Netra™ Data Plane Software Suite 1.1 Release Notes

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Netra Data Plane Software Suite 1.1 Release Notes

The *Netra Data Plane Software Suite 1.1 Release Notes* contain last minute information about the Netra™ Data Plane Software Suite 1.1.

Topics include:

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Software Notes

Known Issues and Workarounds

CR 6529219 Compilation Fails if a Function Returns a Structure

Compilation fails if a function within an application returns a structure. This situation is due in part to private functions missing from `libc`.

The workaround is for the function to return a pointer to the structure.

CR 6536420 Cannot Forcibly Stop a Domain If the Domain Has Any Bound PCI Buses

The ldm stop-domain -f command is disabled if the domain has any PCI-Express I/O buses bound to it. This is currently the case with all the platforms supported by Logical Domains 1.0 software. In this case, an error message of the following form is returned: LDom ldg1 stop notification failed

Due to this restriction, if an I/O domain is unresponsive to console or network input, and is unable to process a domain service shutdown request from the Logical Domains Manager, then there is no way to perform an isolated stop of that domain.

Workaround: Shut down all the other domains, and power cycle the server.

CR 6553922: LDoms Manager Supporting a Means to Force a Base RA Value <= 256M

The NDPS requires a base RA <= 246M. This can be accomplished through judicious allocation of memory to a previously created domain.

The workaround is to create the NDPS domain first, after the primary domain is configured, and allocate *X* MB of memory to the primary domain where *X* is `0 < ((128 MB + X MB) mod 256 MB)`

Reasonable values for a primary domain memory size that meets this restriction include anything in the following ranges:

516MB-628MB
772MB-884MB
1028MB-1140MB
1284MB-1396MB

and so on, adding 256MB to each value above to define additional ranges.

CR 6554543: IPC channels do not recover after one link partner is rebooted

When a domain that uses an IPC channel is reset, there is no method to reestablish the channels without also rebooting the link partner domain. You can only use the `tnsmctl` command to reconfigure the channels after both the LWRTE and the Solaris domains have been rebooted.

Note – This only applies to channels that have been configured using the `tnsmctl` command. The global control channel is not affected by this bug and reestablishes automatically.

CR 6576563: RLP with ARP in switched environment, needs `ipge` to be set in non-promiscuous mode

The RLP reference application does not work on CP3060 even when ARP is enabled. Currently, the `ipge` driver puts the device in promiscuous mode and captures all traffic for RLP application.

Workaround: Break the link between the two switches that connect the extended network fabric ports. Use the `telnet` utility to access one of the switches and shut down the interconnecting port.

CR 6578856: %f not supported in printf

Currently, printf does not support %f in a format string.

CR 6578957: ipc_tx(): chaining of messages is not supported

Chaining of messages using the b_next field in the mblk_t structure is not supported in this release. ipc_tx() must be called once for every message.

CR 6578954: Kernel IPC interfaces for Solaris are not fully functional

The ipc_connect() call in the Solaris kernel does not return a valid IPC handle. For this reason, the kernel interface cannot be used by entities outside the tnsm driver.

CR 6580506: RLP: Need a build script for Montoya 1 port in, 1 port out support

Support for the CP3060 platform in the RLP application can be enabled by making the following changes:

Add the -DDEVID_1060 string to the TEJACC_CFLAGS line.

```
TEJACC_CFLAGS += -I$(NET_INC_DIR) -I$(RLP_DIR) -I$(NET_DIR) \
-I$(BSP_DIR)/include -I../../../../.. -DTEJA \
-Dprintf=teja_synchronized_printf -DTEJAPERF -D_KERNEL -DNEWDEVTREE \
-DFASTIPC_FREEQ -DNIAGARA -I/usr/include -I. -I./sys -DSCATTER_GATHER -DRLP \
-I./src/app \
$(APPSWARCH_DEFINE) -O -DDUMP_IPGE_STATS -DTWOKBUF -DDEVID_1060
```

In RLP/src/app/rlp_config.h, change the RLP agent count to 1.

change

```
# define NUM_RLP_AGENTS (2)
```

to

```
# define NUM_RLP_AGENTS (1)
```

In RLP/src/app/rlp.c, make the following changes in _main_split_rxtx(void) function.

