Linux PCI EP Framework

Support for Configurable PCI Endpoint in Linux

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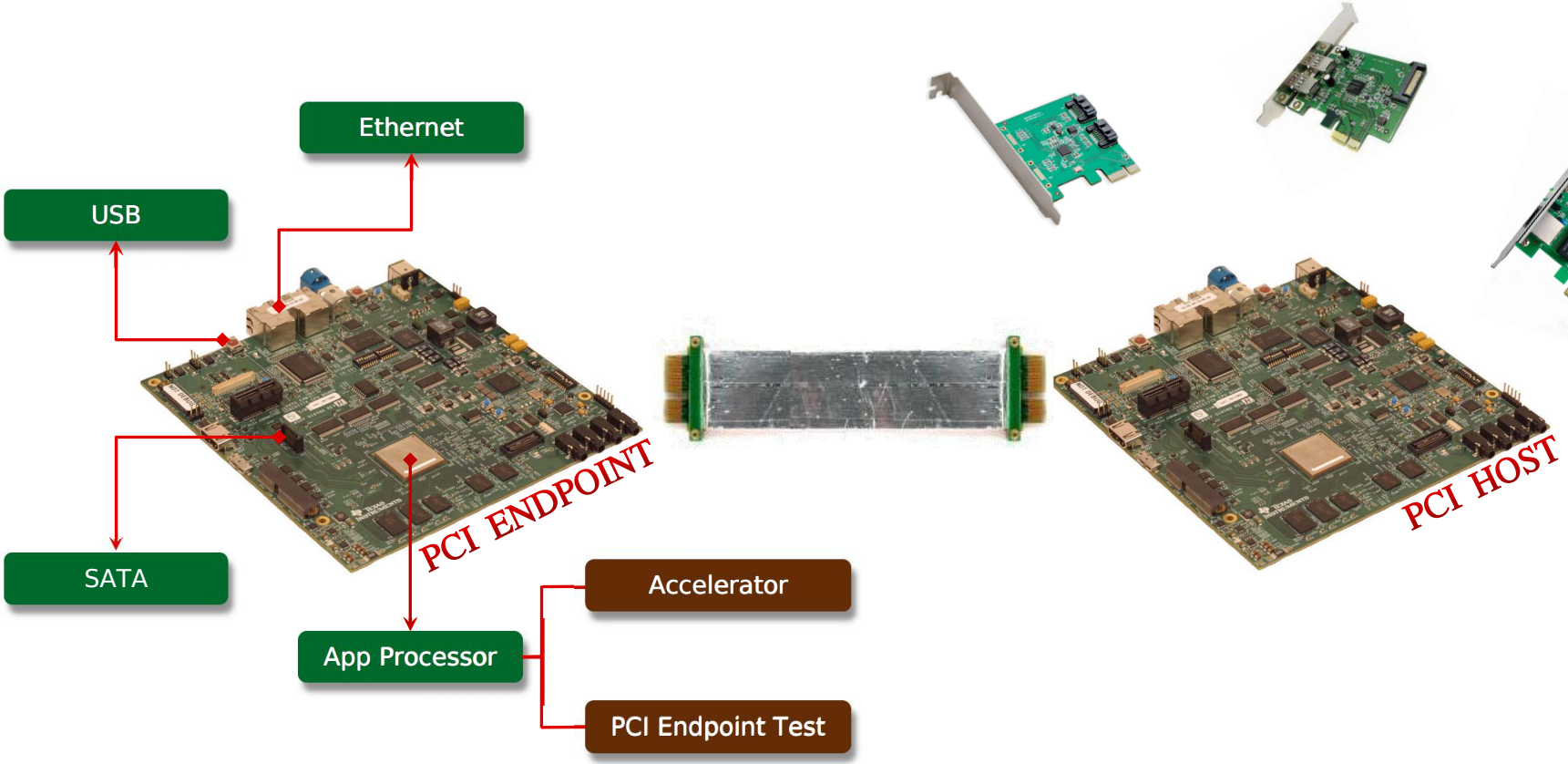
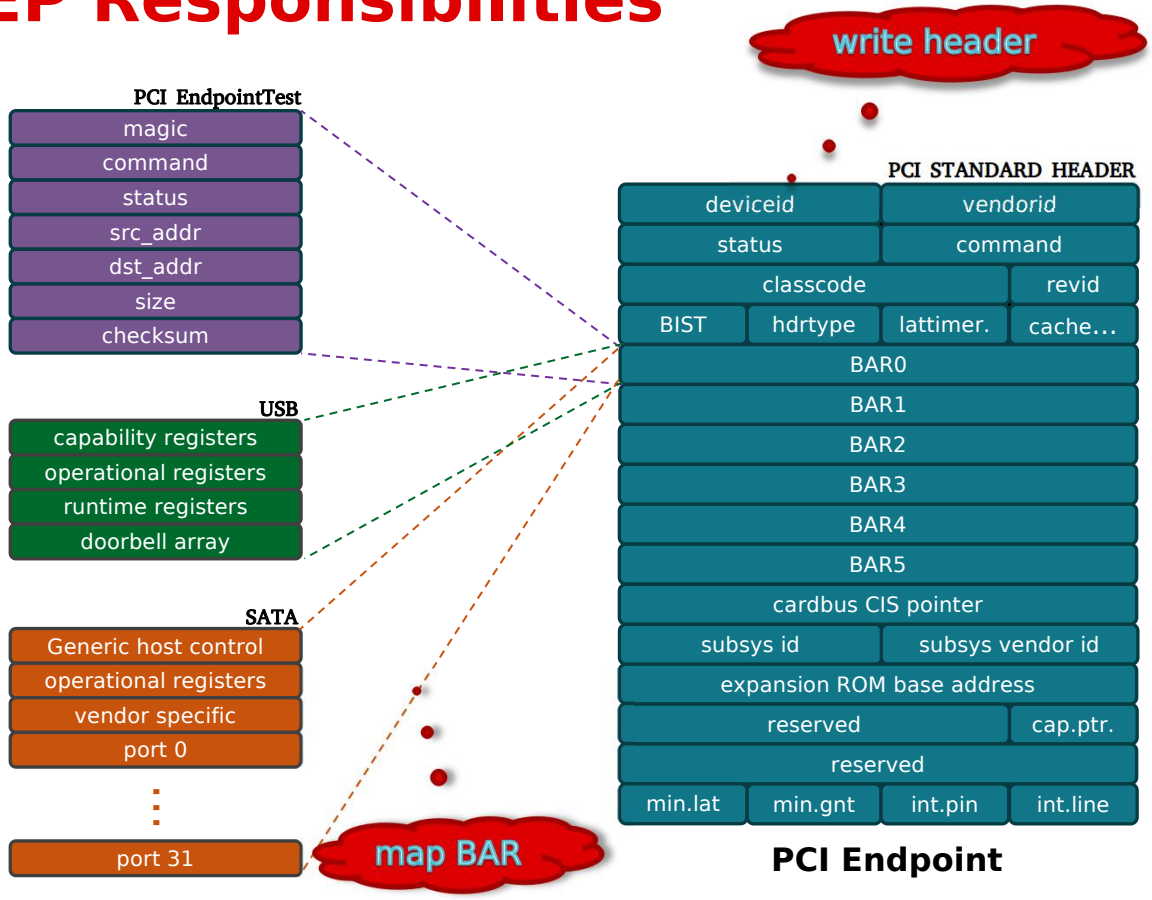
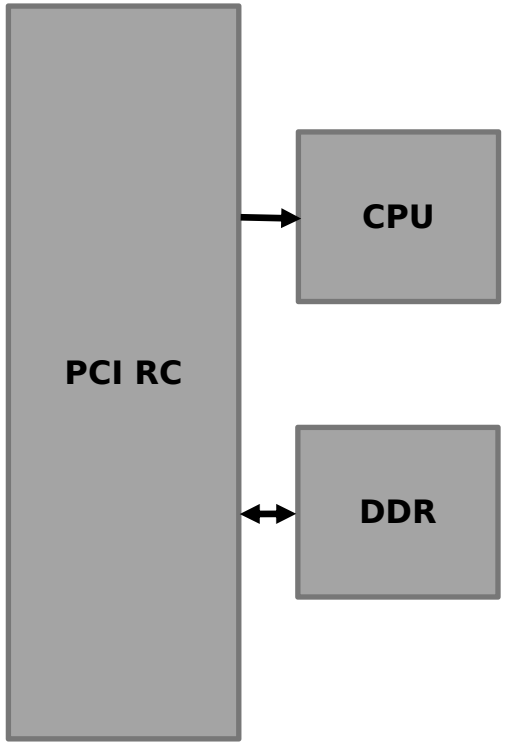
Introduction

