

中国移动现网部署 网迅网卡驱动安装流程

4.19内核

【以下安装教程以4.19内核 安装 驱动txgbe-1.3.6版本为例，后续驱动版本升级，rpm包文件名变化，操作步骤不变】

1、rpm包安装步骤：

```
rpm -ivh kmod-txgbe-1.3.6-BCLinux-for-Euler-21.10-4.19.90-2107.6.0.0100.oe1.bclinux.x86_64.rpm

ln -s /lib/modules/4.19.90-2107.6.0.0100.oe1.bclinux.x86_64/extra/txgbe/ /lib/modules/$(uname -r)/weak-updates

depmod -a
```

```
[root@localhost ~]# rpm -ivh kmod-txgbe-1.3.6-BCLinux-for-Euler-21.10-230324-4.19.90-2107.6.0.0100.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:kmod-txgbe-1.3.6-1.oe1.bclinux ##### [100%]
Working. This may take some time ...
Done.
[root@localhost ~]# ln -s /lib/modules/4.19.90-2107.6.0.0100.oe1.bclinux.x86_64/extra/txgbe/ /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]#
[root@localhost ~]# depmod -a
[root@localhost ~]#
```

2、rpm包卸载步骤：

```
rpm -e kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64

rm -rf /lib/modules/$(uname -r)/weak-updates

depmod -a
```

```
[root@localhost ~]# rpm -e kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
Working. This may take some time ...
Done.
[root@localhost ~]# rm -rf /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]#
[root@localhost ~]# depmod -a
[root@localhost ~]#
```

3、rpm包安装结果验证：

测试系统：BCLinux-for-Euler-21.10-230324

测试内核：4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64

系统自带驱动版本：

```
[root@localhost ~]# grubby --info-ALL
index=0
kernel=/boot/vmlinuz-4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64
args="ro resume=/dev/mapper/bigcloud--enterprise--linux--for--euler-swap rd.lvm.lv=bigcloud-enterprise-linux-for-euler/root
/swap rhgb quiet crashkernel=512M"
root=/dev/mapper/bigcloud--enterprise--linux--for--euler-root
initrd=/boot/initramfs-4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64.img
title=BigCloud Enterprise Linux (4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64) 21.10 (LTS-SP2)
index=1
kernel=/boot/vmlinuz-0-rescue-fb2d627e60d24dedad88fe962cfc0cd9
args="ro resume=/dev/mapper/bigcloud--enterprise--linux--for--euler-swap rd.lvm.lv=bigcloud-enterprise-linux-for-euler/root
/swap rhgb quiet crashkernel=512M"
root=/dev/mapper/bigcloud--enterprise--linux--for--euler-root
initrd=/boot/initramfs-0-rescue-fb2d627e60d24dedad88fe962cfc0cd9.img
title=BigCloud Enterprise Linux (0-rescue-fb2d627e60d24dedad88fe962cfc0cd9) 21.10 (LTS-SP2)
index=2
non linux entry
[root@localhost ~]# modinfo txgbe
filename:      /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/kernel/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version:       1.3.2-k
license:       GPL
description:    WangXun(R) 10 Gigabit PCI Express Network Driver
author:        Beijing WangXun Technology Co., Ltd, <software@trustnetic.com>
srcversion:    554E0506FE035432EFAF076
alias:         pci:v00008088d00002001sv*sd*bc*sc*i*
alias:         pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:     Y
intree:        Y
name:          txgbe
vermagic:      4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
sig_id:        PKCS#7
signer:        openEuler kernel signing key
sig_key:       59:9C:0E:B9:A6:7C:58:7C:AC:5E:9C:C2:20:87:CE:71:31:DD:FA:C8
sig_hashalgo:  sha256
signature:     82:79:FF:42:A8:28:D9:93:B7:90:58:92:BE:22:95:6D:34:4F:A5:44:
```

