Latest Implementation of AMD SEV-SNP in OVMF

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FOSDEM 2025

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Maintain **OVMF** in SLES and openSUSE

Overview

- **Background**
  - Confidential Computing
  - AMD SEV-SNP
  - OVMF
- **Upstream Status**
  - AMD SEV-SNP in Open Source
  - Commits
- **Integration in Virtualization**
  - Integration
  - SEV Driver

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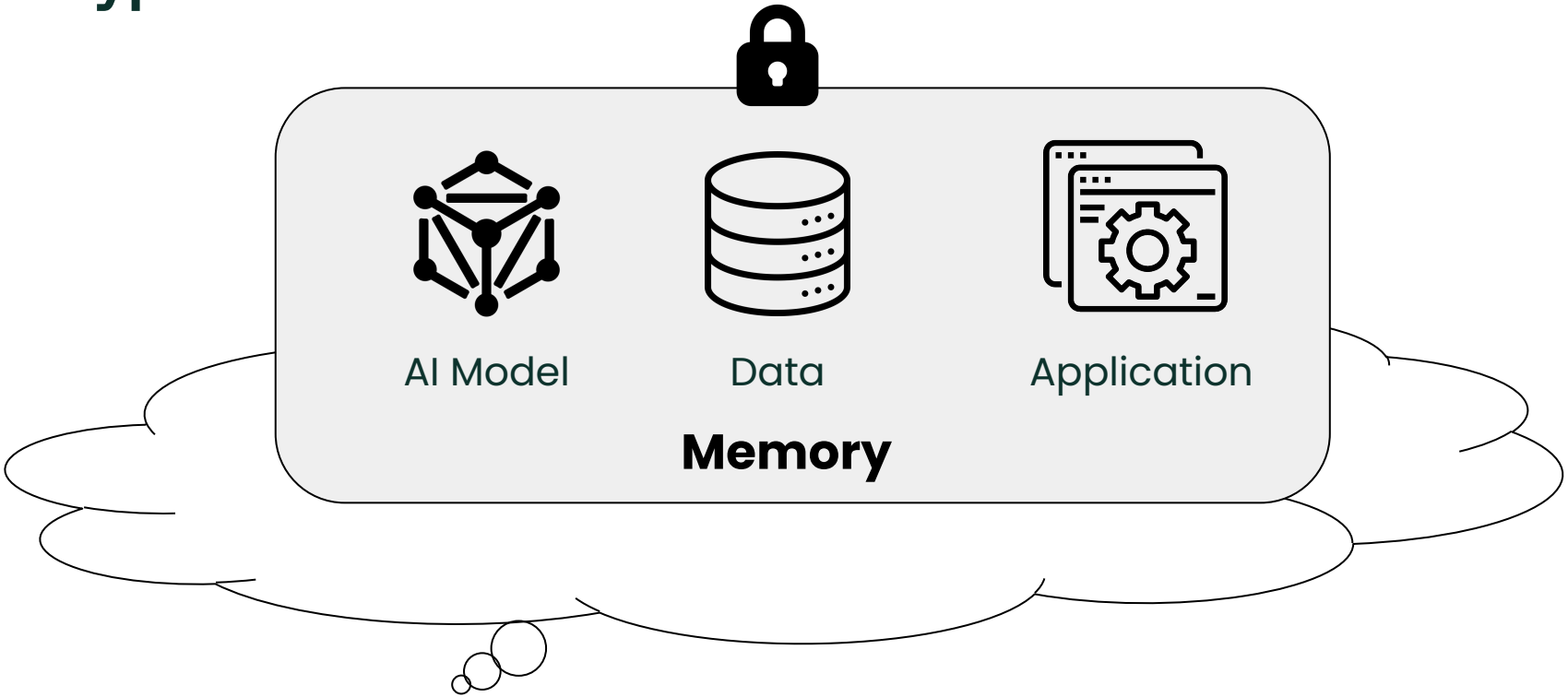
Background