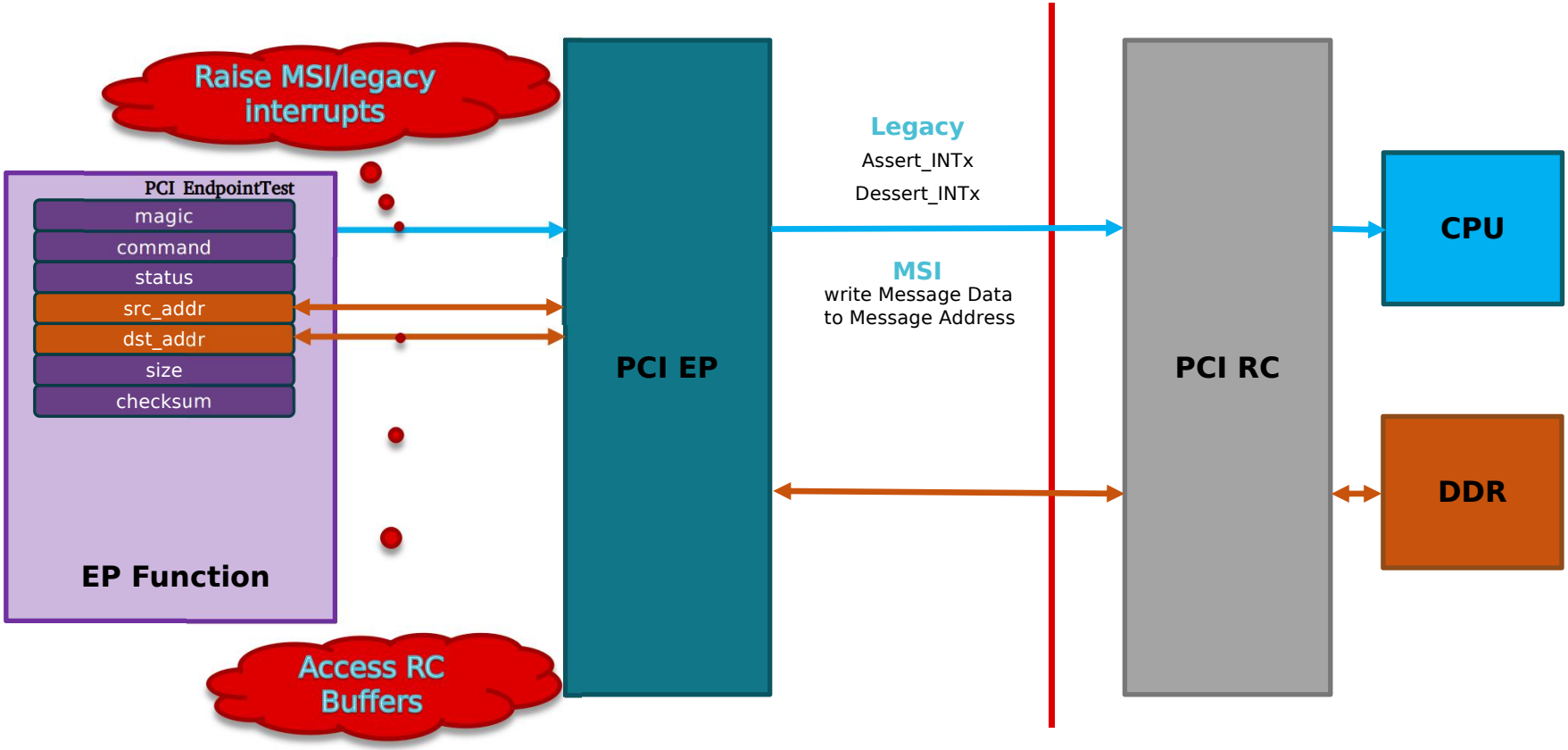


EP Responsibilities

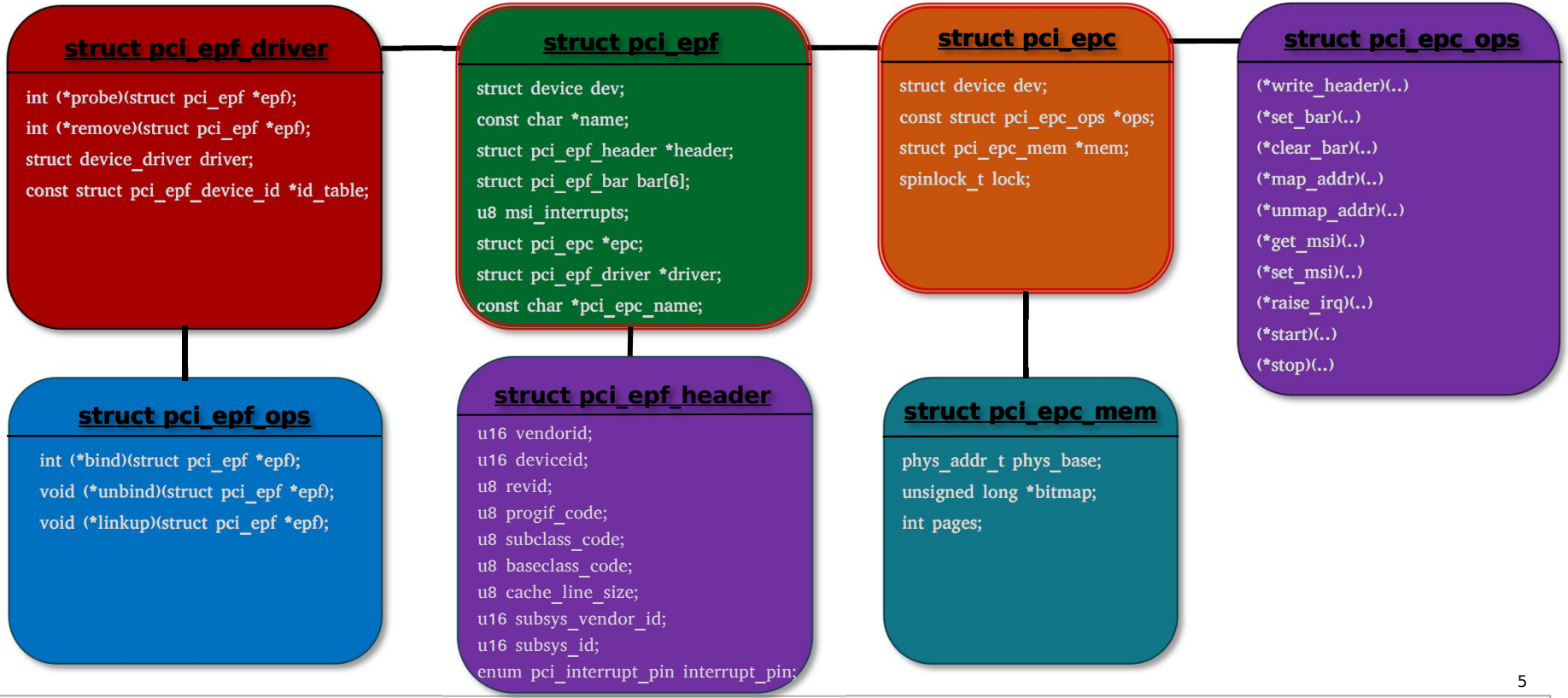




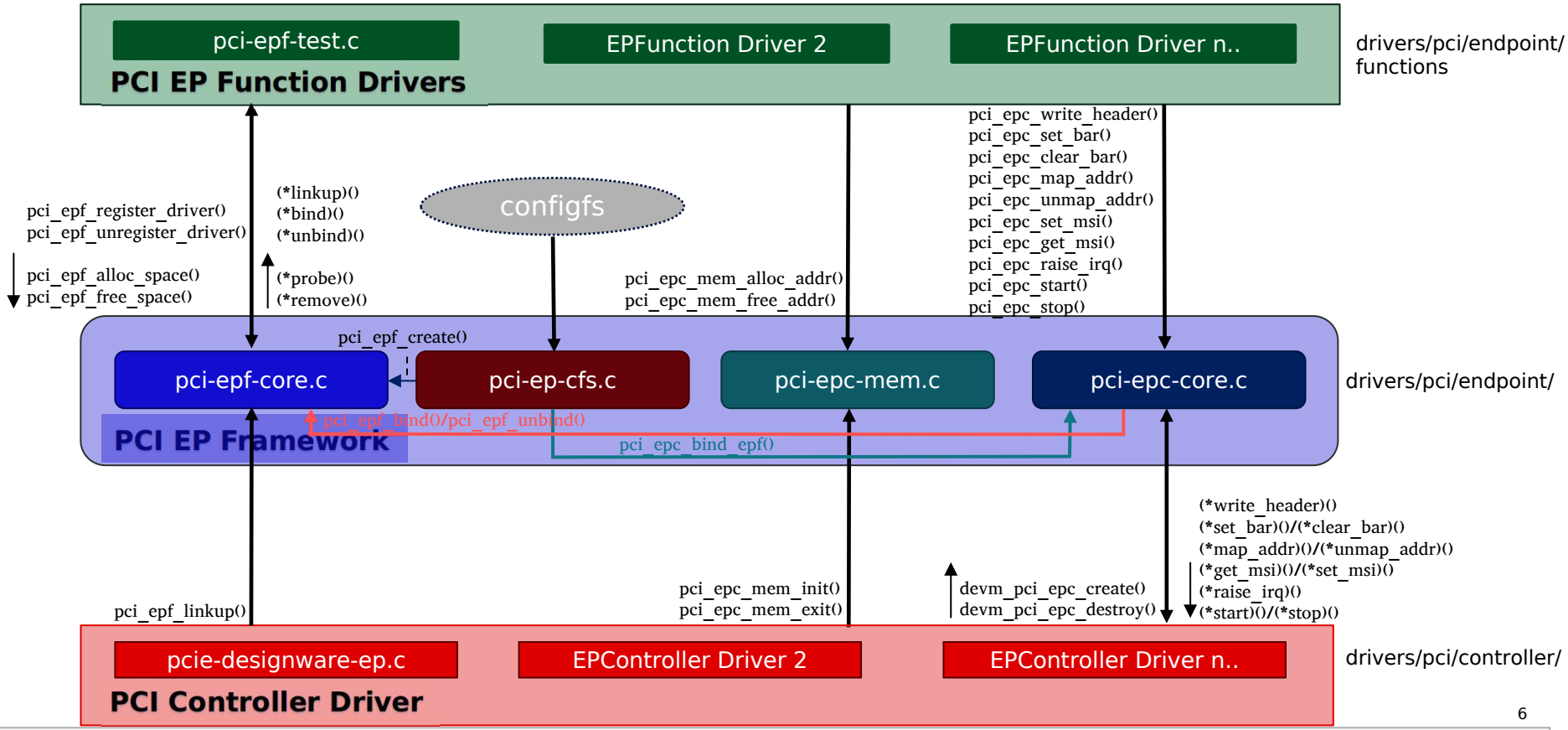
EP Responsibilities



EP Framework



EP Framework



devicetree node

```
pcie1_rc: pcie_rc@51000000 {
    compatible = "ti,dra7-pcie";
    reg = <0x51000000 0x1000>, <0x51002000 0x14c>, <0x1000 0x2000>;
    reg-names = "rc_dbics", "ti_conf", "config";
    interrupts = <0 232 0x4>, <0 233 0x4>;
    ti,hwmods = "pcie1";
    phys = <&pcie1_phy>;
    phy-names = "pcie-phy0";
    num-lanes = <1>;
    #address-cells = <3>;
    #size-cells = <2>;
    device_type = "pci";
    ranges = <0x81000000 0 0               0x03000 0 0x00010000
              0x82000000 0 0x20013000 0x13000 0 0xffed000>;
    #interrupt-cells = <1>;
    linux,pci-domain = <0>;
