

Summary: “Direct” networks

Name	parameter/s & relationship with p	Degree	Diameter	Bisection Bandwidth	Wire lengths
Chain		2		L	short
Ring		2		2L	short
2D mesh	$k, p = k^2$	4	$2(k-1)$	kL	short
2D torus	$k, p = k^2$	4	k	2kL	short
3D mesh	$k, p = k^3$	6	$3(k-1)$	k^2L	short
3D torus	$k, p = k^3$	6	$3k/2$	$2k^2L$	short
n-D mesh, $n > 3$	$k, n: p = k^n$	2k	$n(k-1)$	$k^{(n-1)}L$	variable
n-D torus (k-ary n-cube)	$k, n: p = k^n$	2k	$nk/2$	$2k^{(n-1)}L$	variable
Binary ncube (hypercube)	$d = \log_2 p$	d	d	$pL/2$	variable
PERCS	S = 512 supernodes	47	3 (or 5)	$s^2 L/2$	Variable

p : number of nodes

L: link bandwidth

k, n : topology specific parameters; make it easy to express other properties concisely