LT800 – Boot optimization

# **Summary:**

# On User Build:

Total Boot time: Around 37 secs without any modifications.

Boot time was the same 37 secs’even after modifications in bootloader, kennel and init.rc files.

We did not observe the 2 sec reduction after adding the file system tuning options in init.rc file, as seen with debug build.

The boot up time was calculated using a stopwatch, the time taken from power ON till the launch screen is displayed.

The modifications done are based on the reference provided by google at https://source.android.com/devices/tech/perf/boot-times

Could not capture component level boot times as collection of logs is disabled in user build.

# On Debug Build:

Total Boot time: Around 59 secs without any modifications.

Boot time reduced by approximately 2 secs to 57 secs after modifications in bootloader, kennel and init.rc files.

We observed the 2 sec reduction after add ing the file system tuning options in init.rc file.

# **Component level Boot times on Debug build.**

# **Bootloader:**

Could not capture the time taken because UART port is not available.

**Modifications**: Removed **dprintf(INFO) log** statements from code. Removing these statements did not show significant effect.

**Kernel:**

Boot time with out modifications was 13.57 sec’s and after modifications was 13.56 sec’s

Modifications: Removed unwanted kernel configs listed below.

CONFIG\_DEBUG\_INFO=y  
CONFIG\_L2TP\_DEBUGFS=y  
CONFIG\_RMNET\_DATA\_DEBUG\_PKT=y  
CONFIG\_MSM\_DLOAD\_MODE=y  
CONFIG\_MSM\_SMEM\_LOGGING  
CONFIG\_MSM\_SMP2P\_TEST

Note: - Many of the unwanted kernel configs were already disabled.

**Filesystem:**

Files system mount time without modifications was 6.5 secs

and with modifications was 5.02 sec’s

Note: -As per reference link Filesystem tuning resulted in 20 sec’s reduction on a google pixel device.

Modifications: Added the following in init.rc to tune the FS I/O

*on late-fs*

*/sys/block/mmcblk0/queue/iostats 0*

*/sys/block/mmcblk0/queue/iosched/slice\_idle 0*

*/sys/block/mmcblk0/queue/read\_ahead\_kb 2048*

*/sys/block/mmcblk0/queue/nr\_requests 256*

*/sys/block/dm-0/queue/read\_ahead\_kb 2048*

*on property:sys.boot\_completed=1*

*/sys/block/mmcblk0/queue/iostats 1*

*/sys/block/mmcblk0/queue/iosched/slice\_idle 10*

*/sys/block/mmcblk0/queue/read\_ahead\_kb 128*

*/sys/block/mmcblk0/queue/nr\_requests 128*

*/sys/block/dm-0/queue/read\_ahead\_kb 128*

**Init Process:**

Init process is split into two stages first stage and second stage.

Time taken by init process stage1 is approximately .4 secs before and after modifications.

Time taken by init process stage2 till “Boot Complete” was 39.8 secs before modification’s and 39.3 after modifications.

Modification: Removed the below unwanted services entries from Init.rc

'/system/vendor/bin/esepmdaemon'

'/vendor/bin/vppservice'

'/system/bin/qrngd'

'/system/vendor/bin/dts\_configurator'

'/system/vendor/bin/nqnfcinfo'

'/vendor/bin/ssgqmigd'

'/vendor/bin/mlid'

'/vendor/bin/qvop-daemon'

'/system/vendor/bin/qseeproxydaemon'

'/system/vendor/bin/qdmastatsd'

'/vendor/bin/chre'

'/vendor/bin/seemp\_healthd'

'/system/vendor/bin/audiod'

'/system/xbin/perfprofd'

'/system/vendor/bin/ipacm-diag'

'/system/vendor/bin/ipacm'

'/system/bin/qrngp'

And added the following:

*on init*

*/sys/module/lpm\_levels/parameters/sleep\_disabled Y*

*on property:sys.boot\_completed=1*

*/sys/module/lpm\_levels/parameters/sleep\_disabled N*