3.1、只安装kmod-txgbe-1.3.6-xxx.rpm包

1. 默认优先加载内核自带驱动

```
[root@localhost x86_64]# rpm -ivh kmod-txgbe-1.3.6-Bclinux-for-Euler-21.10-230324-4.19.90-2107.6.0.0100.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:kmod-txgbe-1.3.6-1.oe1.bclinux ##### [100%]
Working. This may take some time ...
Done.
[root@localhost x86_64]# modinfo txgbe
filename:      /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/kernel/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version:       1.3.2-k
license:       GPL
description:    WangXun(R) 10 Gigabit PCI Express Network Driver
author:        Beijing WangXun Technology Co., Ltd, <software@trustnetic.com>
srcversion:    554E0506FE035432EFAF076
alias:         pci:v00008088d00002001sv*sd*bc*sc*i*
alias:         pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:     Y
intree:        Y
name:          txgbe
vermagic:      4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
sig_id:        PKCS#7
signer:        openEuler kernel signing key
sig_key:       59:9C:0E:B9:A6:7C:58:7C:AC:5E:9C:C2:20:87:CE:71:31:DD:FA:C8
sig_hashalgo:  sha256
signature:     82:79:FF:42:A8:28:D9:93:B7:90:58:92:BE:22:95:6D:34:4F:A5:44:
```

2. 执行ln -s命令以及depmod -a命令后正常加载1.3.6驱动

```
[root@localhost x86_64]# ln -s /lib/modules/4.19.90-2107.6.0.0100.oe1.bclinux.x86_64/extra/txgbe/ /lib/modules/$(uname -r)/weak-updates
[root@localhost x86_64]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/kernel/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version:        1.3.2-k
license:        GPL
description:     WangXun(R) 10 Gigabit PCI Express Network Driver
author:         Beijing WangXun Technology Co., Ltd, <software@trustnetic.com>
srcversion:     554E0506FE035432EFAF076
alias:          pci:v00008088d00002001sv*sd*bc*sc*i*
alias:          pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:      Y
intree:         Y
name:           txgbe
vermagic:       4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
sig_id:         PKCS#7
signer:         openEuler kernel signing key
sig_key:        59:9C:0E:B9:A6:7C:58:7C:AC:5E:9C:C2:20:87:CE:71:31:DD:FA:C8
sig_hashalgo:   sha256
signature:      82:79:FF:42:A8:28:D9:93:B7:90:58:92:BE:22:95:6D:34:4F:A5:44:
B5:5A:E1:11:93:EB:51:73:71:11:20:08:E0:17:13:2C:1B:89:79:80:
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
version:        1.3.6
license:        GPL
description:     WangXun(R) 10 Gigabit PCI Express Network Driver
author:         Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion:     05292675655E0085377CDDC
alias:          pci:v00008088d00002001sv*sd*bc*sc*i*
alias:          pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:      Y
name:           txgbe
vermagic:       4.19.90-2107.6.0.0100.oe1.bclinux.x86_64 SMP mod_unload modversions
parm:          FFE_MAIN:TX_EQ MAIN (0 - 40) (array of int)
parm:          FFE_PRE:TX_EQ PRE (0 - 40) (array of int)
parm:          FFE_POST:TX_EQ POST (0 - 40) (array of int)
parm:          FFE_SET:TX_EQ SET must choose to take effect (0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm:          backplane_mode:Backplane Mode Support(0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm:          backplane_auto:Backplane AUTO mode (0 = NO AUTO, 1 = AUTO) (array of int)
parm:          InterruptType:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default IntMode (deprecated) (array of int)
parm:          IntMode:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default 2 (array of int)
parm:          MQ:Disable or enable Multiple Queues, default 1 (array of int)
parm:          RSS:Number of Receive-Side Scaling Descriptor Queues, default 0=number of cpus (array of int)
parm:          VMDQ:Number of Virtual Machine Device Queues: 0/1 = disable, 2-16 enable (default=8) (array of int)
parm:          max_vfs:Number of Virtual Functions: 0 = disable (default), 1-63 = enable this many VFs (array of int)
parm:          VEPA:VEPA Bridge Mode: 0 = VEB (default), 1 = VEPA (array of int)
parm:          InterruptThrottleRate:Maximum interrupts per second, per vector, (0,1,980-500000), default 1 (array of int)
parm:          LLIPort:Low Latency Interrupt TCP Port (0-65535) (array of int)
parm:          LLISize:Low Latency Interrupt on Packet Size (0-1500) (array of int)
parm:          LLIType:Low Latency Interrupt Ethernet Protocol Type (array of int)
parm:          LLIVLANP:Low Latency Interrupt on VLAN priority threshold (array of int)
parm:          FdirPballoc:Flow Director packet buffer allocation level:
```

