Case Study: Hybrid Networking - Applications, Growth, Cost Control, and Security

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BorgWarner

Agenda

- **BorgWarner At a Glace.**

- **Planning** - Choosing the right telecom partner to meet the needs of the business.

- **Requirements** - Increased the amount of bandwidth available, while reducing total cost of ownership.

- **Business Needs** – Transforming the WAN to a "Business Enabled" network

- **Results** - Improved network resilience, reduced failure points, and improved service.

- **Financial** - Achieve savings with acceleration and optimization technologies

- **Secure** - Hardened the network by implementing, and leveraging layers of security into the network

- **Futures** – What's next ?

- Fuel Economy, Emissions, Performance

BorgWarner at a Glance

- **2015 Sales:** $8.3 Billion

- **Headquarters:** Auburn Hills, MI

- **Employees:** 30,000

- **Operations:** 74 Locations
  19 Countries

- **Products:** Engine, Transmission and Driveline systems

- **Market Drivers:** Fuel Economy, Emissions, Performance

Our Vision, Mission and Beliefs

- **Vision**
  - A Clean, Energy-Efficient World

- **Mission**
  - Deliver Innovative Powertrain Solutions that Improve Fuel Economy, Emissions & Performance

- **Our Beliefs**
  - Respect for Each Other
  - Power of **Collaboration**
  - Passion for **Excellence**
  - Personal **Integrity**
  - Responsibility to Our **Communities**

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A Portfolio of Leading Powertrain Solutions

Engine

Turbo Systems
- Regulated 2-stage (R2S™)
- Variable Turbine Geometry (VTG)
- Wastegate
- eBooster®

Thermal Systems
- Thermal Management Components and Systems
- Fans/Fan Drives
- Visctronic® Systems

Morse Systems
- Engine Valve Timing Systems
  - Timing Chain
- HY-VO® Transmission Chain
  - Transmission/Transfer Case Chain
- Variable Cam Timing
  - Cam Torque Actuated
  - Oil Pressure Actuated
  - Torsional Assist

Emissions Systems
- Actuators
- Coolant Control Valves
- Diesel Cold Start
  - Glow Plugs
  - Instant Start System
  - Pressure Sensor Glow Plugs
- Exhaust Gas Recirculation (EGR)
  - Coolers & tubes
  - Integrated Modules
  - Valves
- Gasoline Ignition Technology
- PTC Cabin Heaters
- Secondary Air Systems
- Sensor Technology
- Thermostats

Drivetrain

Transmission Systems
- DualTronic® Systems for Dual Clutch Transmissions
- ECO-Launch™ Stop/Start Accumulator Solenoid Valves
- Solenoids & solenoid blocks
- Friction and Steel Plates
- One-way Clutches and Modules

PowerDrive Systems
- AWD Couplings
- AWD Electronic Controls and Systems Integration
- eAWD Torque Vectoring
- eGearDrive® Electric Drive Transmissions
- Transfer Cases

Thermal Systems · Morse Systems · Transmission Systems · PowerDrive Systems · Turbo Systems · Emissions Systems

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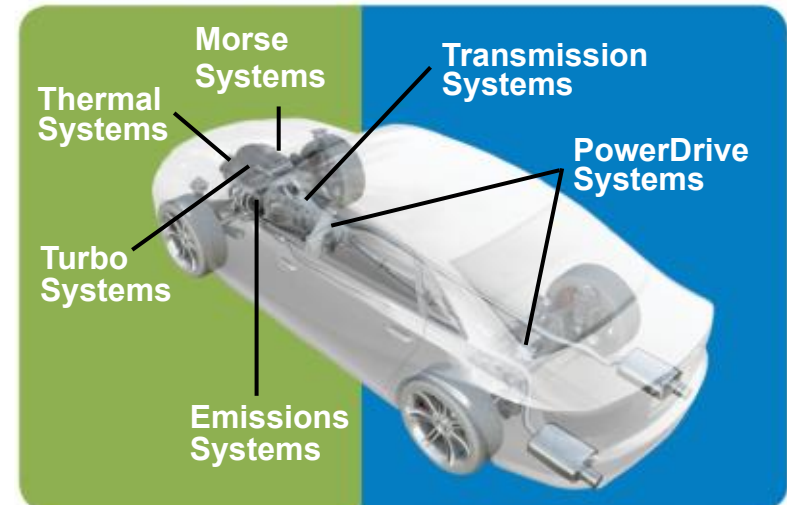
Network Provider (previous)

CHALLENGES

- Transition bottlenecks from a local team.
- High Costs for Wide-Area Network (WAN)
- Poor customer support globally
- Onboarding and implementing new sites are challenging
- Inadequate secondary/back-up network (today only covering 33 of the 47 total multinational sites) with mix of broadband/DSL/TDM services
- Delivery of Standards

The Journey Begins;
- Listen to what the customer wants, and expects.
- Understand the Business Drivers / Requirements.
- Extend Service Level Agreements based upon standards.

