FNT-09-02 Dynamic Tactical Communications Networks (DTCN) EC Open Tactical Router (OTR)

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Outline

- Overview
- Details
- Performer Product Integration
- OTR Runtime System View
- OTR Root Views

Overview

▸ Linux-based Tactical Router "Appliance"
- ◦ Read-only execution environment
- ◦ Packaged like COTS routers
- ◦ Maintains some development flexibility
- ◦ Supports controlled experiments
- ◦ DTCN integration and evaluation environment

▸ "Appliance" because it's just software
- ◦ Discrete x86 hardware
- ◦ Router module with x86 environment
- ◦ Virtual machines

OTR Details

- Based upon Ubuntu 10.04 LTS
- Similar to "Live CD" environment
  - "Root" disk is read-only (normal operation)
  - Non-persistent writeable overlay
- Distinct persistent storage
 - Configuration
  - Logs
  - Other Data (?)

OTR Details, cont.

- Base environment is limited to run-time requirements
  - ◦ i.e., no development tools
  - ◦ As if OTR were deployed in production
- Add-on tools:
  - ◦ Development, instrumentation, etc. tools
- Performer contributions primarily to base env.
  - ◦ Expect collateral contribution to instrumentation
- NRL manages admissible prerequisite packages
  - ◦ Avoid long-term support issues, and mutually-exclusive performer contributions
  - ◦ Avoid dependency upon extra-Ubuntu packages

