

HP OSI Transport Services/9000 Release Notes

HP-UX 11i v1

Edition 1



i n v e n t

Manufacturing Part Number: 32070-90053

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Announcement

This edition of the HP OSI Transport Services/9000 Release Notes contains the current release notes for version C.11.01 for HP-UX 11i v1.

HP OSI Transport Services/9000 (OTS/9000) is the OSI networking stack of HP-UX. It provides functions of OSI Layers 3 (Network), 4 (Transport), 5 (Session), 6 (Presentation) and ACSE/ROSE over X.25, FDDI and IEEE802.3 LAN interfaces. It also provides RFC1006 that allows users to run OSI Services over TCP connections. Applications can use OTS/9000 through Application Program Interfaces (APIs) to layers 4, 5, 6 and ACSE/ROSE application entities.

NOTE

If you are considering updating to OTS/9000 version C.11.01 from OTS/9000 version C.09.00, C.09.01, C.09.02 or C.09.03, read the release notes for version C.09.03 also. If you are considering updating to OTS/9000 version C.11.01 from OTS/9000 version C.11.00, read the release notes for version C.11.00 also. (<http://www.docs.hp.com>)

What is new in this version?

HP OSI Transport Services/9000 version C.11.01 contains several new features and functionalities.

Features

HP OTS/9000 version C.11.01 provides RFC1006 Multiport Listening. OTS can now listen on multiple ports. For each new port configured, an RFC1006 NSAP is available for use by applications. An RFC1006 NSAP contains IP address and the port number, where it listens. The default OTS implementation of RFC1006, listens only on TCP port 102. So on a machine with only one IP address (or a single network card), adding more RFC1006 NSAPs means making RFC1006 to listen on multiple TCP ports.

Before starting OTS, enter the port numbers (separated by comma) for 'snet_port_num' field of ots_subnets file. For example, if you want RFC1006 to listen on ports 102, 2134 and 589 (or any valid, unused TCP ports):

```
snet_port_num      102,2134,589  #your comment.
```

Alternatively, you can use this feature by just adding a new RFC1006 dynamic NSAP using otsaddnsap command. OTS will start listening on the port number available in this new NSAP.

In either case, make sure you have the following entry in ots_parms file:

```
rfc1006_dynamic_nsaps      32
```

Benefits

Upgrading to HP OTS/9000 version C.11.01 will provide RFC1006 Multiple Port Listening. RFC1006 can be configured to listen on multiple TCP ports and hence multiple RFC1006 NSAPs can be used on a machine with a single IP address (or single LAN card).

Limitations

- OTS still supports only one IP address to be configured, while OTS accepts all incoming calls coming from different cards or to different destination IP addresses.

What is new in this version?

- OTS still supports only one IP address to be configured, while OTS accepts all incoming calls coming from different cards or to different destination IP addresses.
- A maximum of 32 ports (dynamic NSAPs) are supported in this enhancement.
- With RFC1006 multiports, NSAPs with port number 102 and those without port number (for example, 54007287220301507018411300102f and 540072872203015070184113) are one and the same. So, if you have started two different applications on these NSAPs but specified the same selector (P,S,T) values, you will not be able to distinguish the applications based on their P-addresses. The workaround is to mention different selector values when you are using these two NSAPs to start RFC1006 applications.

Fixes

Numerous fixes were incorporated into this release of HP OSI Transport Services/9000. See the section "Patches and Fixes in this Version" for more information.

Known Problems and Workarounds

- When MC/ServiceGuard initiates a local LAN switchover for HP OTS/9000 from one LAN card to another, and then switches back to the first LAN card within 120 seconds, some operations to the first LAN card may fail. This is because previous LAN card information is still in the ESH table. If this happens, wait for 120 seconds from the first switchover and try the switchover again.
- In C.11.00 version of OTS, if a local LAN switchover occurs when OTS is running and OTS is then stopped, OTS configuration files would still contain a reference to the primary LAN interface. So, a restart would cause OTS to come up with the primary LAN interface instead of the switched/secondary LAN interface.