Move up the #ifdef RLP_RUN_ALL_THDS by one line after the switch (thdidx) statement. This is similar to the following code on the next page:

```
//PDSN_RX
       case 0:
#ifdef RLP_RUN_ALL_THDS
       case 4:
....
.....
       // RLP
       case 1:
#ifdef RLP_RUN_ALL_THDS
       case 5:
....
.....
       // AT_RX
       case 2:
#ifdef RLP_RUN_ALL_THDS
       case 6:
....
.....
       // AT_TX
       case 3:
#ifdef RLP_RUN_ALL_THDS
       case 7:
....
.....
       //PDSN_TX
       case 23:
#ifdef RLP_RUN_ALL_THDS
       case 24:
```

CR 6581575: remotecli: need ctr+c support for the Solaris utility rcon

The rcon utility does not support ctrl+c in this release. The terminal hangs when a ctrl+c is sent to the terminal that connects to the Solaris domain.

Configuring ADE Licenses Using the FLEXlm Utility

Working with Licenses Using FLEXlm

You must have a license file to use the software. When you invoke an ARC International product, the FLEXlm license manager reads the license file. The license manager allows you to invoke the software based on the information in the license file. ARC International issues two kinds of licenses:

- Node-locked licenses (single user); see Node-Locked Licenses
- Floating licenses (multiple user); see Floating Licenses

Node-Locked Licenses

A node-locked license, or uncounted license, is a license that runs on a single machine. The license file contains permission to run various tools for one user only.

Obtaining a Node-Locked License File

To obtain a license file, email the following information to license@arc.com:

- Name of the license user Name, address, and phone number of your company
- Product and target processor
- Purchase order number
- The host ID of the host computer where the distribution is installed

You can find the host ID by running the FLEXlm utility, lmhostid (located in the bin subdirectory of your Teja installation).

Installing a Node-Locked License

When you receive the license file (for example, licfile.lic), place it in the following folder: /opt/ARC/license. After your license file is installed, use one of the following methods to make FLEXlm aware of the license:

- Install the `icfile.lic` file in the `ARC/license` or `/opt/ARC/license` directory and run the tools. The tools automatically finds the license file.
- Set the `LM_LICENSE_FILE` environment variable to include the location of the new license file. For example, in UNIX or Linux, use the `setenv` command in a C shell:

```
setenv LM_LICENSE_FILE /opt/ARC/license/licfile.lic
```

Installing a Node-Locked License on Windows

Set `LM_LICENSE_FILE` environment variable to `C: ARC license/arc.lic`. To set the `LM_LICENSE_FILE` environment variable in Windows, consult the help utility for your version of Windows. For Windows, the location of the `arc.lic` file is stored in the following Windows registry entry:

```
My Computer\textbackslash HKEY\_LOCAL\_MACHINE\textbackslash
SOFTWARE\textbackslash FLEXlm License Manage\textbackslash
ARCD\_LICENSE\_FILE
```

This entry is automatically updated if a successful checkout occurs from a license file that was not previously listed in the registry file. You can change or delete the registry entry using the Windows `regedit` utility.

Installing a Node-Locked License on UNIX or Linux

Set `LM_LICENSE_FILE` environment variable to `/opt/ARC/license/arc.lic`.

To set the environment variable for UNIX or Linux, use the `setenv` command from within a C shell; for example:

```
setenv LMLICENSEFILE /opt/ARC/license/arc.lic
```

Floating Licenses

A floating license, or counted license, is a network license for a specified number of seats. It allows multiple users to use a single license file to be shared between a specified number of computers. A floating license requires that the `lmgrd` license daemon process be running on a license server machine. The number of seats specified in the license file is the number of concurrent users that can use the products.

Obtaining a Floating-License File

To obtain a floating license file, email the following information to `license@arc.com`:

- Name of the license user (or contact name)
- Name, address, and phone number of your company
- Product and target processor
- The host ID of the license server.

You can find the host ID by running the `FLEXlm` utility, lmhostid (located in the `bin` subdirectory of your Teja installation). The host name of the `FLEXlm` license server (where the license manager is installed). Use the hostname (or `uname -a`) command to find the server name for a UNIX or Linux server. On a Windows machine, run the `lmtools.exe` utility on the server and select the System Settings tab on a Windows machine. As an option, you can include a specific port to be used on your server. The default port is 7434.

