# Enterprise Voice and Data Routers
## Bytton/Bytton VOIP

**Rohde & Schwarz Topex**

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## At a glance

Bytton family is an intelligent services platform which provides high data transfer rates over LTE/3G+ Networks.
Suitable for enterprise WAN and mission critical applications such as multi facility corporate connectivity, professional backup and M2M applications.

Bytton LTE Intelligent Services Gateway includes a large range of communication interfaces and protocols including backward capability 3G+, 3G & 2.5G network coverage, WAN, WiFi and RS232/RS485.

Bytton VoIP is a 4G VoIP Router which integrates VoIP telephony features over LTE/HSPA+ cellular network and wireless high speed data routing in a single unit.

Suitable solution for the broadband data connection and VoIP applications, Bytton VoIP provides the migration of customer legacy PBX to the mobile operator IMS or NGN network.
Bytton VoIP is a cost efficient solution gathering VoIP, T.38 fax and data applications from the same equipment.

## Key Facts

- Enterprise WAN solution
- Branch Office main WAN connection for data and voice connectivity
- Extended temperature range options for deployments in harsh environments
- Multiple PDP context for traffic separation over Wireless(4G) WAN links
- Advanced Layer 2,3,4 data protocols stack

## Benefits and Key Features
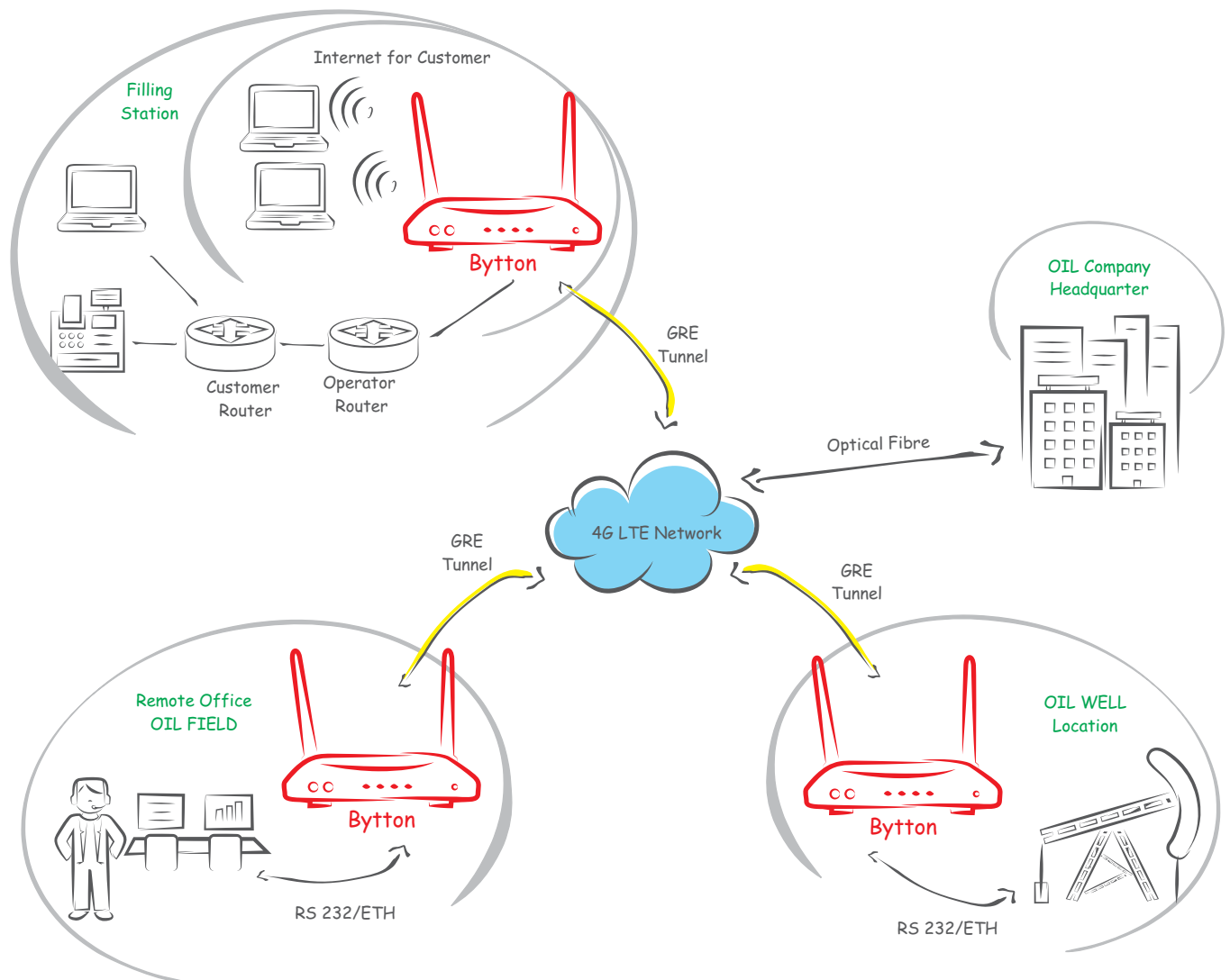
- Advanced routing engine and backup between different WAN links
- Backward compatibility from LTE/HSPA+ to GPRS
- Secure communications through embedded VPN tunnels: IPSec, PPTP, GRE, Open VPN
- Broadband and mobile
- Traffic marking and shaping: Layer 2, Layer 3 and Application Layer
- VoIP over LTE/HSPA+ network
- SIP & H.323 support
- Fax support – T.38
- Unrestricted mobility with high data rates
- Simultaneous voice and data on 4G/3G network