The above problem may also happen if OTS is started subsequent to a local LAN switchover.

A workaround is to verify that the interface configured for use in OTS is currently the functional LAN interface, before restarting OTS.

- With RFC1006 subnet configured in `ots_subnets`, `osiconfchk` would report the following warning:

```
:::::::::::::  
/etc/opt/ots/conf/ots_subnets  
:::::::::::::
```

Line 28:

```
->snet_socket_size          4096
```

```
Warning: Unknown keyword. Line will be ignored.  
(CHK011)
```

NOTE: This line cannot be corrected with `osiconf`. (CHK080)

Line 29:

```
->snet_tcp_nodelay          0
```

Known Problems and Workarounds

Warning: Unknown keyword. Line will be ignored.
(CHK011)

NOTE: This line cannot be corrected with osiconf.
(CHK080)

These warnings may safely be ignored, without any serious consequences.

Compatibility Information and Installation Requirements

Software Requirements

- HP-UX 11i v1 operating system
If you are currently running an older version of HP-UX, you must upgrade to HP-UX 11i v1 before installing HP OSI Transport Services/9000 version C.11.01.
- HP 9000 networking link products such as HP LAN/9000, HP FDDI/9000 and HP X.25 products (High-Performance STREAMS-X25, ACC/X.25).

Hardware Requirements

- HP 9000 Servers
- Install or update the following hardware:
 - DDS tape drive
 - CDROM drive
 - Networking link adapter (For example. HP LAN/9000 card)

Disk Space Requirements

- 85 MB of disk space

Installation HP OTS/9000 Software

A reboot is required for installing HP OTS/9000. The reboot is required to rebuild the HP-UX kernel with HP OTS/9000.

The "Installing and Administering HP OTS/9000" manual (HP Part Number 32070-90030) contains complete instructions for installing this product. For detailed information, refer to the manual (<http://www.docs.hp.com>).

Patches and Fixes in this Version

HP OTS/9000 version C.11.01 incorporates several fixes as available via patch PHNE_28888, PHNE_17864 to be applied to OTS/9000 version C.11.00.

The following section describes the new fixes available in PHNE_28888:

1. CR JAGae56022

Symptom	osi.h is not C++ compliant.
Defect Description	The header files provided by OTS are not ANSI C++ compliant.
Resolution	All the header files and libraries are changed to comply with ANSI C++.

2. CR JAGae51098

Symptom	osiconfchk cores when X25_ARGS contains more than 500 characters.
Defect Description	The structure used to hold information about X.25 configuration was limited to hold eight X.25 port entries only. When more X.25 ports are configured, it causes the structure to overflow. When the structure is accessed by osiconfchk, it dumps core.
Resolution	The structure size has been increased to accommodate 128 configured X.25 ports on a system.

3. CR JAGae47160

Symptom	Panic in eselect() when ISI record timer expires and the corresponding IS is disconnected.
Defect Description	System panic with trap type 15 in Eselect() OTS code with the following stack trace: Eselect+0x4 ERoMulti+0xa4 ERoRI+0x710

	<code>ip_route+0x130</code> <code>t4send+0x58</code> <code>ttoret+0x120</code> <code>ositime+0x158</code> <code>TickOsiam+0x4c</code> <code>sq_wrapper+0x94</code> <code>str_sched_up_daemon+0x1c4</code> <code>str_sched_daemon+0x1a4</code> <code>main+0x3b0</code> <code>\$vstart+0x48</code> <code>\$locore+0x94</code>
Resolution	The problem happens due to bad initialization of ISI record timer. Timer has now been initialised appropriately.
4. CR JAGae28797	
Symptom	Connection request over ACC-X25 subnets fail with N_REJECT error with reason code 0x1203.
Defect Description	When OTS gets a reset-indication from ACC driver, OTS is not freeing a connection context properly. As OTS gets more reset-indications from ACC, more connection contexts are not freed up. Finally all the available free contexts are exhausted. Thus, OTS doesn't allow any further connection request over any subnet.
Resolution	The code has been changed to free the connection contexts when OTS gets reset-indication from ACC driver.
5. CR JAGae18012	
Symptom	Configuring EMS (Event Monitoring Systems) to monitor OTS X.25 subnet fails.
Defect Description	When configuring EMS software to monitor X.25 Subnet, otsresmond is unable to get IP address. The problem