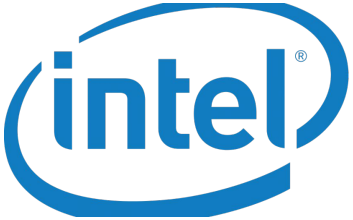
Confidential Computing

Encryption



Providers

- Require a combination of hardware and software



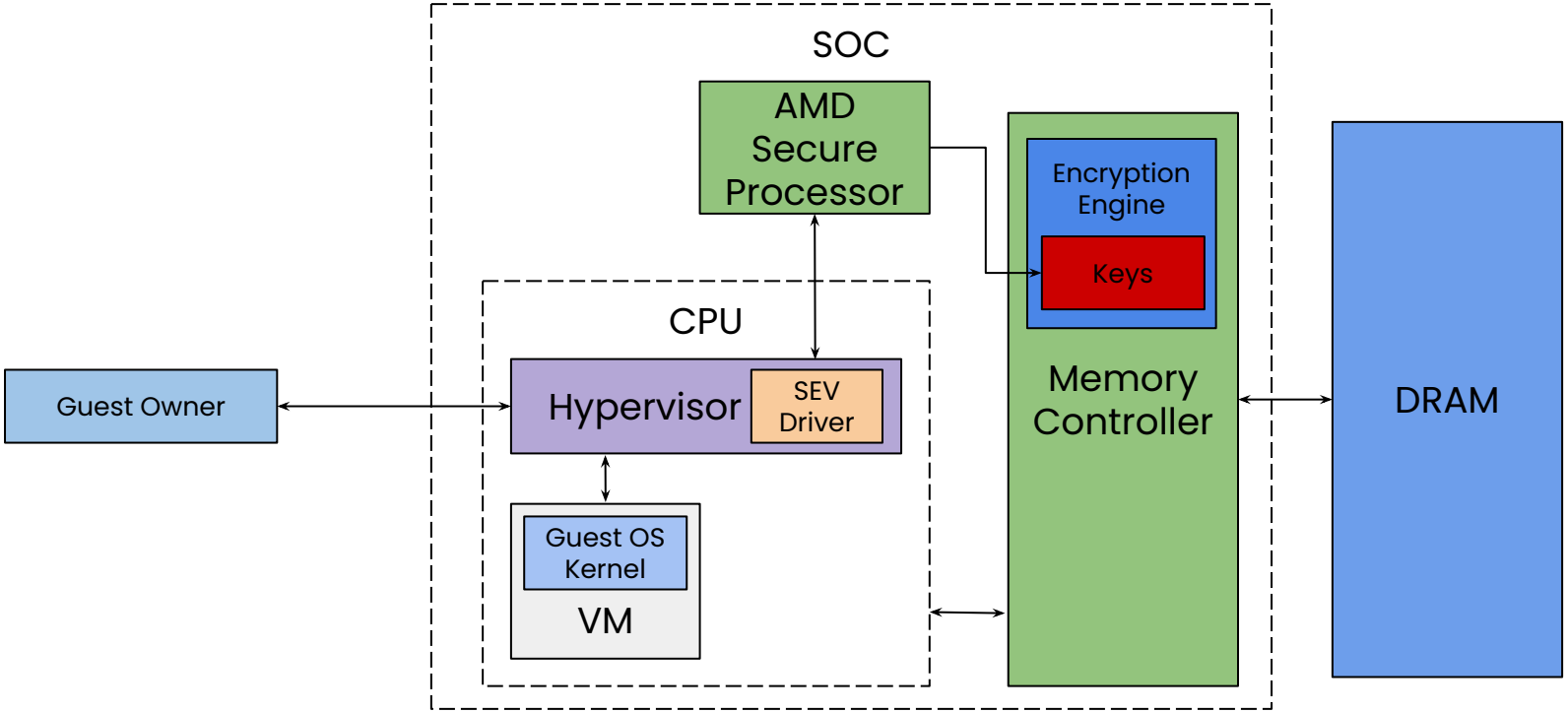
- Delivered with cloud providers or server manufacturers

AMD SEV-SNP

Key Features

- Memory Encryption
- Nested Paging
- Integrity Protection
- Key Management and Attestation

SEV Architecture



OVMF

What is OVMF?

- Open-source UEFI firmware for virtual machines.
- Part of Tianocore's EDK II project.

Key Features:

- UEFI-compliant boot environment.
- Works with QEMU/KVM.
- Simplifies UEFI app development.

