Specification Status

The RISC-V specification process is governed by the Ratification Policy and more concisely articulated in the Specification Lifecycle and Milestone Definitions presentation.

This page serves as the starting point for understanding the status of specifications currently being developed by RISC-V. This status is best represented as progress toward the key Specification Milestones (Plan, Freeze, and Ratification-ready) which are obtained sequentially. Specific status for the relevant status columns is detailed in the Status Key section below.

In-process specifications are grouped below into two tables based on whether they impact the RISC-V ISA (In-process ISA Specifications) or not (In-process Non-ISA Specifications). Items should have links to their respective specification repo, Ratification Plan if not a Fast-track item, and an Acceptance Criteria Status checklist.

Status of active votes by TSC and Committee Chairs can be found on the RISC-V Vote Status wiki page.

Completed specifications are tracked at the bottom of the page.

This dashboard does NOT intend to showed details status (that's available in the status checklist for the specification), but rather the general status in the journey to ratification.

NOTE: This page is maintained by the RISC-V TPMs. To get updates to this page or for questions, contact help@riscv.org.

In-process ISA Specifications

<table>
<thead>
<tr>
<th>Ratification Package (Extension names)</th>
<th>Fast Track</th>
<th>Priv / Unpriv</th>
<th>Committee (Owner)</th>
<th>Plan Milestone Target Date</th>
<th>Freeze Milestone Target Date</th>
<th>Ratification Milestone Target Date</th>
<th>Plan Milestone Status</th>
<th>Freeze Milestone Status</th>
<th>Ratification Milestone Status</th>
<th>Notes / Last Updated</th>
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<tbody>
<tr>
<td>Advanced Interrupt Architecture (AIA)</td>
<td>N</td>
<td>P</td>
<td>Priv HC (John Hauser, Anup Patel)</td>
<td>Q3'22</td>
<td>Plan Complete</td>
<td>Freeze Arch Review Complete Waivers Requested</td>
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<td>08/22 y</td>
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<tr>
<td>Code Size Reduction (Zc*)</td>
<td>N</td>
<td>U</td>
<td>Code Size Reduction Task Group (Tariq Kurd)</td>
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<td>N/A - Grandfathered Waivers Approved Committee Chair Sign-Off Voting</td>
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<td>SAIL / ACT Waive rs Updat ed: 09/23</td>
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<td>Debug</td>
<td>N</td>
<td>P</td>
<td>Debug TG (Tim Newsom)</td>
<td>Q2'23</td>
<td>Plan Development</td>
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<td>08/22 n</td>
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<td>Priv HC (Dan Smathers)</td>
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<td>Hardware Updating of PTE A0 Bits (Svadu)</td>
<td>Y</td>
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<td>Q4'22</td>
<td>N/A Freeze Arch Review Complete</td>
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<td>HpmCounter enhancements (Zicnt, Zihpm)</td>
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<td>U</td>
<td>Unpriv HC (TBD)</td>
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<td>Freeze Arch Review Complete</td>
<td>08/22 y</td>
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## In-process Non-ISA Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Committee (Owner)</th>
<th>Plan Milestone Target Date</th>
<th>Freeze Milestone Target Date</th>
<th>Ratification Milestone Target Date</th>
<th>Plan Milestone Status*</th>
<th>Freeze Milestone Status**</th>
<th>Ratification Milestone Status***</th>
<th>Notes / Last Updated</th>
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<td>ACPI</td>
<td>Software HC (Sunil VL)</td>
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<td>Application Processor-Trusted Execution Environment (AP-TEE)</td>
<td>AP-TEE TG (Suresh Sugumar, Ravi Sahita)</td>
<td>Plan Development</td>
<td>08/22</td>
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<td>Architectural Test Requirements</td>
<td>Architecture Test SIG?? (Allen Baum)</td>
<td>Plan Development</td>
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<td>IOMMU</td>
<td>IOMMU TG (Ved Shanbhogue)</td>
<td>Q3'22</td>
<td>Plan Complete</td>
<td>08/31</td>
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<td>IOPMP TG (Paul K.)</td>
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<td>Plan Development</td>
<td>08/22</td>
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<td>Nexus Trace (control)</td>
<td>Nexus Trace TG (Robert Chylla)</td>
<td>Plan Development</td>
<td>08/22</td>
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<td>Platforms</td>
<td>Platforms HSC (?)</td>
<td>Plan Development</td>
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<tr>
<td>PLIC</td>
<td>Software HC (Abner Chang)</td>
<td>Q2'22</td>
<td>Q3'22 Plan Complete</td>
<td>Freeze Complete Public Review In Process</td>
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<tr>
<td>psABI</td>
<td>psABI TG (Kito Cheng, Jessica Clarke)</td>
<td>Q2'22</td>
<td>Q3'22 Plan Complete</td>
<td>Freeze Complete TSC Sign-Off Voting</td>
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<td>Security Model</td>
<td>Security Model TG (Suresh Sugumar, Ravi Sahita)</td>
<td>Plan Development</td>
<td>08/22</td>
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<td>Unified Discovery (Config)</td>
<td>Unified Discovery TG (Irma Flores-Mendoza)</td>
<td>Q3'22</td>
<td>Plan Development</td>
<td>08/22</td>
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<td>Watchdog Timer</td>
<td>?? TG (Greg Favor, Anup Patel)</td>
<td>Plan Development</td>
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</table>

