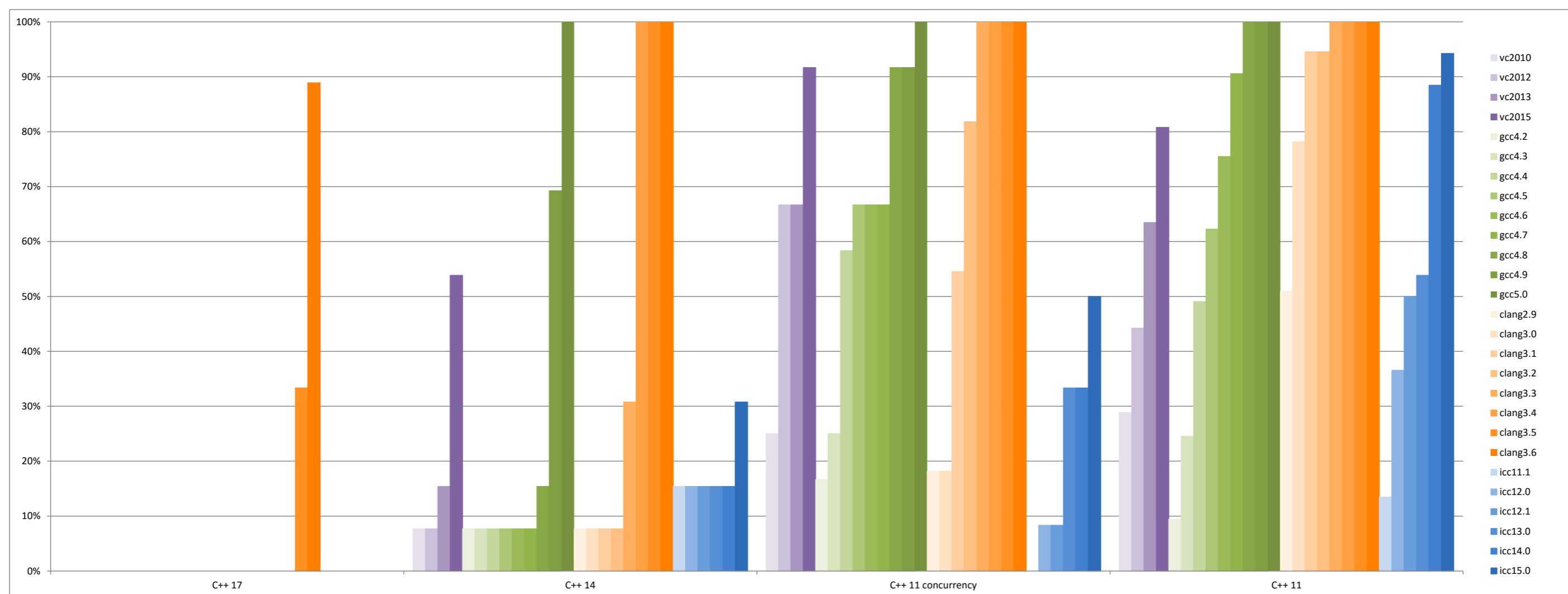


C++ Compiler Matrix

Available C++ functionalities by compilers

January 2015, G-Truc Creation

| Version | Visual C++ | | | | | GCC | | | | | Clang | | | | | ICC | | | | | | | | | | | | |
|--------------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|---------|---------|---------|---------|---------|
| | vc2010 | vc2012 | vc2013 | vc2015 | gcc4.2 | gcc4.3 | gcc4.4 | gcc4.5 | gcc4.6 | gcc4.7 | gcc4.8 | gcc4.9 | gcc5.0 | clang2.9 | clang2.9 | clang3.0 | clang3.1 | clang3.2 | clang3.3 | clang3.4 | clang3.5 | clang3.6 | icc11.1 | icc12.0 | icc12.1 | icc13.0 | icc14.0 | icc15.0 |
| C++ 17 | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 33% | 89% | 0% | 0% | 0% | 0% | 0% | |
| C++ 14 | 8% | 8% | 15% | 54% | 8% | 8% | 8% | 8% | 8% | 8% | 15% | 69% | 100% | 8% | 8% | 8% | 8% | 31% | 100% | 100% | 100% | 100% | 15% | 15% | 15% | 15% | 31% | |
| C++ 11 concurrency | 25% | 67% | 67% | 92% | 17% | 25% | 58% | 67% | 67% | 67% | 92% | 92% | 100% | 0% | 18% | 18% | 55% | 82% | 100% | 100% | 100% | 100% | 0% | 8% | 8% | 33% | 33% | 50% |
| C++ 11 | 29% | 44% | 63% | 81% | 9% | 25% | 49% | 62% | 75% | 91% | 100% | 100% | 100% | 4% | 51% | 78% | 95% | 95% | 100% | 100% | 100% | 100% | 13% | 37% | 50% | 54% | 88% | 94% |



