Livingston Enterprises, Inc.

ComOS 3.5 Release Note

Introduction

The new Livingston Enterprises ComOS™ 3.5 software release is now available for the PortMaster™ 3 Integrated Access Server. This release is provided at no charge to all Livingston customers. Release 3.5 is not yet available for the PortMaster 2, Office Router, and IRX product lines.

This release note documents commands and features in ComOS release 3.5 in addition to those described in the OSPF chapter of the *Command Line Administrator's Guide* (available in late December, 1996) and the "Configuring the PortMaster 3" chapter of the *PortMaster 3 Installation Guide* (included with the PortMaster 3). Both manuals are available in PostScript and Adobe Acrobat PDF format on the Livingston Enterprises FTP site, ftp://ftp.livingston.com:/pub/le/doc/manuals/.

New Features in ComOS 3.5

ComOS 3.5 includes the following new features:

Support for the PortMaster 3 Integrated Access Server and True Digital Modems.

Variable Length Subnet Masks. In previous releases ComOS required the same netmask to be used for all subnets of a network. In release 3.5 variable length subnet masks (VLSM) are supported. To ease the transition, the command "set user-netmask off" is available; see below for details.

OSPF - see the OSPF Chapter in the Command Line Administrator's Guide, which is available now in PostScript and Adobe Acrobat PDF format on our FTP site ftp://ftp.livingston.com/pub/le/doc/manuals/ and will be available in printed form in late December, 1996.

Multichassis PPP. The "set endpoint" command now enables MultiChassis PPP.

The size of Assigned Address Pool can be set with the "set pool" command.

Digital Modem Specifications

Data Modulations:

- ITU V.34 - 28,000 bps et al.
- ITU V.8 - V.34 capabilities negotiations
- ITU V.32bis - 14,400, 12,000, 9600, and 7200 bps with trellis encoding
- ITU V.32 - 9600 and 4800 bps
- ITU V.22bis - 2400 bps
- Modulation supervision for automatic rate selection and bit error performance monitoring for automatic fallback and fallforward.

Support for ITU V.34 Annex 12 - 33,600 bps will be added in a future release.

High Level Data Protocols:

- V.42 (includes LAPM and MNP 2-4 error correction protocols)
- V.42bis data compression algorithm
- MNP 5 data compression algorithm

Modem Support

Following is a list of Modems tested for compatibility with the True Digital™ Modems in the PortMaster 3. For a more complete list see http://www.livingston.com/Products/pm3qa.shtml and http://www.livingston.com/Tech/Appnotes/index.shtml.

All USR V.32, V.32bis & V.34 modems should connect with no problem.

USR Courier V.32, V.32bis, V.34 Dual Standard Fax modems. Stand-alone & PCMCIA CONNECT 28800/ARQ/V34/LAPM/V42BIS

USR Sportsters, Options V32bis,V.34 Stand-alone & PCMCIA CONNECT 28800/ARQ/V34/LAPM/V42BIS

TDK V.fast PCMCIA CONNECT 14400/REL - LAPM Note: V.fast is not supported, so this modem will only connect at 14.4k Practical Peripherals PM14400FXMT 14400, LAP-M, V.42bis 512/6 Connections

Cardinal 33.6 V.34/V.FC CONNECT 115200/v34/lapm/v42bis/28800:TX/28800:RX

Hayes Accura 288 v.34+fax CONNECT 115200/lapm

Boca v.34/data+fax CONNECT 115200/v34/lapm/v42bis/28800:TX/28800:RX

Zoom Fax modem v.34x plus CONNECT 115200/v34/lapm/v42bis/28800:TX/28800:RX

Supra Express 33.6

T1/E1 Loopback

set *Line0* loopback on | off

When line0 or line1 is set to T1 or E1 operation, you can set it for local network loopback, for testing purposes.

Variable Length Subnet Masks

ComOS release 3.5 now supports Variable Length Subnet Masks. In previous releases ComOS required the same netmask to be used for all subnets of a network. In release 3.5 variable length subnet masks (VLSM) are supported. To ease the transition, the command “set user-netmask off” will treat all netmasks specified in the User Table or RADIUS as though they were 255.255.255.255, the way earlier releases did. The command “set user-netmask on” will add a route based on the specified netmask. The default is off.