Resolution	is that call to gethostbyname() fails. This call fails because otsresmond is linked with libpthread library and while linking, libpthread is linked after libc. As per CR JAGad69986, libpthread must be linked before libc. Makefile has been changed such that libpthread is linked before libc, -lpthread -lc.
6. CR JAGae13367	
Symptom	Expedited Data transfer on RFC1006 subnet is not supported. Customer requires this support to be provided for applications using the XTI interface.
Defect Description	This is an enhancement for support of transferring expedited data on RFC1006 subnet using the XTI API interface. The following are the new features: a) Support for sending and receiving expedited data on RFC1006 subnet, using XTI interface. b) Support for sending User Data as a part of Connect Request PDU, using XTI interface. c) Support for 64K size Data Transfer PDUs.
Resolution	All the above listed feature requirements have been implemented. And a new file ots_rfcexpdata.txt is provided to show how to use this feature and enable/disable expedited data transfer over RFC1006 subnet.
7. CR JAGae12971	
Symptom	APLI application aborts connection when it receives data more than 64KB.

Defect Description	APLI gives "incorrect interaction length" error and aborts the connection when it receives data more than 64 Kbytes. When End Of Transfer (EOT) is not set by the sender, the RFC1006 layer accumulates the data. This data size could exceed 64K bytes. But the session layer is limited to handle only 64KB. So the session layer is stripping data whose size is greater than 64KB. The APLI application would receive incorrect data length, resulting in aborting the connection.
Resolution	The RFC1006 layer has been modified to limit data accumulation to less than 64KB, therefore solving the problem
8. CR JAGad91302	
Symptom	osidiag coredump when apa installed.
Defect Description	The structure used to hold information about PPAs was limited to hold 4 entries. When more physical lan entries or link aggregates are created through APA software, it causes the structure to overflow. Thus when the structure is accessed by osidiag, it dumps core.
Resolution	The structure size is increased to accommodate as high as the maximum PPAs which can be created on 11.X. i.e. 50 lan entries.
9. CR JAGae81127	
Symptom	osiadmind core dumping when viewing X.25 configuration.
Defect Description	The buffer which is used to hold the list of arguments for a series of x25init command invocations was limited to 500 bytes, when more arguments were added to X25_ARGS in

Resolution	<p>/etc/rc.config.d/x25 file, it caused buffer overflow. Thus when the buffer is accessed by osiadmin, it dumps core.</p> <p>The buffer size is increased to max pipe size of 8Kb.</p>
10. CR JAGae66284	
Symptom	<p>osiping is hanging when CLNI application is running.</p>
Defect Description	<p>When one CLNI application is already running, executing osiping will result in a hang. osiping continues after the CLNI application is complete.</p>
Resolution	<p>Code has been modified appropriately to allow osiping to run when a CLNI application is already running.</p>
11. CR JAGae87400	
Symptom	<p>When two or more osiping sessions are started concurrently, the one which was started first works and the others hang until the first finishes.</p>
Defect Description	<p>osiping is developed based on CLNI APIs. osiping commands use the same NET-ID as a source. Since ECHO-REQUEST sources are same, STACK cannot differentiate between ECHO-RESPONSEs. So ECHO-RESPONSEs are directed to first started osiping.</p>
Resolution	<p>As osiping uses NET-ID as source, all the osiping's ECHO-RSP packets have the same destination NSAP. We can use the destination NSAP (ie. source NSAP in ECHO-RSP) as an identity to differentiate the ECHO-RSP packets. This needs the following code changes,</p>

- Need to have a place to store destination info in HccxcbT structure.
- Need to store destination info information before sending ECHO-REQ packet.
- While sending ECHO-RSP stack need to swap the source and destination info.