**Status Key**

The following steps and associated states for the milestones listed in the tables above may be parallelized at times, but are most simply thought of as a sequential set. They are as follows:

* Plan Milestone Status Steps:
  1. Plan Development  Plan Review Requested  Plan Complete

** Freeze Milestone Status Steps:
  1. Specification Development  Specification Stable
  2. Freeze Arch Review Requested  Freeze Arch Review In Process  Freeze Arch Review Complete
  3. Waivers Requested  Waiver Voting  Waivers Approved
  4. Committee Chair Sign-Off Requested  Committee Chair Sign-Off Voting  Committee Chair Sign-Off Complete
  5. Freeze Complete

*** Ratification Milestone Status Steps:
  2. Final Arch Review Requested  Final Arch Review In Process  Final Arch Review Complete
  3. Committee Chair Sign-Off Requested  Committee Chair Sign-Off Voting  Committee Chair Sign-Off Complete
  4. TSC Sign-Off Voting  TSC Sign-Off Complete
  5. Ratification (BoD Vote) Voting  Ratification (BoD Vote) Complete
## Ratified

### 2022

**ISA Specifications**

<table>
<thead>
<tr>
<th>Ratification Package (Extension names)</th>
<th>Fast Track</th>
<th>Priv / Unpriv</th>
<th>Committee (Owner)</th>
<th>Freeze Milestone Target Date</th>
<th>Ratification Milestone Target Date</th>
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<th>Freeze Milestone Status</th>
<th>Ratification Milestone Status***</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Multiply without Divide (Zmmul)</td>
<td>Y</td>
<td>U</td>
<td>Unpriv HC (Allen Baum)</td>
<td>Q1'22</td>
<td>Q2'22</td>
<td>N/A</td>
<td>Freeze Complete</td>
<td>Ratification Complete</td>
<td>Unified Discovery Waiver</td>
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### Non-ISA Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Committee (Owner)</th>
<th>Freeze Milestone Target Date</th>
<th>Ratification Milestone Target Date</th>
<th>Plan Milestone Status</th>
<th>Freeze Milestone Status</th>
<th>Ratification Milestone Status***</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Efficient Trace (E-Trace)</td>
<td>SOC Infrastructure HC (Gajinder Panesar)</td>
<td>Q2'22</td>
<td>Plan Complete</td>
<td>Freeze Complete</td>
<td>Ratification Complete</td>
<td>• No waivers • Needs copyright update</td>
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<tr>
<td>Supervisor Binary Interface (SBI)</td>
<td>Software HC (Atish Patra)</td>
<td>Q2'22</td>
<td>Plan Complete</td>
<td>Freeze Complete</td>
<td>Ratification Complete</td>
<td>No waivers</td>
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<tr>
<td>UEFI Protocol</td>
<td>Software HC (Sunil VL)</td>
<td>Q2'22</td>
<td>Plan Complete</td>
<td>Freeze Complete</td>
<td>Ratification Complete</td>
<td>No waivers</td>
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### 2021

**Ratification Package**

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<thead>
<tr>
<th>Extension Names</th>
<th>Owner</th>
<th>Arch Review</th>
<th>Status Checklist</th>
<th>Public Review</th>
</tr>
</thead>
</table>

- **Vector**
  - Priv Unpriv: N U
  - Extension Names: V, Zvamo, Zvlsseg, Zvediv, Zvqmac, Zve32x, Zve32f, Zve64x, Zve64f, Zve64d, Zvnh, Zve
  - Owner: Krste
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **FP in INT regs**
  - Priv Unpriv: N U
  - Extension Names: Zfinx
  - Owner: Tariq
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **Half Width FP**
  - Priv Unpriv: Y U
  - Extension Names: Zfh, Zfhmin
  - Owner: Andrew
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **ePMP**
  - Priv Unpriv: N P
  - Extension Names: Smpmp
  - Owner: Nick
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **Crypto Scalar**
  - Priv Unpriv: N U
  - Owner: Ben
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **CMO base**
  - Priv Unpriv: N P
  - Extension Names: Zicbom, Zicbop, Zicboz
  - Owner: DavidK
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **hypervisor**
  - Priv Unpriv: N P
  - Extension Names: H
  - Owner: JohnH
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **state enable**
  - Priv Unpriv: Y P
  - Extension Names: Smstateen
  - Owner: JohnH
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **time cmp**
  - Priv Unpriv: Y P
  - Extension Names: Sstc
  - Owner: Greg
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **Count overflow & Filtering**
  - Priv Unpriv: Y P
  - Extension Names: Sacoftmpf
  - Owner: Greg
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **Fast TLB invalidation**
  - Priv Unpriv: N P
  - Extension Names: Svinval
  - Owner: Dan
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **NAPOT pages**
  - Priv Unpriv: N P
  - Extension Names: Svnapot
  - Owner: Dan
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **Page-based memory types**
  - Priv Unpriv: N P
  - Extension Names: Svpbmt
  - Owner: Dan
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **Zmmul**
  - Priv Unpriv: Y U
  - Extension Names: Zmmul
  - Owner: Allen
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y

- **Pause Hint**
  - Priv Unpriv: Y U
  - Extension Names: Zihintpause
  - Owner: Greg
  - Arch Review: Complete
  - Status Checklist: Complete
  - Public Review: Y