3. rpm -e 卸载驱动modinfo会报错，需要删除软连接以及执行depmod -a

```
[root@localhost ~]# rpm -qa | grep txgbe
kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
[root@localhost ~]# rpm -e kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# rm -rf /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/kernel/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version:        1.3.2-k
license:        GPL
description:     WangXun(R) 10 Gigabit PCI Express Network Driver
author:         Beijing WangXun Technology Co., Ltd, <software@trustnetic.com>
srcversion:     554E0506FE035432EFAF076
alias:          pci:v00008088d00002001sv*sd*bc*sc*i*
alias:          pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:      Y
intree:         Y
name:           txgbe
vermagic:       4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
sig_id:         PKCS#7
signer:         openEuler kernel signing key
sig_key:        59:9C:0E:B9:A6:7C:58:7C:AC:5E:9C:C2:20:87:CE:71:31:DD:FA:C8
sig_hashalgo:   sha256
signature:      82:79:FF:42:A8:28:D9:93:B7:90:58:92:BE:22:95:6D:34:4F:A5:44:
B5:5A:E1:11:93:EB:51:73:71:11:20:08:E0:17:13:2C:1B:89:79:80:
```

3.2、源码安装低版本驱动，make modules_install 方式，再安装kmod-txgbe-1.3.6-xxx.rpm包

1. make modules_install安装

```
[root@localhost src]# make modules_uninstall clean -j
Uninstalling modules...
rm -f /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko;
*** The target kernel has CONFIG_MODULE_SIG_ALL enabled, but
*** the signing key cannot be found. Module signing has been
*** disabled for this build.
make[1]: Entering directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
Running depmod manually...
/sbin/depmod -e -F /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/source/System.map -o 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64
CLEAN /root/txgbe-1.3.5.1/src/.tmp_versions
CLEAN /root/txgbe-1.3.5.1/src/Module.symvers
make[1]: Leaving directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
[root@localhost src]# make modules_install -j
*** The target kernel has CONFIG_MODULE_SIG_ALL enabled, but
*** the signing key cannot be found. Module signing has been
*** disabled for this build.
make[1]: Entering directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
CC [M] /root/txgbe-1.3.5.1/src/txgbe_main.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_dcb.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_ethtool.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_lib.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_mbx.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_sriov.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_param.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_phy.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_procfs.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_hw.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_mtd.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_pcierr.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_bp.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_xsk.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_dcb_nl.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_debugfs.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_fcoe.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_ptp.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_sysfs.o
CC [M] /root/txgbe-1.3.5.1/src/kcompat.o
LD [M] /root/txgbe-1.3.5.1/src/txgbe.o
Building modules, stage 2.
MODPOST 1 modules
CC /root/txgbe-1.3.5.1/src/txgbe.mod.o
LD [M] /root/txgbe-1.3.5.1/src/txgbe.ko
make[1]: Leaving directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
[root@localhost src]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
vermagic: 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
parm: FFE_MAIN:TX_EQ MAIN (0 - 40) (array of int)
parm: FFE_PRE:TX_EQ PRE (0 - 40) (array of int)
parm: FFE_POST:TX_EQ POST (0 - 40) (array of int)
parm: FFE_SET:TX_EQ SET must choose to take effect (0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_mode:Backplane Mode Support(0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_auto:Backplane AUTO mode (0 = NO AUTO, 1 = AUTO) (array of int)
parm: vf_alloc_mode:Change VF Alloc Mode (0 = 2*64, 1 = 4*32, 2 = 8*16) (array of int)
parm: InterruptType:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default IntMode (deprecated) (array of int)
parm: IntMode:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default 2 (array of int)
parm: MQ:Disable or enable Multiple Queues, default 1 (array of int)
parm: RSS:Number of Receive-Side Scaling Descriptor Queues, default 0=number of cpus (array of int)
parm: VMDQ:Number of Virtual Machine Device Queues: 0/1 = disable, 2-16 enable (default=8) (array of int)
parm: max_vfs:Number of Virtual Functions: 0 = disable (default), 1-63 = enable this many VFs (array of int)
parm: VEPA:VEPA Bridge Mode: 0 = VEB (default), 1 = VEPA (array of int)
parm: InterruptThrottleRate:Maximum interrupts per second, per vector, (0,1,980-500000), default 1 (array of int)
parm: LLIPort:Low Latency Interrupt TCP Port (0-65535) (array of int)
parm: LLISize:Low Latency Interrupt on Packet Size (0-1500) (array of int)
parm: LLIIType:Low Latency Interrupt Ethernet Protocol Type (array of int)
parm: LLIVLANP:Low Latency Interrupt on VLAN priority threshold (array of int)
parm: FdirPballoc:Flow Director packet buffer allocation level:
```

