

OpenVMS Networking Updates

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AGENDA

- HP TCP/IP Services for OpenVMS v5.7
- NFS
- CIFS
- DECnet Plus
- LAN
- Q & A



HP TCP/IP Services for OpenVMS V5.7



HP TCP/IP Services V5.7

Enhancements

- Cluster Over IP Enablement
- Packet Processing Engine
- Stream Control Transmission Protocol
- Enhanced FTP
- LPD configurable port
- Mail Enhancements



HP TCP/IP services V5.7

Support Matrix

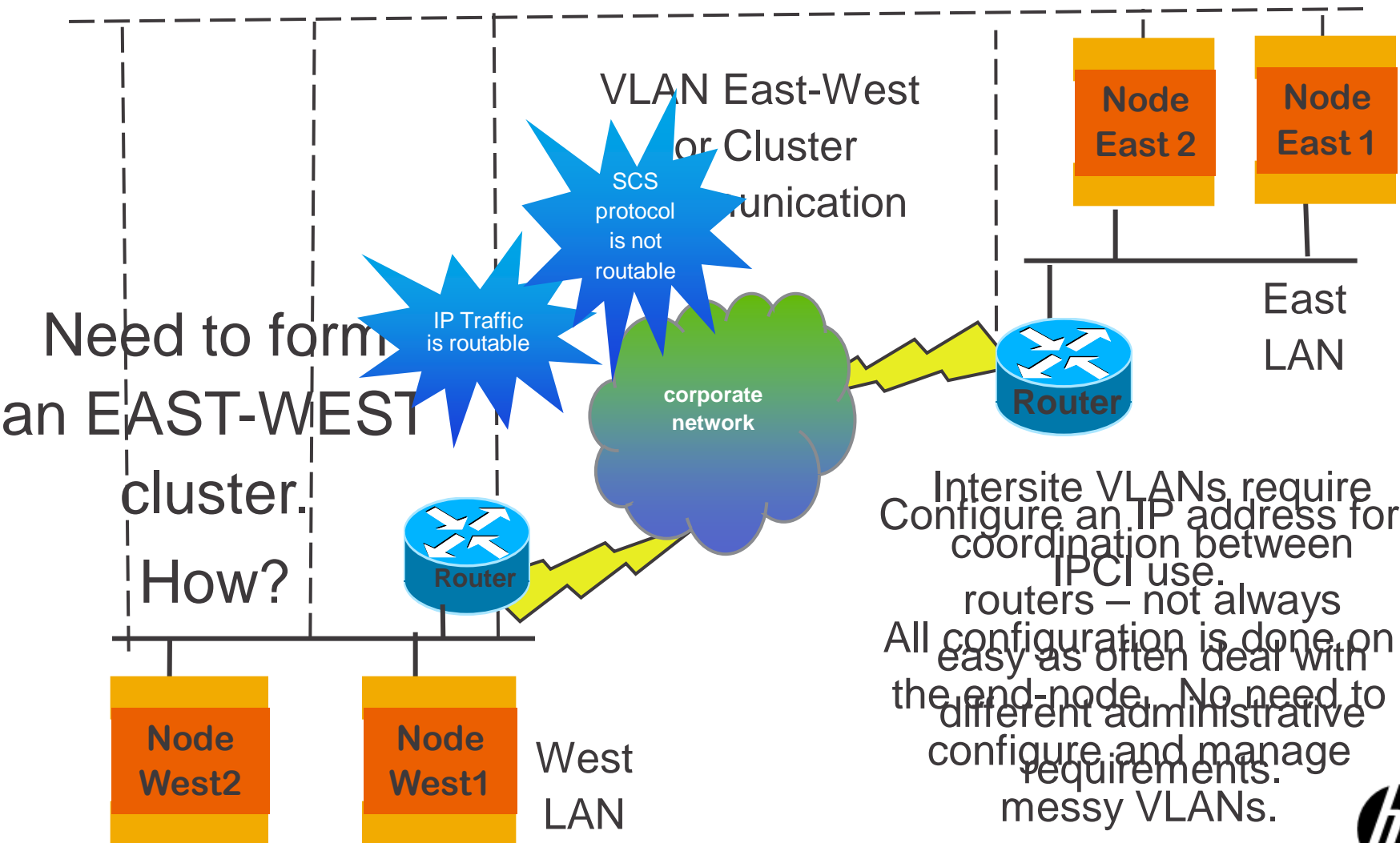
- **TCP/IP V5.7**
 - OpenVMS 8.4 Alpha and Integrity servers
 - OpenVMS 8.3-1H1 Integrity server
 - OpenVMS 8.3 Alpha
- **TCP/IP V5.7 ECO1**



