NAME

mac_callbacks, **mac_callbacks_t -** networking device driver entry points structure

SYNOPSIS

#include <sys/mac_provider.h>

INTERFACE LEVEL

illumos DDI specific

DESCRIPTION

The **mac_callbacks** structure is used by GLDv3 networking device drivers implementing and using the mac(9E) framework and interfaces.

The structure is normally allocated statically by drivers as a single global entry. A pointer to it is passed as the *m_callbacks* member of the *mac_register_t* structure.

TYPES

The following types define the function pointers in use in the *mac_register_t*.

```
typedef int          (*mac_getstat_t)(void *, uint_t, uint64_t *);
typedef    int       (*mac_start_t)(void *);
typedef void         (*mac_stop_t)(void *);
typedef int          (*mac_setpromisc_t)(void *, boolean_t);
typedef int          (*mac_multicst_t)(void *, boolean_t, const uint8_t *);
typedef int          (*mac_unicst_t)(void *, const uint8_t *);
typedef void         (*mac_ioctl_t)(void *, queue_t *, mblk_t *);
typedef void         (*mac_resources_t)(void *);
typedef mblk_t           *(*mac_tx_t)(void *, mblk_t *);
typedef    boolean_t(*mac_getcapab_t)(void *, mac_capab_t, void *);
typedef    int       (*mac_open_t)(void *);
typedef void         (*mac_close_t)(void *);
typedef    int       (*mac_set_prop_t)(void *, const char *, mac_prop_id_t,
                   uint_t, const void *);
typedef    int       (*mac_get_prop_t)(void *, const char *, mac_prop_id_t,
                   uint_t, void *);
typedef void         (*mac_prop_info_t)(void *, const char *, mac_prop_id_t,
                   mac_prop_info_handle_t);
```

STRUCTURE MEMBERS

```
uint_t          mc_callbacks; /* Denotes which callbacks are set */
```

```
mac_getstat_t  mc_getstat;      /* Get the value of a statistic */
mac_start_t    mc_start; /* Start the device */
mac_stop_t     mc_stop;  /* Stop the device */
mac_setpromisc_t mc_setpromisc;/* Enable or disable promiscuous mode */
mac_multicst_t       mc_multicst;   /* Enable or disable a multicast addr */
mac_unicst_t   mc_unicst;       /* Set the unicast MAC address */
mac_tx_t mc_tx;             /* Transmit a packet */
void         *mc_reserved;/* Reserved, do not use */
mac_ioctl_t    mc_ioctl; /* Process an unknown ioctl */
mac_getcapab_t       mc_getcapab;  /* Get capability information */
mac_open_t     mc_open;/* Open the device */
mac_close_t    mc_close;        /* Close the device */
mac_set_prop_t       mc_setprop;    /* Set a device property */
mac_get_prop_t       mc_getprop;    /* Get a device property */
mac_prop_info_t      mc_propinfo;  /* Get property information */
```

The *mc_callbacks* member is used to denote which of a series of optional callbacks are present. This method allows additional members to be added to the *mac_callbacks_t* structure while maintaining ABI compatibility with existing modules. If a member is not mentioned below, then it is a part of the base version of the structure and device drivers do not need to set anything to indicate that it is present. The *mc_callbacks* member should be set to the bitwise inclusive OR of the following pre-processor values:

MC_IOCTL Indicates that the *mc_ioctl* structure member has been set.

MC_GETCAPAB
Indicates that the *mc_getcapab* structure member has been set.

MC_OPEN Indicates that the *mc_open* structure member has been set.

MC_CLOSE Indicates that the *mc_close* structure member has been set.

MC_SETPROP
Indicates that the *mc_setprop* structure member has been set.

MC_GETPROP
Indicates that the *mc_getprop* structure member has been set.

MC_PROPINFO
Indicates that the *mc_propinfo* structure member has been set.

MC_PROPERTIES

Indicates that the *mc_getprop*, *mc_propinfo*, and *mc_setprop* structure members have been set.

The *mc_getstat* function defines an entry point used to receive statistics about the device. A list of statistics that it is required to support is available in mac(9E). For more information on the requirements of the function, see mc_getstat(9E).

