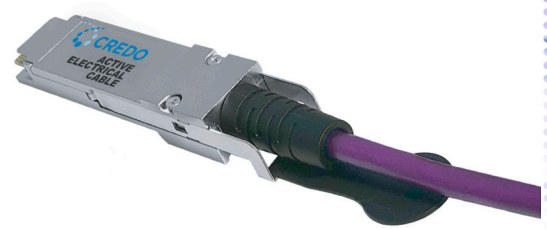




CLOS AEC SPECIFICATION

# Plug & Play AEC Tomahawk4



## 100Tb Ethernet DDC

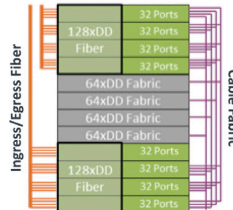
### Broadcom's 25.6Tb Tomahawk4

The release in 2020 combined with the migration to standards based Distributed, Disaggregated Chassis (DDC) promises a new era of cloud and service provider connectivity solutions that support Network Operating System (NOS) software choice, avoid vendor lock-in and allow rapid solutions tailoring to specific application needs.

#### Traditional Chassis



#### Distributed, Disaggregated Chassis



### Solving the DDC CLOS Challenge

A chassis uses a backplane to build a CLOS network. A DDC uses standards based 400G cables to build a CLOS network – but legacy interconnect solutions don't deliver. Optics power is too high for this application – resulting in a CLOS fabric that consumes almost as much power as the Tomahawk4 systems. But what about DACs?

### DACs : Broken Connectors and Broken Dreams

DACs promise a low power and low cost solution to DDC CLOS Connectivity, but at 400G DACs have gotten too fat and too stiff to reliably route at these densities. The result is broken connectors, intermittent signal integrity issues at failed rollouts.

### HiWire LP CLOS AECs

Introducing HiWire LP CLOS AECs – specifically designed for DDC applications – with 75% less power than optics and 75% less volume than DACs.

## Features

Credo HiWire LP CLOS Active Electrical Cables (AEC) are specifically designed for high density in-rack or HPC rack-to-rack interconnect to support CLOS architectures.

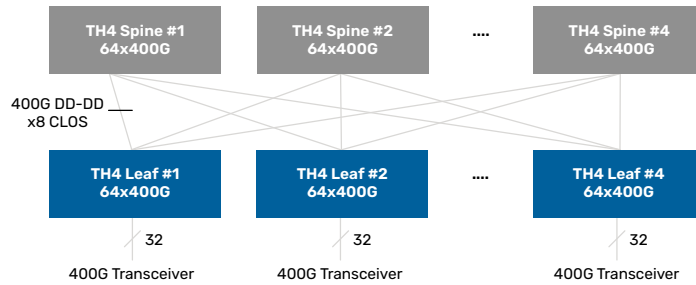
With 75% less power than optical solutions and 75% less volume than DACs, these AECs enable CLOS cabling densities up to 500 cables per rack

## Key Parameters

<b>Lengths</b>	0.5m – 3.0m 0.2m granularity
<b>Cu Gauge</b>	34/32 AWG
<b>Cable Diameter</b>	6mm / 8mm
<b>Modulation</b>	PAM4 ⇌ PAM4
<b>Connectors</b>	A-Side QSFP56-DD  B-Side QSFP56-DD
<b>Link Speeds</b>	28G / 56G
<b>Power</b>	4.5W per end
<b>BER</b>	Pre-FEC BER 1e <sup>-8</sup> Post-FEC BER < 10 <sup>-15</sup>

## 100Tb Tomahawk4 DDC

12x2U 64x400G 25.6T Tomahawk4



### Switch and Transceiver Power Budget

Item	Power (W)	Qty	Ext Power (kW)
25.6T Switch	600	12	7.2
DR4	11 → 9	256	2.8 → 2.3
<b>Total</b>			<b>10 → 9.5</b>

### CLOS Options

Item	Power (W)	Qty	Ext Power (kW)
AOC	2x11	256	5.6
HiWire LP CLOS AEC	2x4.5	256	2.3

## Tomahawk4 based DDCs are about Power Savings

Increasing port speeds to 400G and beyond are meeting static rack power and cooling budgets at cloud and service provider facilities. At these large installations, Tomahawk4 is not about Radix, but about power – it is significantly lower power than two Tomahawk3 based switches. Credo’s HiWire LP CLOS AECs are crucial to enabling Tomahawk4 based DDC – as they reduce CLOS power by up to 75% compared to optical and prevent the failed rollouts of DAC enabling reliable, deterministic CLOS routing densities of up to 300 cables per rack.

## HiWire CLOS AECs Enable Tomahawk4 DDC

Credo’s HiWire LP CLOS AEC are thin, low power, deterministic Active Electrical Cables (AECs) specifically designed for DDC CLOS applications:

- 75% less power consumption than optical solutions
- Up to 75% less space than DACs
- Deterministic  $1e^{-8}$  pre-FEC BER performance
- 10-year service life

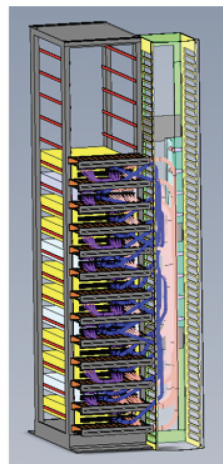
Using HiWire LP CLOS AECs in a DDC

- Routing densities of up to 300 cables per rack
- Improved reliability with MTBF >10 million hours
- Lower power consumption than chassis

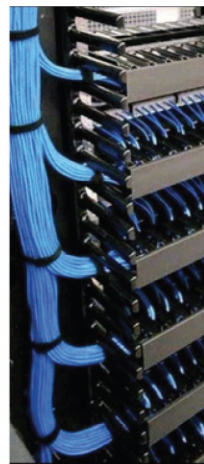
### 100Tb TH4 Switch Rack – Rollout Stages



Physical Mock-up



CAD Space



Canary Build

## About Credo

Credo's mission is to advance high-speed connectivity solutions that deliver optimized performance, reliability, energy efficiency, and security for the next generation of AI driven applications, cloud computing, and hyperscale networks.

Optimized for both optical and electrical applications, our solutions support port speeds up to 1.6Tb. At the core of our technology is our proprietary Serializer/Deserializer (SerDes) IP. Our diverse solutions portfolio includes system-level products such as Active Electrical Cables (AECs), a range of Integrated Circuits, including Retimers, Optical DSPs, SerDes chipsets, and SerDes IP Licensing.

For more information please visit [www.credosemi.com](http://www.credosemi.com)  
or email [sales@credosemi.com](mailto:sales@credosemi.com)

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