    interrupt-map-mask = <0 0 0 7>;
    interrupt-map = <0 0 0 1 &pcie1_intc 1>,
    ....
};
```

RC Devicetree Node

```
pcie1_ep: pcie_ep@51000000 {
    compatible = "ti,dra7-pcie-ep";
    reg = <0x51000000 0x1000>, <0x51002000 0x14c>,
          <0x51001000 0x80>, <0x1000 0xFFFF000>;
    reg-names = "ep_dbics", "ti_conf", "ep_dbics2", "addr_space";
    interrupts = <0 232 0x4>;
    ti,hwmods = "pcie1";
    phys = <&pcie1_phy>;
    phy-names = "pcie-phy0";
    num-lanes = <1>;
    num-ib-windows = <4>;
    num-ob-windows = <16>;
    syscon-legacy-mode = <&scm_conf1 0x14 2>;
};`
```

EP Devicetree Node

Configuring PCI Endpoint Function

```
# ls /sys/class/pci_epc/
        51000000.pcie_ep
```

list of PCI Endpoint Controllers

```
# ls /sys/bus/pci-epf/drivers
        pci_epf_test
```

list of PCI Endpoint Function Drivers

```
# mount -t configfs none /sys/kernel/config
# cd /sys/kernel/config/pci_ep/
# mkdir pci_epf_test.0
# cd pci_epf_test.0
# ls
        baseclass_code    function        revid           vendorid
        cache_line_size   interrupt_pin   subclass_code
        deviceid          peripheral      subsys_id
        epc               progif_code     subsys_vendor_id
# cat vendorid
        0xffff
# cat interrupt_pin
        0x0001
```

Creating Endpoint Function Device

```
# echo 0x104c > vendorid
# echo 16 > msi_interrupts
```

Configuring Endpoint Function Device

```
# echo "51000000.pcie_ep" > epc
```

Binding Endpoint Function with Endpoint Controller

Happy Hacking!

Feedback:
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