Installing a Floating License

After you have obtained the license file, you must set up the license file on the server and set an environment variable on each client machine that runs the tools. The server that runs the `FLEXlm` utilities and contains the license file does not need to have the ARC International products installed. However, it does need to have the `FLEXlm` utilities and license file installed. You can obtain the `FLEXlm` utilities for your platform from the bin subdirectory in the Teja installation directory.

Installing a Floating License on a UNIX or Linux License Server

Copy the FLEXlm utilities and the license daemon to the license server. Copy the license file (typically arc.lic) into the FLEXlm utilities directory. Start the license manager daemon by entering the following command syntax:

```
lmgrd -c /path/to/arc.lic -l /path/to/arcflex.log
```

Where /path/to/arc.lic is the directory to the license files location, and /path/to/arcflex.log is the location and file name of the FLEXlm log file. The following example points to the license file in the FLEXlm directory, and also places the log file in the FLEXlm directory:

```
lmgrd -c /flexlm/arc.lic -l /flexlm/arcflex.log
```

The license manager should now be enabled and running. If you have difficulties setting up your floating license, see the FLEXlm End Users Guide. Setting up UNIX or Linux workstations to use the floating license To run the toolset on a machine (including the license server), set the environment variable LM_LICENSE_FILE to port@servername. For the port, use the port number located in the first line of the license file. The default port number is 7434. For the server name, use the server name located in the first line of the license file. In a Bourne or Korn Shell, use the following command:

```
LM_LICENSE_FILE=port@servername
export LM_LICENSE_FILE
```

In a C Shell, use the following command syntax:

```
setenv LM_LICENSE_FILE port@servername
```

For example, if your server name is Server1 with port 7434, use the following command in a C shell: setenv LM_LICENSE_FILE 7434@Server1

Installing a Floating License on a Windows License Server

Copy the license utilities from the license directory of your installation to the directory on your server (for example C:\ARC1icense). Also, copy the license file (arc.lic) that you received from ARC to the same directory. You can also obtain the FLEXlm utilities from the bin directory in the Teja installation.

Use `lmtools.exe` to a open a window that displays the Service/License File tab.

Check Configuration Using Services by clicking the Configure Services tab. Enter a new name for this service (for example, ARC License Manager). Enter the path to `lmgrd.exe` (for example, `c:\ARC1icense•in1mgrd.exe)`, the new permanent floating license file (for example, `c:\ARC1icense\arc.lic`), and, optionally, create a debug log file.

To run `lmgrd.exe` as a service,

1. **Select Use Services from the Service/License tab.**
2. **Select Start Server at Power Up.**

   This starts the service automatically when you start your computer.
3. **Click Save Service.**
4. **Click the Start/Stop/Reread tab.**

   The entry, ARC License Manager, is highlighted in the list box.
5. **Click Start Server.**

   You may have to wait for several seconds for the `lmgrd` process to start.

   The license manager should now be enabled and running. If you have difficulties setting up your floating license, see the FLEXlm End User's Guide.

   Set up Windows workstations to use the floating license. After your license file is installed, make `FLEXlm` aware of the license by setting the environment variable `LM_LICENSE_FILE` to include the location of the new license file. To set the `LM_LICENSE_FILE` environment variable in Windows, consult the help utility for your version of Windows. For example, if your server name is Server1 with port 7434, use the following syntax: `7434@Server`

Configuration Example for the Remote Command-Line Interface

This section provides example configuration procedures for running remote command-line interface (CLI) support. The remote CLI supports applications using the Logical Domain Channel driver (LDC) in the Logical Domains (LDoms) framework.

