

# Ascend

## Ascend MAX line vs. Livingston PortMaster 3

### Brief Description: Livingston PortMaster 3

The PortMaster 3 (PM3) from Livingston Enterprises is the company's first attempt to provide an integrated remote access switch targeted primarily at small to mid-size ISPs. The PM3 is aimed to compete squarely with the MAX™ line (400X). The product was announced during InterOp Atlanta in September 1996. The PM3 has the following:

- Support for up to 48 modems (60 in E1 version) and 2 PRIs per box; only 46 concurrent sessions due to lack of NFAS
- 8 or 10 True Digital modems/card (K56flex capable)
- Single or dual T1/E1/PRI card
- Distributed processing based on Intel 486 processors
- Support for integrated analog/ISDN (46 concurrent sessions currently)
- Frame Relay support
- 56K modem upgrade based on Lucent chip set

#### U.S. List Prices

Chassis, controller and 1T1/PRI port	\$6,950
Chassis, controller and 2T1/PRI ports	\$9,950
8-port True Digital modem card	\$3,450
10-port True Digital modem card	\$4,300

### Ascend MAX line Competitive Advantages — “The Silver Bullets”

- High degree of scalability and flexibility: Ascend is the leader in providing scalable and flexible access concentrator solutions. The MAX line (including the MAX TNT™) provides scalable and flexible configurations from 8 to 672 modems and from 4 T1/PRI to T3 connections thus covering a wide array of customer needs. Ascend also provides a wide range of offerings from client site (Pipeline products) to central site (MAX, MAX TNT and GRF™ products) to facilitate full scale deployment
- High density modem integration and mixed analog/ISDN sessions: Ascend's MAX line can integrate up to a maximum of 72 modems (MAX 4004 & 4000) and 672 (MAX TNT) and provide up to 96 concurrent sessions (MAX 4004 & 4000) or 672 sessions (MAX TNT) concurrent analog/ISDN sessions.
- Most comprehensive set of security features including fully integrated, dynamic firewall capability and extended RADIUS dictionary (over 120 enhancements)
- Guaranteed interoperability with a wide number of modem manufacturers and carrier networks including carriers in over 36 countries
- End-to-end network management: Ascend's NetClarity™ is a multi-vendor solution that provides total network management — designed specifically for ISPs, carriers and corporations to support a variety of network access services and devices. NetClarity provides discovery and mapping, configuration management, performance measurement and fault monitoring functionality to provide a customized view of the network as a whole or device by device.
- Proven track record and investment protection: Ascend has the largest installed base of integrated access switches and has been shipping high density access concentrators for over three years. Ascend has installed over 2 million digital ports and over 1.5 million digital modems worldwide. Customers can be assured of investment protection because of Ascend's commitment to developing scalable, compatible and high performance platform solutions.



- Support for a complete set of WAN access protocols: Switched 56, DDS 56, T1/FT1, E1, ISDN BRI and PRI, and Frame Relay
- MP+ and Multi-chassis MP, MP+ and BACP support: With the introduction of MAX Stack, a feature which maximizes bandwidth availability by enabling multiple MAX WAN access switches to function together as one logical switch for Multilink PPP calls, Ascend has clearly established itself as the only remote access vendor providing comprehensive bandwidth management features. For example, a single incoming MP/MP+/BACP call that requests greater bandwidth is given additional unused channels anywhere in the stack. MAX Stack reduces the complexity and increases the simplicity of provisioning access to multiple central site WAN access switches.
- Support for GSM cellular V.110
- High speed modem support: The MAX line offers xDSL support (IDSL on the MAX 400X platform and MultiDSL™ (IDSL, SDSL and RADSL support) on the MAX TNT for ISPs and enterprises that want to offer their users the widest available access options and DSL upgrade paths
- Low price/high value: The MAX line now includes low cost products that are bundled with leading edge security and management capabilities to offer higher functionality at more competitive prices

*Any feedback or suggestions are most welcome. This bulletin will be updated regularly. Also, please send any pertinent competitive information from the field to the attention of the Competitive Marketing group in Alameda (x2081)*