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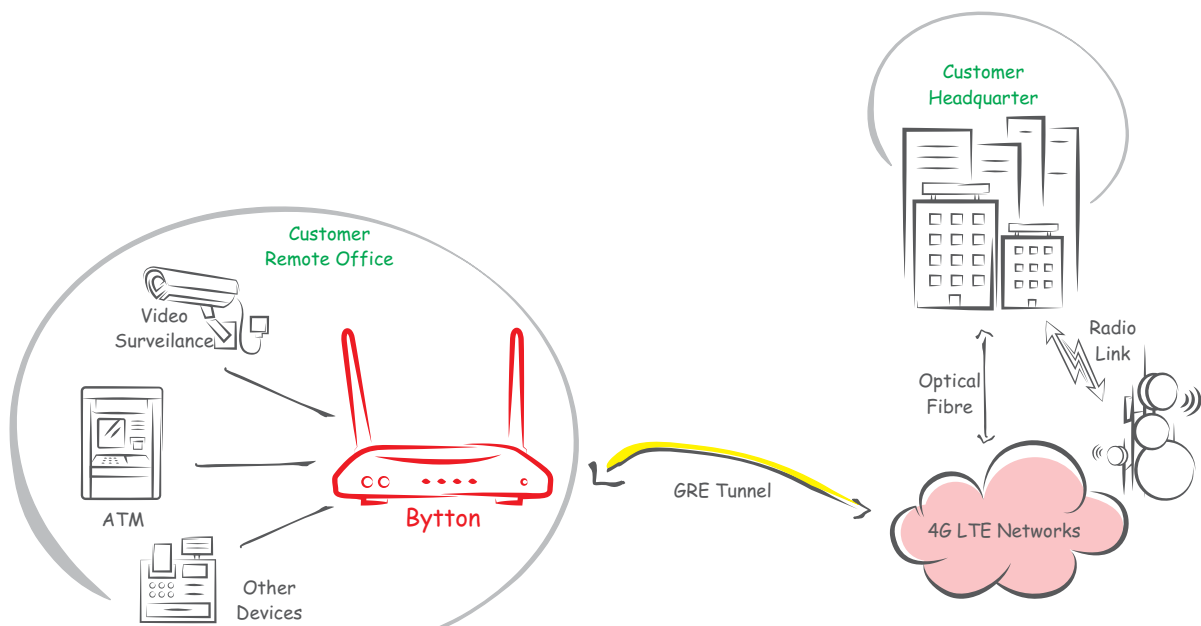




## Bytton Solutions - Oil & Gas use case



Filling Station

Internet for Customer

Bytton

Customer Router

Operator Router

GRE Tunnel

OIL Company Headquarter

Optical Fibre

4G LTE Network

GRE Tunnel

GRE Tunnel

Remote Office OIL FIELD

Bytton

RS 232/ETH

OIL WELL Location

Bytton

RS 232/ETH

# Enterprise Voice and Data Routers
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## Cellular Network Specifications

| | |
|---|---|
| LTE | Band 1 (2100 MHz), Band 3 (1800 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 20 (800 MHz)<br>Category 3<br>Downlink:<br>• 100 Mbps (20 MHz bandwidth)<br>• 50 Mbps (10 MHz bandwidth)<br>Uplink:<br>• 50 Mbps (20 MHz bandwidth)<br>• 25 Mbps (10 MHz bandwidth) |
| UMTS(WCDMA)<br>HSDPA<br>HSUPA<br>HSPA+<br>DC-HSPA+ | Band 1 (2100 MHz), Band 2 (1900 MHz), Band 5 (850 MHz), Band 8 (900 MHz)<br>HSPA+ rates<br>• Downlink: Up to 42 Mbps (category 24)<br>• Uplink: Up to 5.76 Mbps (category 6) |
| 2G EDGE/GSM/GPRS | GSM 850 (850 MHz)<br>EGSM 900 (900 MHz)<br>DCS 1800 (1800 MHz)<br>PCS 1900 (1900 MHz)<br>EDGE throughput up to 236 kbps |