2. 安装kmod-txgbe-1.3.6-xxx.rpm包，并执行depmod 命令，显示正常

```
[root@localhost ~]# rpm -ivh kmod-txgbe-1.3.6-Bclinux-for-Euler-21.10-230324-4.19.90-2107.6.0.0100.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:kmod-txgbe-1.3.6-1.oe1.bclinux ##### [100%]
Working. This may take some time ...
Done.
[root@localhost ~]# ln -s /lib/modules/4.19.90-2107.6.0.0100.oe1.bclinux.x86_64/extra/txgbe/ /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]#
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
version: 1.3.6
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 05292675655E0085377CDDC
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
```

3. 卸载kmod-txgbe-1.3.6-xxx.rpm包，并执行depmod 命令，显示正常

```
[root@localhost ~]# rpm -e kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# rm -rf /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
netpoline: Y
name: txgbe
vermagic: 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
parm: FFE_MAIN:TX_EQ MAIN (0 - 40) (array of int)
parm: FFE_PRE:TX_EQ PRE (0 - 40) (array of int)
parm: FFE_POST:TX_EQ POST (0 - 40) (array of int)
parm: FFE_SET:TX_EQ SET must choose to take effect (0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_mode:Backplane Mode Support(0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_auto:Backplane AUTO mode (0 = NO AUTO, 1 = AUTO) (array of int)
parm: vf_alloc_mode:Change VF Alloc Mode (0 = 2*64, 1 = 4*32, 2 = 8*16) (array of int)
parm: InterruptType:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default IntMode (deprecated) (array of int)
parm: IntMode:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default 2 (array of int)
parm: MQ:Disable or enable Multiple Queues, default 1 (array of int)
parm: RSS:Number of Receive-Side Scaling Descriptor Queues, default 0=number of cpus (array of int)
parm: VMDQ:Number of Virtual Machine Device Queues: 0/1 = disable, 2-16 enable (default=8) (array of int)
parm: max_vfs:Number of Virtual Functions: 0 = disable (default), 1-63 = enable this many VFs (array of int)
```