CLUSTER OVER IP ENABLEMENT



Why Cluster Over IP



Cluster Over IP

TCP/IP Support

Cluster Over IP aka IPCI is the ability to make use of IP for OpenVMS clusters communications

- OpenVMS V8.4 and TCP/IP V5.7
 - Initial release supports IPv4 only
 - Requires static IP addresses and IP Unicast; optionally uses IP Multicast
 - Coexists with LAN interconnect for Cluster communication



Cluster Over IP

TCP/IP changes

- Boot time loading and Initialization
 - Existing boot sequence ; LAN, PE driver, TCP/IP
 - Boot Sequence with IPCI ; LAN, TCP/IP, PE driver
 - Ability to make use of boot time configuration information.



Cluster Over IP

IPCI configuration using TCP/IP

- Support for IPCI addresses

- Creates `sys$system:TCPIP$cluster.dat`
- Simple text file: do not edit manually
- Same as any address – but some special care
 - IPCI addresses are accessed early during boot
 - Hence the need for a simple text file
 - Deleting an IPCI address may cause cluster to lose quorum
 - Shutting down TCP/IP with IPCI may cause loss of quorum

http://h71000.www7.hp.com/doc/84final/4477/4477pro_018.html

- Ability to modify permanent database of other cluster Members



PPE – PACKET PROCESSING ENGINE



Packet Processing ENGINE

Concepts

- Dedicates a CPU for TCP/IP processing
- Without PPE
 - TCP/IP runs on a standard CPU
 - CPU reaches saturation, TCP/IP may become bottleneck
- With PPE
 - No more sharing
 - PPE maybe enabled/disabled dynamically
- Modelled on the OpenVMS Dedicated Lock Manager



Packet Processing ENGINE

Configuration requirements

- Software

- Configure “bg0” device as the only driver in the fast path device
- Move all other fast path drivers to other CPUs

- TCP\$NETPPE Process

- Started automatically when PPE is enabled
- Runs at priority 63
- CPU dedicated to this process
- Hibernates when PPE is disabled



Packet Processing ENGINE

Example

```
$ show fastpath
```

```
Fast Path preferred CPUs on TEST 1-OCT-2010 10:25:10.80
```

```
HP BL860c (1.59GHz/9.0MB) with 4 active CPUs
```

```
Device:                Fastpath CPU:
```

```
EWA0                    0
```

```
EWC0                    2
```

```
FGA0                    0
```

```
FGB0                    3
```

```
PKA0                    1
```

```
OpenVMS TCP/IP is currently running on CPU 1
```

```
$set dev FGB0/pref=1
```

```
$set dev bg0/pref=3
```



Packet Processing ENGINE

Example

```
$ show fastpath
```

```
Fast Path preferred CPUs on TEST 1-OCT-2010  
10:27:05.64
```

```
HP BL860c (1.59GHz/9.0MB) with 4 active CPUs
```

```
Device:                Fastpath CPU:
```

```
EWA0                    0
```

```
EWCO                    2
```

```
FGA0                    0
```

```
FGB0                    1
```

```
PKA0                    1
```

```
OpenVMS TCP/IP is currently running on CPU 3
```



Packet Processing ENGINE

Example

- To enable PPE dynamically
 - sysconfig -r inet ppe_enable=1 ! 0 to disable
 - sysconfig -q inet ppe_enable
- To enable permanently
 - TCPIP\$ETC:SYSCONFIGTAB.DAT



Packet Processing ENGINE

Configuration requirements

- Requires more than one CPU
- Will become dormant if only one CPU is active
- Wakes up when more than one CPU is available
- Better suited to systems with many CPUs