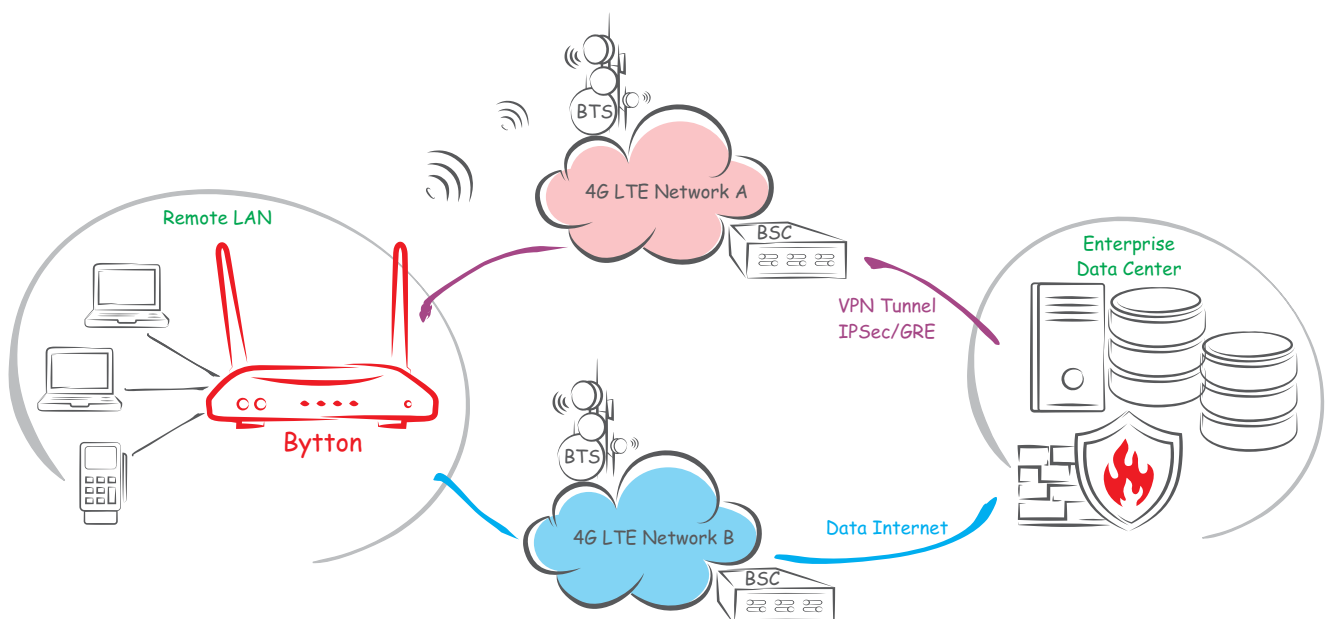## Bytton Solutions - Financial Services use case

# Enterprise Voice and Data Routers
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## Hardware Interfaces Specifications

| | |
|---|---|
| Fast Ethernet LAN/WAN | 10/100 Base -T ports (RJ45 connectors) |
| SIM | 1 or 2 slots for the SIM cards |
| Serial | RS232/RS485 ports - RJ45 connectors |
| Reset | Reset button |
| Antenna connectors | Cellular and WiFi connectors |
| FXS ports | 4 Analog ports RJ 45 connectors |
| BRI ports | 2 ISDN-BRI ports with RJ45 connectors |
| PRI | Custom – PRI interface E1-ISDN with RJ45 connector |
| Status indicator | LEDs for RF signal, data link, power supply, LAN and WAN Ethernet ports |