3.3、源码安装低版本驱动，make install 方式，再安装kmod-txgbe-1.3.6-xxx.rpm包

1. make install安装

```
[root@localhost src]# make install -j
*** The target kernel has CONFIG_MODULE_SIG_ALL enabled, but
*** the signing key cannot be found. Module signing has been
*** disabled for this build.
make[1]: Entering directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
Copying manpages...
CC [M] /root/txgbe-1.3.5.1/src/txgbe_main.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_dcb.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_ethtool.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_lib.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_mbx.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_sriov.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_param.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_phy.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_procs.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_hw.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_mtd.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_pcierr.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_bp.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_xsk.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_dcb_nl.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_debugfs.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_fcioe.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_ptp.o
CC [M] /root/txgbe-1.3.5.1/src/txgbe_sysfs.o
CC [M] /root/txgbe-1.3.5.1/src/kcompat.o
LD [M] /root/txgbe-1.3.5.1/src/txgbe.o
Building modules, stage 2.
MODPOST 1 modules
CC /root/txgbe-1.3.5.1/src/txgbe.mod.o
LD [M] /root/txgbe-1.3.5.1/src/txgbe.ko
make[1]: Leaving directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
Installing modules...
*** The target kernel has CONFIG_MODULE_SIG_ALL enabled, but
*** the signing key cannot be found. Module signing has been
*** disabled for this build.
make[1]: Entering directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
INSTALL /root/txgbe-1.3.5.1/src/txgbe.ko
DEPMOD 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64
make[1]: Leaving directory '/usr/src/kernels/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64'
Running depmod manually...
/sbin/depmod -e -F /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/source/System.map -a 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64
Updating initramfs...
[root@localhost src]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
vermagic: 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
parm: FFE_MAIN:TX_EQ MAIN (0 - 40) (array of int)
parm: FFE_PRE:TX_EQ PRE (0 - 40) (array of int)
parm: FFE_POST:TX_EQ POST (0 - 40) (array of int)
parm: FFE_SET:TX_EQ SET must choose to take effect (0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_mode:Backplane Mode Support(0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_auto:Backplane AUTO mode (0 = NO AUTO, 1 = AUTO) (array of int)
parm: vfp_alloc_mode:Change VF Alloc Mode (0 = 2*64, 1 = 4*32, 2 = 8*16) (array of int)
parm: InterruptType:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default IntMode (deprecated) (array of int)
parm: IntMode:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default 2 (array of int)
parm: MQ:Disable or enable Multiple Queues, default 1 (array of int)
parm: RSS:Number of Receive-Side Scaling Descriptor Queues, default 0=number of cpus (array of int)
parm: VMDQ:Number of Virtual Machine Device Queues: 0/1 = disable, 2-16 enable (default=8) (array of int)
parm: max_vfs:Number of Virtual Functions: 0 = disable (default), 1-63 = enable this many VFs (array of int)
parm: VEPA:VEPA Bridge Mode: 0 = VEB (default), 1 = VEPA (array of int)
parm: InterruptThrottleRate:Maximum interrupts per second, per vector, (0,1,980-500000), default 1 (array of int)
parm: LLIPort:Low Latency Interrupt TCP Port (0-65535) (array of int)
parm: LLISize:Low Latency Interrupt on Packet Size (0-1500) (array of int)
parm: LLIIType:Low Latency Interrupt Ethernet Protocol Type (array of int)
parm: LLIVLANP:Low Latency Interrupt on VLAN priority threshold (array of int)
parm: FdirPballo:Flow Director packet buffer allocation level:
    1 = 8k hash filters or 2k perfect filters
    2 = 16k hash filters or 4k perfect filters
    3 = 32k hash filters or 8k perfect filters (array of int)
```

2. 安装kmod-txgbe-1.3.6-xxx.rpm包，并执行depmod 命令，显示正常

```
[root@localhost ~]# rpm -ivh kmod-txgbe-1.3.6-0.bclinux-for-Euler-21.10-230324-4.19.90-2107.6.0.0100.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:kmod-txgbe-1.3.6-1.oe1.bclinux ##### [100%]
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
[root@localhost ~]# ln -s /lib/modules/4.19.90-2107.6.0.0100.oe1.bclinux.x86_64/extra/txgbe/ /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]# depmod -a

[root@localhost ~]#
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
version: 1.3.6
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 05292675655E0885377C0DC
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
```

