Introduction to MINA

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Agenda

- Overview
- In-depth View
- Implementation Demo
- Future
- Conclusion

Overview

A Multi-purpose Infrastructure for Network Applications

What is MINA?

- Java network application framework
- High productivity
  - Easy-to-learn
  - Elegant application design
- High performance
  - Asynchronous · Event-driven

Elegant Application Design

- Unit test friendly
  - You can test your application without a real client or server via mock objects.
- Extensible
  - Runtime modification of application behavior using ‘filters’
- Maintainable and Reusable
  - Separation of networking code (MINA), protocol codec, and business logic

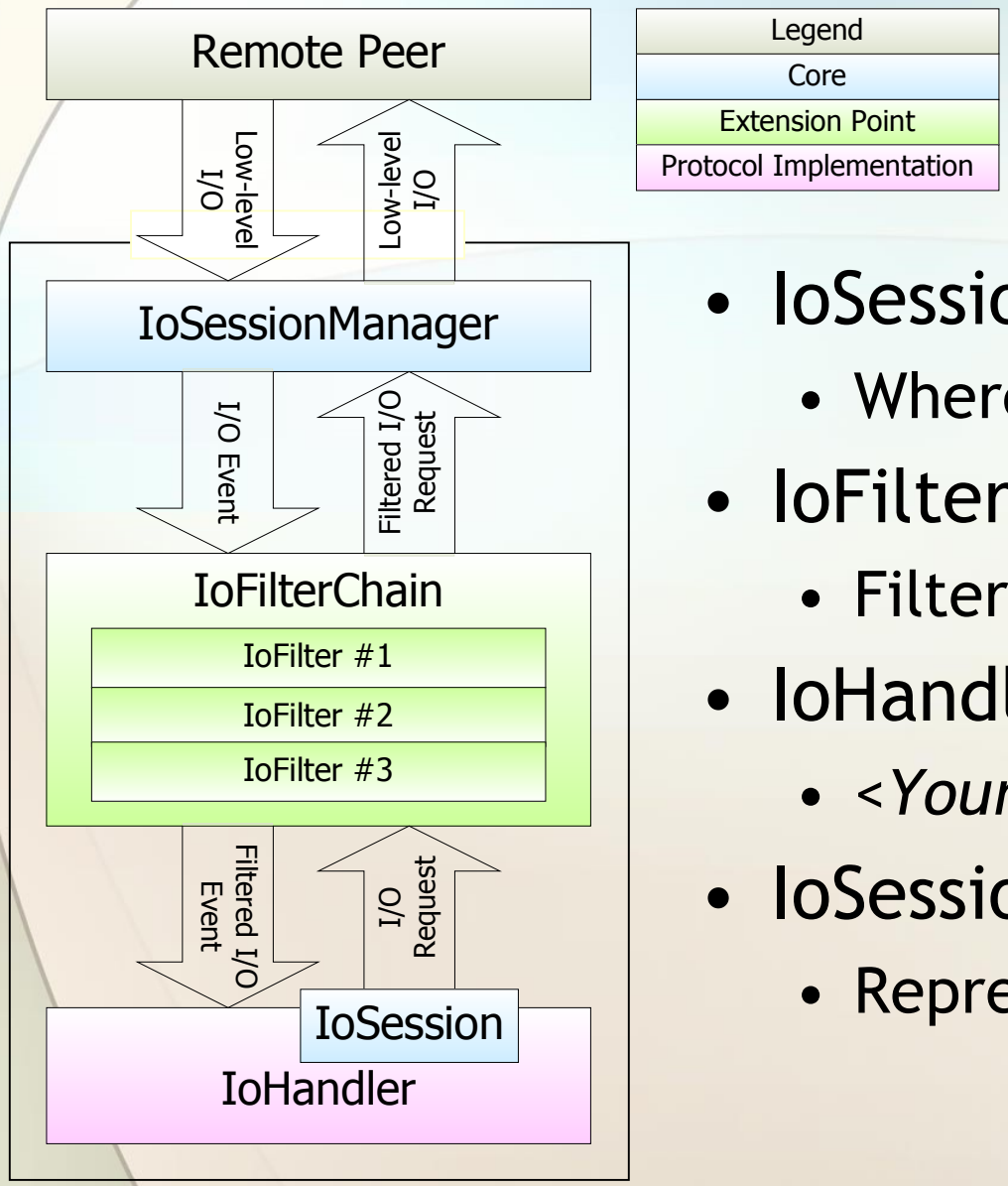
Who Uses MINA?

