I2RS Security Environment draft-ietf-i2rs-security-environment-reqs

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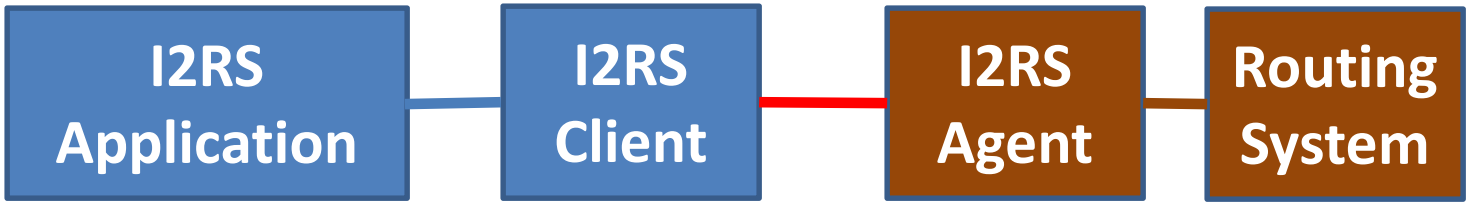
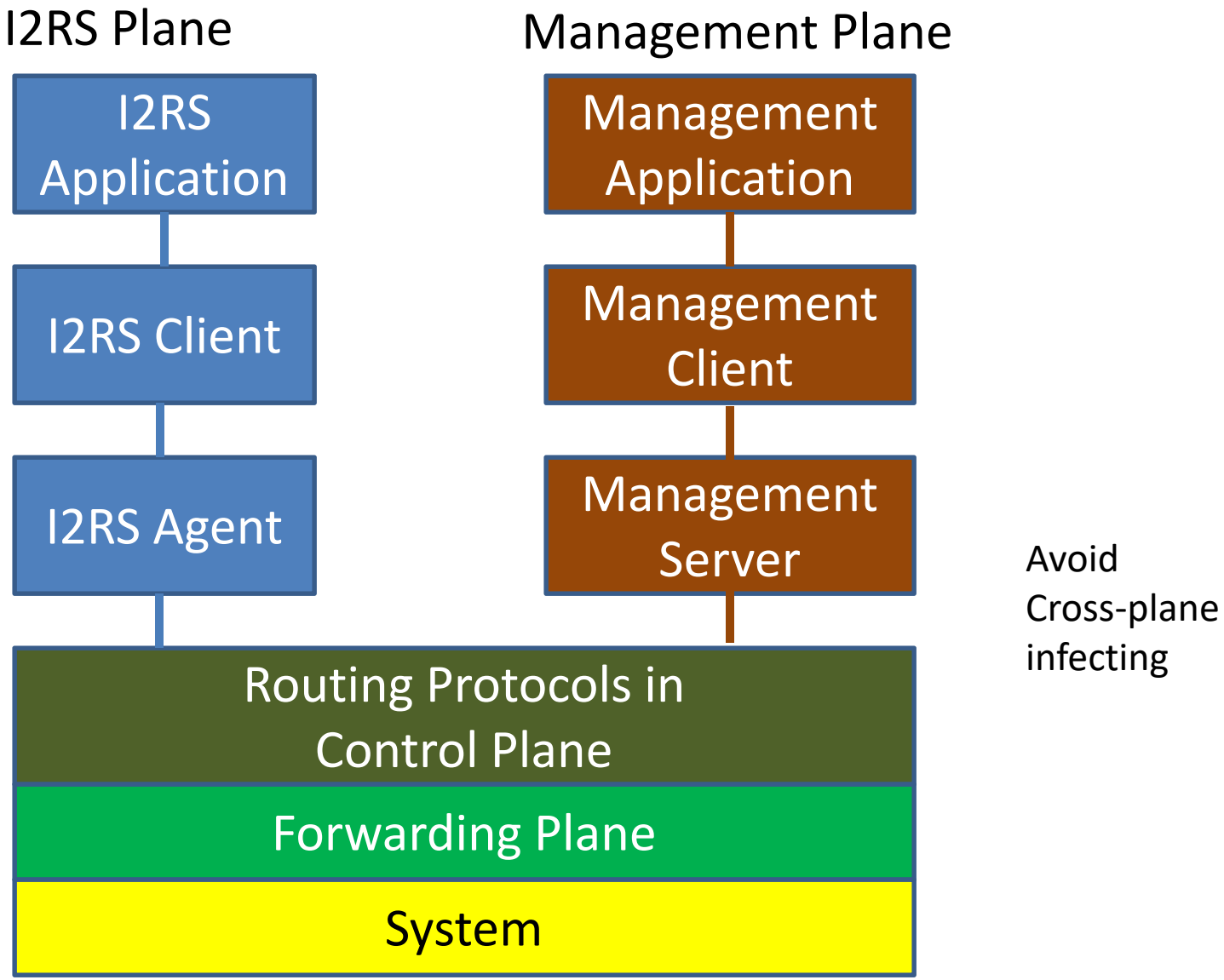
Purpose

