The largest users of data centers have expressed a preference for WDM on SM fiber for reduced cabling bulk and cost.

Here is a table of the options for faster speeds.

| Port | Links | Fibers/Connectors | Limitations | Issues |
|---|---|---|---|---|
| 40Gb, 850nm multimode | 4 X 10Gb, parallel | 8 OM3/4, MTP/MPO | 100-125m | Manage fibers in groups of 4 |
| 40 Gb, 1300 nm singlemode | 4 X 10Gb, CWDM | 2 OS1/OS2, SC or LC | 10, 40 km | Premises singlemode |
| 40 Gb, 1550 nm singlemode | 1 X 40Gb | 2 OS1/OS2, SC or LC | 2 km | Premises singlemode |
| 100 Gb, 850nm multimode | 10 X 10Gb, parallel | 20 OM3/4, MTP/MPO | 100-125m | Manage fibers in groups of 10 or 12? |
| 100Gb. 1300 nm singlemode | 4 X 25Gb, CWDM | 2 OS1/OS2, SC or LC | 10, 40 km | Premises singlemode |
| 800G, Intel SPT, 1300 nm multimode (more, FOA NL 9/13) | 32 X 25Gb/s | 64 special MM fibers, custom 64 fiber expanded beam connector - MXC | 300 m | Proprietary fiber and connector, 64 fiber cables, prefab only |

Beyond 10G, the issue is cost as well as cabling bulk. MM fiber uses parallel optics with 10G channels to build higher speeds. The VCSEL sources used for MM are cheaper but it requires many more fibers and that can offset the higher cost of SM WDM transceivers. SM at 100G is especially advanced, using 4x25G channels over each fiber, making it much less complex in the cable plant.

Discussions with big data center owners and contractors indicate a preference for going to SM. Transceivers are more expensive but cabling is much cheaper and easier to install and manage. SM also allows more flexibility in distance and numbers of interconnections. MPO connectors used in parallel optics have higher loss and the loss budgets are low, as low as 2dB, limiting interconnections.

| Cabling | 40G | 100G |
|---|---|---|
| **MM parallel** | 8 fibers<br>4 Tr - 4 Rcv<br>4 unused | 20 fibers<br>10Tr - 10 Rcv<br>4 unused |
| **SM WDM** | 2 fibers | 2 fibers |