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Lenovo



Firmware as a Service: Enhancing BIOS Security and Flexibility

UEFI 2025 Webinar Series

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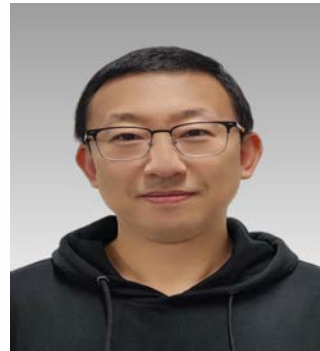
Meet the Presenters



Kevin Wu

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Agenda



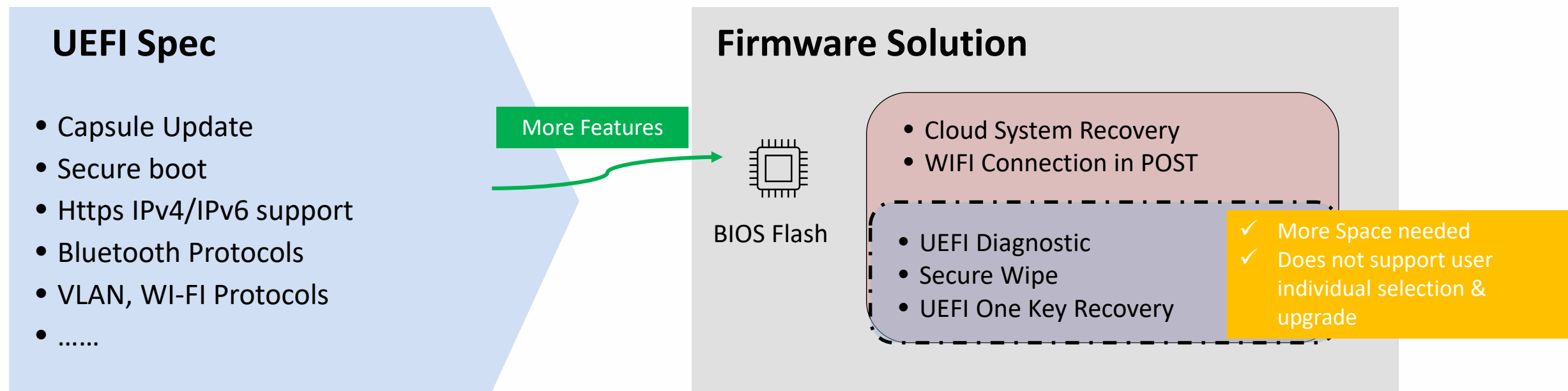
- **Background**
- **What is Firmware as a Service (FaaS)?**
- **FaaS Tech Architecture**
- **Summary**

Background



Firmware solution customization faces new opportunities and challenges

- **Opportunities**
 - Customers are increasingly demanding a wider range of firmware solutions
 - UEFI's feature-rich libraries enhance OEMs / IBVs' capabilities to provide more firmware solutions
- **Challenges**
 - Limited BIOS Flash size makes it difficult to support more embedded features
 - Flexibility and security must be strengthened during feature customization