Understanding the needs;
- The best fit today, might not be best fit for tomorrow.
- Evolution of BorgWarner's business application landscape changes.
- Inherently secure, global network is expected.

Why Hybrid makes sense?

- Provide a high-capacity network that is global in scope
- Support a secondary network for low-priority traffic
- Enable policy-based routing to balance traffic among primary and secondary networks to optimize capacity and minimize costs
- Make service and support available to any region during local business hours
- Support Ethernet on fiber connections
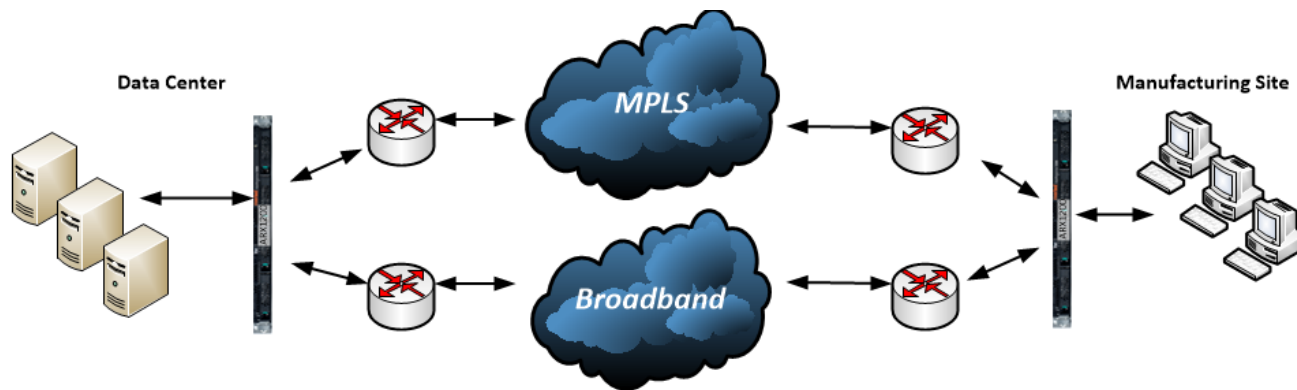
Making it a Reality – Requirements