- The Apache Directory Project
  - LDAP
  - Kerberos
  - DNS
  - NTP
- QuickFIX – QuickFIXEngine.org
  - Financial Information eXchange Protocol
- RED5 Server – OSFlash.org
  - Macromedia Flash Media RTMP
- JStyx – JStyx.sf.net
  - Styx, a file sharing NFS-like protocol
- Proprietary SMS · MMS servers

In-depth View

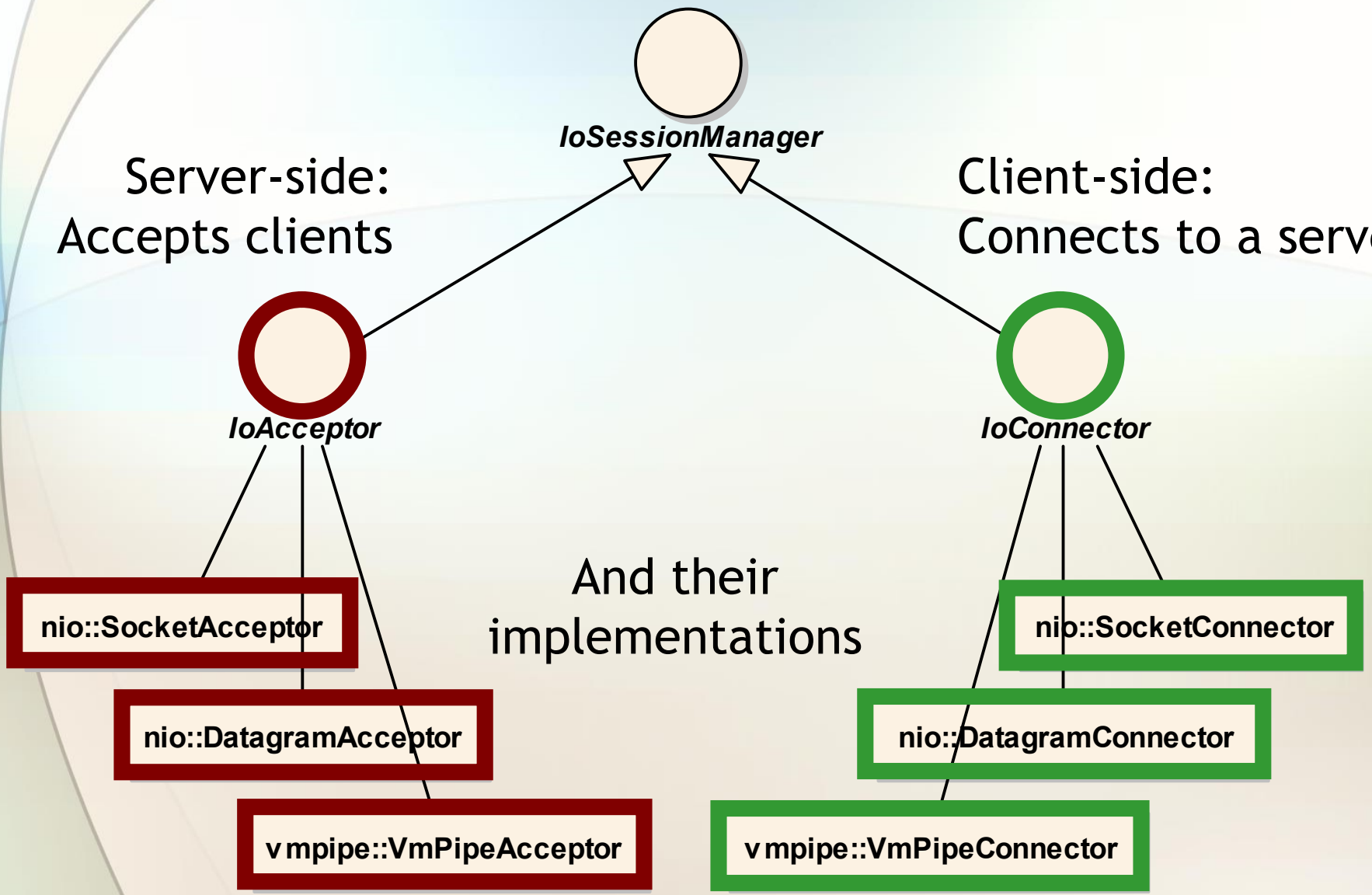
A Multi-purpose Infrastructure for Network Applications