In ComOS release 3.3.3 and earlier the PortMaster always used 255.255.255.255 for the user's Framed-IP-Netmask, regardless of the value of the Attribute. ComOS 3.5 adds support for Variable Length Subnet Masks (VLSM) but by default ignores the Framed-IP-Netmask the same way earlier releases did. To have 3.5 accept the netmask value, issue the following commands on the PortMaster:

```
set user-netmask on
save all
```

After user-netmask is set on, the PortMaster will use the actual value of the Framed-IP-Netmask to update the routing table when a user logs in. USE CAUTION with this feature, since it affects both routing and Proxy ARP on the PortMaster.

If you only want to route to that one host, use the attribute

Framed-IP-Netmask = 255.255.255.255

You should always use Netmask 255.255.255.255 when using the PortMaster assigned address pool (or omit the attribute, which defaults to 255.255.255.255).

If you want to route to an entire 24-bit subnet, you would use

Framed-IP-Netmask = 255.255.255.0

Note that in some cases this may mean that the Framed-Route attribute may no longer be necessary.

Assigned Pool Size

The PortMaster allocates a pool of IP addresses starting at the Assigned Address (set from the global menu or by the "set assigned") and counting up. The total number of addresses is equal to the number of ports configured for Network Dialin. If someone dials in and requests an unused address from the pool, that is assigned; if someone dials in and requests any address, the next address from the pool is assigned, if someone disconnects, their address is placed at the end of the pool for re-use. In Release 3.5 the size of the pool can also be set explicitly with the "set pool Number" command, where Number will be the number of IP addresses allocated to the pool. If the pool size is decreased the PortMaster should be rebooted for the change to take effect.

OSPF

See the OSPF Chapter in the *Command Line Administrator's Guide*, which is available now in PostScript and Adobe Acrobat PDF format on our FTP site ftp://ftp.livingston.com/pub/le/doc/manuals/ and will be available in printed form in late December, 1996. Some additional commands were added after that manual went to press and are documented here.

Before configuring ospf, you must first do the following:

```
set ospf enable
save all
reboot
```

reset ospf

The "reset ospf" command resets the OSPF router engine in the PortMaster, and should be used after making changes to the PortMaster's OSPF configuration.

OSPF cost, hello-timer, dead-timer

OSPF cost, hello-timer and dead-timer are now configurable by interface. Note: The value for cost, hello-interval and dead-time must be the same for all routers attached to a common network.

set *Ether0* ospf on cost *Number*

This command determines the cost of sending a packet on the interface, expressed in the link state metric. Number is a number from 1 to 65535. The default value is 1.

Example: set ether0 ospf on cost 2

set *Ether0* ospf on hello-interval *Number*

This command determines how often the hello packet is transmitted, from 10 to 120 seconds. The default value of hello-interval is 10 seconds.

Example: set ether0 ospf on hello-interval 40

set *Ether0* ospf on dead-time *Number*

This is the number of seconds after ceasing to hear a neighbor router's hello packets, that the remote router is marked as down. Range is 40 to 1200 seconds. The default value is 40 seconds.

Example: set ether0 ospf on dead-time 60

Modem Commands

The following commands were added after the *Command Line Administrator's Guide* went to press.

set location *Locname* analog on | off
show modems
show *M0*
set debug mdp-events | mdp-status | mdp-internal | mdp-max on | off

set location *Locname* analog on | off

on = use an analog modem to dial out to this location

off = use isdn to dial out to this location

Dialout locations can use either analog modem or ISDN. It uses PAP or CHAP to authenticate itself to the location dialed. The remote end must auto-detect PPP; you cannot use dialout chat scripts in ComOS release 3.5 on the PortMaster 3.

Show modem displays the modem status; ACTIVE if the modem is in use, READY if the modem is available for use, ADMIN if the modem has been busied out.

```
            pm3> show modem
Mdm Port  Status   Speed   Compression  Protocol   Calls  Retrain  Disconnect
--- ----  ------   -----   -----------  --------  ------  -------  ------------
M0   S2    ACTIVE   28800   V42BIS       LAPM            2         0  NORMAL
M1   S3    ACTIVE   28800   V42BIS       LAPM            1         0  NORMAL
M2   S4    ACTIVE   28800   V42BIS       LAPM            1         0  NORMAL
M3         READY    UNKNWN  NONE          NONE            0         0  NORMAL

            pm3> show m0
                          State: ACTIVE
                    Active Port: S2
                  Transmit Rate: 28800
                   Receive Rate: 28800
                Connection Type: LAPM/V42BIS
                      Chars Sent: 8537870
                 Chars Received: 7563501
                        Retrains: 0
                 Renegotiations: 0

                     Total Calls: 3
                   Modem Detects: 3
                   Good Connects: 3

                Connection Failures
                  No Modulation: 0
                     No Protocol: 0
                Not Operational: 0
                    Total Failed: 0

                Session Terminations
                    Lost Carrier: 0
               Normal Disconnect: 2
```

