Backbone Solutions

Backbone solutions facilitate IT and OT convergence by providing central management of remote networks and effective data transmission.

Broad portfolio of industrial hardware and software solutions designed to maximize productivity, safety and quality for mission-critical applications.
Backbone Portfolio

MPLS-TP

**DRAGON PTN Backbone Switches**
- MPLS-TP technology delivers dedicated bandwidth for different services and 50ms protection switching
- HiProvision software for easy configuration and management of large transmission networks
- Industrial HiVision integration for backbone and access network
- Variety of interface modules and port types to ensure flexibility and seamless integration of legacy systems
- Central switching modules and power supplies help you build a completely redundant device

Greyhound Series

**Greyhound 1040 Rack Mount Switches**
- Gigabit Ethernet switches and routers designed for use in harsh industrial environments
- High port count, with up to 28 GE ports total
- Deliver fast and reliable uplink speeds at a cost-effective price with 2.5 Gigabit Ethernet (GE) fiber port option
- Ports can be mounted on the front or rear of the device
- Two hot-swappable power supplies (low and high voltages) available
- Choose from copper and fiber media modules – easy to swap in the field

Layer 3 Software and Support

**Industrial HiVision Network Management Software**
- Obtain instant visibility of key performance indicators with the Network Dashboard
- Find faults quickly & achieve timely remediation
- Easily identify, map & configure all network infrastructure, including SNMP-enabled devices from any manufacturer – even during live operation
- Download free version of the software for unlimited use before you buy

**Tripwire Industrial Visibility (TIV)**
- Completely passive solution that dissects industrial network traffic to perform industrial asset discovery, profile all industrial protocol communication, and provide threat detection from the DMZ down to the field I/O devices
- Understands over 40+ industrial protocols including EtherNet/IP, ModBus, DNP3, S7, PROFINET, IEC 101/104, GOOSE, and Bacnet
- Provides visibility into controller mode changes, configuration changes, and firmware uploads
- Diagrams network communication traffic patterns via Purdue model

MACH Series

**DRAGON MACH4x00 Layer 2 or Layer 3 Backbone Switches**
- Enables easy, progressive transition from 1 GE to 2.5 GE to 10 GE speeds
- Helps you build a redundant backbone network for maximum availability
- Offers redundant and hot-swappable power supply for maximum device uptime

**MACH100 Rack Mount Switches**
- Static, dynamic and multicast routing allow subnetworks to be set up and linked together
- Technologies such as PoE+ and PTPv2 facilitate a wide range of possible applications
- Various redundancy methods – like MRP, HIPER-Ring and RSTP – combined with a robust design ensure high network availability

Magnum 10RX Router

- Multi-Protocol Support – enables protocol routing for legacy networks, as well as current IP routing technologies
- Cyber Security Capabilities – includes built-in firewall protection & virtual private network (VPN) security
- Reduce Network Downtime – replace failed power supplies in the field on a live network, while system continues operating on secondary power unit
## Backbone Product Selection

<table>
<thead>
<tr>
<th>Backbone</th>
<th>Bandwidth</th>
<th>Port Density</th>
<th>Max Fiber Ports</th>
<th>CE</th>
<th>C-Tick</th>
<th>EN-50022/ FCC Part 15</th>
<th>UL 61010-1</th>
<th>UL 61010-2-001</th>
<th>EN 60950-1</th>
<th>EN 50137</th>
<th>REAEM2</th>
<th>EN 50312</th>
<th>EN 50312-1</th>
<th>GL/DNV (Ship)</th>
<th>ATEX Zone 2 (Hazardous Locations)</th>
<th>IEEE 901 (Substation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAGON PTN</td>
<td>10G</td>
<td>60</td>
<td>60</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>DRAGON MACH4500</td>
<td>10G</td>
<td>88</td>
<td>56</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>DRAGON MACH4000</td>
<td>10G</td>
<td>52</td>
<td>52</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>GREYHOUND 1040</td>
<td>10G</td>
<td>28</td>
<td>22</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Magnum 10RX</td>
<td>10G</td>
<td>42</td>
<td>10</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>MACH 100</td>
<td>10G</td>
<td>26</td>
<td>18</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
</tbody>
</table>

## Backbone Network Diagram

**Oil and Gas Production Sites**

**Legend**
- Fiber Optic Cable
- DataTuff Ethernet

- **Network Management and Provisioning**
- **MPLS-TP Backbone 10 GB Fiber Ring**
- **DRAGON PTN - Core**
- **DRAGON PTN Node 1**
- **DRAGON PTN Node 2**
- **DRAGON MACH 4x00**
- **Greyhound 1040**
- **Oil field 1**
- **Oil field 2**
- **RSP**
- **BAT**
Value Added Benefits

The Belden Solution brings breadth you won’t find with any other vendor. Consider the reliability of a total infrastructure built to work seamlessly in the harshest operating conditions. Based on true industry knowledge built over time in field-proven applications, Belden networks work. Plus, you’ll find Belden professionals actively engaged in the governance organizations and work groups exploring new technologies and setting standards for optimum performance.

Competence Center

As a reliable partner for end-to-end solutions, Belden offers expert consulting, design, technical support, as well as technology and product training courses, from a single source: Belden Competence Center.

Learning Opportunities

www.belden.com/resources/training/industrial-training

Keep pace with the latest trends and newest technologies through Belden.

- Formal certification courses
- Local roadshows
- Bi-weekly blogs and newsletters

<table>
<thead>
<tr>
<th>Backbone</th>
<th>Operating Software</th>
<th>DRAGON PTN</th>
<th>DRAGON MACH4x00</th>
<th>GREYHOUND 1040</th>
<th>Magnum 10RX</th>
<th>MACH 100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>HProvision</td>
<td>HOS</td>
<td>INOS</td>
<td>Classic</td>
<td></td>
</tr>
</tbody>
</table>

Software Key Features

- * Denotes availability

<table>
<thead>
<tr>
<th>Feature</th>
<th>DRAGON PTN</th>
<th>DRAGON MACH4x00</th>
<th>GREYHOUND 1040</th>
<th>Magnum 10RX</th>
<th>MACH 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAGON PTN</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>DRAGON MACH4x00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREYHOUND 1040</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnum 10RX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MACH 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Optimal Network Solution

- Individual consultation, design, project management
- Network design and migration concepts
- Compatibility testing
- On-site wireless site survey

Know-how for Reliable Operations

- Training plans
- Documentation
- Maintenance concepts
- Security concepts (network security)
- Individual user training courses
- Security training
- Workshops
- Pre-configuration and pre-assembly of systems
- On-site commissioning
- Application tests

Protection Against Downtimes

- Integration of redundancy
- Spare parts store concept
- Emergency concepts
- Qualification/certification of your employees and external service providers
- Network monitoring and support by in-house experts or partners
- Network security audit
- Network baselining
- 24 x 7 support hotline
- On-site support
- Remote service
- Replacement hardware services

Lasting Cost Control

- Service planning
- Complete costing
- Update training for technologies and product
- Warranty extension
- Individual, product-related service packages

Learn more at www.belden.com | Follow us on Twitter@BeldenIND | Call 1-800-BELDEN-1