

ECU Startup Sequence:

The startup sequence for an ECU is handled by the EcuM (ECU Manager)

- the EcuM is responsible for initialization of BswM, SchM and Autosar OS modules as well as some basic software driver modules.
- EcuM also handles all the wakeup events for the ECU, differentiating between real wakeup events and the erratic ones.

The startup is divided in to two parts, first part being **StartPreOs Sequence** and the second part being **StartPostOs Sequence**.

In the first part of initialization handled by EcuM_Init() and the following activities take place

1. Initialization of interrupts [EcuM_AL_SetProgrammableInterrupts()]
2. Initialization of BlockZero drivers [EcuM_AL_DriverInitZero()]
3. [EcuM_DeterminePbConfiguration] – This callout returns a pointer to a fully initialized [EcuM_ConfigType] structure that contains post-build configuration data for all BSW module post-build configurations.
4. Initialization of BlockOne drivers [EcuM_AL_DriverInitOne()]
5. Get Reset Cause – The [EcuM_GetValidatedWakeupEvents] API returns wakeup events that have been validated.
6. Select the default shutdown target – These set the shutdown state in which the ECU will run after exiting the UP phase. It can be configured in one of these three, OFF, SLEEP and RESET.
7. The last step of the StartPreOs Sequence is always to start the OS and EcuM gives up the control for a moment, only to gain it back once the OS has started.

ECU Shutdown Sequence:

Also, the ECU Shutdown Phase handled by the EcuM (ECU Manager)

- Shutdown phase is triggered when the API EcuM_GoDown() is called. It handles the shutdown of the basic software modules (BSW) and results in one of the shutdown targets, RESET or OFF. The main task to be done in this phase is to write back the NVRAM blocks.
- At the end of shutdown, ShutdownOS() API is called.

Shutdown is divided in to two parts, first part being **OffPreOS Sequence** and the second part being **OffPostOS Sequence**.

The following activities take place in the first part:

1. De-init BSW Mode Manager.
2. De-init BSW Scheduler.
3. Check for pending wakeup events (Purpose is to detect wakeup events that occurred during shutdown).
4. Set RESET as shutdown target, if wakeup events are pending (default reset mode of EcuMDefaultResetModeRef will be used) This action shall only be carried out when pending wakeup events were detected to allow an immediate startup
5. ShutdownOS ... Last operation in this OS task