3. 卸载kmod-txgbe-1.3.6-xxx.rpm包，并执行depmod 命令，显示正常

```
[root@localhost src]# rpm -e kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
Working. This may take some time ...
Done.
[root@localhost src]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost src]# rm -rf /lib/modules/$(uname -r)/weak-updates
[root@localhost src]#
[root@localhost src]# depmod -a

[root@localhost src]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
vermagic: 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
parm: FFE_MAIN:TX_EQ MAIN (0 - 40) (array of int)
parm: FFE_PRE:TX_EQ PRE (0 - 40) (array of int)
parm: FFE_POST:TX_EQ POST (0 - 40) (array of int)
parm: FFE_SET:TX_EQ SET must choose to take effect (0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_mode:Backplane Mode Support(0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
parm: backplane_auto:Backplane AUTO mode (0 = NO AUTO, 1 = AUTO) (array of int)
parm: vf_alloc_mode:Change VF Alloc Mode (0 = 2*64, 1 = 4*32, 2 = 8*16) (array of int)
parm: InterruptType:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default IntMode (deprecated) (array of int)
parm: IntMode:Change Interrupt Mode (0=Legacy, 1=MSI, 2=MSI-X), default 2 (array of int)
parm: MQ:Disable or enable Multiple Queues, default 1 (array of int)
parm: RSS:Number of Receive-Side Scaling Descriptor Queues, default 0=number of cpus (array of int)
parm: VMDQ:Number of Virtual Machine Device Queues: 0/1 = disable, 2-16 enable (default=8) (array of int)
parm: max_vfs:Number of Virtual Functions: 0 = disable (default), 1-63 = enable this many VFs (array of int)
```

3.4、安装低版本不带kmod的rpm包，再安装kmod-txgbe-1.3.6-xxx.rpm包

1. 安装不带kmod的低版本rpm包

```
[root@localhost ~]# rpm -ivh txgbe-1.3.5.1-4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:txgbe-1.3.5.1-1.oe1.bclinux ##### [100%]
original pci.ids saved in /usr/local/share/txgbe
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
vermagic: 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
```

2. 安装kmod-txgbe-1.3.6-xxx.rpm包, 并执行depmod 命令, 显示正常

```
[root@localhost ~]# rpm -ivh kmod-txgbe-1.3.6-BCLinux-for-Euler-21.10-230324-4.19.90-2107.6.0.0100.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:kmod-txgbe-1.3.6-1.oe1.bclinux ##### [100%]
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version:        1.3.5.1
license:        GPL
description:     WangXun(R) 10 Gigabit PCI Express Network Driver
author:         Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion:     515E9DFDC75046626EF5F98
alias:          pci:v00008088d00002001sv*sd*bc*sc*i*
alias:          pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:      Y
name:           txgbe
[root@localhost ~]# ln -s /lib/modules/4.19.90-2107.6.0.0100.oe1.bclinux.x86_64/extra/txgbe/ /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
version:        1.3.6
license:        GPL
description:     WangXun(R) 10 Gigabit PCI Express Network Driver
author:         Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion:     05292675655E0085377CDDC
alias:          pci:v00008088d00002001sv*sd*bc*sc*i*
alias:          pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:      Y
name:           txgbe
vermagic:       4.19.90-2107.6.0.0100.oe1.bclinux.x86_64 SMP mod_unload modversions
parm:           FFE_MAIN:TX_EQ MAIN (0 - 40) (array of int)
parm:           FFE_PRE:TX_EQ PRE (0 - 40) (array of int)
parm:           FFE_POST:TX_EQ POST (0 - 40) (array of int)
parm:           FFE_SET:TX_EQ SET must choose to take effect (0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
```