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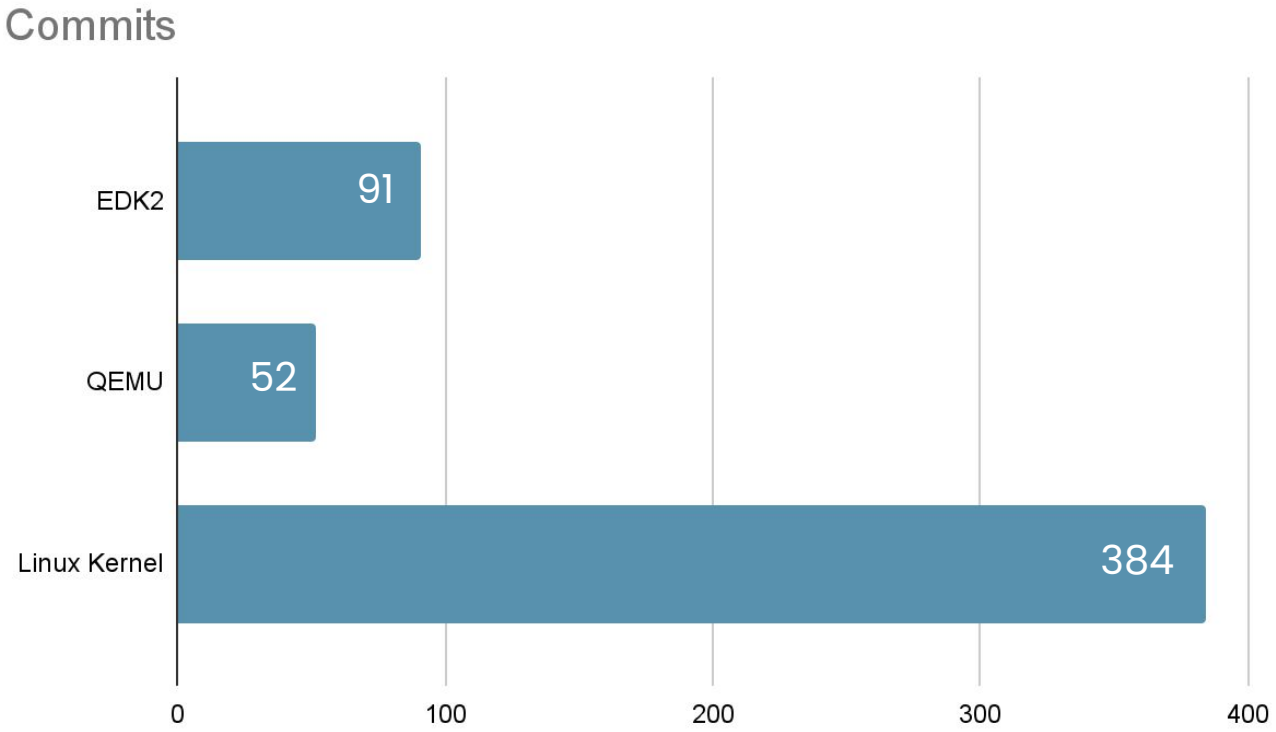
Upstream Status

AMD SEV-SNP in Open Source

Technology	Features	EDK2	QEMU	Linux
SEV	Memory encryption	>= edk2-stable201808	>= 2.12	>= 4.15
SEV-ES	Memory encryption + CPU state encryption	>= edk2-stable202008	>= 6.0	>= 5.10
SEV-SNP	Memory encryption + CPU state encryption + Memory integrity protection	>= edk2-stable202405	>= 9.10	>= 6.11