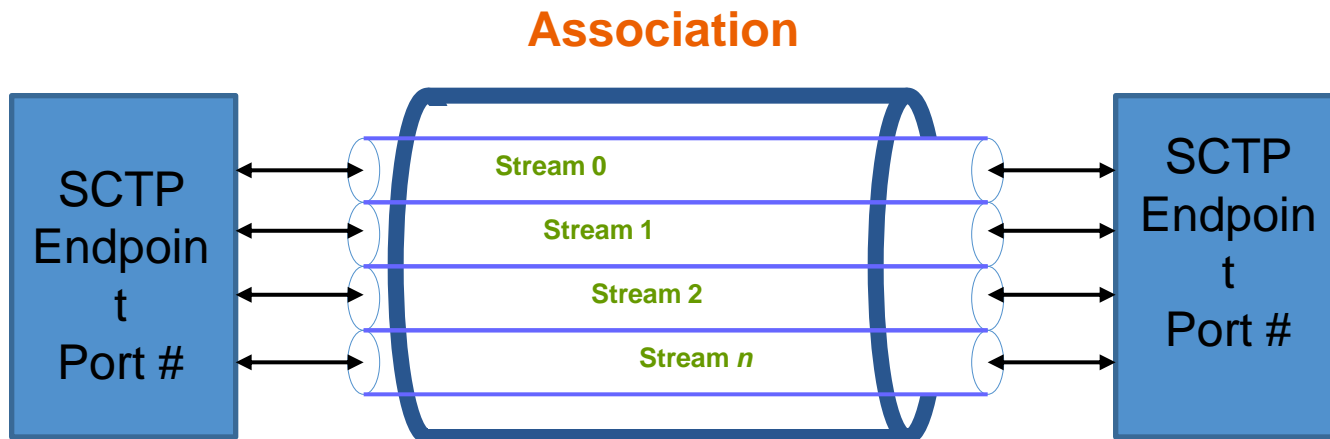
SCTP – STREAM CONTROL TRANSMISSION PROTOCOL



SCTP

Associations and Streaming

- Transport level (RFC 2960) protocol like TCP and UDP
- Streams created within a single SCTP association
- Each stream delivers data independently
- Avoids head-of-line blocking



SCTP

Concepts

- Talk about associations instead of connections
- SCTP end point is a port number
- Multiple streams per association
- Supports multi homing per association
- TCP provides strict byte level ordering as well as reliability: some application (e.g., HTTP) do not need both simultaneously
- Consider loading multiple images over one TCP connection using multiple streams



SCTP

OpenVMS implementation

- Based on Free-BSD
 - Well written code and mature code base
- Compiled with
TCPIP\$INTERNET_SERVICES
- TCP/IP V5.7 SCTP - enabled by default
- TCP/IP V5.7 ECO1 SCTP - disabled by default
 - Enable : SYSCONFIG –c SCTP



ENHANCED FTP



Enhanced FTP

Configurations

- **FTP ANONYMOUS LIGHT**

- Enabled via user-based logical
TCPIP\$FTP_ANONYMOUS_LIGHT
- Restricts the user's FTP access to directories defined by
TCPIP\$FTP_ANONYMOUS_DIRECTORY

- **FTP Over SSL**

- Compliant with RFC 4217
- FTPS is about 2.5 times faster than SFTP



LPD



Line Printer Driver

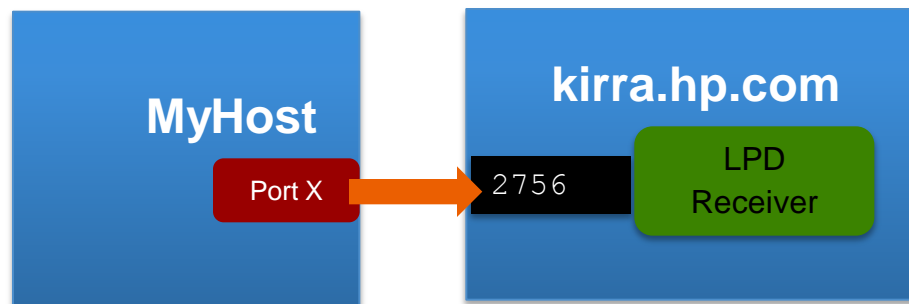
Configurable Port

- LPD default port is 515 (RFC 1179)
- TCPIP\$PRINTCAP.DAT configuration file

e.g., Assume LPD listens on remote host:port = "KIRRA:2756".