## Bytton Solutions - 4G LTE Enterprise use case

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| Software Features and Protocols | |
|---|---|
| IP Routing protocols | RIPv1/RIPv2 - IPv4,  RIPng - IPv6, OSPF v2 and v3, BGPv4+, IS-IS, VRF |
| Security | OpenVPN, OpenSSL, IPSec (PSK, RSA, X.509, 3DES, AES, MD5, SHA1), PPTP, L2TP, GRE(RFC1701) with configurable MSS, DMVPN,  Static and dynamic access lists and session-based Firewall |
| Layer 2 Features and Protocols | VLAN tagging/VLAN separation on Ethernet interfaces (WAN/LAN), Client MAC static allocation configuration allowed per Ethernet port,  802.1d, 802.1s, 802.1x, PPPoE (PAP, CHAP Auth) |
| WiFi | 802.11b/g/n , WEP, WPA-PSK, WPA-PSK2, WPA2, MAC Security (only configured MAC addresses shall be authenticated), Op. modes: Access Point, Station, Bridge |
| Cellular | SIM Registration & Status, Radio quality parameters Signal Level and Cell details(CellID, LAC, RAC, SAC, TAC, RSCP, Ec/Io, RSRP, RSRQ, SINR) , Network selection, minimum dual-PDP context, Frequency band locking, Channel locking, Operator locking |
| QoS, Clasification, Marking, Shaping and Policing | CoS, DSCP, Classification and marking of traffic - per-service/interface, Source/Destination Address, L4 Port/Protocol,  BW anagement/prioritization/limitation |
| Management and Monitoring | Web based management and CLI (via SSH), SNMPv2v3, SMS, advanced logging, firmware update single unit or group of units, TR69(custom firmware) |
| Voice | SIP(RFC 3261), RTP(codecs G711, G729, T38 for VOIP), SDP,  SIP Methods(REGISTER, SUBSCRIBE, NOTIFY, PUBLISH, MESSAGE, INVITE, ACK , PRACK, UPDATE, BYE,  CANCEL, OPTIONS, INFO, REFER, Re-INVITE), SIP Headers(Accept, Accept-Encoding, Accept-Language, Allow, Authorization, Call-ID,  Contact, Content-Length, Content-Type, Cseq, Date, Expires, From, Max-Forwards, P-Access-Network-Info,  P-Asserted-ID, P-Preferred-ID, Priority No, Privacy, Proxy-Authenticate, Proxy-Authorization, Proxy-Require, Record-Route, Referred-By, Referred-To, Remote-Party-ID Yes, Replaces Yes, Requested-By,  Require Yes, Response-Key No, Retry-After, Route, Server, Subject Yes, Timestamp, To, Unsupported, User-Agent, Via, Warning, WWW-Authenticate), Early Media(183), VAD, Silence Suppression, CNG(RFC 3389), Echo Cancellation |
| Misc | Failover between different WAN interfaces, DHCP – client/server & relay, DynamicDNS, NTP, FTP, VRRP, DNS, FTP, SFTP, SSH, ARP, ARP Proxy, MTU discovery, NAT, PAT, IGMP (v1,v2, v3), PIM-SM, IPSLA responder, iperf |