Commits



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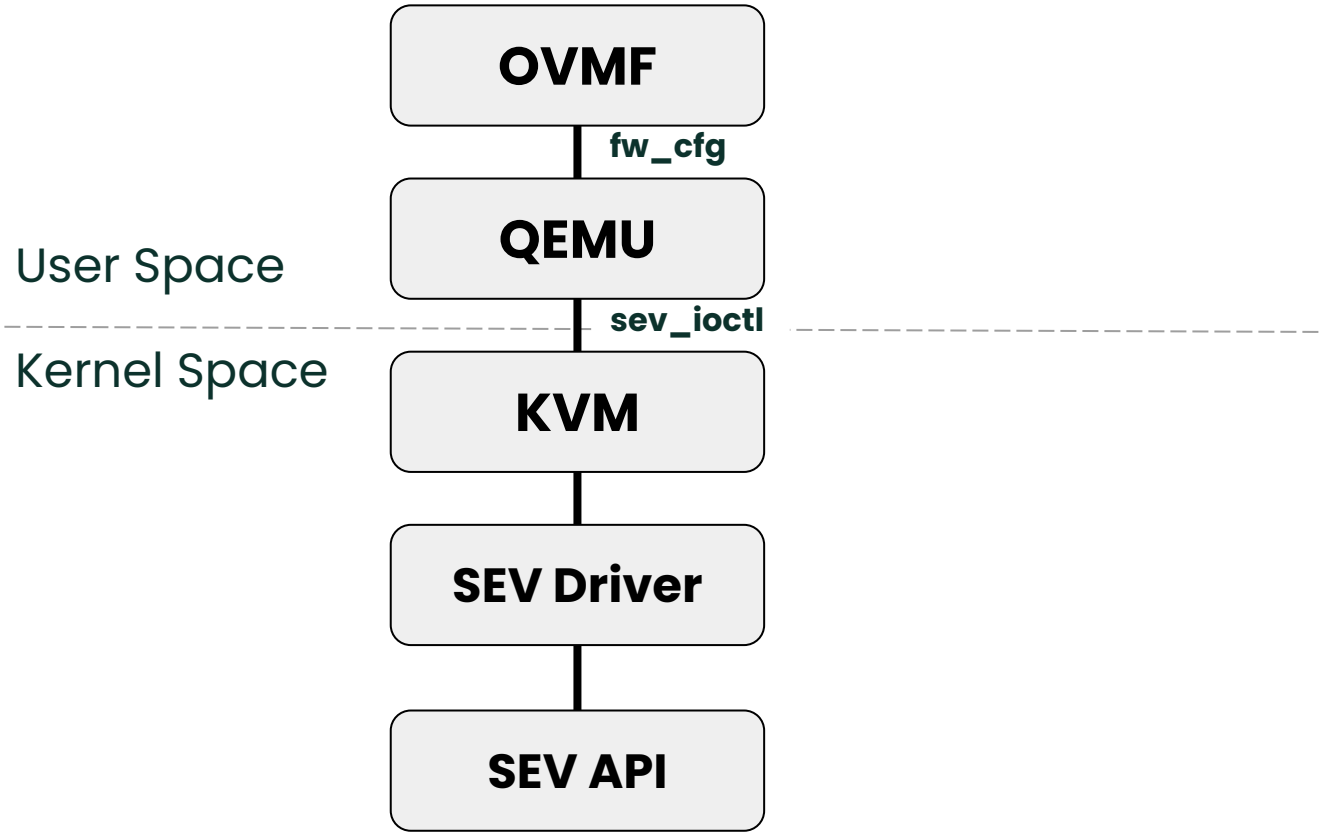
Integration in Virtualization

