NET async - There is no thread

I/O completion port threads

1. IOCP threads are blocked for notification on assigned IOCP
2. DoAsync from worker thread "opens" device, "binds" it to IOCP and starts overlapped I/O - state machine is created and Task returned
3. I/O operation completes

worker threads

Sync state machine

4. IOCP is signalled
5. one of the blocked IOCP threads is signalled and runs state machine to set Task result - deciding when to run a continuation: inlined, SynchronizationContext, TaskScheduler, ...

State data flow

SomeAsync

stateMachine.MoveNext()

wait DoAsync();
DoOther();

PerformI0CompletionCallback

task.TrySetResult

task.RunContinuations

decide where to continue: run or queue/schedule

I/O completion port

I/O (socket, drive)

Operating system

CLR