3. 卸载kmod-txgbe-1.3.6-xxx.rpm包, 并执行depmod 命令, 显示正常

```
[root@localhost ~]# rpm -qa |grep txgbe
txgbe-1.3.5.1-1.oe1.bclinux.x86_64
kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
[root@localhost ~]# rpm -e kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# rm -rf /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version:        1.3.5.1
license:        GPL
description:     WangXun(R) 10 Gigabit PCI Express Network Driver
author:         Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion:     515E9DFDC75046626EF5F98
alias:          pci:v00008088d00002001sv*sd*bc*sc*i*
alias:          pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:      Y
name:           txgbe
vermagic:       4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
```

3.5、安装低版本带kmod的rpm包, 再安装kmod-txgbe-1.3.6-xxx.rpm包

1. 安装带kmod的低版本rpm包

```
[root@localhost ~]# rpm -ivh kmod-txgbe-1.3.5.1-4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:kmod-txgbe-1.3.5.1-1.oe1.bclinux ##### [100%]
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename:       /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/extra/txgbe/txgbe.ko
version:        1.3.5.1
license:        GPL
description:     WangXun(R) 10 Gigabit PCI Express Network Driver
author:         Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion:     515E9DFDC75046626EF5F98
alias:          pci:v00008088d00002001sv*sd*bc*sc*i*
alias:          pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline:      Y
name:           txgbe
```


2. 安装kmod-txgbe-1.3.6-xxx.rpm包, 并执行depmod 命令, 显示正常

```
[root@localhost ~]# rpm -ivh kmod-txgbe-1.3.6-BCLinux-for-Euler-21.10-230324-4.19.90-2107.6.0.0100.oe1.bclinux.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:kmod-txgbe-1.3.6-1.oe1.bclinux ##### [100%]
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/extra/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
vermagic: 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
[root@localhost ~]# ln -s /lib/modules/4.19.90-2107.6.0.0100.oe1.bclinux.x86_64/extra/txgbe/ /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]#
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
version: 1.3.6
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 05292675655E0085377CDDC
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
```

3. 卸载kmod-txgbe-1.3.6-xxx.rpm包, 并执行depmod 命令, 显示正常

```
[root@localhost ~]# rpm -qa |grep txgbe
kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
txgbe-1.3.5.1-1.oe1.bclinux.x86_64
[root@localhost ~]# rpm -e kmod-txgbe-1.3.6-1.oe1.bclinux.x86_64
Working. This may take some time ...
Done.
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# rm -rf /lib/modules/$(uname -r)/weak-updates
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/weak-updates/txgbe/txgbe.ko
modinfo: ERROR: could not get modinfo from 'txgbe': No such file or directory
[root@localhost ~]# depmod -a
[root@localhost ~]# modinfo txgbe
filename: /lib/modules/4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64/updates/drivers/net/ethernet/wangxun/txgbe/txgbe.ko
version: 1.3.5.1
license: GPL
description: WangXun(R) 10 Gigabit PCI Express Network Driver
author: Beijing WangXun Technology Co., Ltd, <linux.nic@trustnetic.com>
srcversion: 515E9DFDC75046626EF5F98
alias: pci:v00008088d00002001sv*sd*bc*sc*i*
alias: pci:v00008088d00001001sv*sd*bc*sc*i*
depends:
retpoline: Y
name: txgbe
vermagic: 4.19.90-2107.6.0.0192.8.oe1.bclinux.x86_64 SMP mod_unload modversions
parm: FFE_MAIN:TX_EQ MAIN (0 - 40) (array of int)
parm: FFE_PRE:TX_EQ PRE (0 - 40) (array of int)
parm: FFE_POST:TX_EQ POST (0 - 40) (array of int)
parm: FFE_SET:TX_EQ SET must choose to take effect (0 = NULL, 1 = sfi, 2 = kr, 3 = kx4, 4 = kx) (array of int)
```