Integration



SEV Driver

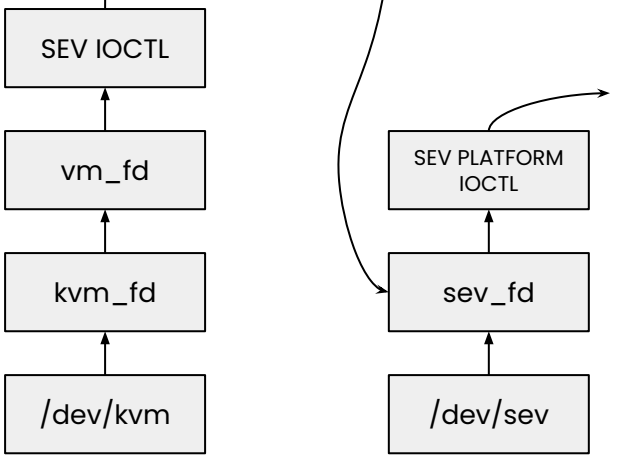
```
struct kvm_sev_cmd {
        __u32 id;
        __u32 pad0;
        __u64 data;
        __u32 error;
        __u32 sev_fd;
};
```

```
/* Secure Encrypted Virtualization command */
enum sev_cmd_id {
        /* Guest initialization commands */
        KVM_SEV_INIT = 0,
        KVM_SEV_ES_INIT,
        /* Guest launch commands */
        KVM_SEV_LAUNCH_START,
        KVM_SEV_LAUNCH_UPDATE_DATA,
        KVM_SEV_LAUNCH_UPDATE_VMSA,
    …
        KVM_SEV_NR_MAX,
};
```

```
struct sev_issue_cmd {
        __u32 cmd;              /* In */
        __u64 data;             /* In */
        __u32 error;            /* Out */
} __packed;
```

```
/**
 * SEV platform commands
 */
enum {
        SEV_FACTORY_RESET = 0,
        SEV_PLATFORM_STATUS,
        SEV_PEK_GEN,
        SEV_PEK_CSR,
        SEV_PDH_GEN,
        SEV_PDH_CERT_EXPORT,
        SEV_PEK_CERT_IMPORT,
        SEV_GET_ID,     /* This command is
deprecated, use SEV_GET_ID2 */
        SEV_GET_ID2,
        SNP_PLATFORM_STATUS,
        SNP_COMMIT,
        SNP_SET_CONFIG,
        SNP_VLEK_LOAD,

        SEV_MAX,
};
```



