Coexistence of IPv4 and IPv6 for delivering IOT Capabilities using Open Source Technologies
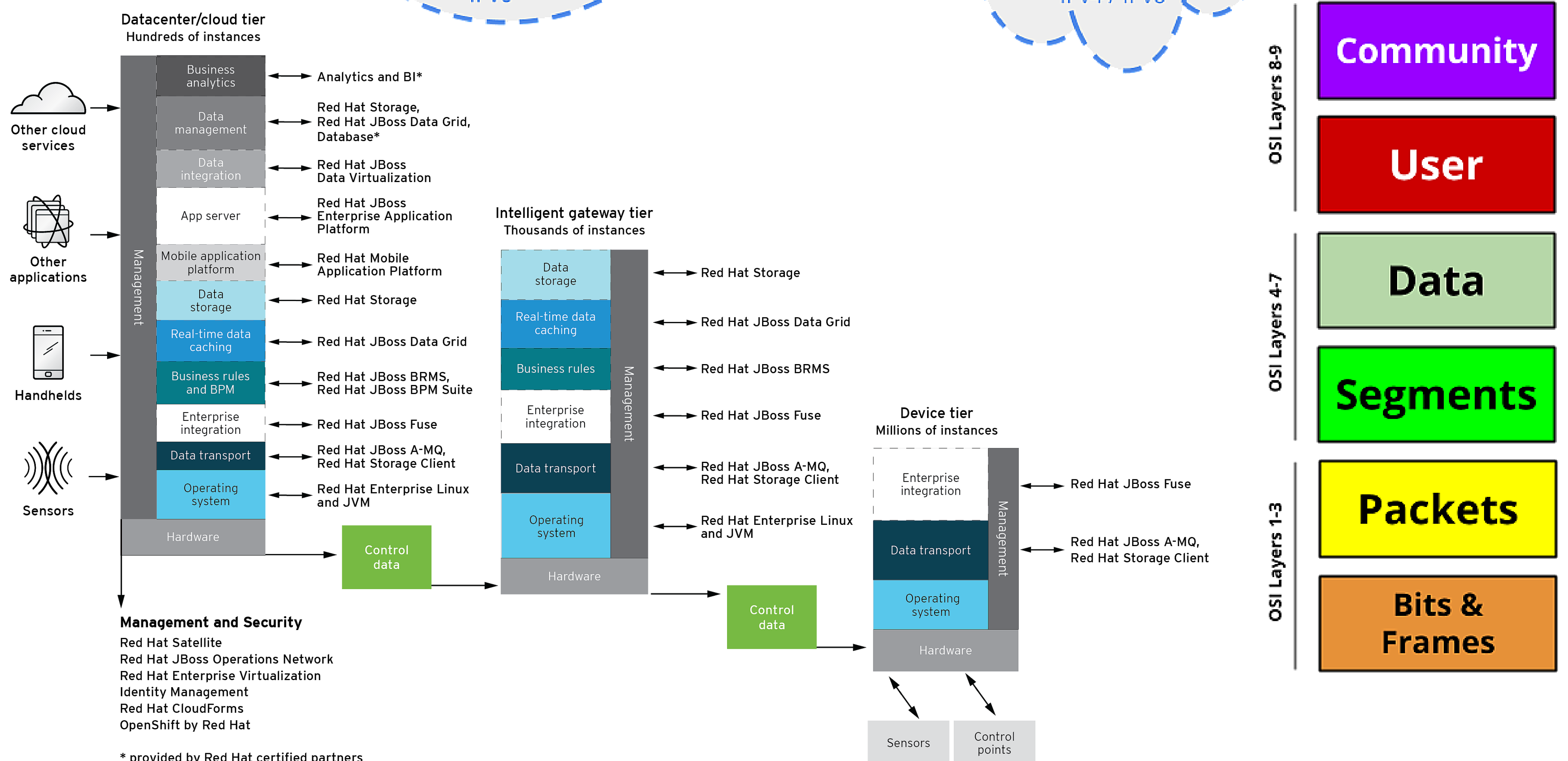