Solaris Utilities and Drivers

You need to install the following files to your Solaris LDom domain. You can get these files after you install the `SUNWndps` package and make the binary under `src/apps/remotecli/rconsole/ldc_so`:

- coredump Solaris driver `cdum` and its configuration file `cdum.conf`
- remote cli Solaris driver `remc` and its configuration file `remc.conf`
- remote cli Solaris utility `rcon` and its configuration file `rcon.xml`

Here is the example for setup in the Solaris domain:

```
cp cdum* /usr/kernel/drv
cp remc* /usr/kernel/drv

cd /usr/kernel/drv/
ln -s /usr/kernel/drv/remc.conf remc.conf
ln -s /usr/kernel/drv/cdum.conf cdum.conf

cd /usr/kernel/drv/sparcv9
ln -s /usr/kernel/drv/remc remc
ln -s /usr/kernel/drv/cdum cdum

rem_drv cdum
add_drv cdum
rem_drv remc
add_drv remc

cp -f rcon /usr/bin
chmod ugo+xr /usr/bin/rcon
echo ¡°rcon 6000/tcp¡ >> /etc/services

cp -f rcon.xml /var/svc/manifest/network/rcon.xml
svccfg import /var/svc/manifest/network/rcon.xml
svcadm enable svc:/network/rcon:rcon
```

From any remote system, `telnet` to the Solaris domain port number 6000. Type `ifconfig -a` to get the IP or host name for the Solaris domain.

```
telnet solarisdomain 6000
Trying 192.168.1.4...
Connected to lwrtesol.
Escape character is '^]'.
ndps> help
        show local-ldc          : show local available LDC channels
        connect <id>            : connect to Virtual Data Plane Channel
        disconnect             : disconnect from Virtual Data Plane Channel
        send break dbg          : jump into debugger
        send break sys          : jump into system cli
        cont                    : quit from debugger
        c                       : quit from debugger
        setdumpch <id> [-d <dump dir>]  : sets dump channel and directory
        quit                    : quit from system cli
        exit                    : quit this program
        help                    : help for this
ndps>
```

Now compile the `remotecli` application for NDPS.

NDPS `remotecli`

From your `SUNWndps` package `src/apps/remotecli/`, do the following:

Run `gmake` and then enter `cd code/main`. Then do `gmake` again. You then have the `remotecli` application binary. Boot that application binary in your Lightweight Runtime Environment (LWRTE) domain.

Once the application is running in your LWRTE domain, then you can do a debug/core dump and profile remotely. This is a reference application showcasing the use of the remote CLI.

Debugging Remotely

```
telnet solarisdomain 6000

Connected to lwrtesol.
Escape character is ¡¯^]¡¯.
ndps> show local-ldc
```

This displays:

```
1 of channels solaris-cli found
       channel ids = [ 0x4 ]
the channel 5 is for CLI!
1 of channels solaris-cored found
       channel ids = [ 0x5 ]

ndps> connect 4
```

Select the RCLI channel 4 to connect to the LWRTE domain after the message says the link is UP.

Go into the NDPS Debugger:

```
ndps> send break dbg
and it will come back with this prompt
dbg>
```

In remote CLI, do same as the local CLI for debugging.

Type `help` or `?` for help.

To quit the Debugger, simply type c or cont commands.

Coredump Support

You can set the dump channel and dump directory (optional) before going into the debugger:

```
telnet solarisdomain 6000
Connected to lwrtesol.
Escape character is ¡¯^]¡¯.
ndps> show local-ldc
```

This displays:

```
1 of channels solaris-cli found
       channel ids = [ 0x4 ]
the channel 5 is for CLI!
1 of channels solaris-cored found
       channel ids = [ 0x5 ]

ndps> setdump 5 [-d /tmp]
```

This picks the channel for coredump and `/tmp` will store the coredump file.

Coredump is supported under Debugger. You need to get into Debugger by sending the ¡˚send break dbg¡ command.

```
ndps> send break dbg
dbg> show-ldc

1 of channels ndps-cli found
       channel ids = [ 0x5 ]
the channel 5 is for CLI!
1 of channels ndps-cored found
       channel ids = [ 0x6 ]
```

The program then tells you which LDC channel ID to use (for example, `ndps-cored`).

Then type:.

```
dbg> setdump -l ldcid# corename
```

where `ldcid#` is obtained from show-ldc in the Debugger.

Then type:.

```
dbg> coredump
```

The program will start to dump the core and transfer the core dump file to the Solaris domain You can then obtain the coredump file from the directory you specified under the Solaris domain and use the `gdb` tool to analyze it (make sure you have the NDPS binary image ELF format with the coredump file).

Note – You need to do `stumped <id> [-d <dump dir>]` in your `telnet` terminal in the Solaris domain before doing setdump <id> [-d <dump dir>] in the LWRTE domain.

