Subject: Brussels - enhanced network driver configuration via dladm

Submitted by: Sowmini Varadhan

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Committee: James D. Carlson (opinion written by Garrett D’Amore), Kais Belgaied, Glenn Skinner, Gary Winiger.

Product Approval Committee:

Solaris PAC
solaris-pac-opinion@sun.com

1. Summary

Brussels is a project to enhance and standardize network interface configuration through properties. It extends the GLDv3 driver interface to allow drivers to expose device properties to Solaris, provides normalized access to these properties via the **dladm**(1m) command line application, and provides for persistence of said configuration across reboots. A compatibility layer for **ndd**(1m) is included.

2. Decision & Precedence Information

The project is is approved as specified in reference [1]. The members have made one technical recommendation as listed in Appendix B below.

The project may be delivered in a minor release of Solaris.

3. Interfaces

The project exports the following interfaces.

Interfaces Exported		
Interface	Classification	Comments
mac_register	Consol. Private	<sys/mac.h> (modified)
mac_callbacks_t	Consol. Private	<sys/mac.h> (modified)
MC_SETPROP	Consol. Private	Sect. 2.1 of [3]
MC_GETPROP	Consol. Private	Sect. 2.1 of [3]
mc_setprop	Consol. Private	Sect. 2.2 of [3]
mc_getprop	Consol. Private	Sect. 2.3 of [3]
dld_ioc_prop_val_t	Consol. Private	Sect. 3.2 of [3]
DLDIOCSETPROP	Consol. Private	<sys/dld.h>
DLDIOCGETPROP	Consol. Private	<sys/dld.h>
DLD_PROP_PRIVATE	Consol. Private	<sys/dld.h>
DLD_PROP_*	Consol. Private	Property prefix.
dladm_is_wlan_prop	Consol. Private	
dladm_get_single_mac_stat	Consol. Private	
default_mtu	Committed	Property name
flowctrl	Volatile	Property name
ifspeed	Committed	Property name
link_duplex	Committed	Property name
link_up	Committed	

Interfaces Exported		
Interface	Classification	Comments
adv_autoneg_cap	Committed	PSARC/2003/581
adv_asmpause_cap	Committed	PSARC/2003/581
adv_pause_cap	Committed	PSARC/2003/581
adv_1000fdx_cap	Committed	PSARC/2003/581
adv_1000hdx_cap	Committed	PSARC/2003/581
adv_100fdx_cap	Committed	PSARC/2003/581
adv_100hdx_cap	Committed	PSARC/2003/581
adv_10fdx_cap	Committed	PSARC/2003/581
adv_10hdx_cap	Committed	PSARC/2003/581
ndd on data-link drivers	Obsolete	Replace with dladm

The project imports the following interfaces.

Interfaces Imported		
Interface	Classification	Comments
GLDv3 MAC interfaces	Consolidation Private	PSARC 2006/249
libdladm API	Consol. Private	PSARC 2004/471
mac_maxsdu_update	Consol. Private	Clearview IP Tunneling

4. Opinion

4.1. Link Capabililties

Several members discussed a desire to to have the ability to enable or disable offload capabilties (hardware checksum being one example). However, as this feature is mostly used to work around bugs that the customer should not see, it was agreed that this is not in-scope for this project.

4.2. Obsolete NDD

The members discussed two issues surrounding NDD. First, the documentation should be changed to indicate use of NDD to configure network devices is Obsolete. The project team agreed with this correction.

Second is the idea that in the future it might be possible to make a separate case to either backport Brussels to Solaris 10, or to provide at least CLI compatibility (via some kind of wrapper around NDD) in Solaris 10, so as to facilitate removal of the NDD compatibility layer sooner. The members ultimately decided that this is not in scope for this project.

4.3. Crossbow

The project materials refer to properties that are not being approved at this time, but that will will be reviewed as part of the Crossbow project. Only the properties that are called out in [1] are approved as public properties at this time.

4.4. Power Management of Link Interfaces

One participant discussed the problem of link power management, where power management policy may result in a link advertising a different set of bits via the MII register (normally a subset) than was administratively configured via the adv_* bits.

The problems surrounding this have resulted in a technical change advised, which is documented more fully in Appendix B.

5. Minority Opinion(s)

None.

6. Advisory Information

The members would like to see a project enhancement to configure link NIC offload capabilities proposed. One example is hardware checksum, but there are other possibilities as well.

7. Appendices

7.1. Appendix A: Technical Changes Required

None.

7.2. Appendix B: Technical Changes Advised

1 Separate out the configuration tunable for administration of MII ethernet link bits into a separate writable knob (such as **enable_100fdx_cap**), and a read-only value indicating the actual state of the bit as it is being exposed over the wire (i.e. **adv_100fdx_cap**).

7.3. Appendix C: Reference Material

Unless stated otherwise, path names are relative to the case directory PSARC/2007/429.

1. 20 Questions
   File: commitment.materials/20q.txt
2. Brussels - NIC configuration Design Specification
   File: commitment.materials/brussels.pdf
3. Brussels Framework Interfaces Specification
   File: commitment.materials/framework.pdf
4. Brussels Umbrella Overview
   File: commitment.materials/umbrella.txt
5. Release Notes Update
   File: commitment.materials/relnotes-update.txt
6. bge(7d)
   File: commitment.materials/manpages/bge.7d
7. dladm(1m)
   File: commitment.materials/manpages/dladm.1m
7. ieee802.3(5)
   File: commitment.materials/manpages/ieee802.3.5
8. ndd(1m)
   File: commitment.materials/manpages/ndd.1m