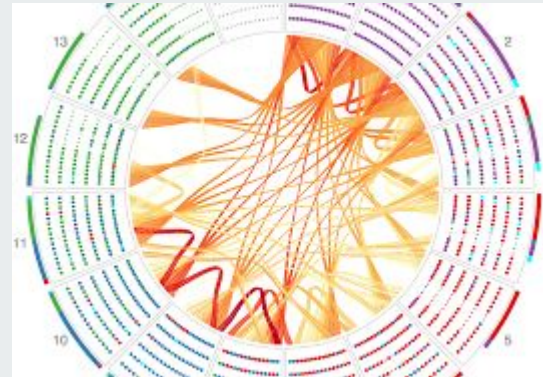


Technology-Driven, Highly-Scalable Dragonfly Topology

By: Alex Allen & Adam Brohl





Contributions

- Created the Dragonfly topology
 - With optimal routing, any packet will only have to travel 1 global channel
- Improvements to Routing
 - Uses Valiant's algorithm to uniformly distribute load to other groups

Dragonfly

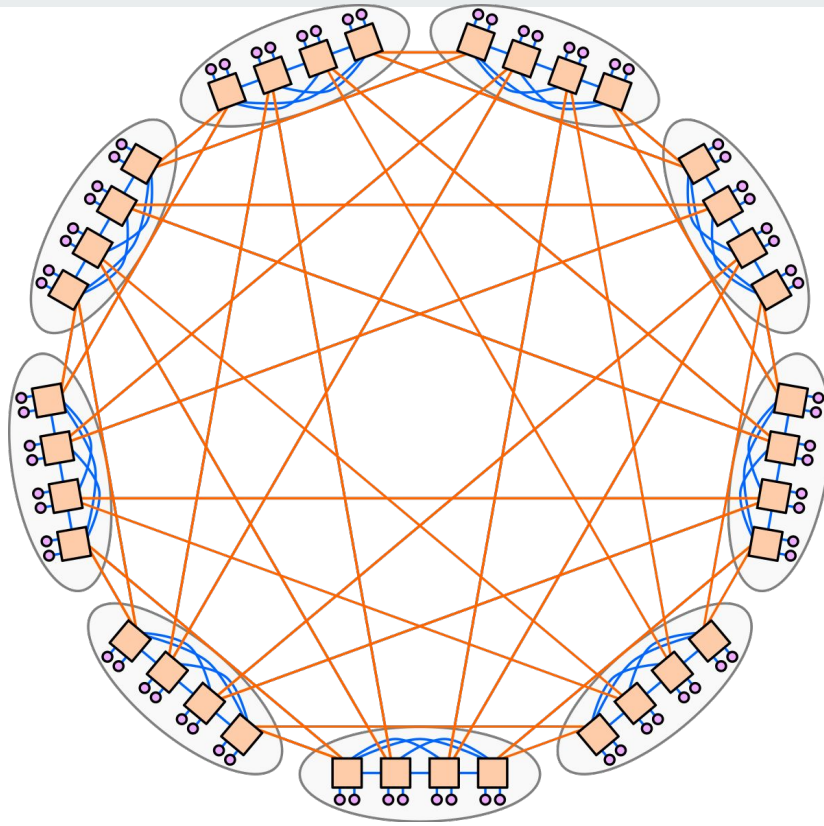


Diagram from Wikimedia Commons

Routing

- Minimal Route
 - Good for load-balanced traffic
 - Poor performance on adversarial traffic patterns
- Non-Minimal Route
 - Used to load-balance adversarial traffic patterns
 - Introduces a random group G_i (Valiant's Algorithm)

topology	diameter		cable length	
	minimal	nonminimal	avg	max
flattened butterfly	$h_l + 2h_g$	$2h_l + 4h_g$	$E/3$	E
dragonfly	$2h_l + h_g$	$3h_l + 2h_g$	$2E/3$	$2E^\dagger$

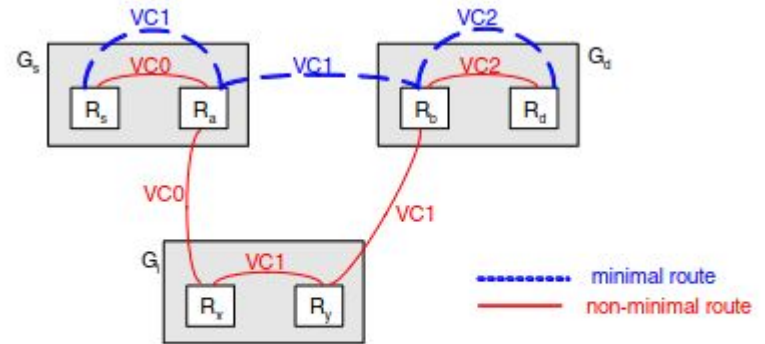


Figure 7. Virtual channel assignment to prevent routing deadlock in a dragonfly topology with both minimal and nonminimal routing.