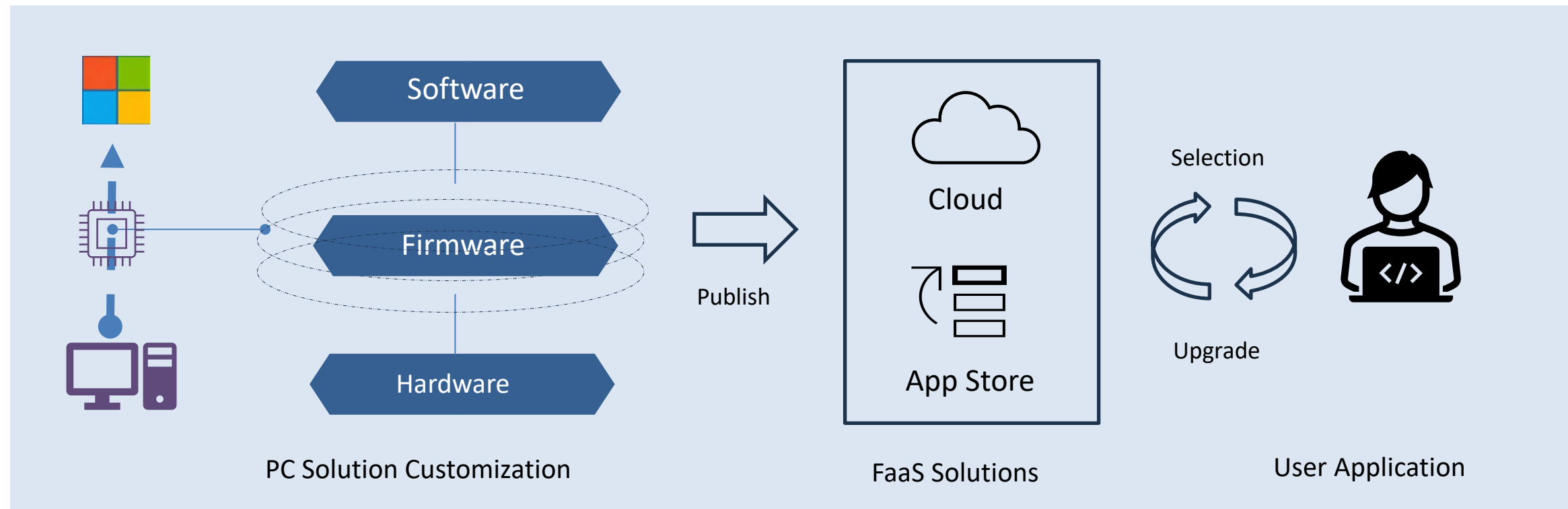


What is Firmware as a Service (FaaS)?



Firmware as a Service

- **A new concept:**
 - FaaS reimagines firmware-level functionalities as modular, service-oriented offerings rather than static, monolithic BIOS components
 - Users can choose their preferred firmware solutions from the website \ App Store or OEM App Portal