12. CR JAGae86551

Symptom

When second CR-TPDU containing option C7 (alternate transport class with value of class 0) is received within an existing network connection, the TPDU is rejected with cause 0x85.

Defect Description

When the second TRANSPORT connection is received over the same X25 connection, the CR-TPDU has the Alternate Class option C7 coded to class 0. This second TRANSPORT connection is rejected by OTS with a DR-TPDU and reason protocol error(0x85).

Resolution

The code has been modified, to accept the second incoming CR-TPDU. A new file otsapc.txt is provided to show how to use this feature and enable/disable the acceptance of the second CR-TPDU which has Alternate Class option C7 coded to class 0 using otsapc script.

13. CR JAGae57870

Symptom

The Expedited Data Transfer is not available when snet_tpdu_size is 65536 on both sides.

Patches and Fixes in this Version

Defect Description	The encoding of expedited data transfer option in Connection Confirmation PDU is not proper when local and remote side has <code>snet_tpdu_size</code> value as 65536.
Resolution	The code has been changed to properly encode the expedited data.
14. CR JAGae42578	
Symptom	<code>otsexpdata</code> doesn't disable the support of expedited data transfer over RFC1006 subnet feature.
Defect Description	When <code>otsexpdata</code> is executed to enable the expedited data transfer over RFC1006 subnet, it enables the feature properly. Later if <code>otsexpdata</code> is executed to disable the feature, it shows that the feature has been disabled but OTS stack still allows the expedited data transfer. The bit used to enable/disable the expedited data transfer was not set/reset properly.
Resolution	The code has been changed to set/reset the bit correctly which is used to enable/disable the expedited data transfer feature.
15. CR JAGae25619	
Symptom	RFC1006 connect requests fail if TPDU size is changed from 65536 to another value and stack is re-started.
Defect Description	In <code>ots_subnets</code> configuration file, if " <code>snet_tpdu_size 65536</code> " line is added for RFC1006 subnet, all RFC1006 connection request goes through without any problems. But, if the line, " <code>snet_tpdu_size 65536</code> " is removed or reset to some other value and OTS stack is restarted, RFC1006 connection request fails. The variable holding the

	<p>value of "snet_tpdu_size" is static data type. So when the "snet_tpdu_size" value is reset and the stack is re-started, the variable was not getting the updated value.</p>
Resolution	<p>The code has been modified to reinitialize the variable after every connection request.</p>
16. CR JAGad43676	
Symptom	<p>OTS session applications fail in ses_connect_rs() on MP system with MP-safe OTS installed.</p>
Defect Description	<p>Session applications fail in ses_connect_rs().The problem was, session library was not handling the EAGAIN error returned by getmsg() properly.</p>
Resolution	<p>The session library code has been modified to handle EAGAIN error returned by getmsg().</p>
17. CR JAGad43746	
Symptom	<p>OTS XAP applications fail in ap_bind() on MP system with MP-safe OTS installed.</p>
Defect Description	<p>The XAP library used to set the error value to AP_INTERNAL if it encountered an EAGAIN error during an ap_bind() call. Hence applications used to fail, since AP_INTERNAL is considered as an unrecoverable error.</p>
Resolution	<p>The XAP library code has been modified to set the error value to AP_AGAIN, if ap_bind() returns EAGAIN. Since AP_AGAIN is treated as a recoverable error, applications will retry the ap_bind() call.</p>

18. CR JAGab70710

Symptom

64 bit OTS libraries libapli, librose and libxap dump core in multi-threaded environment.

Defect Description

64 bit OTS libraries libapli,librose and libxap dump core in multi-threaded environment. This was because OTS libraries were not compiled with `_PROTOTYPES` preprocessor directive.

Resolution

OTS libraries are now compiled with `_PROTOTYPES` preprocessor directive. `Makefile_64` is added into these directories
`/opt/ots/apli/demo/threads_demo`
`/opt/ots/rose/demo/threads_demo`
`/opt/ots/xap/demo/threads_demo` This makefile is required for building the 64-bit threads demos.