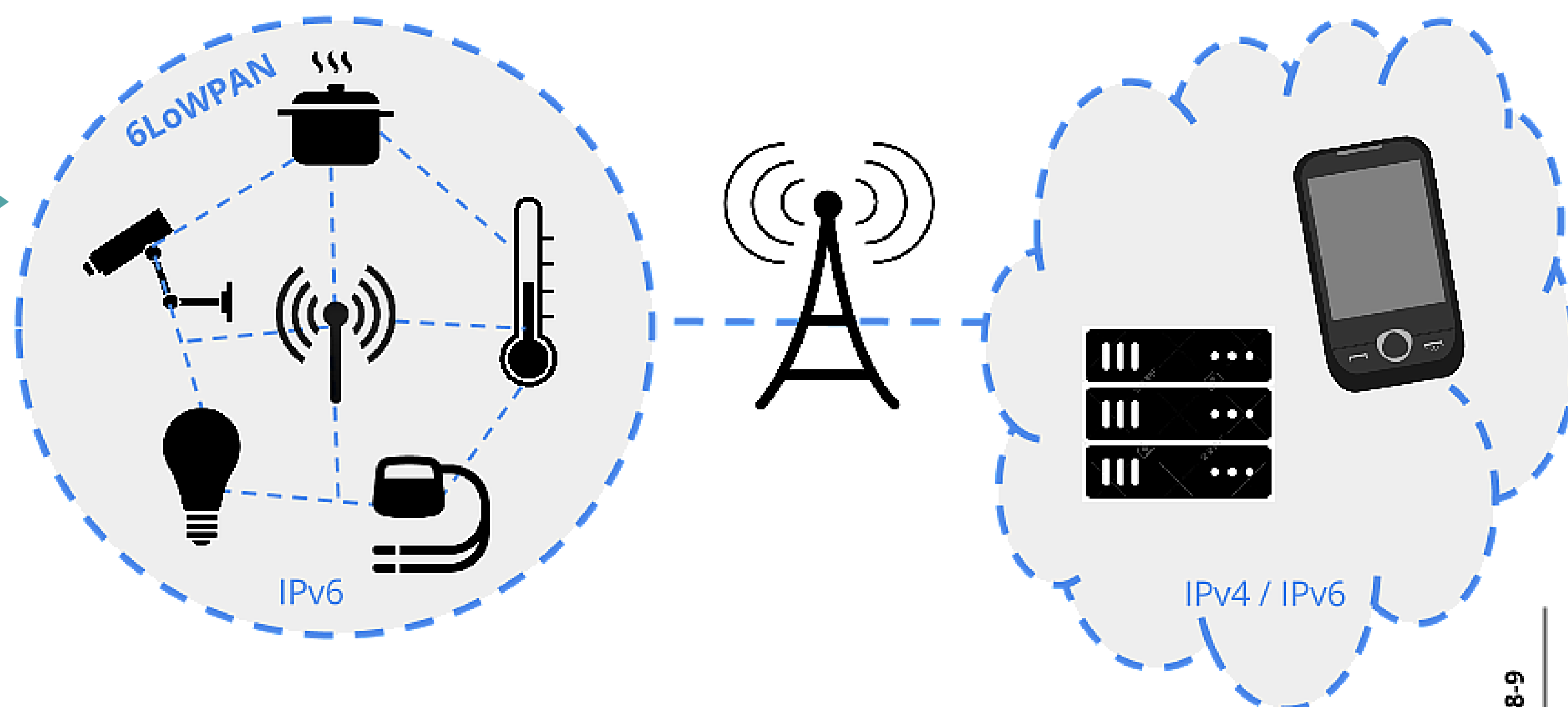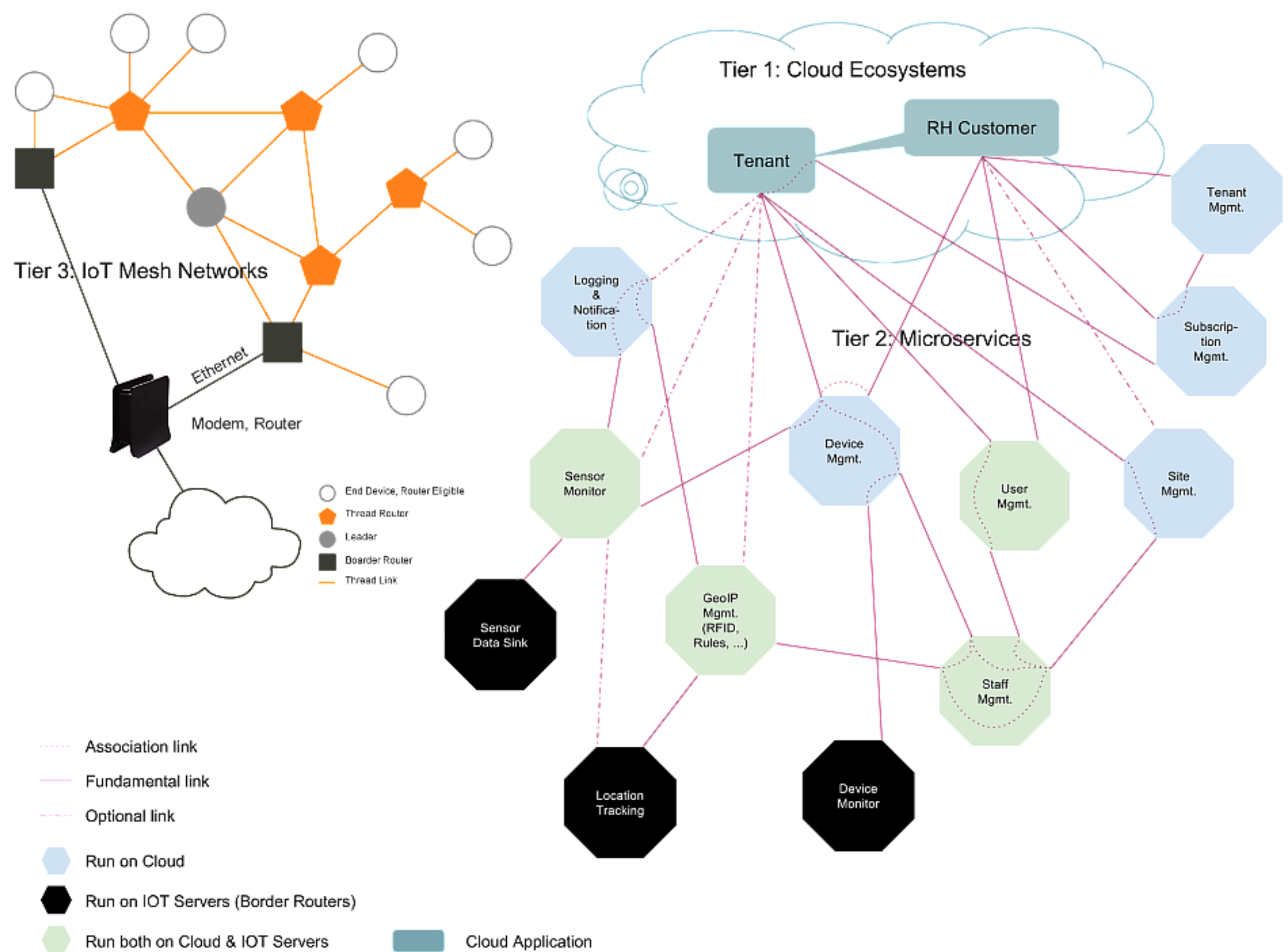
Why IP for IOT?