At a Glance



- IoSessionManager
  - Where real I/O occurs
- IoFilters
  - Filters I/O events · requests
- IoHandler
  - *<Your protocol logic>*
- IoSession
  - Represents a connection

IoSessionManagers



IoFilters

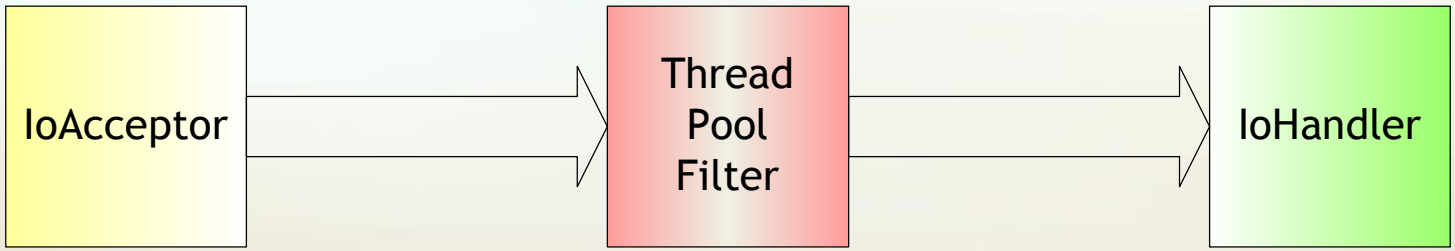
- An event & request interceptor
  - Reusable
  - Hot-deployable

- SSL · TLS
- Thread pool
- SASL
- Performance profiler
- Lightweight firewall
- Peer blacklist
- Logger
- Authorization
- Traffic shaper
- Overload detector

