3612 MAINSTREET

NARROWBAND MULTIPLEXER | Release 8.0

Alcatel's 3612 MainStreet Narrowband Multiplexer (NBM) provides highly flexible delivery of multiple services to remote small/medium branch sites or acts as a network hub for smaller networks.

The device is designed to maximize the efficiency of bandwidth, hence reducing networking costs while delivering the high performance services required for today's business applications.

The 3612 MainStreet NBM manages expensive access link bandwidth through the use of voice compression. This provides high quality at very low bit rates, frame relay switching and encapsulation, and subrate multiplexing features. As a result, the unit makes efficient use of network resources, thus providing a very cost-effective network access solution.

The system can support various combinations of voice and high/low speed data, including connections from LAN routers and up to 14 analog or digital connections from a PBX, key system or fax machine. Maximum bandwidth efficiency is realized with dynamic bandwidth allocation by sharing bandwidth on demand between voice, fax and data.

Cost-efficient access for voice, fax, LAN and legacy data over narrowband leased line, frame relay and ISDN fixed and switched services

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3612 MainStreet NBM network solutions

- Bandwidth savings through efficient multiplexing of voice, fax and data onto leased line, frame relay and ISDN services from remote locations
- Highly flexible access feeder to Alcatel backbone networks
- Central hub for smaller star networks or point-to-point applications
- Combination of LAN, legacy data (Async, X.25, SNA, etc.) and voice over frame relay enables substantial bandwidth savings and performance improvements across the WAN
- Use of sophisticated low bit rate voice compression techniques delivers high quality voice (and fax) communications while minimizing use of costly bandwidth
- Replacement of expensive leased lines with ISDN basic rate interface (BRI) switched services enables automatic dial-on-demand communication upon detection of CPE voice, data or LAN activity
- Encapsulation into frame relay of PBX CCS signaling protocols provides significant bandwidth savings and provides PBX feature transparency
- Automatic aggregate protection of leased lines over the switched ISDN network negates the need for expensive, and often idle, alternate bandwidth for rerouting. Call charges incurred only during backup
- Flexible ISDN features allow provision of temporary switched connections for disaster recovery applications

Data applications

Data devices such as routers, cluster controllers, terminals, or video CODECs can be connected either directly to the 3612 MainStreet NBM or remotely using Data Termination Units (DTUs) at distances of up to 5.5 kilometers (3.4 miles).

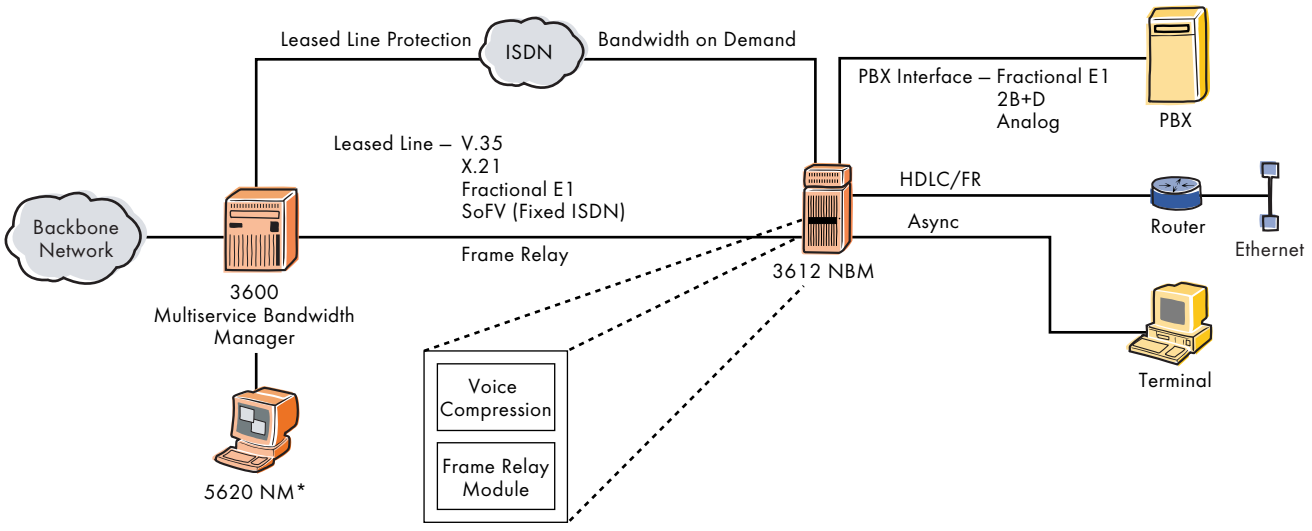
The data interfaces can support low and high speed connections for frame relay, Async, X.25, SNA and other HDLC-based protocols. This enables support of a variety of data applications including remote LAN interconnect, or support for cluster controller, to FEP connections, etc.