- open
- lightweight
- versatile
- ubiquitous
- scalable
- manageable
- mature

Why IPv6?

- no NAT / DHCP needed
- no more collisions
- auto-config
- multi-cast routing
- QoS / flow labeling
- authentication & extensions

Coexistence IPv4/IPv6

- Dual IP stack IPv4/IPv6
- Tunnels (RFC 4213)
- NAT (RFC 2766)

Tier 3: IoT Mesh Networks

Ethernet

Modem, Router

End Device, Router Eligible
Thread Router
Leader
Boarder Router
Thread Link

Tier 1: Cloud Ecosystems

Tenant | RH Customer

Tenant Mgmt.

Logging & Notification

Tier 2: Microservices

Subscription Mgmt.

Sensor Monitor | Device Mgmt. | User Mgmt. | Site Mgmt.

Sensor Data Sink

GeoIP Mgmt. (RFID, Rules, ...)

Staff Mgmt.

Location Tracking | Device Monitor

Association link
Fundamental link
Optional link
Run on Cloud
Run on IOT Servers (Border Routers)
Run both on Cloud & IOT Servers
Cloud Application

6LoWPAN

IPv6

IPv4 / IPv6

Datacenter/cloud tier
Hundreds of instances

Other cloud services

Other applications

Handhelds

Sensors

Business analytics	Analytics and BI*
Data management	Red Hat Storage, Red Hat JBoss Data Grid, Database*
Data integration	Red Hat JBoss Data Virtualization
App server	Red Hat JBoss Enterprise Application Platform
Mobile application platform	Red Hat Mobile Application Platform
Data storage	Red Hat Storage
Real-time data caching	Red Hat JBoss Data Grid
Business rules and BPM	Red Hat JBoss BRMS, Red Hat JBoss BPM Suite
Enterprise integration	Red Hat JBoss Fuse
Data transport	Red Hat JBoss A-MQ, Red Hat Storage Client
Operating system	Red Hat Enterprise Linux and JVM
Hardware	

Management

Control data

Management and Security
Red Hat Satellite
Red Hat JBoss Operations Network
Red Hat Enterprise Virtualization
Identity Management
Red Hat CloudForms
OpenShift by Red Hat

* provided by Red Hat certified partners

Intelligent gateway tier
Thousands of instances

Data storage	Red Hat Storage
Real-time data caching	Red Hat JBoss Data Grid
Business rules	Red Hat JBoss BRMS
Enterprise integration	Red Hat JBoss Fuse
Data transport	Red Hat JBoss A-MQ, Red Hat Storage Client
Operating system	Red Hat Enterprise Linux and JVM
Hardware	

Management

Control data

Device tier
Millions of instances

Enterprise integration	Red Hat JBoss Fuse
Data transport	Red Hat JBoss A-MQ, Red Hat Storage Client
Operating system	
Hardware	

Management

Sensors | Control points

OSI Layers 8-9

Community

User

OSI Layers 4-7

Data

Segments

OSI Layers 1-3

Packets

Bits & Frames

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