

Proposed Priorities for Chapel 1.21

Chapel version 1.20

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Proposed Priorities for Chapel 1.21

- **Language Stability:** continue working toward 2.0 readiness (see next slide)
- **Shasta:** tune and optimize implementation
- **User Support**
- **LLVM Back-end:** enabled by default, explore vectorization
- **GPUs:** start exploring support via libraries and/or code generation
- **Performance:** multi-locale scalability and performance optimizations
- **Compilation Time:** reduce it
- **Interoperability:** improved support for multi-locale libraries, bytes, arrays
- **Memory Leaks:** reduce to zero

Language Stability Priorities for Chapel 1.21

- **Modules and Namespaces:** better support for programming “in the large”
- **Switch to Zero-based Indexing by Default (?):** if sufficient support
 - note: would only affect automatically-indexed types, not arrays
- **Prototype Modules:** commit to feature or replace with an alternative
- **Constrained Generics:** refine design and implement
- **Point-of-Instantiation Rules:** address current problematic points
- **Expiring Value Semantics:** refine design and implement
- **Deprecate .size Synonyms (?):** if sufficient support

Performance Priorities for Chapel 1.21

- **Unordered Operations:**

- flesh out unordered atomic API
- extend to POD types
- tune implementation
- explore aggregation library or optimizations

- **Performance Portability:** improve performance for non-Aries networks

- **Slicing:** complete optimization effort

- **Distributed arrays:** improve creation cost, privatization, field access overheads

- **Locale mapping:** explore process-per NUMA domain implementation

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