OPSEC-found useful

- 37 Requirements for those who implement and deploy I2RS regarding:
  - Isolation of Systems management systems
  - I2RS Inter-Plane isolation for Access control
  - I2RS application comments
- Not Protocol, but environment lives in




I2RS Plane
Management Plane
I2RS Application
I2RS Client
I2RS Agent
Management Application
Management Client
Management Server
Routing Protocols in Control Plane
Forwarding Plane
System
Avoid Cross-plane infecting

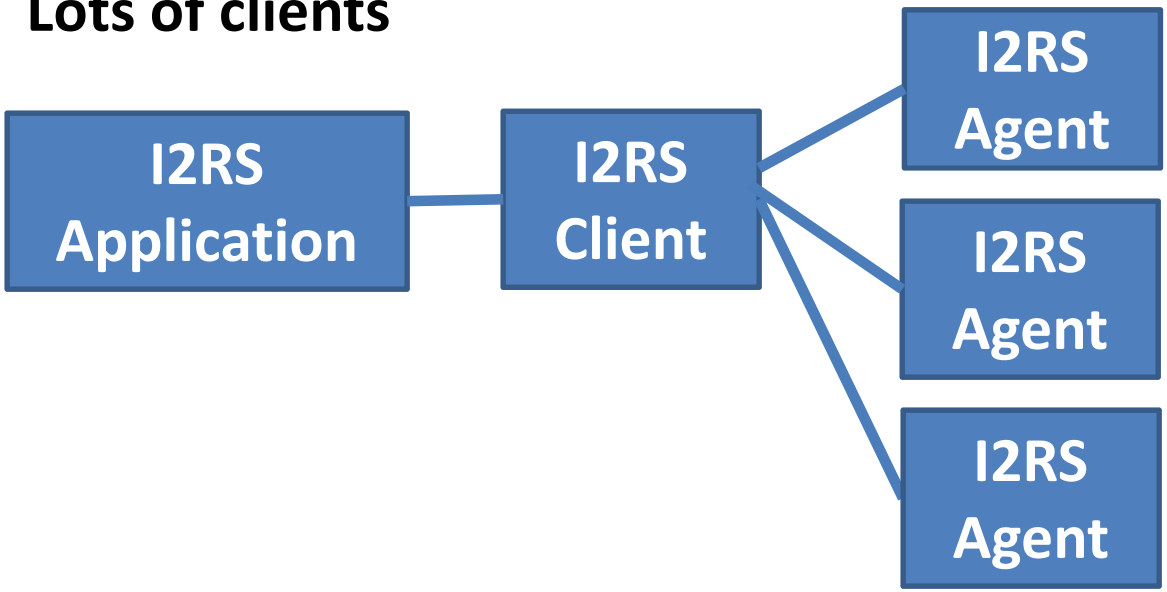
5 Requirements

- Requirements regarding inter-plane isolation:
  - isolated channel,
  - logical interface,
  - set specific permissions for I2RS client,
  - I2RS client notified if routing resource manage
  - Overwrite policy for routing system (I2RS over config, config or I2RS)