19. CR JAGad36474

Symptom

OTS leaks memory in the STREAMS arenas `ALLOCB_MBLK_SM`, `ALLOCB_MBLK_MH`, `ALLOCB_MBLK_DA` and `ALLOCB_MBLK_LM` when OTS is stopped.

Defect Description

Memory allocated at OTS startup was not being freed when OTS is stopped.

Resolution

Code has been added to free the memory allocated at OTS startup, when OTS is stopped.

20. CR JAGad32322

Symptom

Unnecessary debug print statements in rose API logs.

Defect Description	The rose library had some debug print statements, which were appearing in the log files when ROSE API TRACING is enabled.
Resolution	Unnecessary debug print statements have been removed.
21. CR JAGad69661	
Symptom	TCP bind request fails with Session applications running over RFC1006.
Defect Description	OTS session applications used to fail with TCP bind request. Following the bind failure, the local session application gets a Provider abort and initiates a User abort to the remote. So, the remote session application also used to fail with a Ses-UAB-ID (Session-User Abort-Indication). If the application is binding on a wild card IP address, the code was not checking the length field to determine the length of the RFC header + IP address field. In OTS 11.11, there are some uninitialized values in these fields. Since length field was not checked, the function was succeeding and returning an invalid IP address value. A bind on this address would fail.
Resolution	Code has been modified to check the length value of the RFC header + IP address field.
22. CR JAGad71962	
Symptom	Executing Isolf command after OTS is started results in system panic.
Defect Description	OTS sets the write side qi_minfo to null for the ositmr device. Any kernel routine that attempts to dereference the fields of qi_minfo structure could crash the system.

Resolution	The "qi_minfo" field of the write side queue for the timer device is initialized with a valid structure.
23. CR JAGad74372	
Symptom	Running osidiag test , returns the error message "Unable to open file '/var/opt/ots/osa01172.TRC0'.", when nettl tracing and logging is ON.
Defect Description	osidiag returns error message, for tracing and logging on 11.11 system because the hard coded extension of ".LOG00" and ".TRC00" is being added to osidiag's log and trace file respectively, by osidiag. These files are given to netfmt for formatting. But in 11.11, nettl formatter expect log and trace file names to end with ".LOG000" and ".TRC000" instead of ".LOG00" and ".TRC00". So as a result the netfmt reports error of missing file.
Resolution	File extensions of osidiag's log and trace file are changed to ".LOG000" and ".TRC000".
24. CR JAGad71074	
Symptom	System panics when OTS start/stop tests are run with OTS under heavy load and vmtrace corruption log ON.
Defect Description	The problem is because the code was dereferencing a pointer which is freed.
Resolution	Code has been modified to NULL out the freed pointer when memory is freed and checks have been added for subsequent dereference of the pointer.
25. CR JAGad72644	

Symptom	With vmtrace corruption log ON, system panics in OsiFreeSeg() if LAN initialization fails.
Defect Description	The problem is due to dereferencing a stale pointer.
Resolution	The code has been modified to avoid access of stale pointer.
26. CR JAGad72641	
Symptom	With vmtrace corruption log ON, system panics in ltostr_close() if LAN initialization fails when non-dlpi lan configuration is specified.
Defect Description	With vmtrace corruption log enabled on the system, if lan LAM initialization fails, the system panics in ltostr_close() when trying to access the elements of the data structure stored in the 'q_ptr' field of the streams queue. This was because the pointer stored in the 'q_ptr' field would get freed before the call to ltostr_close() in case of a failure in the lan LAM initialization, and the subsequent access would be dereferencing a stale pointer.
Resolution	The code has been modified to remove pointer references once the addresses are freed, and subsequent accesses to these pointers have a check for null pointers before dereferencing the same.
27. CR JAGad74364	
Symptom	Applications linked with HP-UX 11.11 64bit OTS shared libraries libapli, librose and libxap dump core.