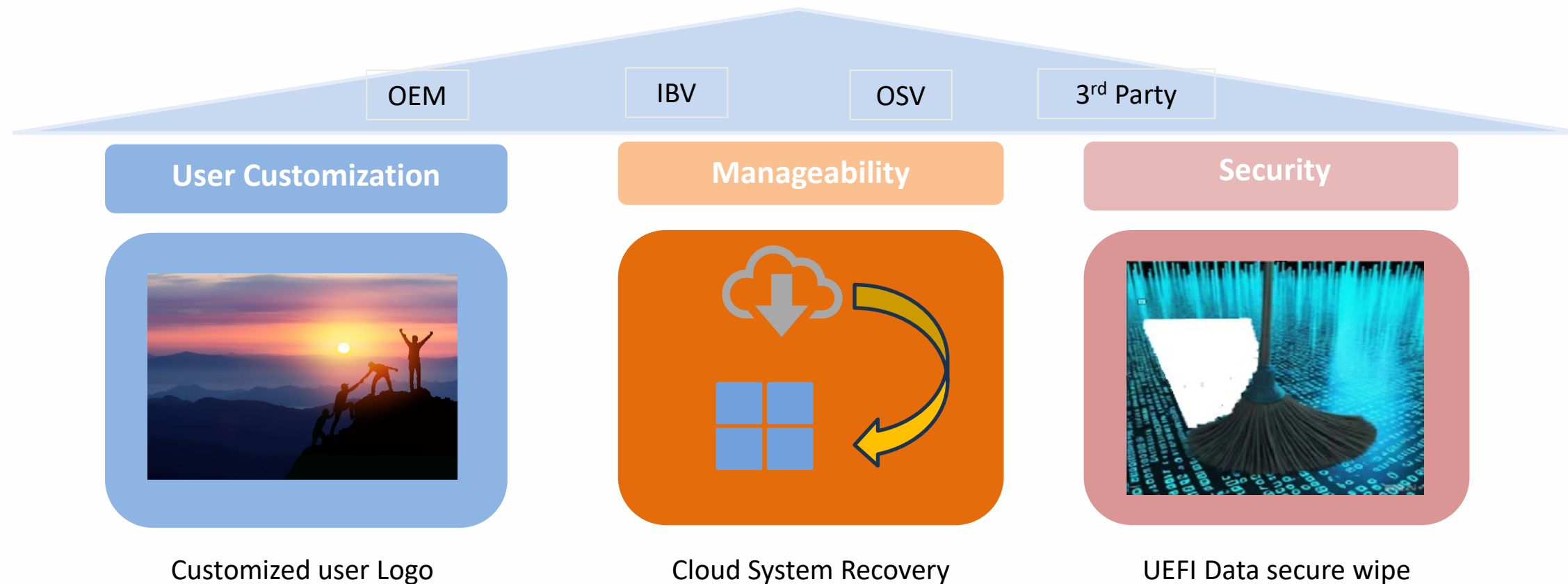


What is Firmware as a Service (FaaS)?



Firmware as a Service

- **A technical solution:** FaaS is not merely a concept, it also offers technical solutions
 - FaaS modules could be published via cloud as an independent plug-in module
 - The architectural design of FaaS should be crafted to guarantee compatibility with a diverse range of UEFI modules and numerous feature providers