Use in different deployments

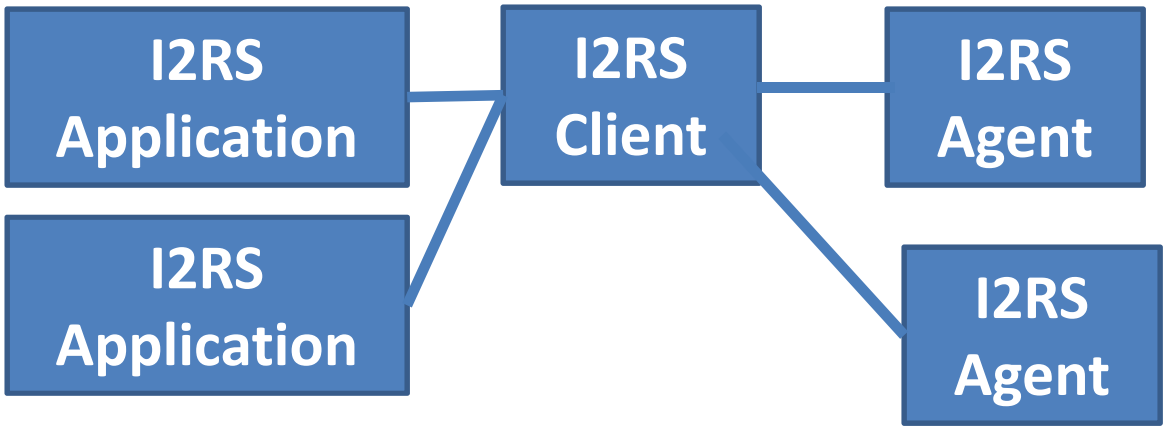
Simple

Lots of clients

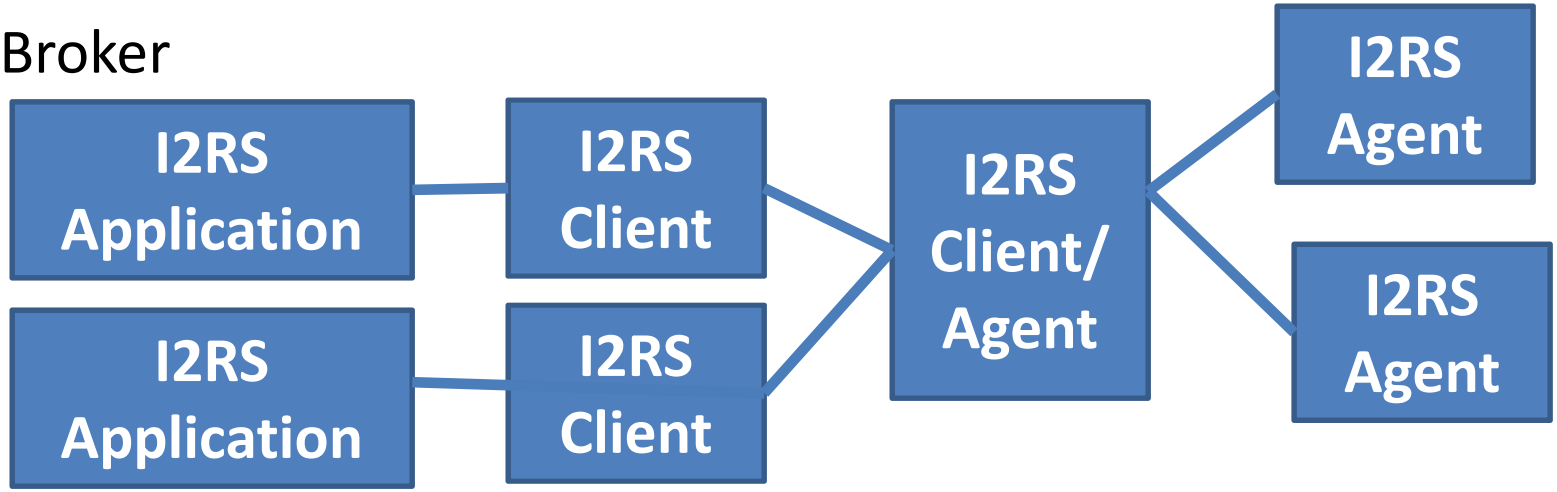


Use in different deployments

Two applications



Broker



Trust + Tell

- Access control active through-out plane
  - If something is changed, tell reason through chain back to application
  - Used trusted communication to reduce chance for attacks/ Can refuse channel not secure enough
  - I2RS Agent/Client inform if policies change
  - Applications can request security policies from I2RS Client - so does not send info tossed
  - Applications may subscribe to notification

Prevent Permissions Escalation Attack

- High-priority/Low priority application share client – can allow attacks
  - 2 Application (configure/monitor) share 1 I2RS Client
  - Monitor client get permissions escalated to configuration status

- How to fix: Application and client have same level of permissions + tracing
  - Configuration applications talk to configuration client to I2RS agents (aka restconf servers)
  - Trace what happens,
  - Authentication Application←→ Client

I2RS Agent – Final link

- Agent have uniquely policies
- Application/Clients that bind may depend on agent to enforce access policies, but this weakness protection
- Track who changed Agent last
- Enforce overwrite policy (I2RS

Automate Security

- Grant or revoke across whole domain similarly
- Update frequently
- Identify parts of system uniquely – to prevent permissions escalation
- Look for who changes what in whole system