Then on the local host, add an entry to TCPIP\$PRINTCAP.DAT

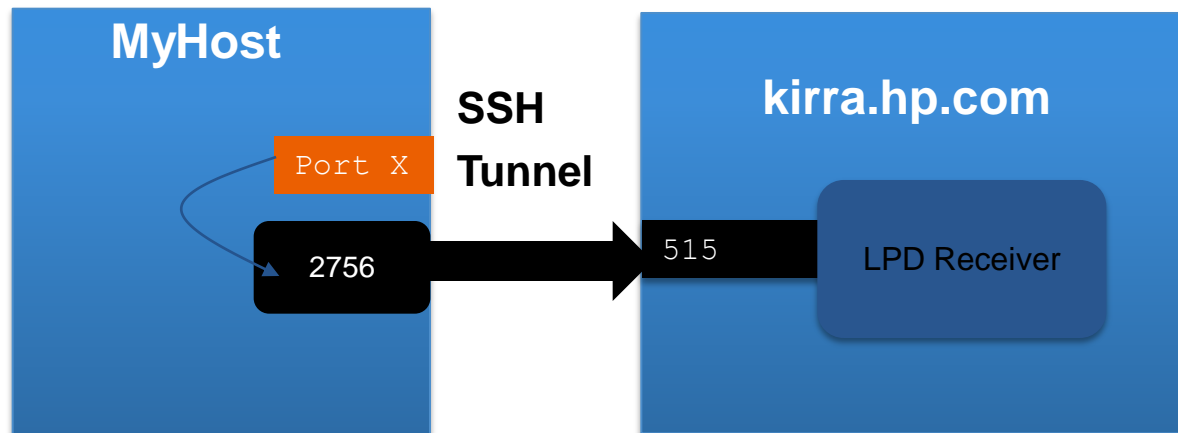
```
PRINTER1: \  
  :rm=kirra.hp.com: \  
  :rt=2756: \  
<etc>
```



Line Printer Driver

Secure Printing

- In TCPIP\$PRINTCAP.DAT set “:rm=localhost:”
 - Forward port 2756 over an SSH tunnel to remote port 515, or wherever the remote print server is listening
 - \$MYHOST\$ SSH -"L"2756:localhost:515 kirra.hp.com



Mail Enhancements



SMTP

Changes in TCP/IP v5.7

– Cluster-aware SMTP

- Load balancing and high availability
- SMTP files/folders - disk visible to all nodes in the cluster.

– TCPIP\$SMTP.CONF

- Configuration based on logical names is obsolete
- Roll-over tool ;
TCPIP\$SMTP_V57_ROLLOVER.EXE

– SMTP Persistent Receiver



TCPIP\$PEERNAME Utility

- Displays end-point information

e.g.,

```
$ peername bg1630
```

```
Local address: 10.11.12.13, port: 22
```

```
Remote address: 10.11.22.210, port: 49573
```

```
$show sym TCPIP$peername*
```

```
TCPIP$PEERNAME_LOCAL_ADDRESS      =
```

```
"10.11.12.13"
```

```
TCPIP$PEERNAME_LOCAL_PORT          = "22"
```

```
TCPIP$PEERNAME_REMOTE_ADDRESS     =
```

```
"10.11.22.210"
```

```
TCPIP$PEERNAME_REMOTE_PORT        = " 49573"
```



NFS UPDATE



CIFS UPDATE



CIFS V1.2

Enhancements

- Improved installation and Automated Configuration and management
 - SAMBASCONFIG.COM ,
SAMBASMANAGE_CIFS.COM
- HP CIFS Server as member in Windows ADS Realm



CIFS V1.2

Enhancements

- Performance enhancements
 - Storing file size in an ACE/ACL for non stream format files
 - Utility to automatically update file length hint values for Sequential VAR and VFC files
 - Creation of TDB files using the optimized FDL files/values
 - Open File Caching
- ODS 2 Support
- Improved documentation



CIFS V1.2

Enhancements

- File security improvements
- Support for fixed and undefined format file creation
- Support for share security migration from ASV to CIFS
- Support for different idmap backends



DECnet Plus



DECnet Plus

- DECnet/IP communication through SSH
 - Uses port forwarding feature of SSH
 - Enabled by `DECNET_IP_PORT_FORWARD` logical
- The latest ECO is DECnet-Plus v8.4 ECO01 for both Alpha and Itanium systems.



LAN Update



LAN Update

10Gig LOM (Broadcom 57711e)

- BL860c i2/BL870c i2/BI890c i2 server
- SYS\$EW57711.EXE driver
- Support for Flex-10 (Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem (455880-B21) and DDC (Plan to Support)

10Gig Standup Cards (HP NC532m PCIe 2-Port 10GbE NIC)

- Flex-10 Capable (Plan to support)
- SYS\$EW57711.EXE



LAN Update

1 Gig cards (BL860c i2/BL870c i2/BI890c i2)

- HP NC364m PCIe 4-Port 1GbE (Intel) – SYS\$EI1000.EXE
- HP NC360m PCIe 2-Port 1GbE (Intel) – SYS\$EI1000.EXE

HP Integrity rx2800 i2 server (OpenVMS support planned)

- Core i/o card (LOM) – SYS\$EI1000.EXE
- AD221A, AD222A, AD393A – SYS\$EI1000.EXE
- AD337A, AD338A, AD339A – SYS\$EI1000.EXE



Q&A