The *mc_start* member defines an entry point that is used to start the device. For more information on the requirements of the function, see mc_start(9E).

The *mc_stop* member defines an entry point that is used to stop the device. It is the opposite of the *mc_start* member. For more information on the requirements of the function, see mc_stop(9E).

The *mc_setpromisc* member is used to enable and disable promiscuous mode on the device. For more information on the requirements of the function, see mc_setpromisc(9E).

The *mc_multicst* member is used to enable or disable multicast addresses in the device's filters. For more information on the requirements of the function, see mc_multicst(9E).

The *mc_unicst* member is used to set the primary unicast MAC address of the device. For more information on the requirements of the function, see mc_unicst(9E).

The *mc_tx* member is used to transmit a single message on the wire. For more information on the requirements of the function, see mc_tx(9E).

The *mc_ioctl* member is used to process device specific ioctls. The MAC framework does not define any ioctls that devices should handle; however, there may be private ioctls for this device. This entry point is optional. For it to be considered, the MC_IOCTL value must be present in the *mc_callbacks* member. For more information on the requirements of the function, see mc_ioctl(9E).

The *mc_getcapab* member is used to determine device capabilities. Each capability has its own data and semantics associated with it. A list of capabilities is provided in mac(9E). This entry point is optional. For it to be used, the MC_GETCAPAB value must be present in the *mc_callbacks* member. For more information on the requirements of the function, see mc_getcapab(9E).

The *mc_open* member is used to provide specific actions to take when the device is opened. Note that most device drivers will not have a need to implement this. It is not required for this function to be implemented for this device to be used with dlpi(7P). This entry point is optional. For it to be used, the MC_OPEN value must be present in the *mc_callbacks* member. For more information on the requirements of the function, see mc_open(9E).

The *mc_close* member is used to provide specific actions to take when the device is closed. Note that most device drivers will not have a need to implement this. It is not required for this function to be implemented for this device to be used with dlpi(7P). This entry point is optional. For it to be used, the MC_CLOSE value must be present in the *mc_callbacks* member. For more information on the requirements of the function, see mc_close(9E).

The *mc_getprop* member is used to get the current value of a property from the device. A list of properties, their sizes, and their interpretation is available in mac(9E). This entry point is optional. For it to be used, the MC_GETPROP value must be present in the *mc_callbacks* member. For more information on the requirements of the function, see mc_getprop(9E).

The *mc_setprop* member is used to set the value of a device property. A list of properties, their sizes, and their interpretation is available in mac(9E). This entry point is optional. For it to be used, the MC_SETPROP value must be present in the *mc_callbacks* member. For more information on the requirements of the function, see mc_setprop(9E).

The *mc_propinfo* member is used to obtain metadata about a property such as its default value, whether or not it is writable, and more. A list of properties, their sizes, and their interpretation is available in mac(9E). This entry point is optional. For it to be used, the MC_PROPINFO value must be present in the *mc_callbacks* member. For more information on the requirements of the function, see mc_propinfo(9E).

Required Members

Many members in the structure are optional; however, the following members must be set or a call to mac_register(9F) will fail.

- *mc_getstat*
- *mc_start*
- *mc_stop*
- *mc_setpromisc*
- *mc_multicst*
- *mc_tx*

- *mc_unicst*

Devices which implement the MAC_CAPAB_RINGS capability for receive rings must not implement the *mc_unicst* entry point. Devices which implement the MAC_CAPAB_RINGS capability for transmit rings must not implement the *mc_tx* entry points. For more information about the capability, please see mac_capab_rings(9E).

Generally, a device that implements one of *mc_getprop*, *mc_setprop*, or *mc_propinfo* will want to implement all three endpoints to ensure that the property is fully integrated into user land utilities such as dladm(1M).

SEE ALSO

dladm(1M), dlpi(7P), mac(9E), mac_capab_rings(9E), mc_close(9E), mc_getcapab(9E), mc_getprop(9E), mc_getstat(9E), mc_ioctl(9E), mc_multicst(9E), mc_open(9E), mc_propinfo(9E), mc_setpromisc(9E), mc_setprop(9E), mc_start(9E), mc_stop(9E), mc_tx(9E), mc_unicst(9E), mac_register(9F), mac_register(9S)