Profiler Support Remotely

Type `connect <ldc>` to get to the NDPS domain. All of the output is diverted to the remote console. You can therefore capture all profile output remotely.

How to Configure LDoms for Remote Command-Line Interface (CLI)

Note – This feature requires the LDoms 1.0 release; download and follow LDoms 1.0 official release instructions.

The following instructions assume that you have installed the necessary Ldom 1.0 software and firmware. You simply just follow the instruction below to create the ldoms you need to run remote CLI.

Note – For the configuration of the LDC channels used in remote CLI and core dump cases, follow the `ldm` commands presented below. That is, do not change the name of `ndps-cli/ndps-cored/solaris-cli/solaris-cored`, in order for it to work.

For the LWRTE domain, you need to do the following `ldm` configuration for `ldg1`:

```
/opt/SUNWldm/bin/ldm add-vdpcs ndps-cli ldg1
/opt/SUNWldm/bin/ldm add-vdpcs ndps-cored ldg1
```

For NDPS domain, you need to do the following `ldm` configuration for `ldg2`:

```
/opt/SUNWldm/bin/ldm add-vdpcc solaris-cli ndps-cli ldg2
/opt/SUNWldm/bin/ldm add-vdpcc solaris-cored ndps-cored ldg2
```

The following are detailed configuration examples:

Configuring the Primary Domain

```
/opt/SUNWldm/bin/ldm remove-mau 8 primary
/opt/SUNWldm/bin/ldm remove-vcpu 28 primary
/opt/SUNWldm/bin/ldm remove-mem 31G primary
/opt/SUNWldm/bin/ldm add-vdiskserver primary-vds0 primary
/opt/SUNWldm/bin/ldm add-vconscon port-range=5000-5100
primaryvcc0 primary
/opt/SUNWldm/bin/ldm add-vswitch net-dev=e1000g0 primary-vsw0
primary
/opt/SUNWldm/bin/ldm list-config
/opt/SUNWldm/bin/ldm add-config remotecli-config
```

Reboot the system to activate `remotecli-config`.

Configuring LDoms Running NDPS

```
/opt/SUNWldm/bin/ldm add-vcpu 16 ldg1
/opt/SUNWldm/bin/ldm add-mem 4G ldg1
/opt/SUNWldm/bin/ldm add-vnet vnet1 primary-vsw0 ldg1
/opt/SUNWldm/bin/ldm add-vdsdev /dev/lofi/1 vol1@primary-vds0
/opt/SUNWldm/bin/ldm add-vdisk vdisk1 vol1@primary-vds0 ldg1
/opt/SUNWldm/bin/ldm add-vdpcs ndps-cli ldg1
/opt/SUNWldm/bin/ldm add-vdpcs ndps-cored ldg1
/opt/SUNWldm/bin/ldm bind ldg1
/usr/openwin/bin/xterm -sb -sl 5000 -T ¡˚Console: ldg1¡
geometry 80x12+98+193 -bg black -fg white -e /usr/bin/telnet
localhost 5000 &
/opt/SUNWldm/bin/ldm start ldg1
```

Configuring LDoms Running Solaris

```
/opt/SUNWldm/bin/ldm add-domain ldg2
/opt/SUNWldm/bin/ldm add-vcpu 12 ldg2
/opt/SUNWldm/bin/ldm add-mem 8G ldg2
/opt/SUNWldm/bin/ldm add-vnet vnet2 primary-vsw0 ldg2
/opt/SUNWldm/bin/ldm add-vdsdev /dev/lofi/2 vol2@primary-vds0
/opt/SUNWldm/bin/ldm add-vdisk vdisk2 vol2@primary-vds0 ldg2
```

```
/opt/SUNWldm/bin/ldm add-vdpcc solaris-cli ndps-cli ldg2
/opt/SUNWldm/bin/ldm add-vdpcc solaris-cored ndps-cored ldg2
/opt/SUNWldm/bin/ldm bind ldg2
/usr/openwin/bin/xterm -sb -sl 5000 -T ¡˚Console: ldg2¡ -
geometry 80x12+98+193 -bg black -fg cyan -e /usr/bin/telnet
localhost 5001 &
/opt/SUWldm/bin/ldm start ldg2
```

Feedback/Support

You can request Sun support and provide feedback to Sun at the following email address:

ndps-feedback@sun.com