Configuring hardware checksum offload operations

Ubuntu 20.04.1 LTS | LPAR mode | z/VM guest

Some CPU-intensive operations can be offloaded to the OSA adapter, thus reducing the load on the host CPU.

The qeth device driver supports offloading for the following operations on both layer 2 and layer 3:

- Inbound (receive) and outbound (transmit) checksum calculations for TCP and UDP network packets
- TCP segmentation

VLAN interfaces inherit offload settings from their base interface.

You can set the offload operations with the Linux® **ethtool** command. See the **ethtool** man page for details. The following abbreviated example shows some of the offload settings:

```
# ethtool -k encf500
Features for encf500:
rx-checksumming: on
tx-checksumming: on
        tx-checksum-ipv4: on
        tx-checksum-ip-generic: off [fixed]
        tx-checksum-ipv6: on
        tx-checksum-fcoe-crc: off [fixed]
        tx-checksum-sctp: off [fixed]
scatter-gather: on
        tx-scatter-gather: on
        tx-scatter-gather-fraglist: off [fixed]
tcp-segmentation-offload: on
        tx-tcp-segmentation: on
        tx-tcp-ecn-segmentation: off [fixed]
        tx-tcp6-segmentation: on
```

```
udp-fragmentation-offload: off [fixed]
generic-segmentation-offload: off [requested on]
generic-receive-offload: on
large-receive-offload: off [fixed]
...
```

- **Configuring the receive checksum offload feature**
  A checksum calculation is a form of redundancy check to protect the integrity of data.
- **Configuring the transmit checksum offload feature**
  The qeth device driver supports offloading outbound (transmit) checksum calculations to the OSA feature.
- **Enabling and disabling TCP segmentation offload**
  Offloading the TCP segmentation operation from the Linux network stack to the adapter can lead to enhanced performance for interfaces with predominately large outgoing packets.

Parent topic:

→ Working with qeth devices