OpenMP offload from static libraries

foo.c

```
void foo() {
#pragma omp target
 printf("Target is executed on the \"%s\".\n",
    omp_is_initial_device() ? "host" : "device");
}
```

bar.c

```
extern void foo();
int main() {
  foo();
  return 0;
}
```

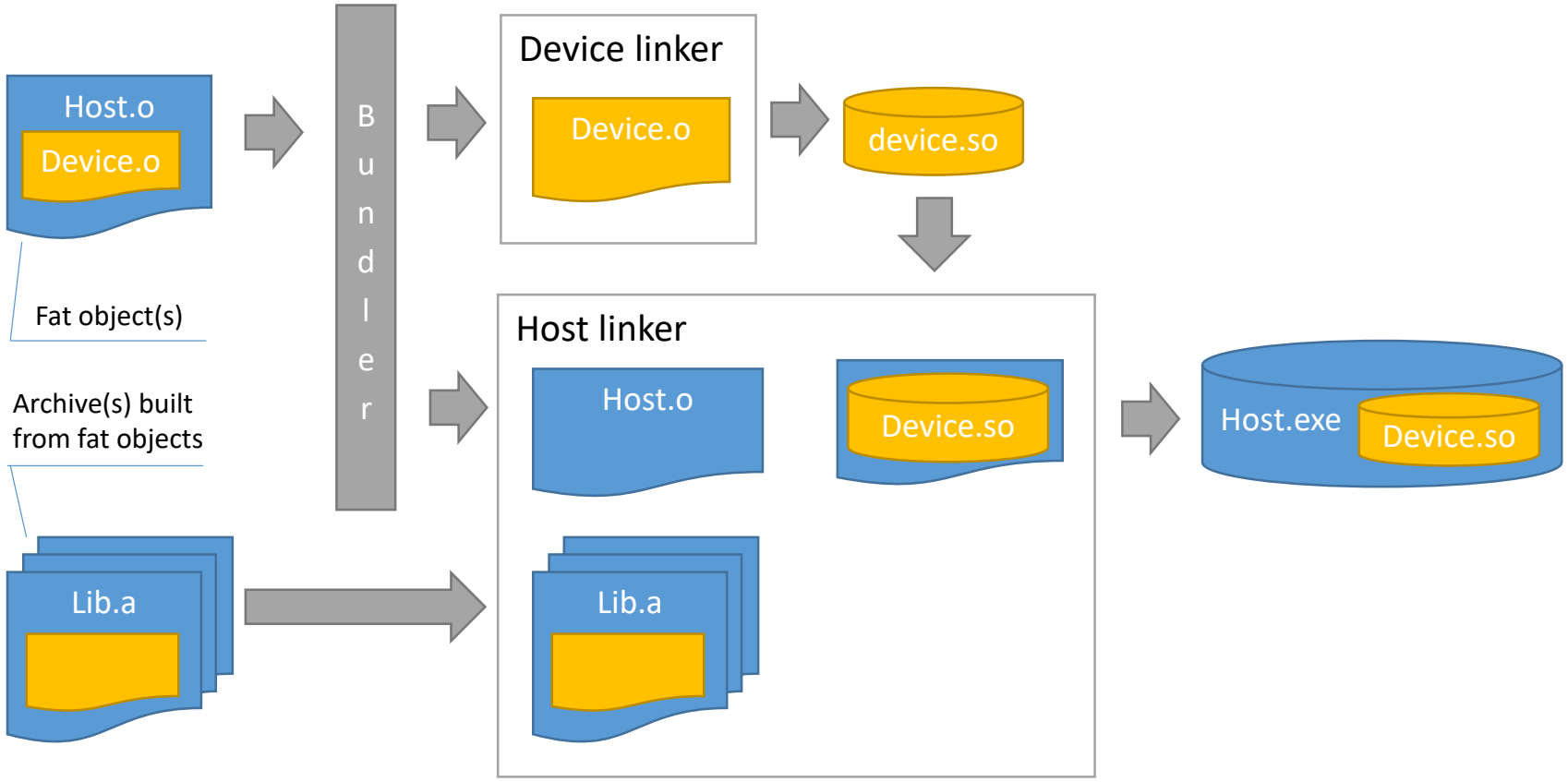
```
$ clang -fopenmp -fopenmp-targets=x86_64-pc-linux-gnu -c foo.c
$ ar crv libfoo.a foo.o
a - foo.o
$ clang -fopenmp -fopenmp-targets=x86_64-pc-linux-gnu bar.c -L. -lfoo
$ ./a.out
Target is executed on the "host".
```

vs.

```
$ clang -fopenmp -fopenmp-targets=x86_64-pc-linux-gnu foo.c bar.c
$ ./a.out
Target is executed on the "device".
```