Solution Requirements

- Ethernet handoff everywhere, supporting SIP, Voice, Video and Data.
- 24x7x365 Managed Service / In country support, targeted SLA on Outages – 4 Hours.
- Carrier diversity for primary and backup circuits (New Standard)
- Managed router diversity (New Standard)
- Internet Offloading - capitalizing on backup circuit available bandwidth (New Standard)
  - Policy based Routing on low cost internet connections, Offloading backup Traffic
  - QOS for critical applications
- Support local egress points consolidation regionally.
- New "Application Acceleration" focus with enhanced optimization deployments.
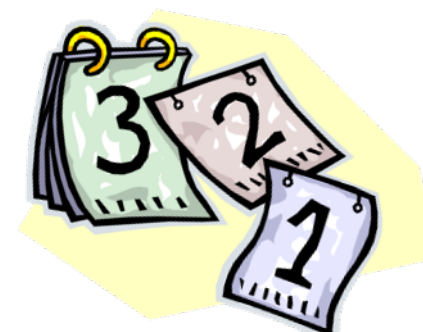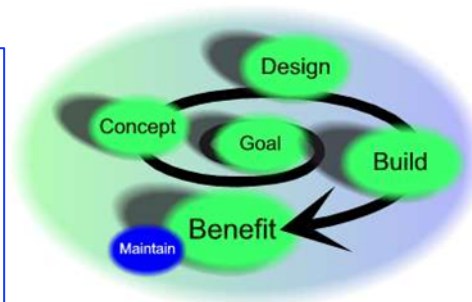
Address	City	State/Province	Country	Region	POP	AccPt	CktType	Access Vendor
Av. Finisterre 319	A Coruña	All	Spain	Europe	Paris	Paris, France	10 Mb Eth	Colt
Av. Finisterre 319	A Coruña	All	Spain	Europe	Paris	Paris, France	10 Mb Eth	Verizon (UK)
1350 N Greenbriar Dr	Addison	Illinois	USA	US	Chicago	Chicago, IL	10 Mb Eth	ATT
1350 N Greenbriar Dr	Addison	Illinois	USA	US	Chicago	Chicago, IL	10 Mb Eth	Level 3
1350 N Greenbriar Dr	Addison	Illinois	USA	US	Chicago	Chicago, IL	10 Mb Eth	Verizon Bus.
1350 N Greenbriar Dr	Addison	Illinois	USA	US	Chicago	Chicago, IL	10 Mb Eth	XO
Via Cesare Battisti, 122	Arcore (MI)	All	Italy	Europe	Frankfurt	Milan, Italy	10 Mb Eth	Colt
Via Cesare Battisti, 122	Arcore (MI)	All	Italy	Europe	Frankfurt	Frankfurt, Germany	10 Mb Eth	Interoute
Via Cesare Battisti, 122	Arcore (MI)	All	Italy	Europe	Frankfurt	Frankfurt, Germany	10 Mb Eth	Verizon (UK)
Via Cesare Battisti, 122	Arcore (MI)	All	Italy	Europe	Frankfurt	Frankfurt, Germany	10 Mb Eth	Telecom Italia
1849 Brevard Road	Arden	North Carolina	USA	US	Atlanta	Atlanta, GA	10 Mb Eth	Verizon Bus.
1849 Brevard Road	Arden	North Carolina	USA	US	Atlanta	Atlanta, GA	20 Mb Eth	Verizon Bus.
August Broemel Straße 4	Arnstadt	All	Germany	Europe	Frankfurt	Frankfurt, Germany	10 Mb Eth	Colt
August Broemel Straße 4	Arnstadt	All	Germany	Europe	Frankfurt	Frankfurt, Germany	10 Mb Eth	Interoute
1849 Brevard Rd	Asheville	North Carolina	USA	US	Charlotte	Charlotte	10 Mb Eth	Duke
1849 Brevard Rd	Asheville	North Carolina	USA	US	McLean	McLean, VA	10 Mb Eth	Verizon Bus.
Lucheng Middle Road, Lucheng Town, Tongzhou District No. 5	Beijing	All	China	Asia Pac	Beijing	Beijing, China	10 Mb Eth	FR DYXNet
Lucheng Middle Road, Lucheng Town, Tongzhou District No. 5	Beijing	All	China	Asia Pac	Beijing	Beijing, China	2 Mb Eth	FR DYXNet

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How did we get there?

Telecom Management:

Initiate
- Initial Comprehensive Account Review
- RFP Partner Management
- Understand our Telecom Expense Management

Coordinate
- Coordination of Location Moves including detailed Scope of Work (SOW)
- Project Managing all orders from installations through completion

Deliver
- Trouble Ticket Management – Escalation
- Billing Management Billing Dispute
- Ordering – MACD - Cancel Service

Set and Meet Expectations, Every Time !

On-Time Delivery

96%   98%   97%

AVPN   Optimization   AVTS
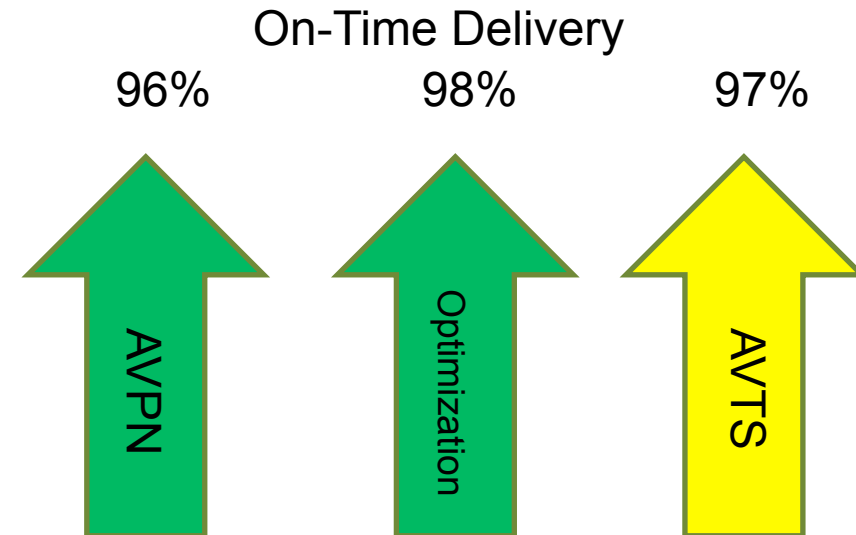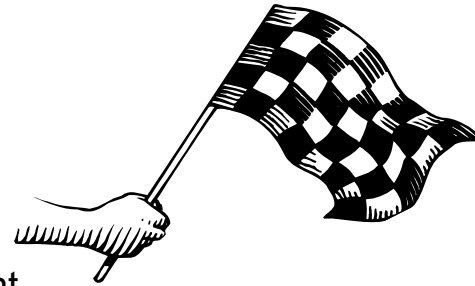
Migrated Services

