



Updates on Server Base System Architecture and Boot Requirements

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Agenda

- SBSA/SBBR
- SBBA/SBBR Tests
- Ecosystem Questions

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SBSA/SBBR

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Platform Architecture

- **Base System Architecture (BSA)**
 - Defines hardware requirements
- **Base Boot Requirements (BBR)**
 - Defines firmware requirements
- These specifications require a minimum set of hardware and firmware implementations that will ensure OS and firmware will interoperate



SBSA/SBBR

- SBSA/SBBR are the BSA/BBR for the enterprise systems
 - Developed using feedback from vendors across the industry (Silicon vendors, OSVs, Hypervisor vendors, BIOS vendors, OEMs and ODMs)
 - SBBR defines the required, recommended and optional UEFI, ACPI and SMBIOS interfaces
- SBSA and SBBR are now available at <https://developer.arm.com/>
 - Current versions are SBSA v3.0 and SBBR v1.0
 - No click through license required

The screenshot shows the ARM Developer website page for "Server Base System Architecture". The page has a blue header with "ARMDeveloper" and navigation links for "Products", "Support", and "Technologies". Below the header, there is a breadcrumb trail: "Home / Products / Architecture / A-Profile Architectures / Documentation". The main title is "Server Base System Architecture". There are two tabs: "Overview" and "Documentation", with "Documentation" selected. On the left, there is a sidebar with "A-Profile Documentation" and a list of links: "C++ Application Binary Interface Standard for the ARM 64-bit Architecture", "Critical Interrupt Prioritization", "Application Note 274 Migrating from IA-32 to ARM", "ARM® Generic Interrupt Controller Architecture Specification GIC architecture version 3.0 and 4.0", "ARM® System Memory Management Unit Architecture Specification, SMMU architecture version 3.0 and 3.1", and "Application Note 490 LP32 for AArch64". The main content area has the title "Server Base System Architecture" and a "Note" box stating: "This document does not grant you a license to build SBSA - you rights to claim SBSA compliance. If you wish to build a SBSA please contact ARM Support." Below the note, it says "This document is only available in a PDF version. Click Down".

The screenshot shows the ARM Developer website page for "Server Base Boot Requirements System Software". The page has a blue header with "ARMDeveloper" and navigation links for "Products", "Support", and "Technologies". Below the header, there is a breadcrumb trail: "Home / Products / Architecture / A-Profile Architectures / Documentation". The main title is "Server Base Boot Requirements System Software". There are two tabs: "Overview" and "Documentation", with "Documentation" selected. On the left, there is a sidebar with "A-Profile Documentation" and a list of links: "C++ Application Binary Interface Standard for the ARM 64-bit Architecture", "Critical Interrupt Prioritization", "Application Note 274 Migrating from IA-32 to ARM", "ARM® Generic Interrupt Controller Architecture Specification GIC architecture version 3.0 and 4.0", "ARM® System Memory Management Unit Architecture Specification, SMMU architecture version 3.0 and 3.1". The main content area has the title "Server Base Boot Requirements on ARM Platforms" and a note stating: "This document is only available in a PDF version. Click D". Below the note, there is a "Was this page helpful?" section with "Yes" and "No" buttons.



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SBSA/SBBR Compliance Tests

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SBSA/SBBR Compliance Tests

- SBSA test suite covers

- SBSA PE properties
- SBSA defined system components
- SBSA rules for PCIe integration
 - Based on the PCIe specification
 - Based on standard OS drivers with no quirks enabled

- SBBR test suite covers

- UEFI testing based on the UEFI SCT
- ACPI testing based on FWTS
- SMBIOS testing

- Provided as open source

- Apache v2 License

- Built on top of a Platform Adaptation Layer

- ARM will support one based on UEFI and ARM Trusted Firmware
- A silicon vendor can also port to a bare metal environment



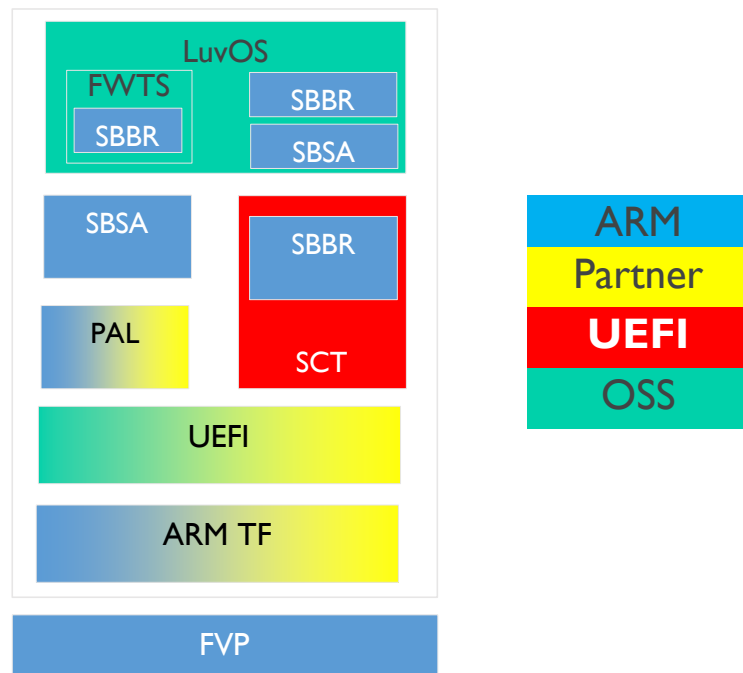
SBBR Tests

- From 3 sources (all open source)
 - UEFI SCT* (ARM will upstream into SCT)
 - FWTS (ARM + Linaro will upstream)
 - Standalone (ARM provides through github and packages into LuvOS image)
- Note: UEFI SCT is currently for UEFI member only. Would like to see it open source



