



Opal Activation Behavior

The Intel® Solid-State Drive (SSD) Professional Family offers self-encrypting drives (SEDs) that support the Trusted Computing Group* (TCG*) Opal specification to manage the drive encryption and authentication. New SSDs are shipped in the state of "Opal ready," meaning the drive can be used, but is not secured or managed. To manage the encryption capabilities of the SSD "Opal activation" must be completed. Testing by Intel and its partners indicates that the time required for the Opal activation process varies, and can range from less-than-one minute up to ten minutes. This technical brief explains the Opal activation process.

Opal Activation Description

Opal activation refers to the process of an independent software vendor's (ISV) security software taking security ownership of an Opal ready drive, installing its specific pre-boot authentication code, and configuring the user authentication. As a result of the Opal activation process other ISV software cannot take ownership of the drive, and security-related ATA commands like setting passwords and secure erase are no longer supported. Additionally, instead of booting to the traditional boot partition of the drive, the system boots to the ISV's pre-boot authentication (PBA) code. The PBA provides the user interface and after successful authentication, the traditional boot partition is loaded.

Opal Activation Time Variation

Some of the factors that affect the length of time needed to complete Opal activation include:

- SSD model
- ISV security software, PBA code size, and policy settings
- Operating system
- Platform, and platform configuration

Typical Enterprise IT Opal Activation Flow

Typically, ISV software allows Opal activation to be initiated locally, or initiated remotely from a central management console application. Generally the initial activation process is a one-time, or very infrequent, activity administered by an IT technician.

The typical flow for locally initiated (foreground task) activation:

- Install the OS on an Opal ready drive
- Install the ISV security software (agent and local management application)
- Configure security policies, such as authorized users, password rules, authentication methods, etc.
- Initiate the Opal activation process; user initiated
- Wait for Opal activation process to complete; often requiring one or more reboots

The typical flow for centrally managed (background task) activation:

- Install and configure the enterprise IT central management infrastructure and set enterprise policies
- Install the OS on an Opal ready drive
- Install the ISV security software agent
- Initiate the Opal activation process; policy initiated through the software agent
- Wait for Opal activation process to complete; often requiring one or more reboots

Once the initial Opal activation is complete, managing user accounts and deactivating Opal management capabilities are similarly managed, either through a local application or a centrally managed console application.

Opal Activation Considerations

Some models of the Intel® SSD Professional Family are configured without Opal support. To determine if your model is Opal ready view the drive properties using either the [Intel® SSD Toolbox](#) or the [Intel® SSD Pro Administrator Tool](#).

If the Opal activation process is interrupted, handling of the scenario will vary based on the nature of the interruption, the progress of activation, and the ISV software. In a worst-case scenario where the drive is left in an Opal-activated, yet unmanaged state, the drive can be reset to its out-of-box state using the PSID revert function of the [Intel® SSD Pro Administrator Tool](#).

Intel works with its ecosystem partners to validate proper operation and to optimize the Opal-related processes, such as initial activation time. While we strive for Opal-related operations to complete as quickly as possible, we must also balance design decisions that enable successful Opal activation with those that impact the handling of events such as unplanned power loss.



Intel® Solid-State Drive Professional Family

Opal Activation Time Variations

Intel® Solid-State Drives

Summary

There are many factors that affect Opal activation completion time, which can take up to ten minutes. IT administrators should take the Opal activation time variation into consideration when planning an OS build and Opal management strategy.

Additional Information

Intel® Solid-State Drive Toolbox:

https://downloadcenter.intel.com/Detail_Desc.aspx?ProductID=3042&DwnldID=18455

Intel® Solid-State Drive Pro Administrator Tool:

https://downloadcenter.intel.com/Detail_Desc.aspx?agr=Y&DwnldID=24007

Intel® Solid-State Drive Pro 1500 Series Opal Compatibility Guide:

<http://www.intel.com/content/www/us/en/solid-state-drives/ssd-pro-1500-series-opal-compatibility-guide.html>

Intel® Solid-State Drive Pro 2500 Series Opal Compatibility Guide:

<http://www.intel.com/content/www/us/en/solid-state-drives/ssd-pro-2500-series-opal-compatibility-guide.html>

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