SYSTEM FACILITIES

/etc/insserv.conf
insserv.conf.d/

\$ FACILITY DEPENDENCIES

+ = OPTIONAL (IF SERVICE NAME DOESN'T EXIST
IT'S OK)

UPSTART COMPATIBILITY ↗

\$ PORTMAP RPCBIND