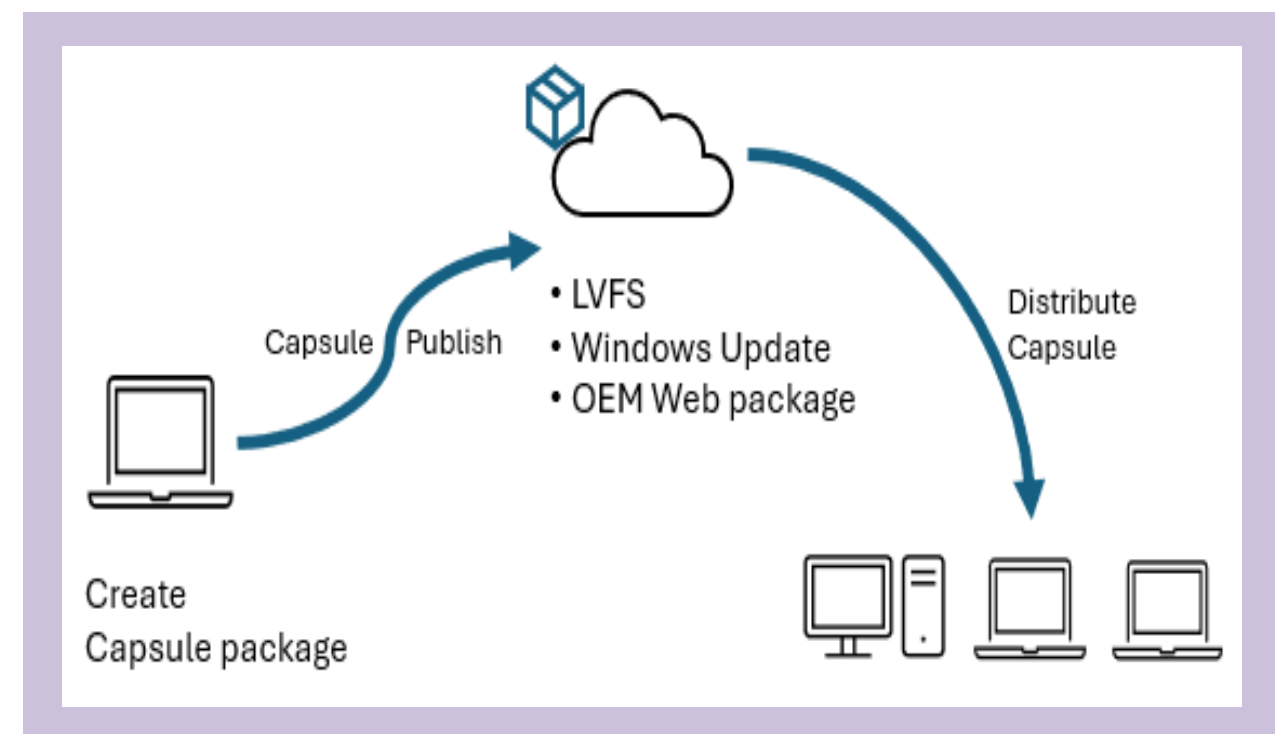
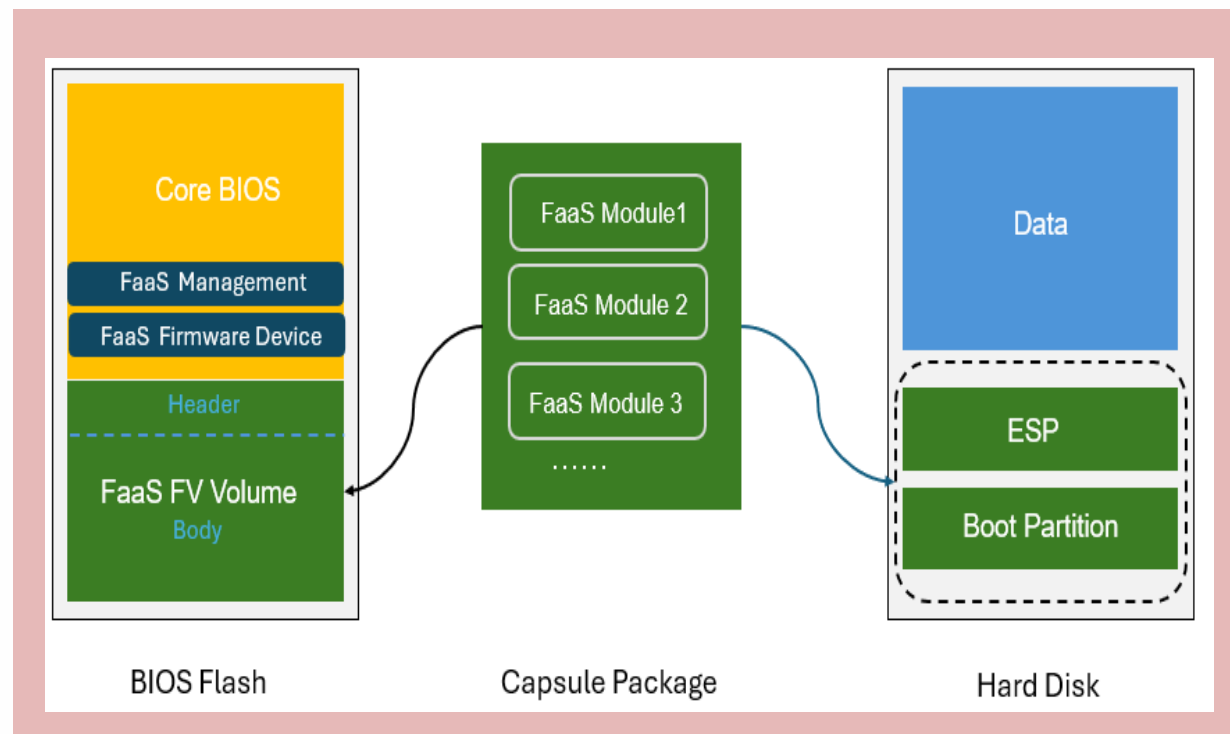
FaaS Tech Architecture



FaaS tech architecture is designed to simplify BIOS customization, enable the injection of individual functions and third - party services, and offer a flexible solution for module install & upgrade