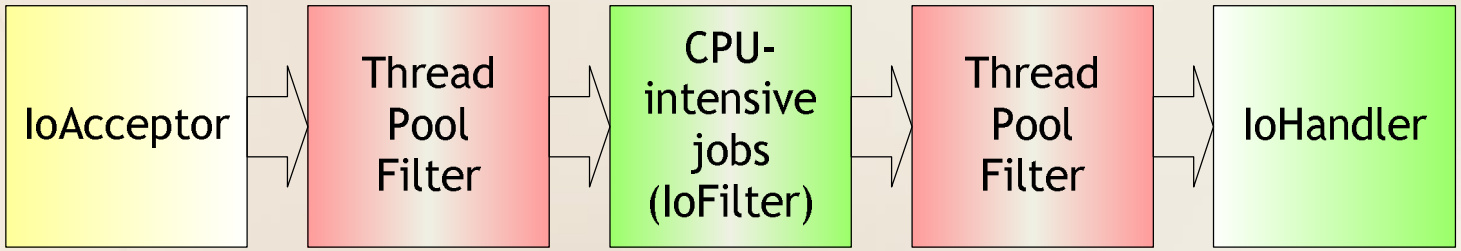
IoFilters: ThreadPoolFilter

No thread pool: single thread setting for minimal latency

One thread pool: general setting for high throughput



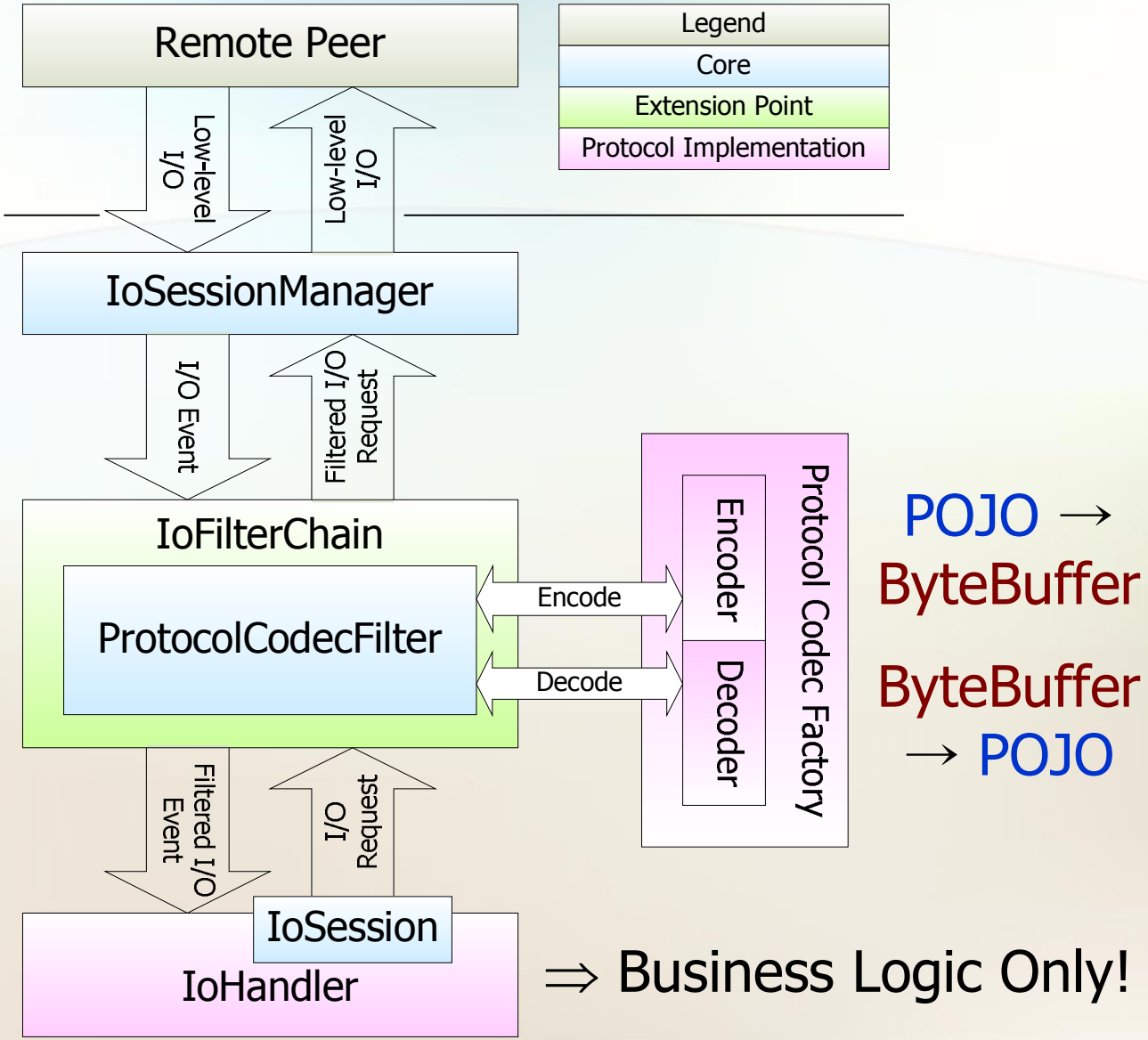
More than one thread pool: special setting for CPU-intensive jobs



IoFilters: ProtocolCodecFilter

- Clear separation and reusability
- Business logic – IoHandler
- Protocol codec – ProtocolCodecFilter
- Out-of-the-box
  - Object serialization
  - Text line

IoFilters: ProtocolCodecFilters (Cont'd)



In-VM Pipe

I/O events are converted into

‘Direct Method Invocations’

⇒ No protocol codec
⇒ No network latency
⇒ Using the same API

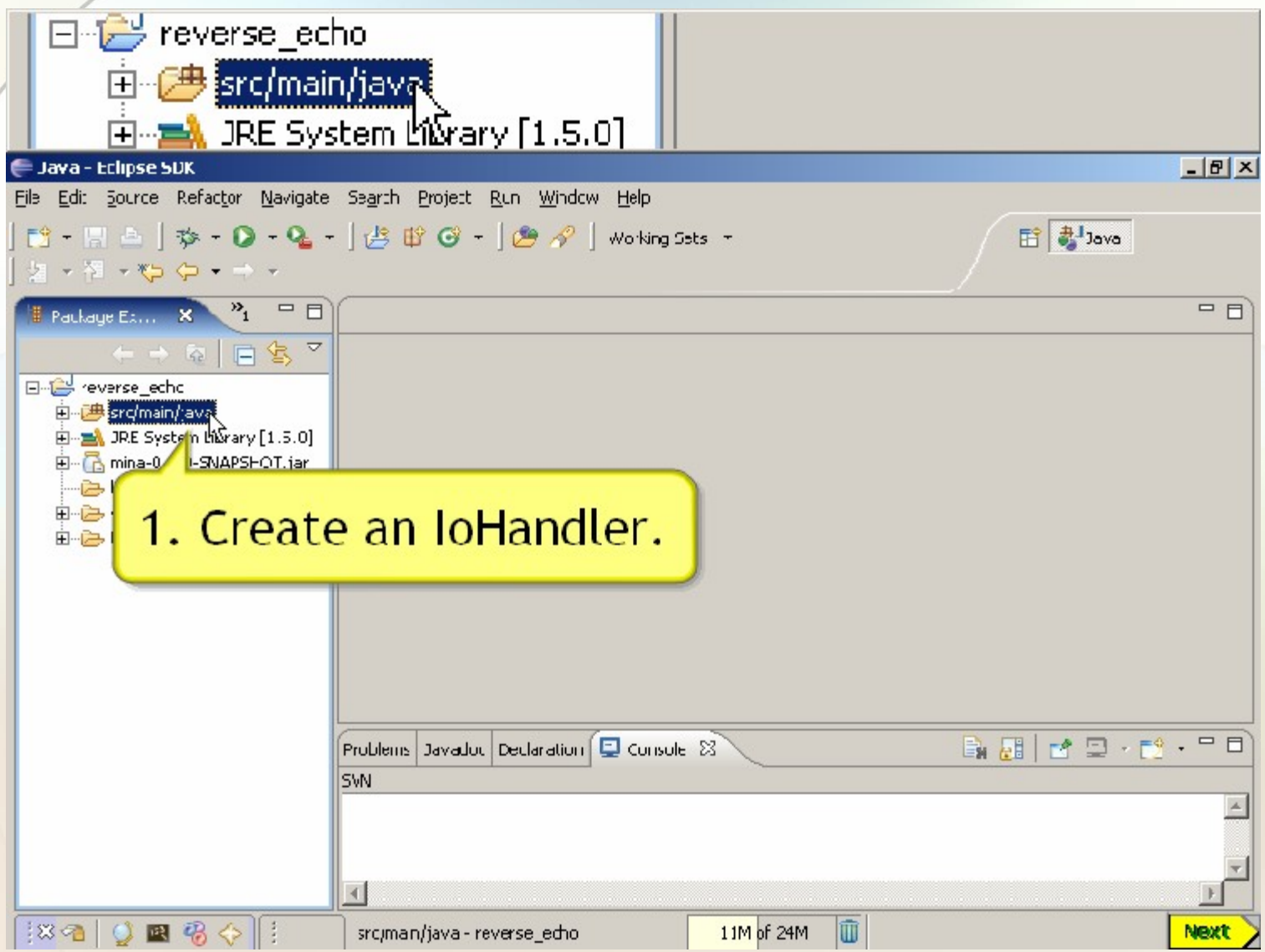
Implementation Demo

A Multi-purpose Infrastructure for Network Applications

Reverse Echo Server

- Echo server which reverses a line
- Using a built-in text line protocol codec in MINA

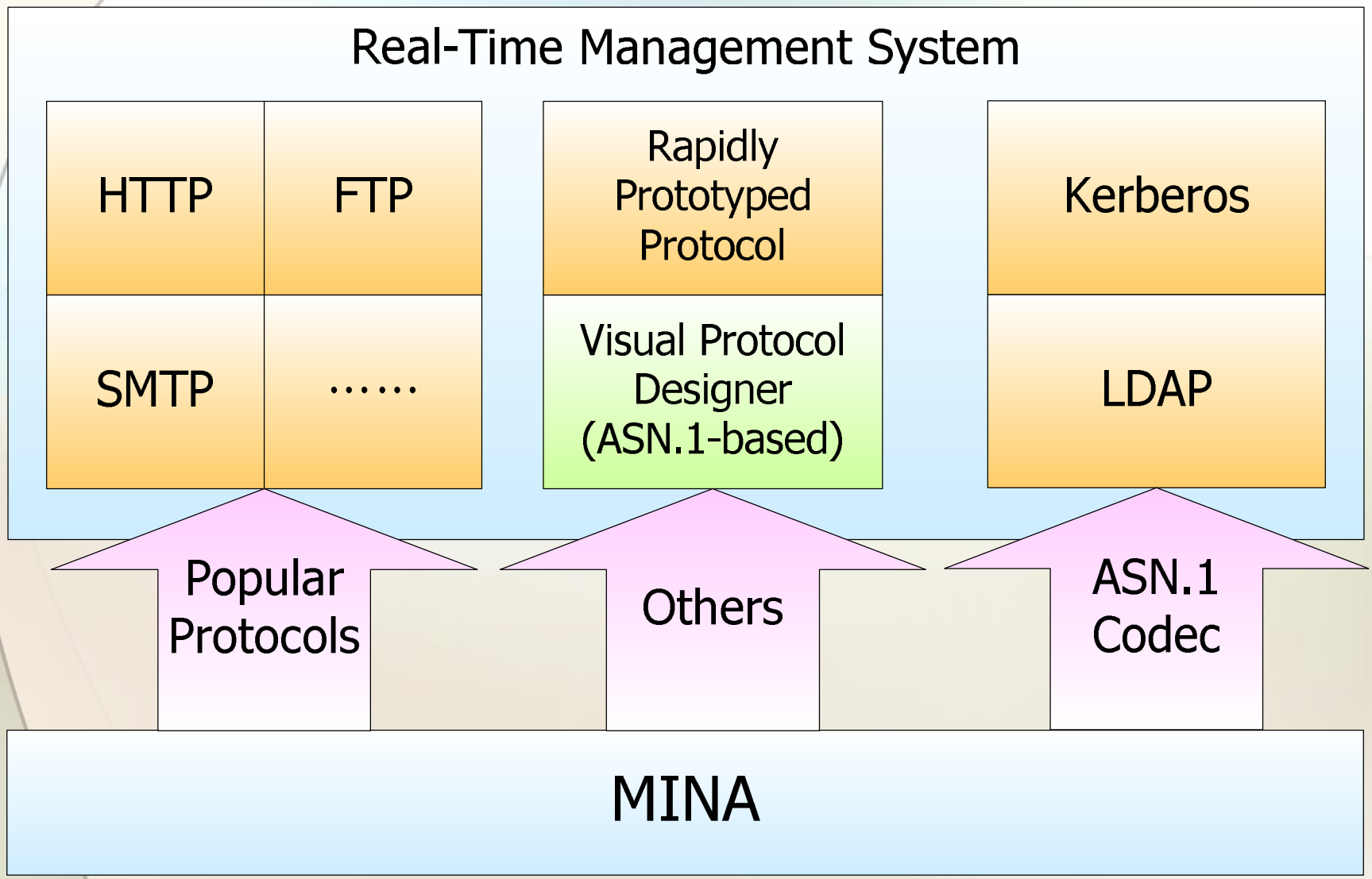
Demo


reverse_echo
src/main/java
JRE System Library [1.5.0]
Java - Eclipse SDK
File Edit Source Refactor Navigate Search Project Run Window Help
Working Sets
Java
Package E...
reverse_echo
src/main/java
JRE System Library [1.5.0]
1. Create an IoHandler.
Problems Javadoc Declaration Console
SVN
src/man/java - reverse_echo
11M of 24M
Next

Future

A Multi-purpose Infrastructure for Network Applications

MINA as a Platform



Real-Time Management System

- A universal management view
- JMX console and Web browser
- Real time access
  - Server traffic
  - IoFilter Hot-deploy
  - Which client is sending what message now?
  - Which message takes too long to process?
  - And <*what you want to monitor*>

We Need Your Participation!

- Sounds exciting?
- Please help MINA team!
  - Try MINA
  - Ask questions
  - Criticize
  - Report bugs
  - Benchmark
  - Contribute code
  - Contribute a tutorial

Conclusion

A Multi-purpose Infrastructure for Network Applications

Conclusion

- MINA is an extensible network application framework that helps you implement your network application elegantly without compromising productivity.
- MINA will be a full-featured network application dev. & mgmt. platform if we get our efforts together.

Resources

- Homepage
  - http://directory.apache.org/subprojects/network/
  - Tutorial
  - More useful examples

- Mailing List
  - dev@directory.apache.org
    (Please use '[mina]' prefix)

Thank You!

Q & A