*All above mentioned features depend on equipment hardware and firmware.
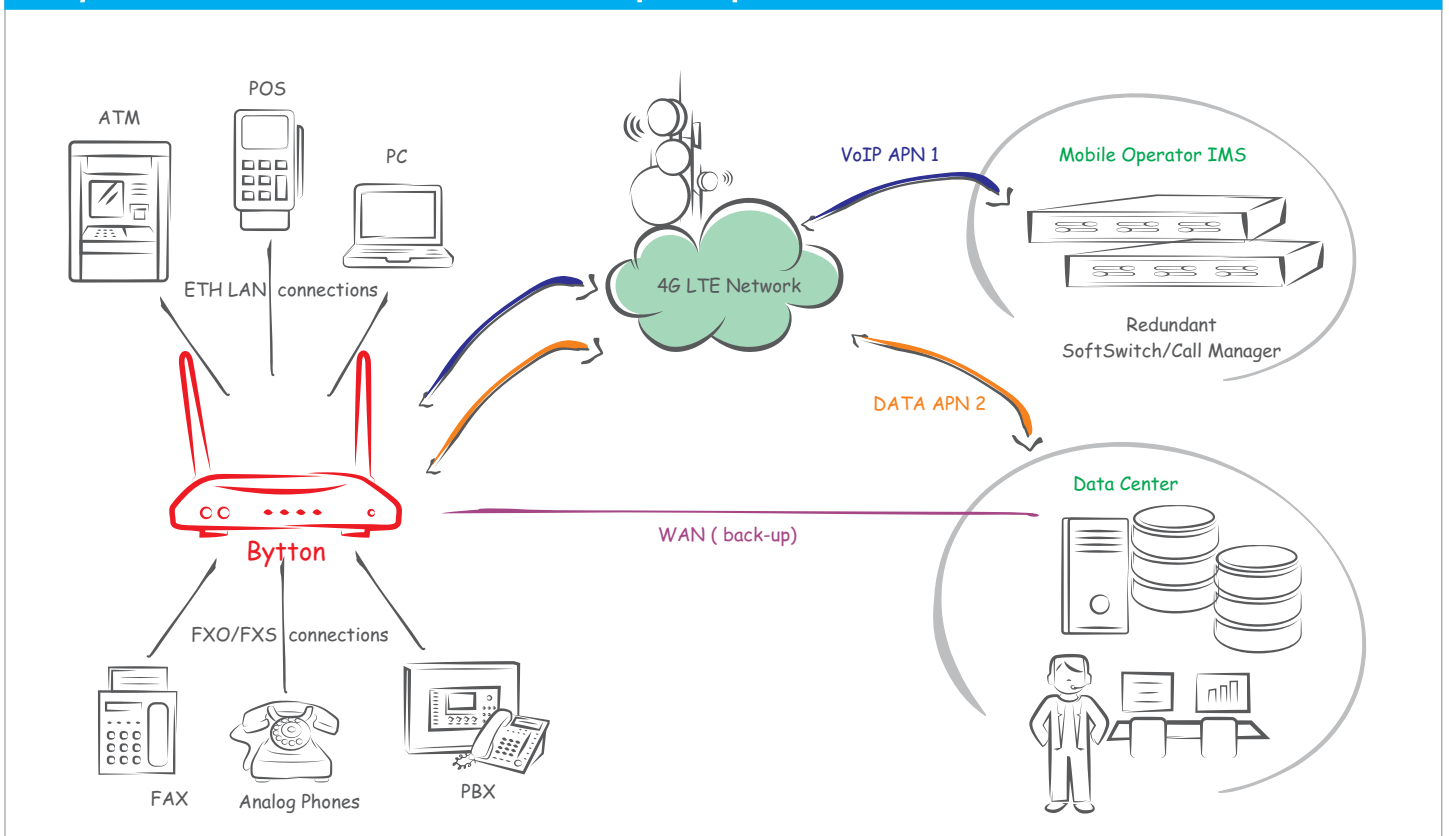
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## Power Supply Specifications

| | |
|---|---|
| Input | 100÷240 Vac, max 1A @ 50-60Hz |
| Output | +12Vdc @ 2A |
| Power Output | Max 24W |
| Power Supply Adapter | AC / DC standard adapter<br>Optional: car kit adapter<br>Optional : Terminal Block:10 V - 30VDC |

## Bytton Solutions - Local Loop Replacement use case



## Environment Conditions

| | |
|---|---|
| Standard Operating Temperature | 0 to 40 degrees Celsius |
| Optional Operating Temperature | -20 to 60 degrees Celsius |
| Humidity | 0 to 95%, non - condensing |

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## Ordering Information

| Type | Part Number | Hardware Interface |
|------|-------------|--------------------|
| | BYT_3G_FZ_T_SM | 4xFE |
| Bytton LTE | BYT_4G_F2V_1T_SM | LTE + 4xFE |
| Bytton LTE with WiFi | BYT_4G_F2V_1WNT_SM | LTE + 4xFE + WiFi |
| Bytton LTE dual SIM | BYT_4G_F2V_2T_SM | LTE + 4FE + 2xSIM |
| Bytton LTE dual SIM & WiFi | BYT_4G_F2V_2WNT_SM | LTE + 4FE + 2xSIM + WiFi |
| Bytton LTE extended range | BYT_4G_F2V_1J_SM | LTE + 4FE + Extended Temperature range |
| Bytton VoIP (FXS) | BYT_4GV_K2V4S_SM | LTE + 4xFXS + 2FE |
| Bytton VoIP (BRI) | BYT_4GV_L2B_SM | LTE + 2xFE + 2xBRI |
| Bytton VoIP (FXS) with WiFi | BYT_4GV_K2V4SW_SM | LTE + WiFi + 4xFXS + 2xFE |
| Bytton VoIP (BRI) with WiFi | BYT_4GV_L2BW_SM | LTE + WiFi + 2xBRI |
| Bytton LTE dual SIM & WiFi<br>North America frequencies | BYT_4G_F2R_2WDI_SM | LTE(North America) + 4FE + 2xSIM + WiFi + Extended |