## The Ping floor selection algorithm

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## Floor search "Ping" algorithm

We need a simple algorithm that ensures a Cabin services all stop and floor requests in its Shaft. Here is a proposed algorithm which accomplishes this by keeping the Cabin moving in one direction as long as possible before reversing. It is called "Ping" because it can be visualized as a submarine issuing a sonar ping which spreads outward and then bounces back.

The entire Shaft can be searched by performing two "pings"; one in front of the Cabin and one behind it. Each ping consists of an outward and inward phase 1-2 and 3-4, illustrated below. The phases are executed in order and the first qualifying request yields a destination with no need to continue searching. If no requests are pending, no destination will be found and the Cabin will wait at its current location.



Proceed in this order and guit as soon as a qualifying destination is found or all four phases are exhausted with no result.



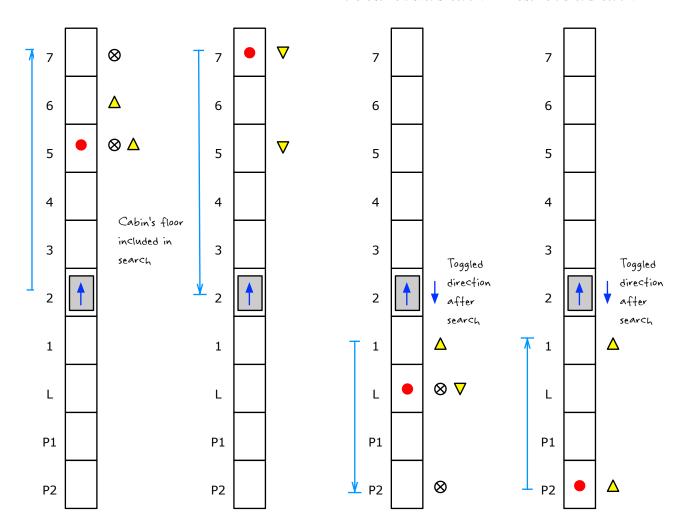
Search in the travel direction outward from the Cabin's floor for the first stop request or floor request matching the travel direction.

**(2**)

Get the farthest floor request beyond the Cabin in the current travel direction calling in the opposite direction. (3)

Get the closest stop or floor request beyond the Cabin's floor opposite the current travel direction calling in the opposite direction. If found, toggle the Cabin's travel direction. 4

Get the farthest call beyond the Cabin opposite the current travel direction calling in the travel direction. If found, toggle the Cabin's travel direction.



Cabin's floor excluded from search