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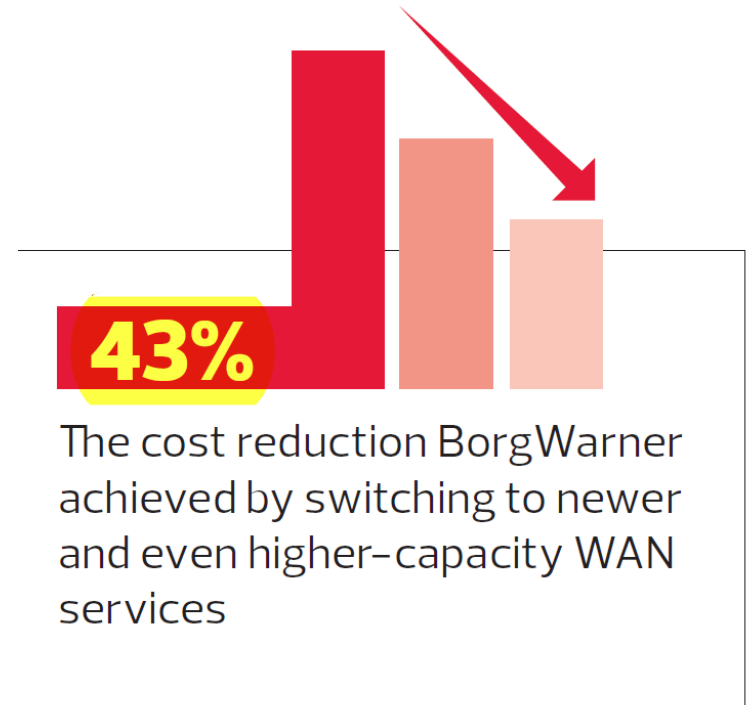
Hybrid Financials – Doing more with Less.

Overall Results - Increased Network Bandwidth 719.50MB, Reduced Cost 43% annually, Implemented Secondary Network.

43%

The cost reduction BorgWarner achieved by switching to newer and even higher-capacity WAN services

BGN WAN - Capabilities

1. **Enable the Evolution to UC**
   - Voice and Video presence.
   - High Speed Wireless

2. **Mesh Applications and Network Services**
   - Bandwidth on Demand
   - Software Defined Networks (SDN)
   - Predictive Application Performance

3. **Adaptive Security Architecture**
   - Defending the state of continuous compromise
     - Predict, Prevent, Detect, Respond……………

Network as a Service - NaaS
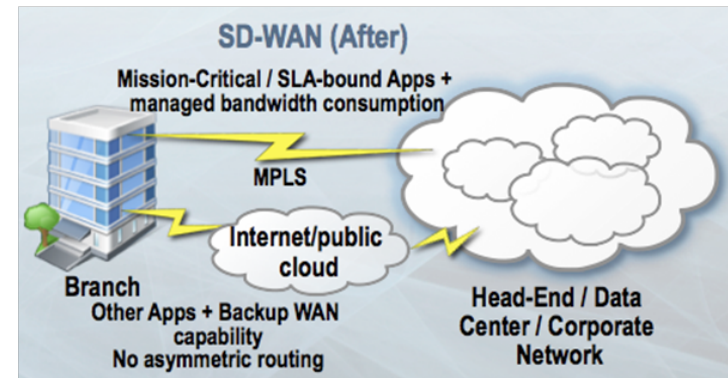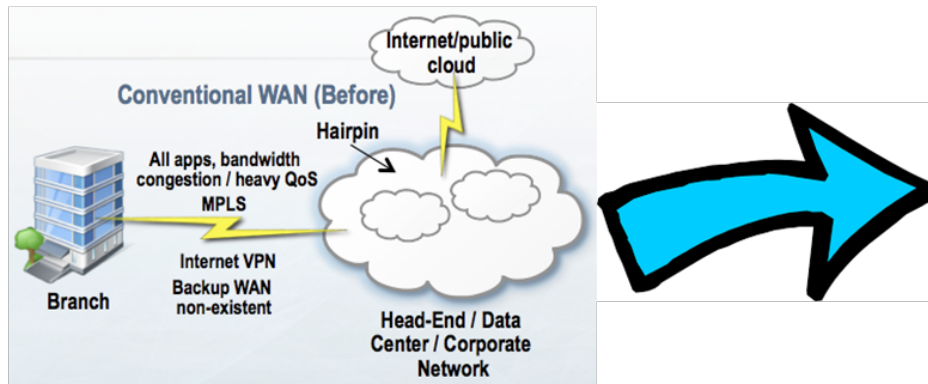
2016 ⟶ 2017 ⟶ 2018