Nomenclature:
Supported
Not supported
N/A don't know

| C++17 | 2010 | 2012 | 2013 | 2015 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 11.1 | 12.0 | 12.1 | 13.0 | 14.0 | 15.0 |
|--|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| N3928: static_assert with no message | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| N4086: Disabling trigraph expansion by default | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| N4051: typename in a template template parameter | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| N3922: New auto rules for direct-list-initialization | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |
| N4295: Fold expressions | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| N4267: u8 character literals | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| N4230: Nested namespace definition | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| N4265: Attributes for namespaces and enumerators | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| N4268: Allow constant evaluation for all non-type template arguments | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | V | V | X | X | X | X | X | |
| Support | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 33% | 89% | 0% | 0% | 0% | 0% | 0% |

| C++14 | 2010 | 2012 | 2013 | 2015 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 11.1 | 12.0 | 12.1 | 13.0 | 14.0 | 15.0 |
|---|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|
| N3323: Tweak to certain C++ contextual conversions | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | X | V | V | V | X | X | X | X | X | |
| N3472: Binary literals | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | X | V | V | V | V | V | V | V | V | |
| N3638: declval(auto) | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3638: Return type deduction for normal functions | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3648: Initialized lambda captures | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3649: Generic lambdas | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3651: Variable templates | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3652: Relaxing requirements on constexpr functions | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3653: Member initializers and aggregates | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3664: Clarifying memory allocation | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | |
| N3760: [[deprecated]] attribute | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3781: Single quotation mark as digit separator | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| N3778: C++ Sized Deallocation | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | |
| Support | 8% | 8% | 15% | 54% | 8% | 8% | 8% | 8% | 8% | 8% | 15% | 69% | 100% | 8% | 8% | 8% | 8% | 8% | 8% | 31% | 100% | 100% | 100% | 15% | 15% | 15% | 15% | 31% |

| C++11 concurrency | 2010 | 2012 | 2013 | 2015 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 11.1 | 12.0 | 12.1 | 13.0 | 14.0 | 15.0 | |
|--|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|-----|
| N2239: Sequence points | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | | |
| N2427: Atomic operations | X | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | V | | |
| N2748: Strong Compare and Exchange | X | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | V | | |
| N2752: Bidirectional Fences | X | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | V | | |
| N2429: Memory model | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | | |
| N2664: Data-dependency ordering: atomics and memory model | X | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | | |
| N2782: Data-dependency ordering: function annotation | X | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | | |
| N2179: Propagating exceptions | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | | |
| N2440: Abandoning a process and at_quick_exit | X | X | X | V | V | V | V | V | V | V | V | V | V | V | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | X | X | X | X | | |
| N2547: Allow atomics use in signal handlers | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | | |
| N2659: Thread-local storage | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | | |
| N2660: Dynamic initialization and destruction with concurrency | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | X | X | X | | |
| Support | 25% | 67% | 67% | 92% | 17% | 25% | 58% | 67% | 67% | 67% | 92% | 92% | 100% | 0% | 18% | 18% | 55% | 82% | 100% | 100% | 100% | 100% | 100% | 0% | 8% | 8% | 33% | 33% | 50% |

| C++11 | 2010 | 2012 | 2013 | 2015 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 11.1 | 12.0 | 12.1 | 13.0 | 14.0 | 15.0 | |
|--|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|
| N2118: Rvalue references | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | V | V | V | V | |
| N2439: Rvalue references for *this | X | X | X | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | X | X | X | V | |
| N1610: Initialization of class objects by rvalues | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | V | V | V | V | V | |
| N2756: Non-static data member initializers | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | V | |
| N2242: Variadic templates | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | X | V | V | V | |
| N2555: Extending variadic template template parameters | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | X | V | V | V | |
| N2672: Initializer lists | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | V | |
| N1720: Static assertions | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | V | V | V | V | V | |
| N1984: auto-typed variables | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | V | V | V | V | |
| N1737: Multi-declarator auto | N/A | N/A | N/A | N/A | X | X | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | V | V | V | V | |
| N2546: Removal of auto as a storage-class specifier | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | V | V | V | V | |
| N2541: New function declarator syntax | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | V | V | V | V | |
| N2927: Lambda expressions | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | V | V | V | V | |
| N2343: Declared type of an expression | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | V | V | V | V | |
| N3276: Incomplete return types | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | V | V | V | V | |
| N1757: Right angle brackets | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | V | V | V | V | V | |
| DR226: Default template arguments for function templates | N/A | N/A | N/A | N/A | X | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | X | V | V | V | |
| DR339: Solving the SFINAE problem for expressions | N/A | N/A | N/A | N/A | X | X | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | N/A | N/A | N/A | N/A | N/A | N/A |
| N2258: Alias templates | X | X | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | V | V | V | |
| N1987: Extern templates | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | V | V | V | V | V | |
| N2431: Null pointer constant | V | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | V | V | V | |
| N2347: Strongly-typed enums | X | V | V | V | V | V | V | V | V | V | V | V | V | V | X | V | V | V | V | V | V | V | V | X | X | X | X | V | |
| N2764/DR1206: Forward declarations for enums | X | V | V | V | V | V | V | V | V | V | V | V | V | V | X | X | X | X | V | V | V | V | V | X | X | X | X | V | |
| N2761: Standardized attribute syntax | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |