

What's a Proxy Printer Provider?

PWG WIMS-CIM Working Group

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Doing a CIM Proxy Provider



- What's a proxy provider? An SNMP-to-CIM proxy agent
 - Reads SNMP data from a network printer
 - Republishes that data in CIM format
- Management applications using WBEM protocols can then access the data in CIM schema format
 - WS-Management protocol in particular

What is a CIM Provider?



- A mapping layer between a driver and a data repository
 - Maps from physical representation to logical representation
 - Physical = hardware, driver, device-dependent
 - Logical = device-independent model, data represented using CIM schema standard classes
- Façade only
 - Passive code, called when needed, no active business logic, no active management, translation interface only

Structure of Provider



- Provider statically registers definitions of classes to be instantiated in what namespaces
 - CIMOM uses this to determine what provider to call for what data requests: instances (of classes) in CIM namespaces
- WBEM protocols are all "pull" model
 - Data doesn't have to exist until someone asks for it, never stale
 - Data isn't stored, it's "instantiated" when requested
 - Fewer db race conditions (locking being addressed just now)
- Interface up to CIMOM
- Interface down to "driver(s)"
- The cheese in the sandwich translates the data

Proxy Provider Components - Interfaces



- Interface between CIMOM and provider logic
 - OS-specific
 - Maybe CMPI or CIMPLe (on Linux)
 - WMI provider interface (on Windows)
- Interface between provider and network printer is SNMP
 - Choose version(s), security

Proxy Provider CIM Data



- Provider "instantiates" (embodies) the dozen new Printer-related classes
 - Directly map 80% of Printer MIB to CIM classes and properties
 - As general, non-device-specific as Printer MIB
 - Can support any printer that supports Printer MIB

Where Does a Proxy Provider Fit in the System?



- "Logical Mapping Layer"
 - What's that?
- Look at the entire management stack, like a protocol stack
 - Several distinct layers, with distinct functions and defined interfaces

Management Stack - Layers



Resource Management Layer

Access Layer

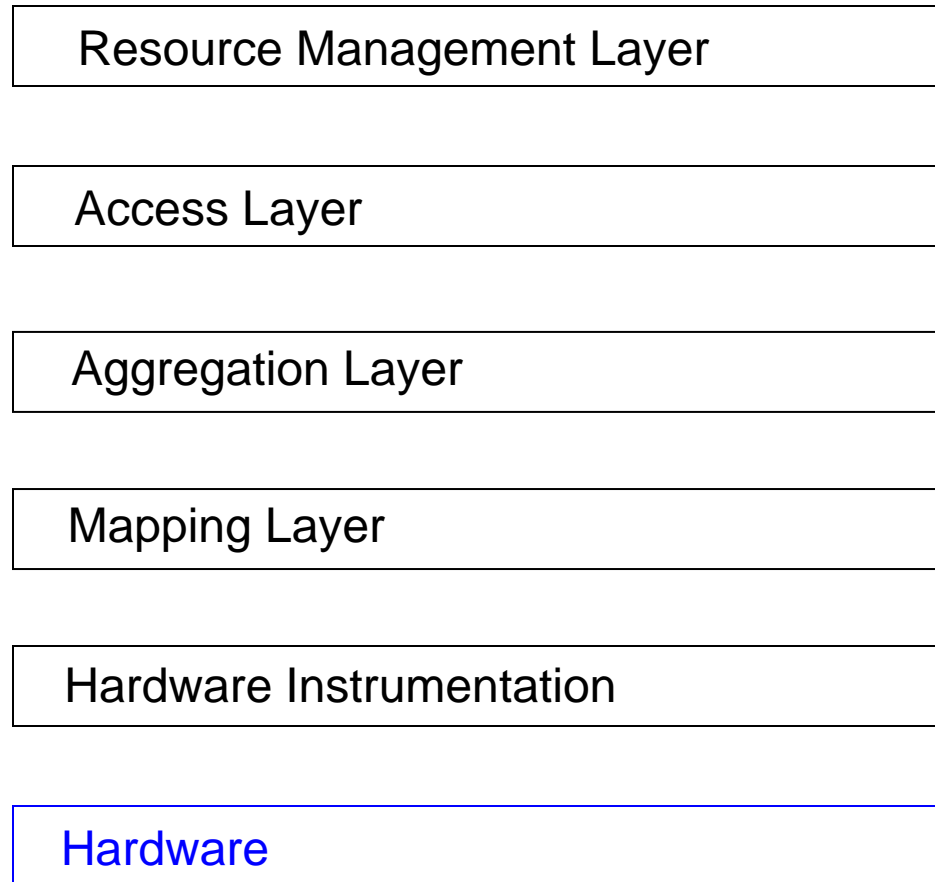
Aggregation Layer

Mapping Layer

Hardware Instrumentation

Hardware

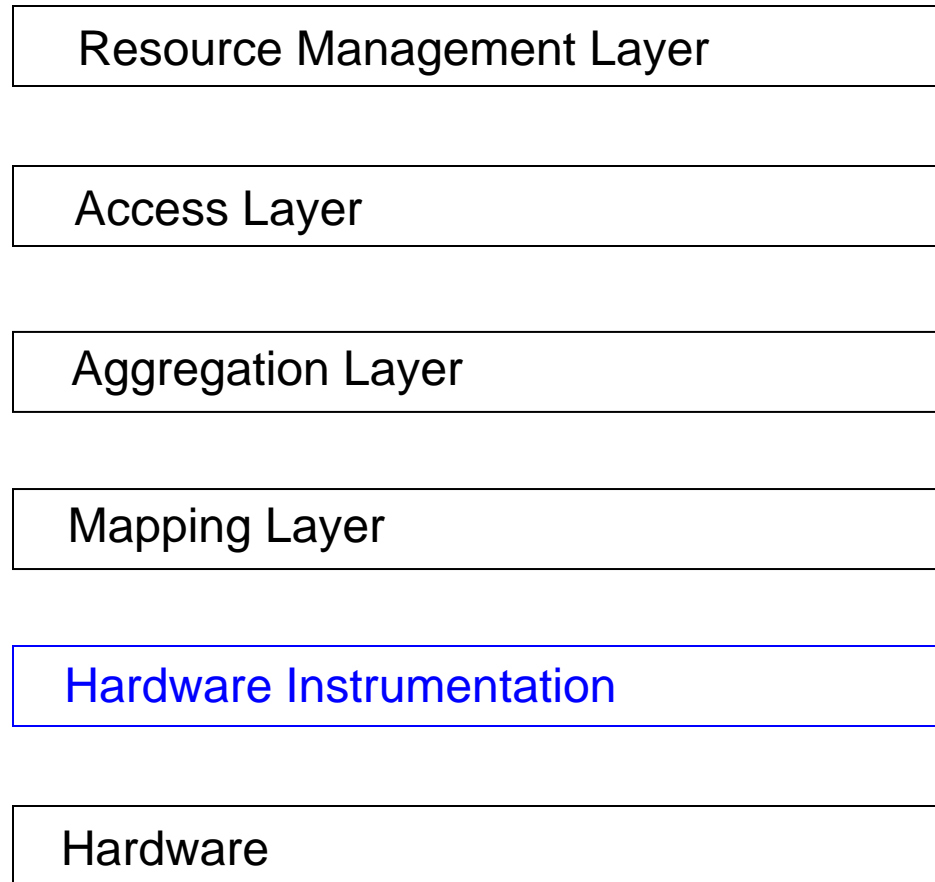
Management Stack - Hardware



Printer

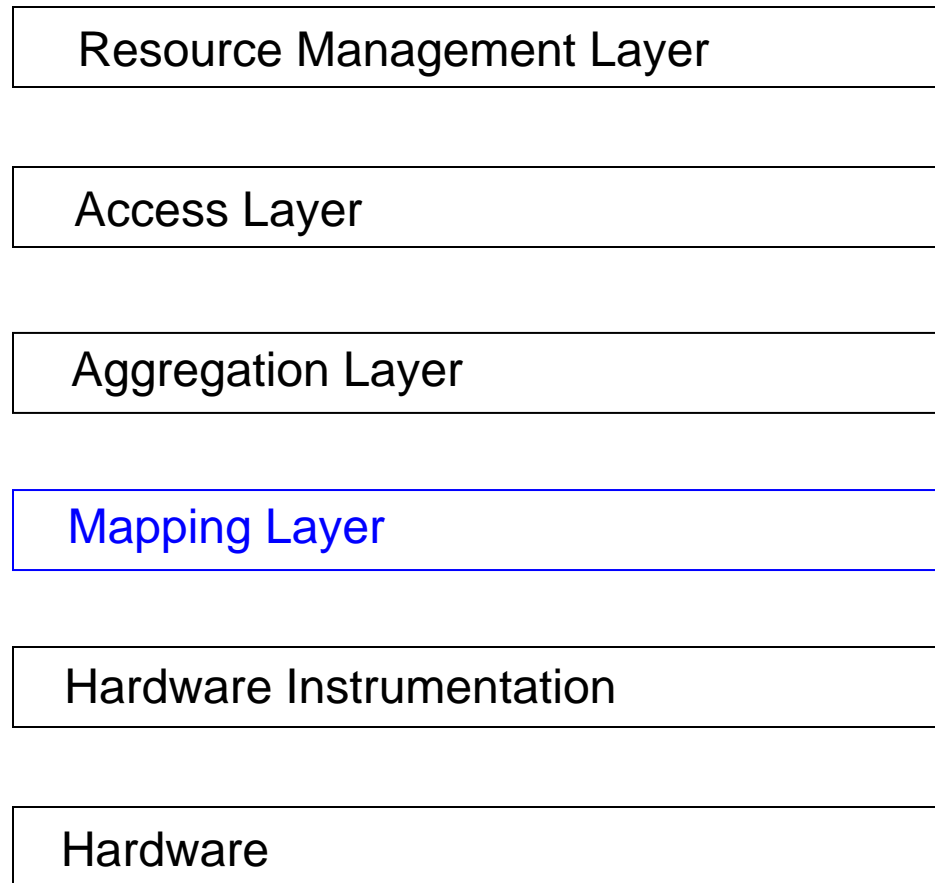
- Hardware mechanism
- Embedded controller
- Communications

Management Stack - Instrumentation



- Management Instrumentation
- Identity
 - Capabilities
 - Settings
 - Status
 - History

Management Stack - Mapping

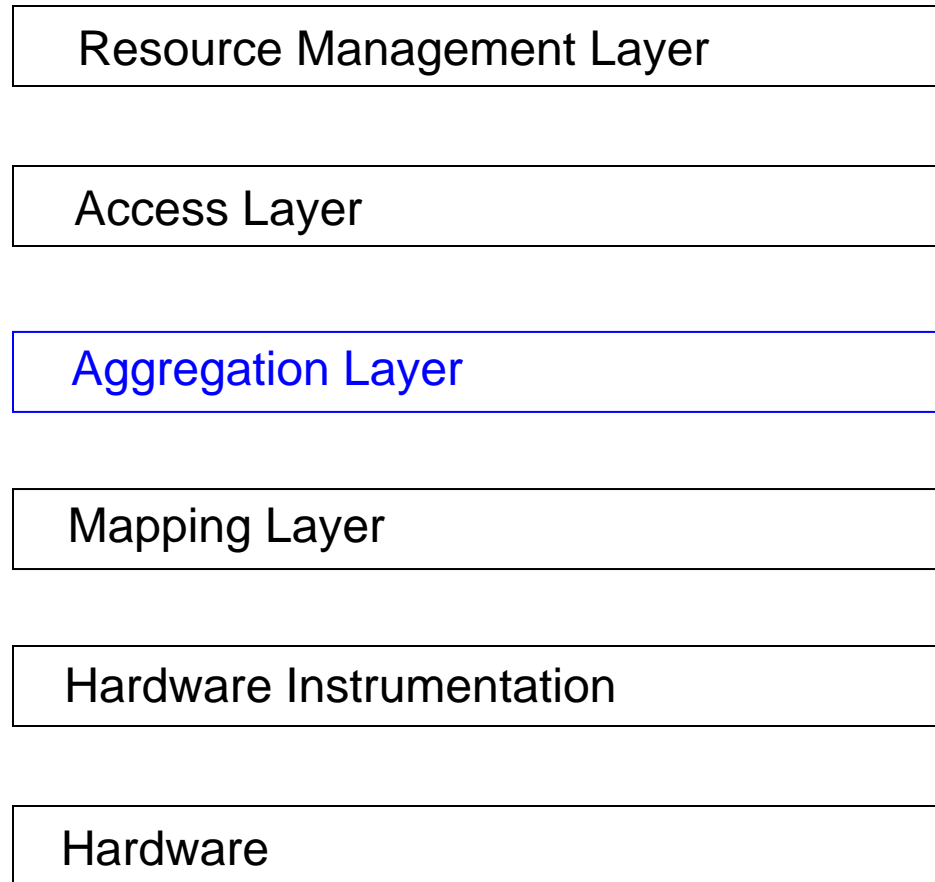


Mapping

- Present management data in standard form
- Choice of standard form = CIM schema



Management Stack - Aggregation



Aggregation
- Collection of all
management data

Management Stack - Access



Resource Management Layer

Access Layer

Aggregation Layer

Mapping Layer

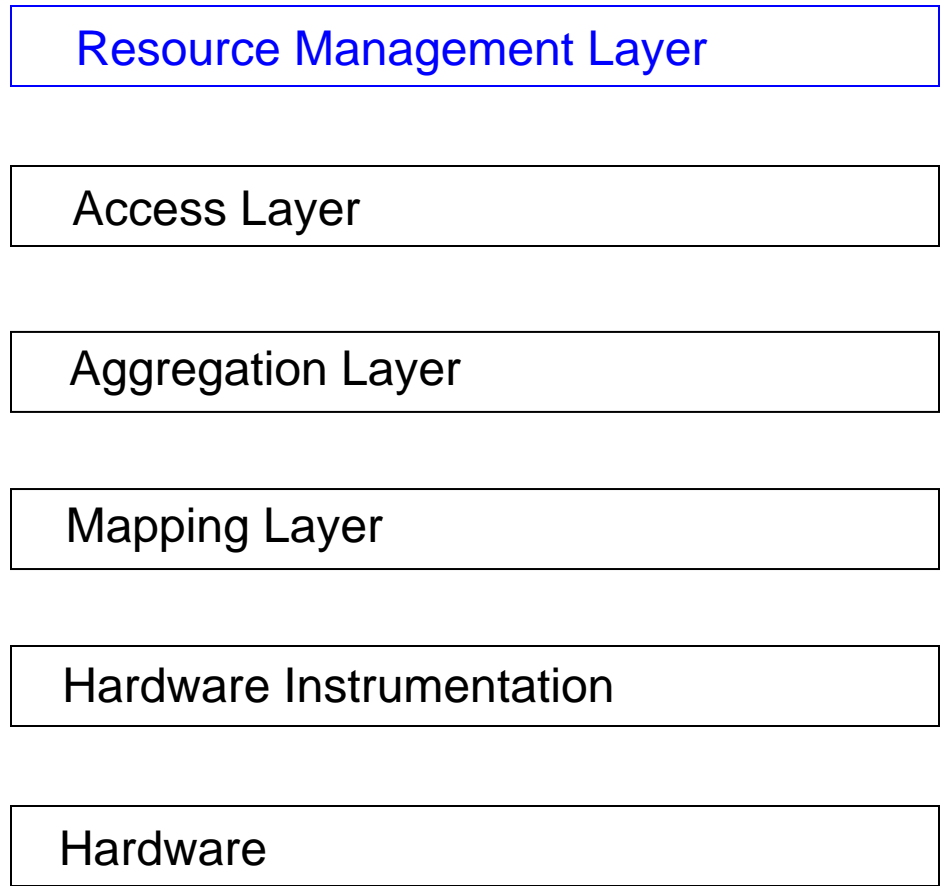
Hardware Instrumentation

Hardware

Access Layer
- Protocol adapter
- Mainly for remote access

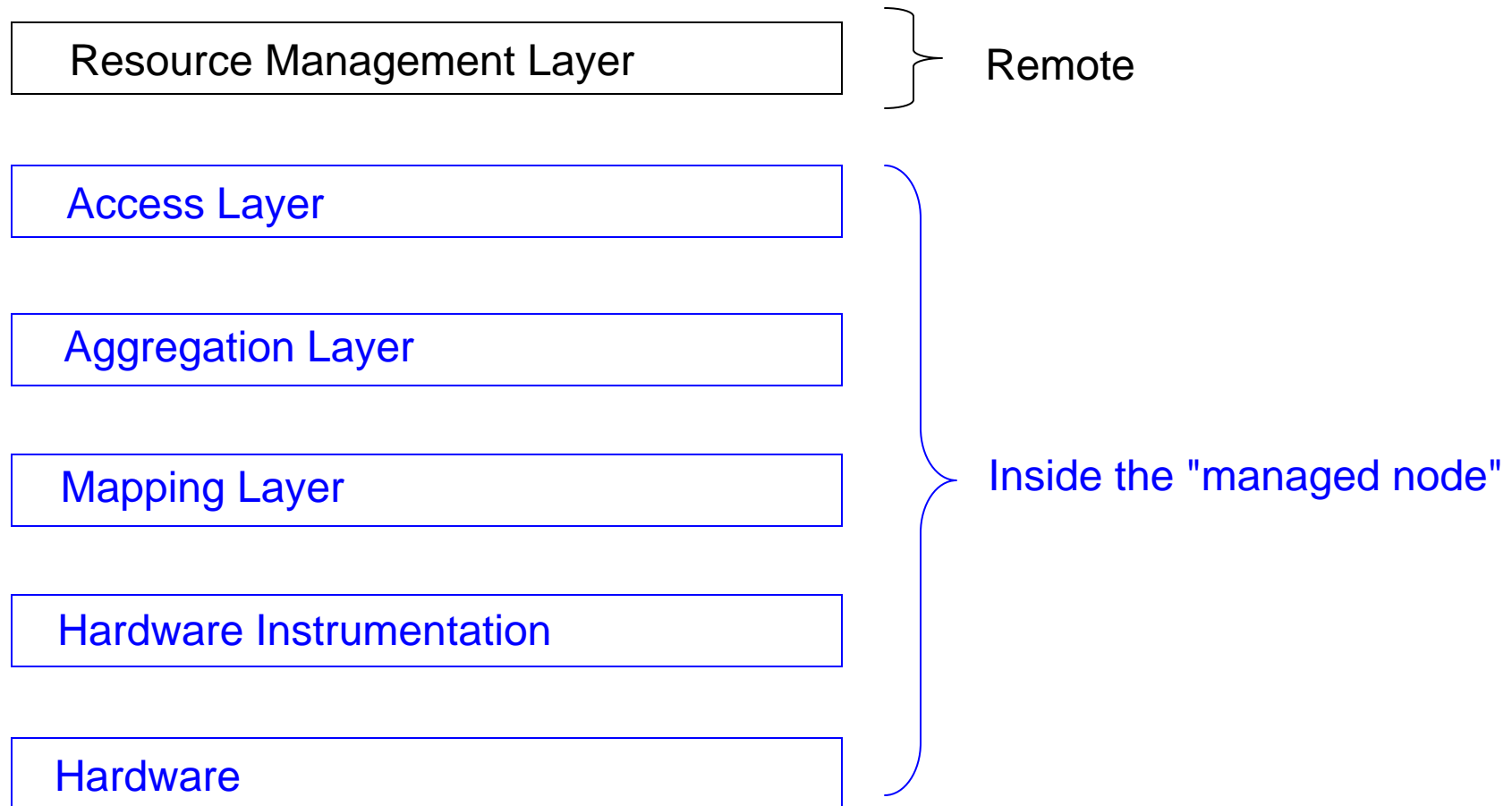


Management Stack - Resource Management

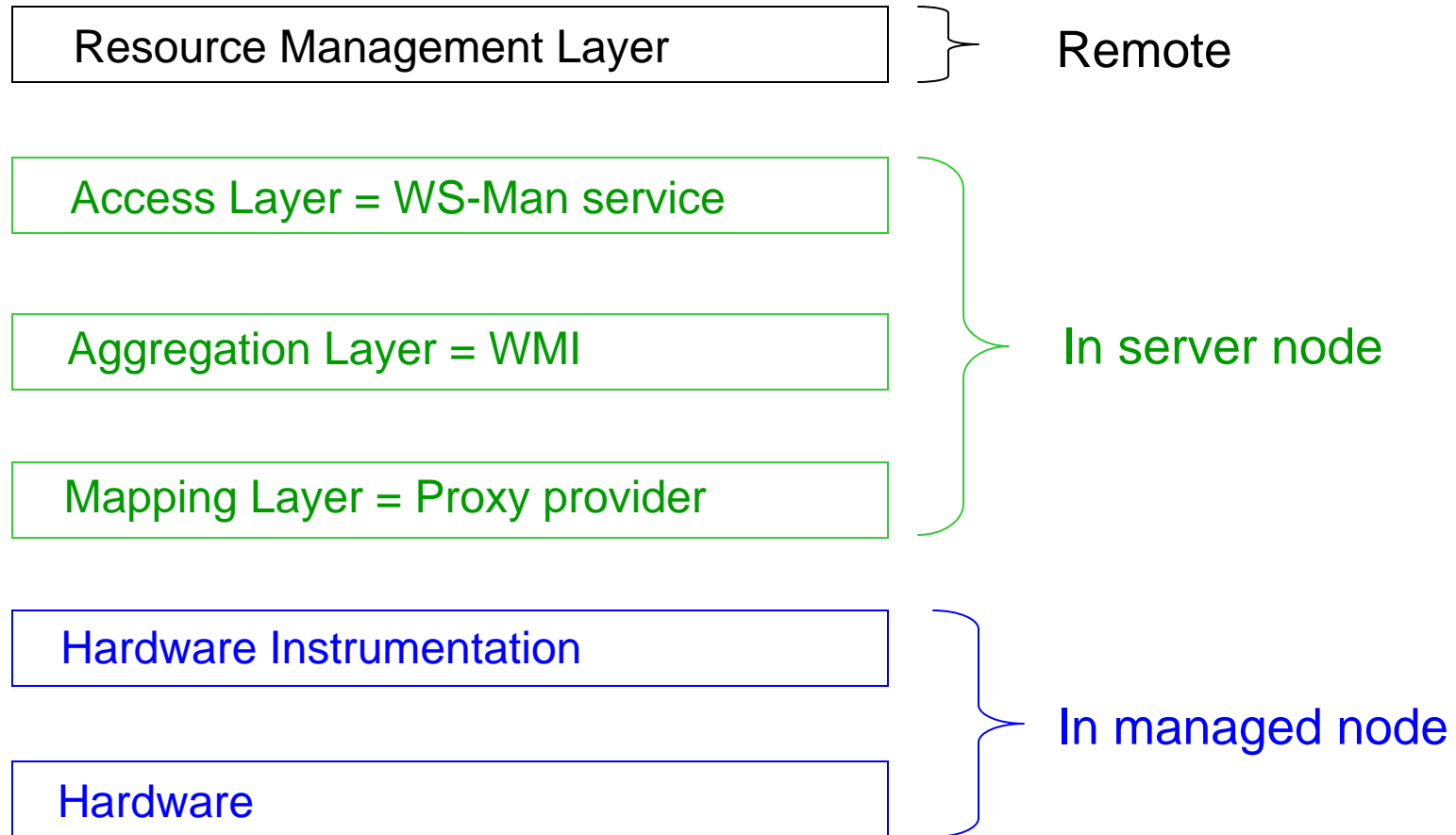


Resource Management
- Management application that people use
- Application-specific or generalized

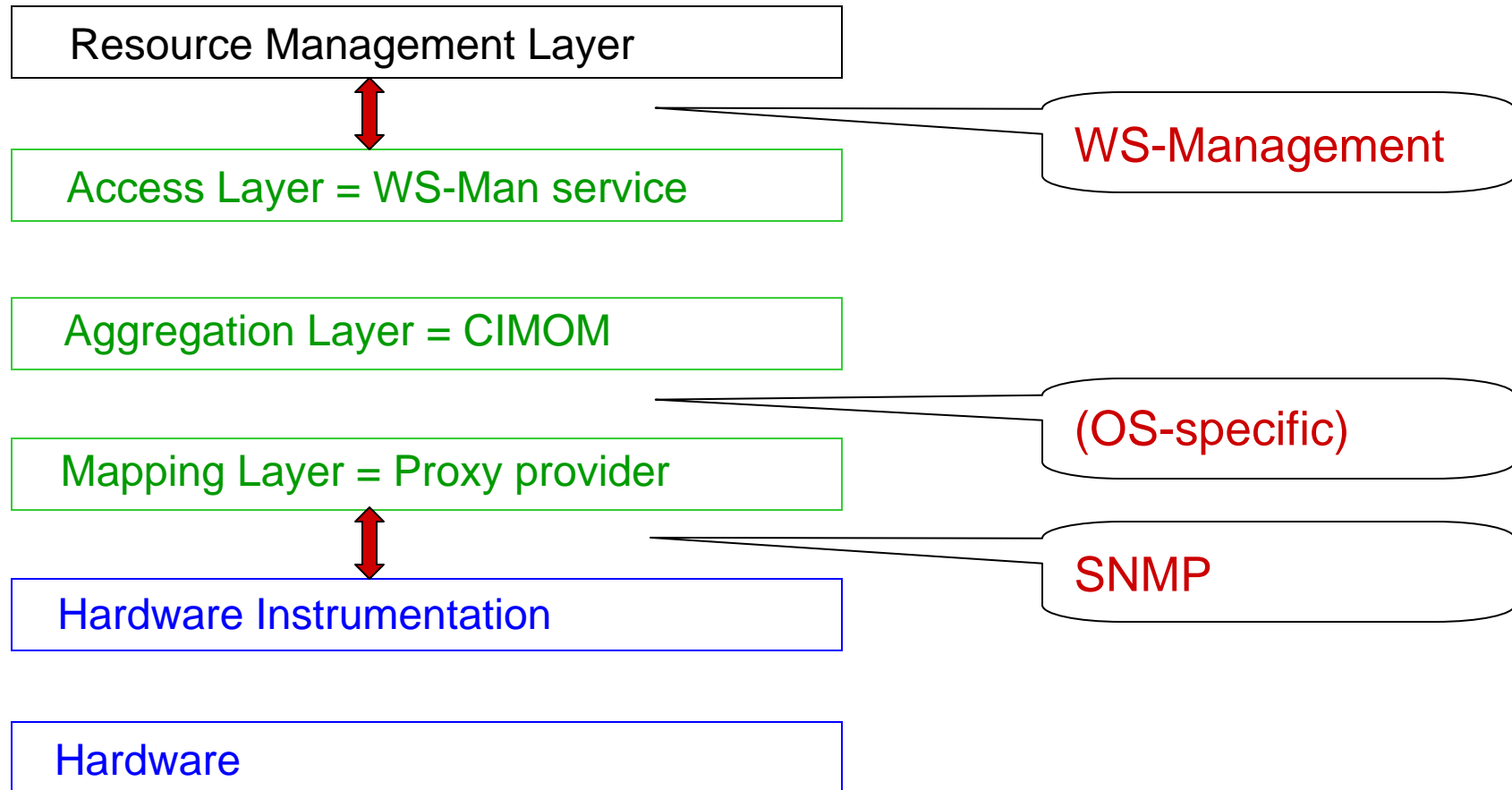
Management Stack - Monolithic Device



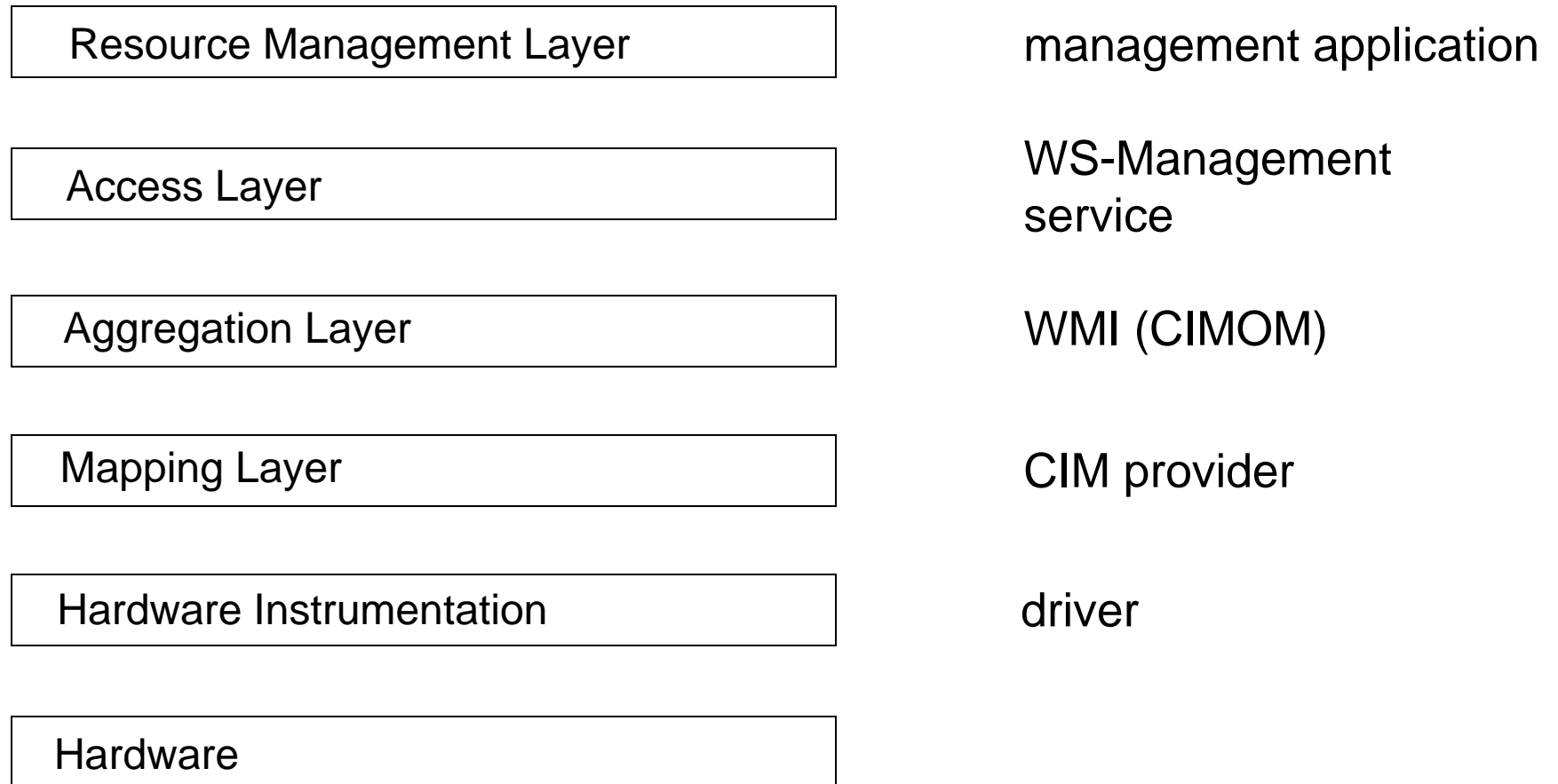
Management Stack - Proxy Provider



Management Stack - Protocols Between Layers



Management Stack on Windows



Questions?