The main goal of SD-WAN technology is to deliver a business-class, secure, and simple cloud-enabled WAN connection with as much open and software-based technology as possible. Bandwidth on-demand and Software Defined Networks delivers basic WAN connectivity, and high priority application business services using VPN tunnels, WAN optimization, and applications delivery control

Full network-as-a-service

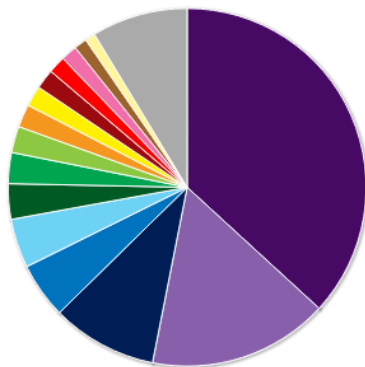Delivered from EVERY pop around the world
- Built in caching,
- Built in application acceleration,
- Built in Application prioritization with service target levels
- Built-in security

Bandwidth on Demand

Conventional WAN (Before)

Internet/public cloud

Hairpin

All apps, bandwidth congestion / heavy QoS MPLS

Internet VPN Backup WAN non-existent

Branch

Head-End / Data Center / Corporate Network

SD-WAN (After)

Mission-Critical / SLA-bound Apps + managed bandwidth consumption

MPLS

Internet/public cloud

Branch
Other Apps + Backup WAN capability
No asymmetric routing

Head-End / Data Center / Corporate Network

BorgWarner

Optimize and Accelerate as a Service

Optimized Traffic Reduced 67.2TB to 31.8TB (47%)

riverbed™
Think fast.

Optimization Enhancements
Riverbed enhancements make big impact.
Implement CMC Console (Single View)
New Vendor – Fully Managed Business Services
New Enhancements
        SAP & Team Center PLM, Exchange
Application Performance Management

Sensor: (007) wan0_0 Traffic (Live Graph, 2 hours)
Riverbed / .   (Steelhead) [Windows Linux/Unix]

■ Traffic In (kbit/s)   ■ Traffic Out (kbit/s)

PRTG Network Monitor 16.1.21.1924   3/22/2016 10:44:27 AM - ID 2405

Sensor: (011) wan0_1 Traffic (Live Graph, 2 hours)
Riverbed / .   (Steelhead) [Windows Linux/Unix]

■ Traffic In (kbit/s)   ■ Traffic Out (kbit/s)

	Port	Reduction	LAN Data	WAN Data	Traffic %
	Total Optimized Traffic	(52.76%)	67.2 TB	31.8 TB	--
	80 (HTTP)	(57.26%)	24.8 TB	10.6 TB	36.82%
	7830 (MAPI)	(72.15%)	11.0 TB	3123.2 GB	16.29%
	8779 (SMB2)	(50.17%)	6560.3 GB	3268.8 GB	9.53%
	10301 (Unknown)	(57.63%)	3478.6 GB	1473.9 GB	5.05%
	2051 (epnsdp)	(38.98%)	3055.9 GB	1864.7 GB	4.44%
	8081 (tproxy)	(24.44%)	2200.4 GB	1662.7 GB	3.20%
	27000 (Unknown)	(22.89%)	1924.2 GB	1483.7 GB	2.79%
	64327 (Unknown)	(0.00%)	1649.7 GB	1690.5 GB	2.40%
	10302 (Unknown)	(94.10%)	1426.2 GB	84.2 GB	2.07%
	389 (ldap)	(63.34%)	1275.6 GB	467.6 GB	1.85%
	445 (CIFS:TCP)	(71.94%)	1225.2 GB	343.8 GB	1.78%
	8080 (webcache)	(27.79%)	1070.9 GB	773.3 GB	1.56%
	25 (smtp)	(4.37%)	1011.0 GB	966.8 GB	1.47%

Thank You

feel good about driving

better fuel economy
reduced emissions
great performance