## Comparison of Key Features — Ascend MAX line vs. Livingston PM3

Feature	MAX 20XX	MAX 40XX	Livingston PortMaster 3
<b>U.S. List Price</b>			
Base chassis	\$6,500	\$11-\$15,500	\$6,950-\$9950
Max. modems/box	Up to 24	8 to 96	48
Price/modem	\$746	\$542-\$750	\$639
Max. PRI/box	1	2 to 4	2
Concurrent sessions	12 to 24	48 to 96**	46*
Firewall pricing	\$2,000	\$4,000	N/A
<b>WAN Connectivity/Bandwidth Management</b>			
T1	Yes	Yes	Yes
V.34	Yes	Yes	Yes
ISDN BRI	Yes	Yes	No
ISDN PRI	Yes	Yes	Yes
PPP	Yes	Yes	Yes
Frame Relay	Yes	Yes	Yes
AppleTalk remote access	Yes	Yes	No
Multilink Protocol (MP)	Yes	Yes	Yes
Multilink Protocol Plus™ (MP+)	Yes	Yes	No
Hardware data compression	Yes	Yes	No
Multi-Chassis MP	Yes	Yes	Yes
Multi-Chassis MP+	Yes	Yes	No

<b>Security</b>			
PAP/CHAP	Yes	Yes	Yes
TACACS & TACACS+	Yes	Yes	No
Dynamic firewall	Yes	Yes	No
RADIUS	Yes	Yes	Yes
Extended RADIUS	Yes	Yes	No
Integrated firewall	Yes	Yes	No
CLID	Yes	Yes	No
VPN Tunneling support	Yes	Yes	No
<b>Network Management</b>			
Full SNMP MIB support	Yes	Yes	Yes
Total Network (multi-device) management	Yes	Yes	No
Multi-vendor router/switch support	Yes	Yes	No
QoS reporting	Yes	Yes	No
Complete discovery and mapping	Yes	Yes	No
<b>Routed/Routing Protocol Support</b>			
IP	Yes	Yes	Yes
IPX	Yes	Yes	Yes
OSPF	Yes	Yes	Yes
RIP 2	Yes	Yes	No
Appletalk	Yes	Yes	No
<b>Server Functions</b>			
STAC comp.	Yes	Yes	No
Terminal server	Yes	Yes	Yes
FAX out	Yes	Yes	No
Remote software download	Yes	Yes	Yes
LAN to LAN	Yes	Yes	Yes
<b>Carrier Support</b>			
Redundant power supply	No	Yes	No
Cellular service support	Yes	Yes	No
<b>DSL Support</b>	No	IDSL	No
<b>K56flex Support</b>	Yes	Yes	Yes

\* Only 46 can be used currently on the 2 PRIs since there is no D-channel sharing

\*\* International version (E1) supports up to 120 concurrent sessions

## Selling against Livingston PortMaster 3

### *Major Weaknesses of the PortMaster 3 — “The Knock-offs”*

- Low density: The PM3 supports up to 2 PRI — a maximum 46 ISDN or analog channels (no NFAS yet). The MAX supports 96 total channels with up to 72 analog modems
- Limited WAN flexibility: The PM3 does not currently support channelized T1s. All WAN connections must be made using PRI lines (many parts of the country do not offer PRI)
- Limited experience: Livingston has no experience with modem technology and integrating analog/ISDN technology into the same box; Ascend has a proven track record in the field for over 3 years and has the largest installed base of Remote Access Concentrators. It will take a long time for Livingston to bring the modem code to a field-operational level
- Upgrade to dual PRI requires hardware swap: To upgrade the PM3 to dual PRI requires replacement of the motherboard — an extremely tedious process and may require set-up and configuration from scratch. In the case of the MAX 4002/4004 the upgrade does not require any hardware changes
- Limited routed protocol support: PM 3 does not support RIP2 yet, which allows ISPs to support Variable Length Subnet Masks (VLSM). Without support for VLSM, ISP's cannot segment or concatenate Class C address subscribers. Also, support for OSPF is in beta, and BGP is not supported. These protocols are especially important to ISPs. Livingston's forte has not been in developing routing software. It will take a few iterations for Livingston to develop this code and get it right.
- No Compression yet — to be added “later” with daughter card. Ascend supports compression today with an enormous installed base.
- No Support for D-Channel Sharing (NFAS) — The MAX allows multiple PRIs to share D-channel signaling. This allows for cost-effective addition of B-channels per PRI
- Potentially lower performance compared to the MAX (PM3's Intel 486 vs. MAX Intel RISC i960)
- Limited security: Livingston supports stand-alone firewall and static filters only; it does not have built-in (integrated) firewall and dynamic filtering capability. In addition, the PM3 has limited RADIUS extensions
- No end-to-end multi-device/multi-vendor network management: Limited management capabilities are single device only
- Not an industrial strength, reliable system: No redundant power supplies and NEBS compliance
- No support for MultiDSL technology

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