Unified Release

- A unified software release, to tie all of these deliverables together with the enterprise FVP model
- Planned for future

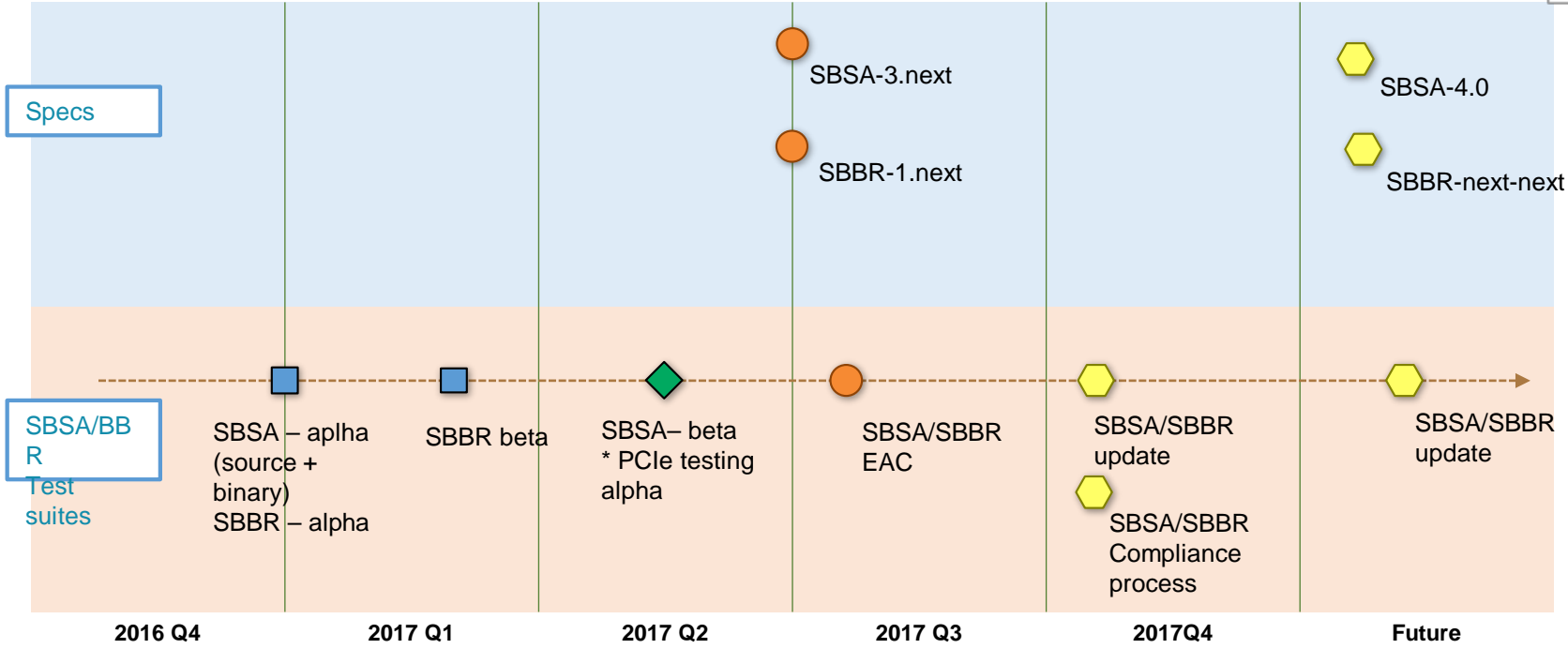
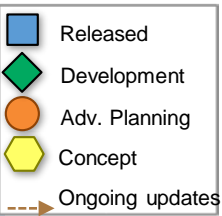


SBSA/SBBR Tests Release

- Overarching github including SBBR
 - <https://github.com/ARM-software/arm-enterprise-acs>
- SBSA github
 - <https://github.com/ARM-software/sbsa-acs>



SBSA/SBBR Roadmap





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Questions to the ARM Community

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SBSA/SBBR Certificate

- To improve the out-of-box experience for OS vendors and system users, ARM received feedback that a badge program certifying the SBSA/SBBR Compliance can be useful
- Feedback?



UEFI Driver Binary Format

- EBC is a cross-architecture solution
 - One driver image for all ISAs
 - Open-source EBC Interpreter for ARM upstreamed to tianocore
- However,
 - Benefit cannot be realized if x86 uses its native format, unless more ISAs become relevant
 - No supported EBC Compiler
 - No Secure Boot Signing for EBC Drivers
- Can the industry come together to solve these problems?
 - If not, propose that ARM AArch64 native binary format be used for UEFI Drivers on ARM systems
 - Feedback?





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Summary

Conclusion

- SBSA/SBBR Tests can be used for compliance tests
- Drive closure on a remaining questions
- Contact info: dong.wei@arm.com





Thank You

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For further information: www.linaro.org

BUD17 keynotes and videos on: connect.linaro.org