Voice applications

The 3612 MainStreet NBM supports connection to PBXs, key systems and fax machines via fractional E1, basic rate ISDN or traditional analog interfaces. Voice channels are then compressed to as low as 8 kb/s using A-CELP coding (8:1 compression ratio), delivering significant bandwidth savings on the aggregate link, while maintaining high voice quality. Voice channels transparently support G3 fax traffic without the need for additional bandwidth.

Signaling from the analog interfaces (CAS or DTMF) is carried in-band with the compressed voice traffic without additional bandwidth overheads. PBX CCS signaling protocols can be encapsulated with other data traffic into frame relay, giving further bandwidth efficiency and enabling end-to-end feature transparency between PBXs.

▼ The 3612 MainStreet NBM is a versatile network element, providing multiservice access over narrowband lines.



* Alcatel 5620 Network Manager (NM), formerly the 46020 Network Manager.
This product belonged to the Newbridge family. Newbridge was acquired by Alcatel in May 2000.

Key Features

Frame relay support

The frame relay resource module (FRM) can be used for frame relay switching and encapsulation of voice and legacy protocols (e.g., Async and HDLC) into frame relay. Combining voice and these data streams over frame relay provides efficient use of aggregate bandwidth and allows easy access to a frame relay backbone.

Super tandem voice

This feature enables compressed voice circuits to transit multiple tandem PBXs over digital interfaces without the need to decompress and recompress the signal, thus improving voice quality in large mesh networks. This tandem capability is independent of the PBX signaling protocol and provides an end-to-end quality of one hop, even if the circuit transits many PBXs.

ISDN support

Integral ISDN basic rate interfaces can be used to connect to a fixed ISDN line, such as the I (Japan) or SoFV (Germany) interfaces. This interface can also be connected to the ISDN switched network, instead of a leased line, for offices where dedicated connections are not justified. When the 3612 detects voice, data or LAN activity, an ISDN call will be made, hence charges are only incurred for the duration of that activity.

Alternatively ISDN can be used to back up a failed leased line connection.

Network management

The 3612 MainStreet NBM is fully software configurable and managed by a local VT100 terminal or terminal emulator, or remotely by one of the Alcatel series of network managers.

The 3612 NBM is part of the MainStreet family of products, which provide a wide variety of managed network solutions. The 3612 NBM can be used in small point-to-point or star networks, or as an access node to large international circuit switched and packet networks. This flexibility and expansion capability allows the network to grow as user needs change.

Technical Summary

Aggregate Interfaces

- Four aggregate interface slots are available supporting: V.35, X.21, S/T BRI ISDN and fractional E1 (75Ω and 120Ω) aggregates
- Aggregate link speeds: V.35, X.21 and fractional E1 up to 512 kb/s
- High capacity multiplexing (HCM) or transparent I.460 framing
- Integral satellite doppler buffer
- CPSS over satellite links
- Protection switching and dial-up circuit protection via ISDN aggregate interfaces
- Full Euro-ISDN, INSNet, and National ISDN 1 compliance
- SoFV (Germany) and I (Japan) connection
- AQA (activity qualified access) providing on-demand ISDN connection

Tributary Interfaces

- Up to 12 tributary interfaces (some dual circuit)
- Dial-up data circuit protection
- AQA on X.21, V.35, TIA/EIA-232, LGS and E&M

Data

- V.35, X.21, TIA/EIA-232 (dual channel)
- ISDN BRI (2B+D), fractional E1
- Synchronous data rates up to 512 kb/s
- DNIC and 2B1Q for connection to remote DTUs at up to 128 kb/s

Voice

- Dual channel E&M (2/4 wire), LGS, LGE, MRD, ISDN BRI (2B+D), and fractional E1
- E&M signaling: Type I, II, V or SSDC5
- Modem support up to 9 kb/s
- G3 fax speeds: 9.6, 7.2, 4.8 and 2.4 kb/s

Voice Compression

- 8 kb/s A-CELP, 16 b/s LD-CELP
- HCV 16 and 8 kb/s
- Super Tandem Support (for digital PBX connections)
- ADPCM at 32 kb/s with transitional signaling (ITU-T G.721 and ANSI T-1.302)
- CAS, CCS, DTMF and AC-15 Type A and D signaling support