Patches and Fixes in this Version

Defect Description	Any HP-UX 11.11 ots application, which are linked to 64-bit shared library, dumps core. It is because, the 64-bit shared library internal name does not have a valid library path.
Resolution	The file that sources environment variables has been updated to create libraries with the proper internal name.
28. CR JAGad41294	
Symptom	otsstat behaviour inconsistent between STREAMS/X.25 and ACC/X.25.
Defect Description	With the High-Performance STREAMS/X.25 product, otsstat displays "DOWN" if the port is not initialized, and "NOT RUNNING" if the cable is disconnected (X.25 Level 2 is down), while in case of ACC/X.25, otsstat reports "NOT RUNNING" on uninitialized ports, and "DOWN" on ports where X.25 Level 2 is down. The behaviour with ACC/X.25 is the correct behaviour.
Resolution	otsstat has been modified to have consistent behaviour with both High-Performance STREAMS/X.25 and ACC/X.25.
29. CR JAGab12536	
Symptom	When an application sends CN-SPDU with the user session requirements proposed, it receives an AB-SPDU and fails.
Defect Description	When the user session requirements parameter is proposed in an incoming connection, the way OTS passes up the session version to user application is incorrect, resulting in the application seeing a different session version than what was proposed. When the

Resolution	application confirms the connection with this version, it does not match with what the kernel has in its structure. This causes an abort to be sent to the initiator of the connection. Code has been modified so that the kernel passes the correct session version to the user application.
30. CR JAGad80070	
Symptom	Kernel stack overflow when OTS is used with mbuf based lan drivers.
Defect Description	The stack overflow occurs in the following situations. a) If a dynamic NSAP is deleted when applications are registered on that NSAP and are in data transfer state over the associated connections. b) Due to a bad OTS configuration, where the machine has been configured as a default IS. This would be a bad configuration since OTS cannot be configured as an IS. In both the cases, the incoming CLNP PDU would get locked up between the DLPI layer and OTS CLNP layer. When the PDU was finally freed, it resulted in the kernel stack overflow, due to the chain of streambuffers and mbufs that had to be freed.
Resolution	a) For the first case, when deleting dynamic NSAP, code is modified to remove the routing information entry for that NSAP, so that forwarding the PDU to the local system is avoided

	b) For the second case, code is modified to ensure that the PDU is not forwarded when the destination physical address points to the local system.
31. CR JAGad76367	
Symptom	On running 'osiconfchk', after changing values for parameters in 'ots_subnets' file which requires reboot, the following message is returned "Parameters in this file have been changed OTS is not in an updatable state. The OTS stack on this node must be rebooted to apply the new configuration."
Defect Description	The message displayed is not appropriate, since OTS 11.11 has 'otsstop' feature.
Resolution	Message has been modified appropriately.
32. CR JAGad82794	
Symptom	Dequeue of RIB Timer is not proper.
Defect Description	OTS stores the timer element information in a chain of doubly link list, whose size grows, as and when there is need to store more element's information. This list, once get allocated, becomes part of a timer element's pool and OTS does not deallocate anything from this pool during it's life time. When some entry gets dequeued from the pool, that entry becomes part of the free list and can be reused, when required. So when any ES/IS element is dequeued, the corresponding timer entry is also dequeued. So as part of timer element dequeue, the element from the pool list

Resolution	is also removed, but this entry is not re-initialized again. This can result in bad usage of timer element. Code has been modified for re-initializing the timer element again.
33. CR JAGae04819	
Symptom	PATH and MANPATH environment variables are not set for OTS product when OTS C.11.00 is installed.
Defect Description	On installing the OTS C.11.00 product, the control scripts do not add the following paths to the environment variables: /opt/ots/bin and /opt/ots/lbin to PATH
Resolution	The configure script has been modified to add /opt/ots/bin and /opt/ots/lbin to PATH /opt/ots/man to MANPATH.

Software Availability in Native Languages

HP OSI Transport Services/9000 (C.11.01) is not available in non-English languages.