Performer Self- and Cross- Integration
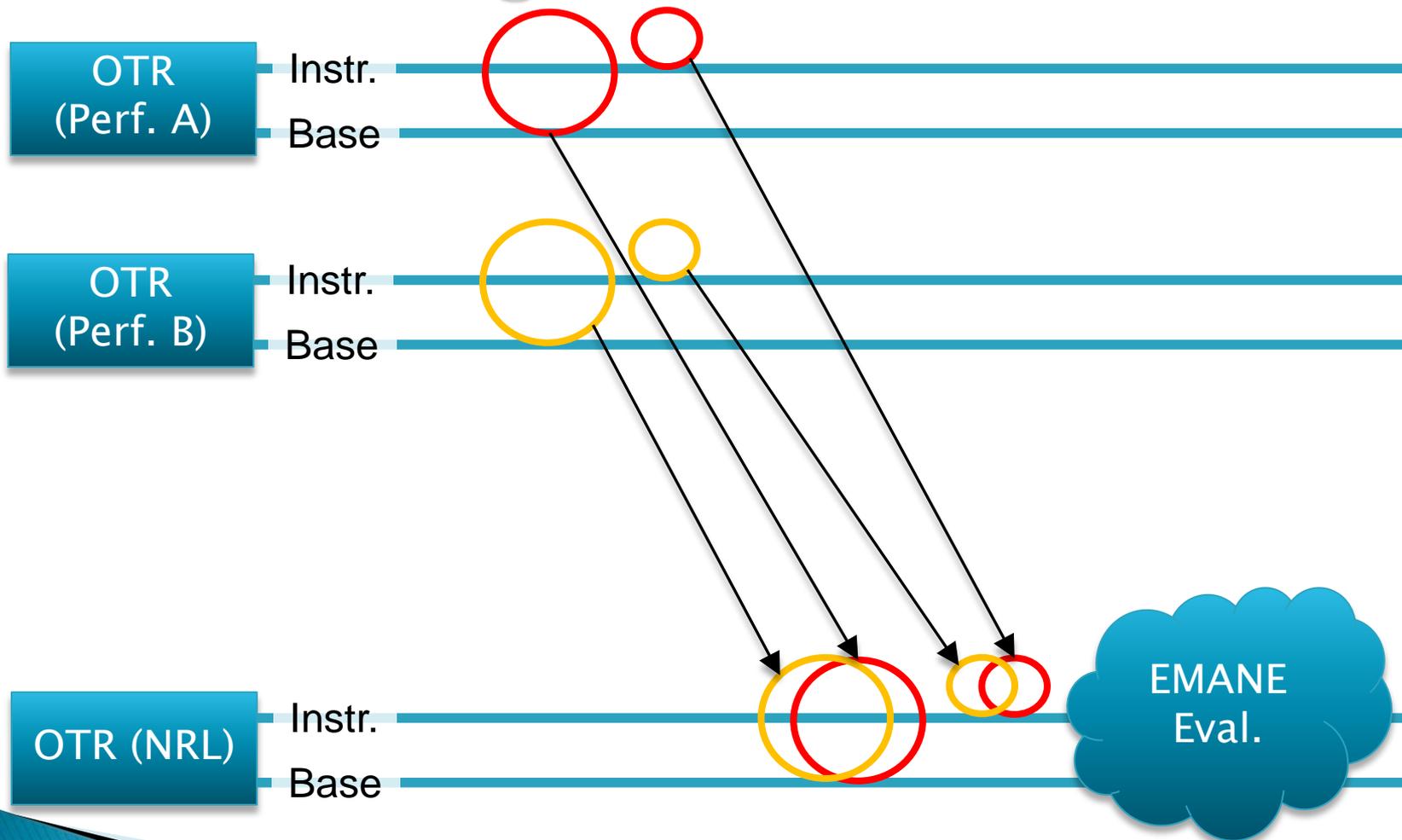
OTR Runtime System View
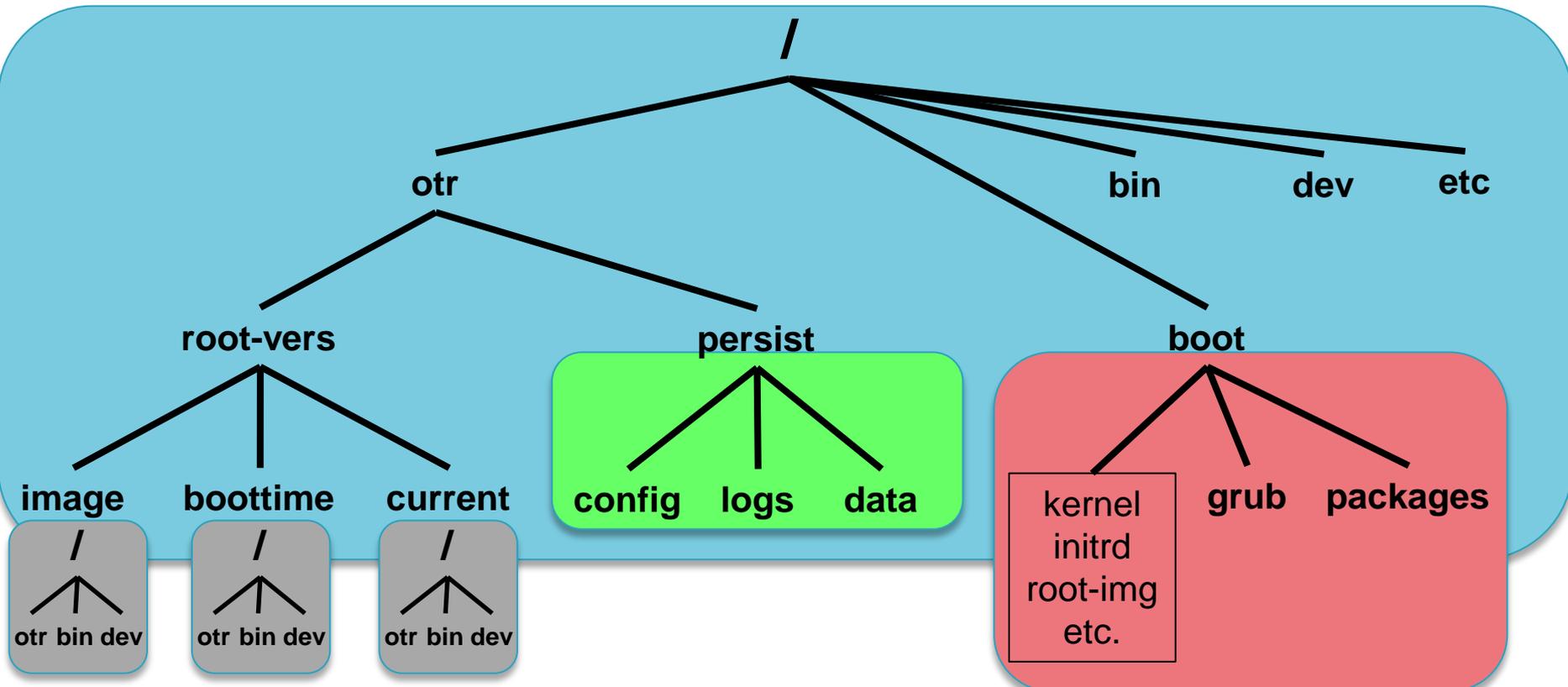
"Root" (blue): writeable, non-persistent overlays above read-only file
"Boot" (red): read-only, physical device
"otr/persist" (green): writable, physical device
"otr/root-vers/image" (grey): read-only, read-only file
"otr/root-vers/boottime" (grey): read-only, non-persistent overlay
"otr/root-vers/current" (grey): read-only, bind mount of root

OTR Root Views

/

/otr/root-views/current

/otr/root-views/boottime

/otr/root-views/image

Read-write

Read-only

Read-only

Read-only

Sparse writable overlay #2

Sparse writable overlay #1

"root–img" from /boot