Frame Relay

- Voice over frame relay per FRF.11
- Transparent HDLC encapsulation into frame relay per Q.933 Annex G or Annex F
- Async encapsulation using FRM subrate interface
- Frame relay format conforming to T-1.606/I.122 and I.233, T-1.618/Q.922
- Frame relay interface conforming to T-1.617 Annex D, Q.933 Annex A
- Up to 120 DLCIs supported
- Connecting to public frame relay using E1, X.21 or V.35 interfaces

Data Termination Units

- Supports Alcatel's 275x MainStreet Data Termination Units (DTUs)
- Interface for all DTUs is single twisted pair up to 5.5 km (3.4 mi.)
- Asynchronous data rates up to 38.4 kb/s (including 14.4 kb/s)
- Synchronous data rates up to 128 kb/s

Subrate Multiplexing

- Alcatel HCM: 800 b/s granularity with only 800 b/s overhead (up to 98% efficient)
- Supports subrate multiplexing of voice, data and signaling
- Multidrop data bridging applications

Tone Generation

- Tone Module: 1004 Hz test tone, quiet tone, ringback tone frequency (440 Hz modulated with 480 Hz, 400 Hz modulated with 450 Hz, and 425 Hz), and ringback cadence (including split-cadence)

Maintenance

- All parameters are software configurable
- Directed and automatic self-diagnostics
- Alarm logs and remote alarm signaling
- Operational and diagnostic LED displays
- Circuit, equipment and line loopbacks
- Quality and performance statistics for X.21, V.35, S/T BRI and fractional E1 aggregate interfaces

Physical Description

- Height: 60.58 cm (23.85 in.)
- Width: 30.23 cm (11.9 in.)
- Depth: 11.3 cm (4.45 in.)
- Weight: 7.2 kg (16 lb.)
- Lockable, wall-mount cabinet
- Rack-mount adapter option

Operating Environment

- Temperature: 0 C to 40 C (32 F to 104 F)
- Humidity: 5% to 95% noncondensing
- Elevation (atmospheric pressure range): 60 m (197 ft.) below sea level to 1,800 m (5,905 ft.) above sea level

Power

- Power supply: 100 V/50 or 60 Hz, 115 V/60 Hz or 220 V/50 Hz
- Maximum power consumption: 133 W
- Ringing generators: 16, 20 or 25 Hz/60 V rms

Feature Summary

Voice Interfaces	2902	3612	3624	3630
E&M		•	•	•
LS/GS Subscriber (LGS)		•	•	•
LS/GS Exchange (LGE)		•	•	•
T1 RBS			•	•
E1 CAS		•		•
MRD/GEN-GEN		•	•	•
Data Interfaces				
V.24, V.28, T1A/E1A-232-C	•	•	•	•
2WTO and 4WTO			•	
V.35	•	•	•	•
X.21/V.11	•	•	•	•
OCU-DP			•	•
2B1Q (interfaced with 275x DTUs)	•	•	•	•
Aggregate Interfaces				
1.544 Mb/s T1 (D4, ESF, 64 kb/s chan.)			•	•
2.048 Mb/s E1 (CAS, CCS, 64 kb/s chan.)	•			•
E1 HDSL				•
Fractional E1		•		
X.21		•		
V.35		•		
ISDN S/T BRI		•		
Optical Extension E1				•
DSP Applications				
Voice compression				
▼ 8 and 16 kb/s HCV compression		•		
▼ 8 kb/s A-CELP (ITU-T Rec. G.729)		•		
▼ 16 kb/s LD-CELP (ITU-T Rec. G.728)		•		
▼ ADPCM (ITU-T Rec. G.721) 32 kb/s		•		
G3 fax support (V.17) over compressed voice (14.4 kb/s max.)		•		
Modem (V.32bis) tones support over compressed (CELP) voice (14.4 kb/s)		•		
Subrate multiplexing		•	•	•
Echo cancellation		•		
Voice conference bridging				•
Multidrop data bridging	•	•	•	•
High capacity multiplexing (HCM)	•	•	•	•
DDS rate adaptation			•	
Packet Services				
Frame relay switching		•		
Transport HDLC encapulation		•		
Voice over frame relay		•		
DLCI multiplexing		•		
General (maximum)				
# of E1 ports	2			2
# of fractional E1 ports		4		
# of T1 ports			1	2
# of circuits	4	24	24	32

For more information www.cid.alcatel.com

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