

Debug Info

Status Update

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Where are we?

The Good



C++11

Fission

LTO

TLS

Size Wins

Unused Struct Parameters

Pubnames/Pubtypes

Type Units*

Accelerated Access*

Unused Struct Parameters

```
struct foo { long a, b, c, d; };  
void func(foo f, int i) {  
}
```

```
int main() {  
    foo f;  
    func(f, 3);  
}
```

```
pfunc func
```

```
type = void (foo, int)
```

```
type = void (int)
```

```
type = void (foo, int)
```

LTO

```
!llvm.dbg.cu = !{!0}
```

```
!0 = metadata !{i32 786449, metadata !1, i32 4, metadata !"clang version 3.3 (trunk 180775) (llvm/trunk 180776)", i1 false, metadata !"", i32 0, metadata !2, metadata !2, metadata !2, metadata !3, metadata !2, metadata !""} ; [ DW_TAG_compile_unit ] [ /usr/local/google/home/echristo/tmp/bar.cpp ] [ DW_LANG_C_plus_plus ]
```

```
!1 = metadata !{metadata !"bar.cpp", metadata !"/usr/local/google/home/echristo/tmp"}
```

```
!2 = metadata !{i32 0}
```

```
!3 = metadata !{metadata !4}
```

```
!4 = metadata !{i32 786484, i32 0, null, metadata !"a", metadata !"a", metadata !"", metadata !5, i32 5, metadata !6, i32 0, i32 1, %class.A* @a, null} ; [ DW_TAG_variable ] [a] [line 5] [def]
```

```
!5 = metadata !{i32 786473, metadata !1} ; [ DW_TAG_file_type ] [ /usr/local/google/home/echristo/tmp/bar.cpp ]
```

```
!6 = metadata !{i32 786434, metadata !1, null, metadata !"A", i32 1, i64 32, i64 32, i32 0, i32 0, null, metadata !7, i32 0, null, null} ; [ DW_TAG_class_type ] [A] [line 1, size 32, align 32, offset 0] [from ]
```

```
!7 = metadata !{metadata !8, metadata !10}
```

```
!8 = metadata !{i32 786445, metadata !1, metadata !6, metadata !"a", i32 2, i64 32, i64 32, i64 0, i32 1, metadata !9} ; [ DW_TAG_member ] [a] [line 2, size 32, align 32, offset 0] [private] [from int]
```

```
!9 = metadata !{i32 786468, null, null, metadata !"int", i32 0, i64 32, i64 32, i64 0, i32 0, i32 5} ; [ DW_TAG_base_type ] [int] [line 0, size 32, align 32, offset 0, enc DW_ATE_signed]
```

LTO - Type Merging

```
!4 = metadata !{i32 786484, i32 0, null, metadata !"a", metadata !"a", metadata  
!"" , metadata !5, i32 5, metadata !6, i32 0, i32 1, %class.A* @a, null} ; [  
DW_TAG_variable ] [a] [line 5] [def]
```

```
!6 = metadata !{i32 786434, metadata !1, null, metadata !"A", i32 1, i64 32, i64  
32, i32 0, i32 0, null, metadata !7, i32 0, null, null} ; [ DW_TAG_class_type ]  
[A] [line 1, size 32, align 32, offset 0] [from ]
```

LTO - Type Merging

```
!4 = metadata !{i32 786451, metadata !1, null, metadata !"foo", i32 1, i64 256,  
i64 64, i32 0, i32 0, null, metadata !5, i32 0, null, null, metadata !"_ZTS3foo"}  
; [ DW_TAG_structure_type ] [foo] [line 1, size 256, align 64, offset 0] [def]  
[from ]
```


Size Wins - LTO

Before:

Memory: 7GB

Resulting Debug Info: 58MB

After:

Memory: 2.8GB

Resulting Debug Info: 9.9MB

Size Wins - PR7554

Before:

After:

Info: 1121994

Info: 356859

Strings: 1807241

Strings: 331528

77% Smaller!

The Bad



Labels
Constants

Referenced Constants

```
int main() {  
    FILE *f = stderr;  
}
```

The Ugly



Variable Locations
Optimized Debug Info

Variable Locations

```
struct foo {  
    foo() : i(3) {}  
    foo(const foo &f) : i(f.i) {}  
    int i;  
};
```

```
int func(foo f) {  
    if (!f.i)  
        return f.i + 1;  
    return f.i + 2;  
}
```

```
int main() {  
    foo l;  
    func(l);  
}
```

Questions?





Image Credits

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