OpenMP offload from static libraries is not supported, but it is a highly desired feature!

Current OpenMP offload linking flow



Unbundling is done only for object files, device code from static libraries is ignored.

Suggested change to OpenMP offload linking

Add a new intermediate link step which will do partial linking of object files and static libraries provided in command line

- All required objects (dependencies) will be pulled in from static libraries
- Partial linking will produce a single fat object file with device parts concatenated in corresponding ELF sections

Extract device parts from the partially linked fat object

- Expect to get one or more object files for each offload target
- Offload bundler has to be enhanced to extract multiple concatenated device objects from the given fat object

And continue linking as it is done now

- Link device binary for each offload target from the extracted device objects
- Create an offload linker script for embedding device images into the host program
- Link host binary using the linker script and the host part of the partially linked object

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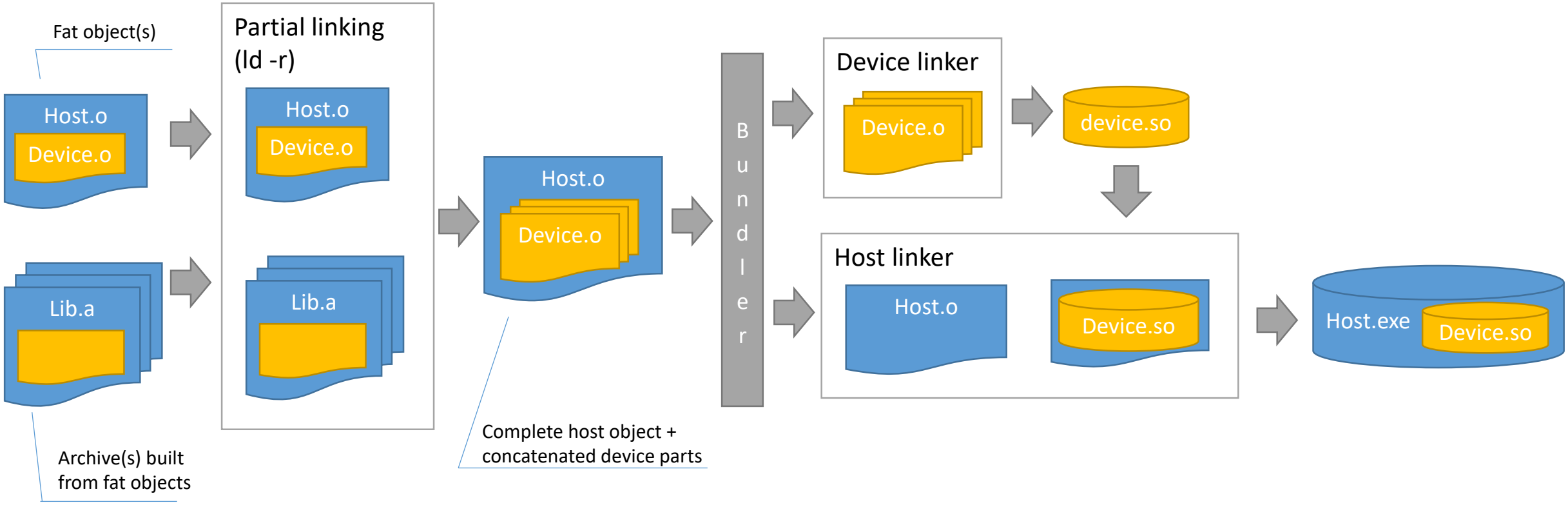

Add partial linking for fat objects and libraries. It will pull all required fat objects from static libraries.