Service Cores

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Service Cores - Problem Statement

- Ethdev, Cryptodev, Eventdev, ...
  - HW Available?
    - No lcore required
  - SW Functionality?
    - Requires CPU cycles

- Environments have **different lcore requirements**
Abstract Icore requirements

- No application code changes required
- Regardless of
  - Platform or environment
  - HW / SW PMD
Service Cores - Solution

- **Service**
  - Runnable work item
  - Runs an *iteration of work* then returns

- **Service Core**
  - Dedicated lcore to running services
  - *Removed from app* coremask
    - Main loop in service library
Service Cores - Solution

- Service
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```c
void (*service)();
```
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```c
void (*service)()
```
```c
while(1) {
    FOREACH_SERVICE() 
    service()
}
```
Service Cores - Mapping

- Which service runs on what core?
  - Set by mapping

- Flexibility
  - Multiple services on one core
  - Multiple cores running one service
    - Multi-thread safe flag
Service Cores - Your Use Case

- Start thinking ... Q & A!
- Eventdev SW PMD + Service Cores example
- Discussion
Service Cores - Eventdev Example

- Application
  - Uses Eventdev SW PMD
  - EAL args passed: `./app --vdev event_sw0 -s 0x10`
    - Registers `event_sw0_service`
    - Service core init and mappings by EAL
Service Cores - Result

- Application just uses DPDK
  - No application code changes
  - Possibly less lcores available in coremask
    - Depends on environment

- Not concerned with “possibly-required” functions
  - rte_event_schedule()
Service Cores - Current State

- Initial merge 17.08
- API improvements 17.11
  - Recommending DPDK from Git
- Sample app
  - Application registered services
  - Advanced service API usage
  - http://dpdk.org/dev/patchwork/patch/29169/
!! Discussion !!

?? Questions ??

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Service Cores - Service Mappings

Performance

Service Core 1: Running
Service Core 2: Running

Eventdev SW PMD Service: ✔️
Monitoring / Stats Service: ❌

Scale-Down

Service Core 1: Running
Service Core 2: Sleep

Eventdev SW PMD Service: ✔️
Monitoring / Stats Service: ✔️