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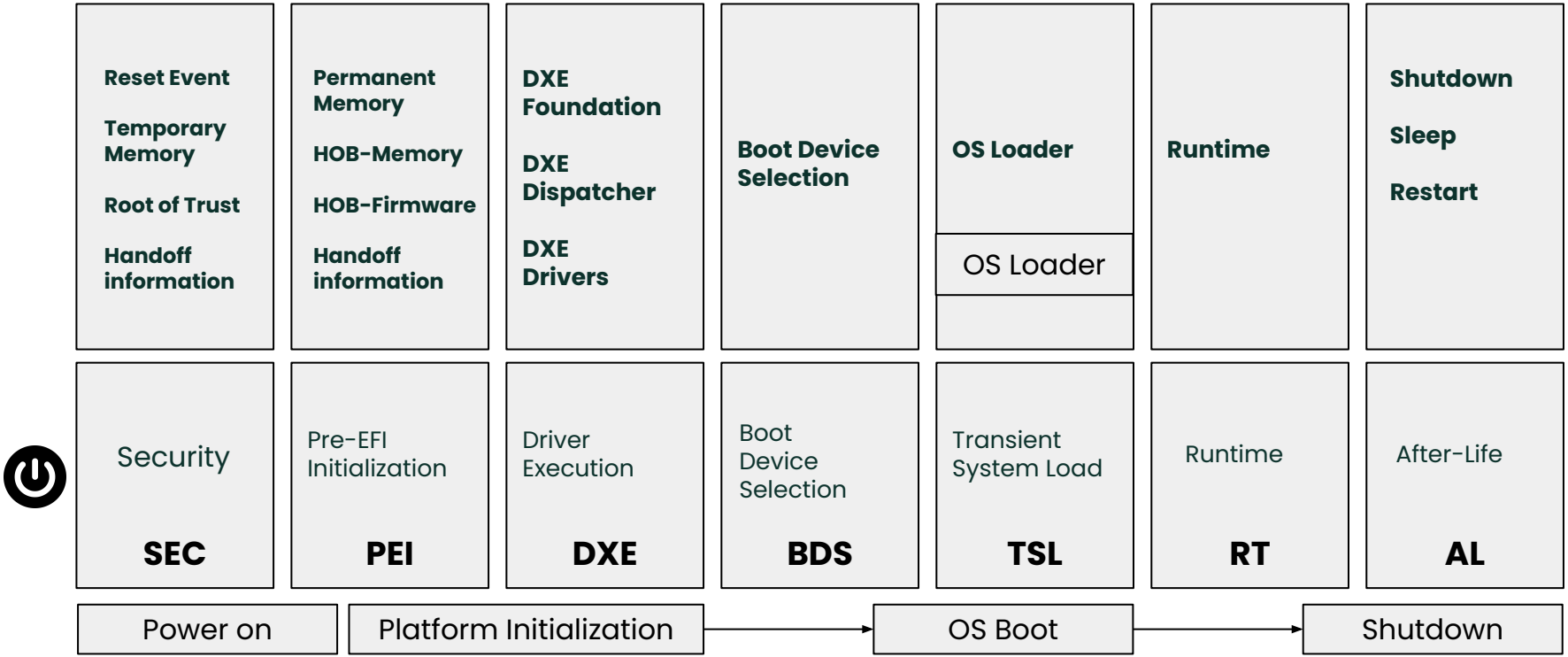
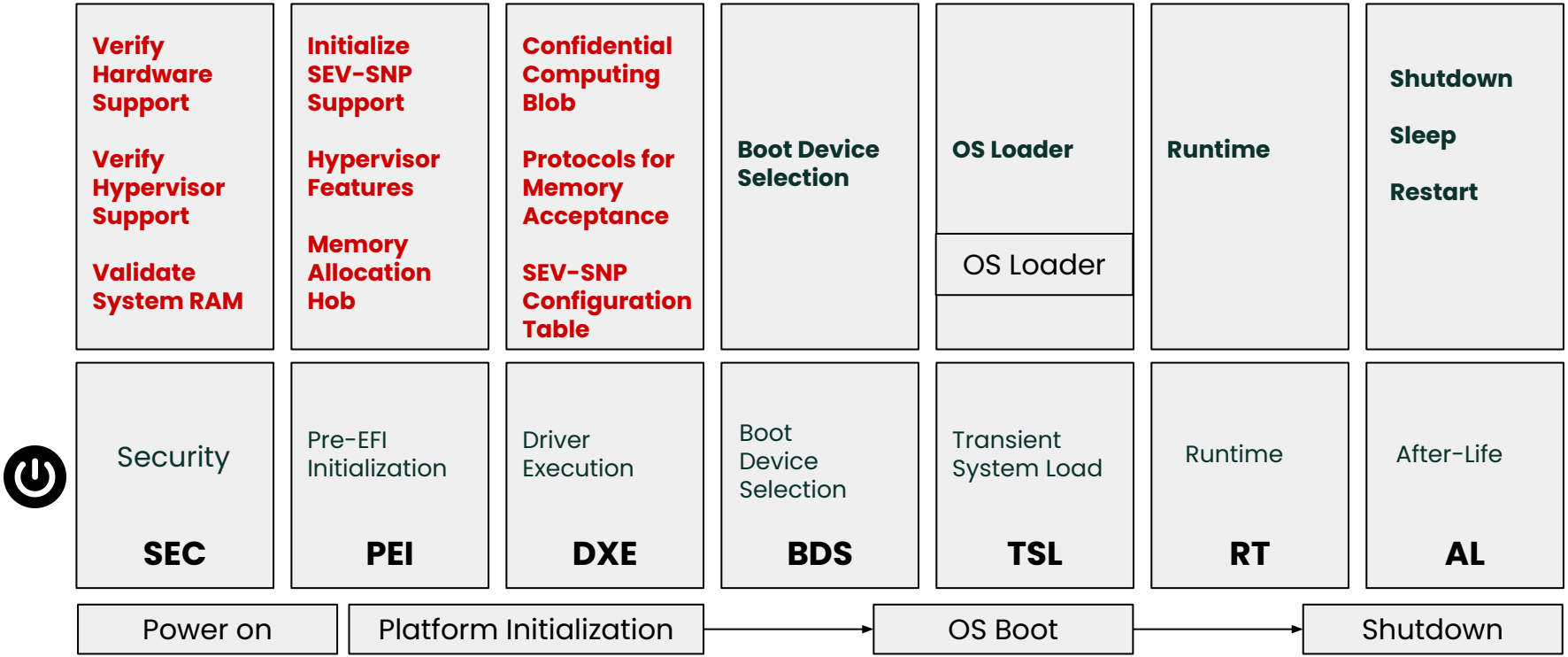
PI Architecture Firmware Phases



PI Architecture Firmware Phases



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Thank You!

Q&A

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