- FaaS Plug-in modules could be installed in BIOS Flash or Hard Disks

- FaaS plug-in modules published as capsule package via cloud

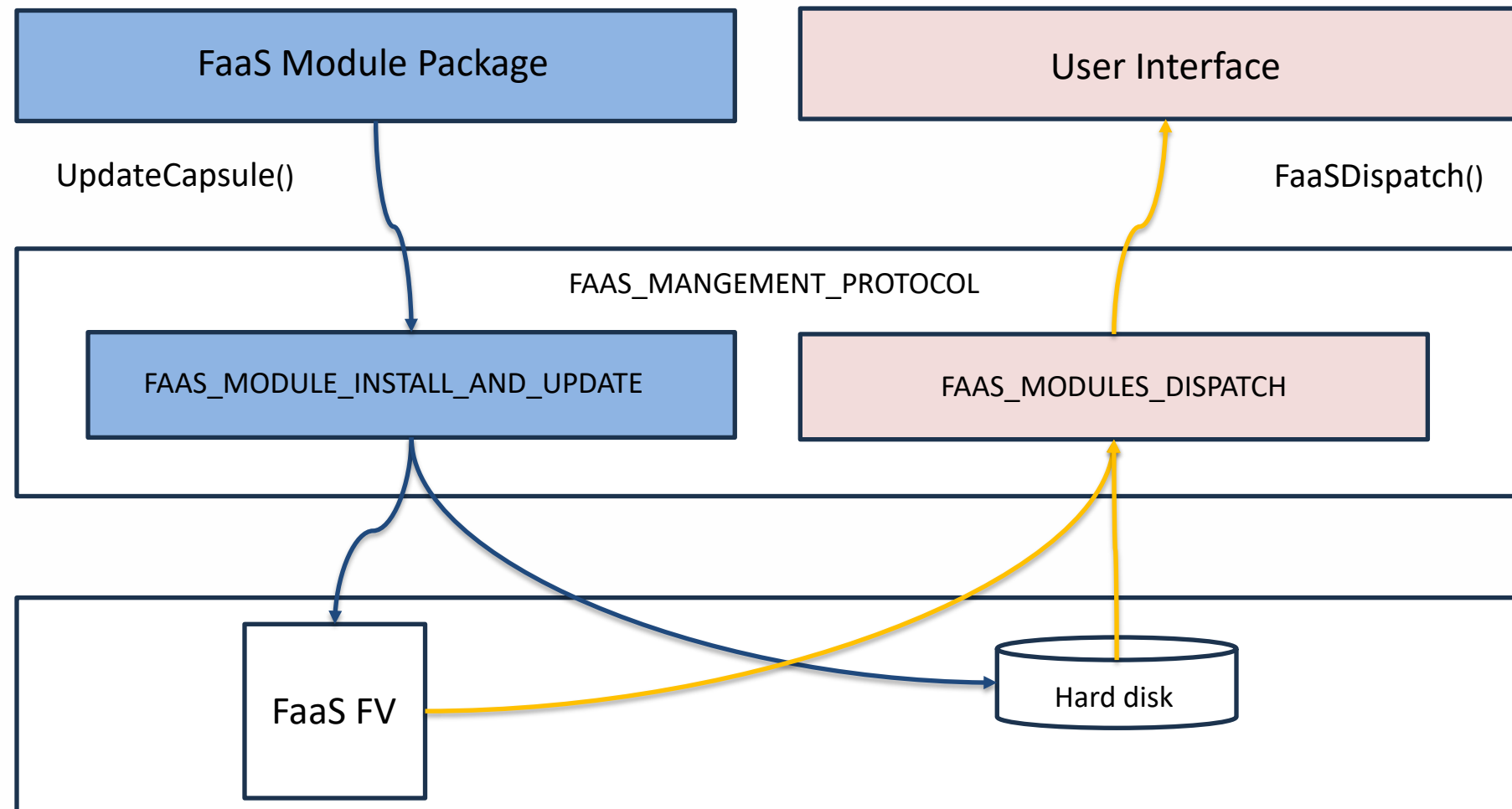


FaaS Tech Architecture



FaaS Protocol definition

- Mainly define FaaS module install / update and dispatch protocols

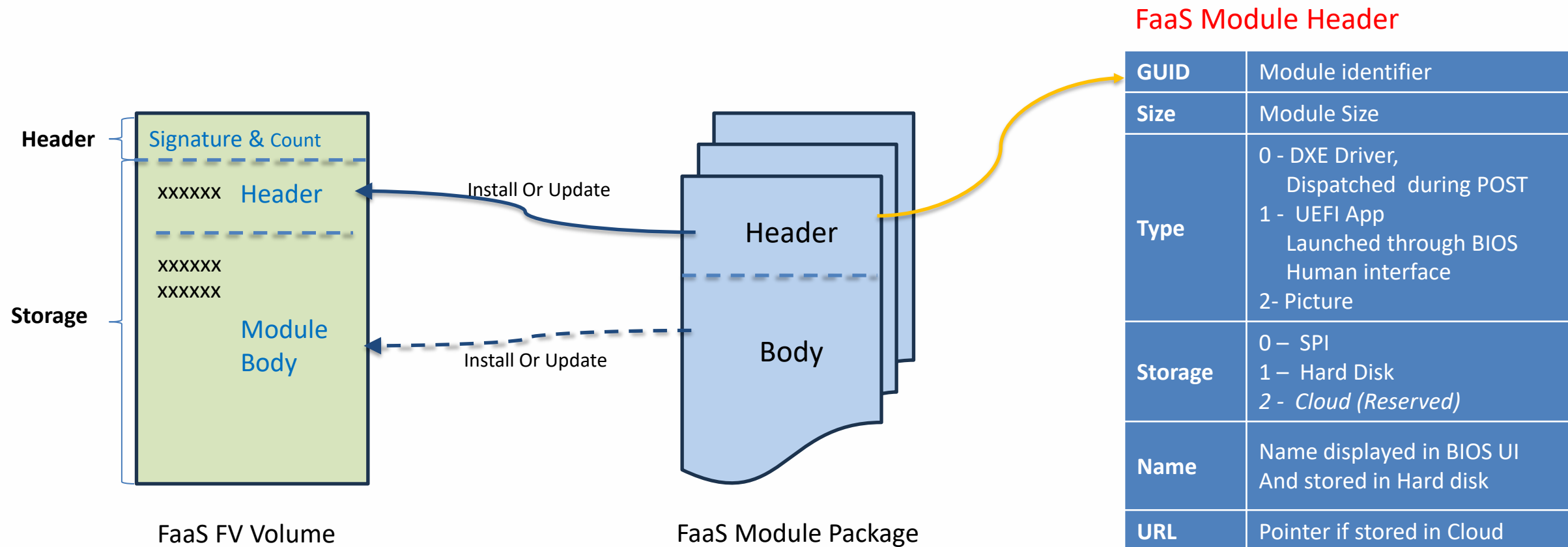


FaaS Tech Architecture



FaaS FV Volume in BIOS Flash and FaaS Module header definition

- Allocate an independent FaaS Volume for FaaS module installation, upgrade and dispatch
- Define FaaS module header for module information check



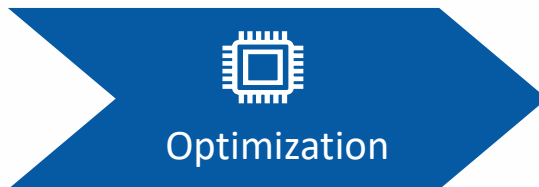
Summary



FaaS enhances BIOS security and flexibility while improving user experience



- **Easy Selection**
Users can easily choose the features via the website, App store, or OEM app portal
- **Easy Upgrade**
Features can be conveniently updated either through Cloud or OEM web package



- **Optimal Development Model**
FaaS supports solutions from various providers and individual upgrades
- **Extendable Storage: Cloud and Hard Disk**
Offers an expanded array of features, and the size of the BIOS Flash could be optimized



- **Secure Update**
Different FV for Core BIOS and FaaS modules enables separate updates
- **Flexible Design**
FaaS module was design as standalone EFI module based on EDK open source, which promotes reusability, ease of maintenance, and efficient integration within different systems

Call to Action

- We encourage developers to design standalone UEFI feature modules and share them via the UEFI Forum





Questions?



Thanks for attending a UEFI Forum sponsored webinar

For more information on UEFI Forum and UEFI Specifications, visit <http://www.uefi.org>

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