The Mdm column in “show all” indicates which modem the port is using, if it is using a modem.

```
            pm3> show all
Port  Speed  Mdm  Host        Type    Status          Input       Output       Pend
----  -----  ---  ----------  ------  -------------  ----------  ------------  ----
C0     9600  off  server      Login   USERNAME              0           30     0
S0    28800  M2   server      Login/  COMMAND         1126499     4341532     0
S1    28800  M1               Device  ESTABLISHED      912355     3707007     0
S2    64000  on   ptp49       Netwrk  ESTABLISHED      783691      874518     0
S3    64000  on   server      Netwrk  CONNECTING     63057187    64106116     0
S4    64000  on   server      Login/  IDLE              99463      789349     0
```

Debugging Modems

set debug mdp-events | mdp-status | mdp-internal | mdp-max on | off

Use these commands to turn on and off modem debugging to the console.

MultiChassis PPP

MultiChassis PPP (MCPPP) supports Multilink PPP (RFC 1717) across multiple PortMasters sharing an ethernet, to allow the use of MP across multiple PortMasters in a single telephone hunt group. To enable MCPPP use the “set endpoint” command.

MCPPP Features

Load balancing - In a hunt group configuration, traffic will be automatically switched to subsequent units if it is saturated on the first unit.

Master and Slave Links - If the Master link goes down for any reasons, the Master unit will continue process the Slave links as long as they still exist.

Master and Slave units - If the Slave unit is out of service, the Master links will continue to function. However, if the Master unit if out of service, the Slave links will cease to exist since the Master unit is required to process its links. MCPPP Commands

Enabling MCPPP

Use the following commands on all PortMasters sharing a hunt group and Ethernet, using the same 12 digit hexadecimal endpoint discriminator on all of them. For convenience you may wish to use one PortMaster’s ethernet MAC level address as the endpoint discriminator for all the PortMasters on that hunt group, but any 12-digit hexadecimal number will work.

set endpoint *00C005123456*
save all reboot

The Endpoint Discriminator takes effect after the PortMaster is rebooted.

show mcppp

This command displays the mcppp table with the neighboring units in the same domain, the port number, user name, destination, the port type, and the IP addresses of the peer units.

show global

This command displays the End Point Discriminator address.

show session

The “show session” command on the Master unit now shows the virtual ports that are corresponding to the physical ports of the Slave unit. The virtual ports indicate by the letter V followed by the port number.

reset *V0*

V0 is a virtual port number, v0, v1, etc. This command is used on the Master unit to reset the virtual port. Since the virtual port has a corresponding physical port on the Slave unit, once the virtual port is reset on the Master, its corresponding physical port will not be available on the Slave.

Debugging MCPPP

To enable MCPPP debugging, use the “set console” command followed by any of the following commands:

set debug mcppp-event

Displays all the events related to the MCPPP links

set debug mcppp-history

Displays the most recent 40 events

To disable debugging, use the “set debug off” command, and “reset console” to release the console.

Quick Setup Example

This example configures a PortMaster 3 to use two PRI lines for dial-in by modem or ISDN users, with RADIUS authentication and accounting. Refer to the “Configuring the PortMaster 3” chapter in the *PortMaster 3 Installation Guide* for more information. Change the values and addresses shown to match your actual requirements.

In this example, the RADIUS and RADIUS accounting servers are at 192.168.1.3, the default routing gateway is 192.168.1.1, and the PM-3 will assign dynamic IP addresses to dial-in users from the range 192.168.1.4 through 192.168.1.49 (if using two 23 channel PRI’s) or 192.168.1.63 (if using two 30 channel PRI’s).

```
set password Hard2Guess
set ether0 address 192.168.1.2
set gateway 192.168.1.1
set isdn-switch att-5ess
save all
reboot

set assigned 192.168.1.4
set loghost 192.168.1.3
set authenticate 192.168.1.3
set accounting 192.168.1.3
set secret UpTo15Character
save all
```

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To contact Livingston technical support by voice, dial 1-800-458-9966 within the US or 1-510-426-0770 outside the US, by FAX, dial 1-510-426-8951, by electronic mail, send mail to support@livingston.com, and through the World Wide Web at http://www.livingston.com/.