

The DIMMA QoS enabled Flow Protocol

Douglas Donaldson

douglas.donaldson@ansa.co.uk



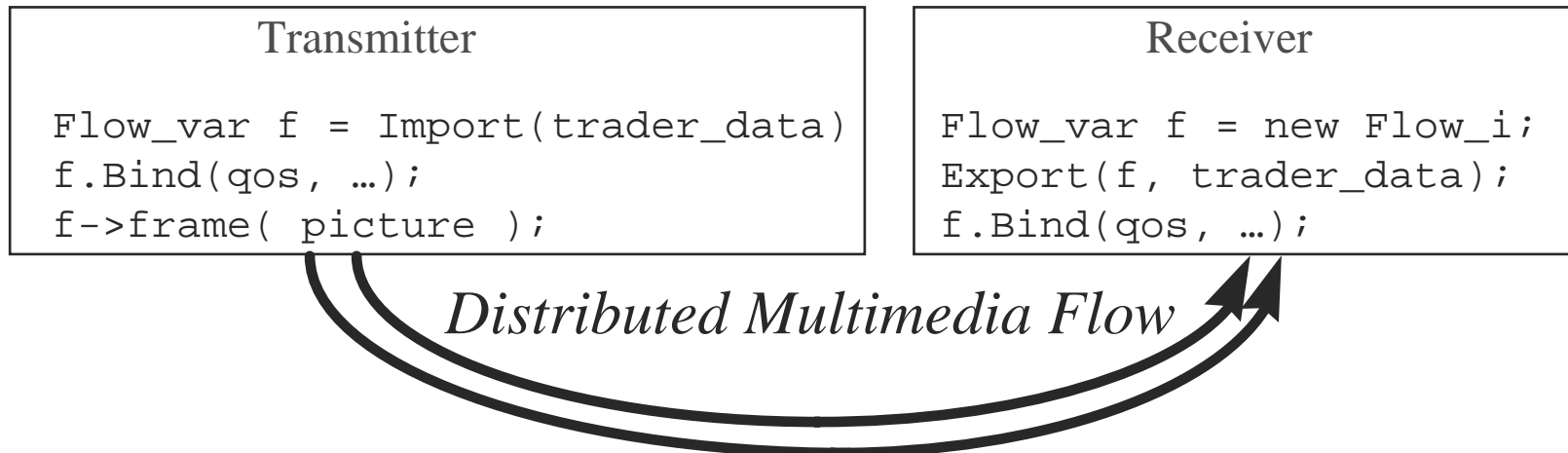
Objectives and Issues

- Support for Distributed Multimedia Flows
- Extension to the CORBA Object Model
- Implementation within an abstract framework for layered protocols
- Flexible Binding models, including ‘Transmitter First’
- Configurable Quality of Service support
 - A simple interface for application programmers
 - Multiple Bindings to a Flow receiver,
 - Customisable Resource Sharing
 - Resource Preallocation per Binding/Channel
 - A range of Threading policies.



Application Programmer's View

- Unidirectional flow, based on CORBA oneway invocations
- ```
flow Flow {
 void frame(in Picture picture);
 void sound(in Sound sound);
};
```

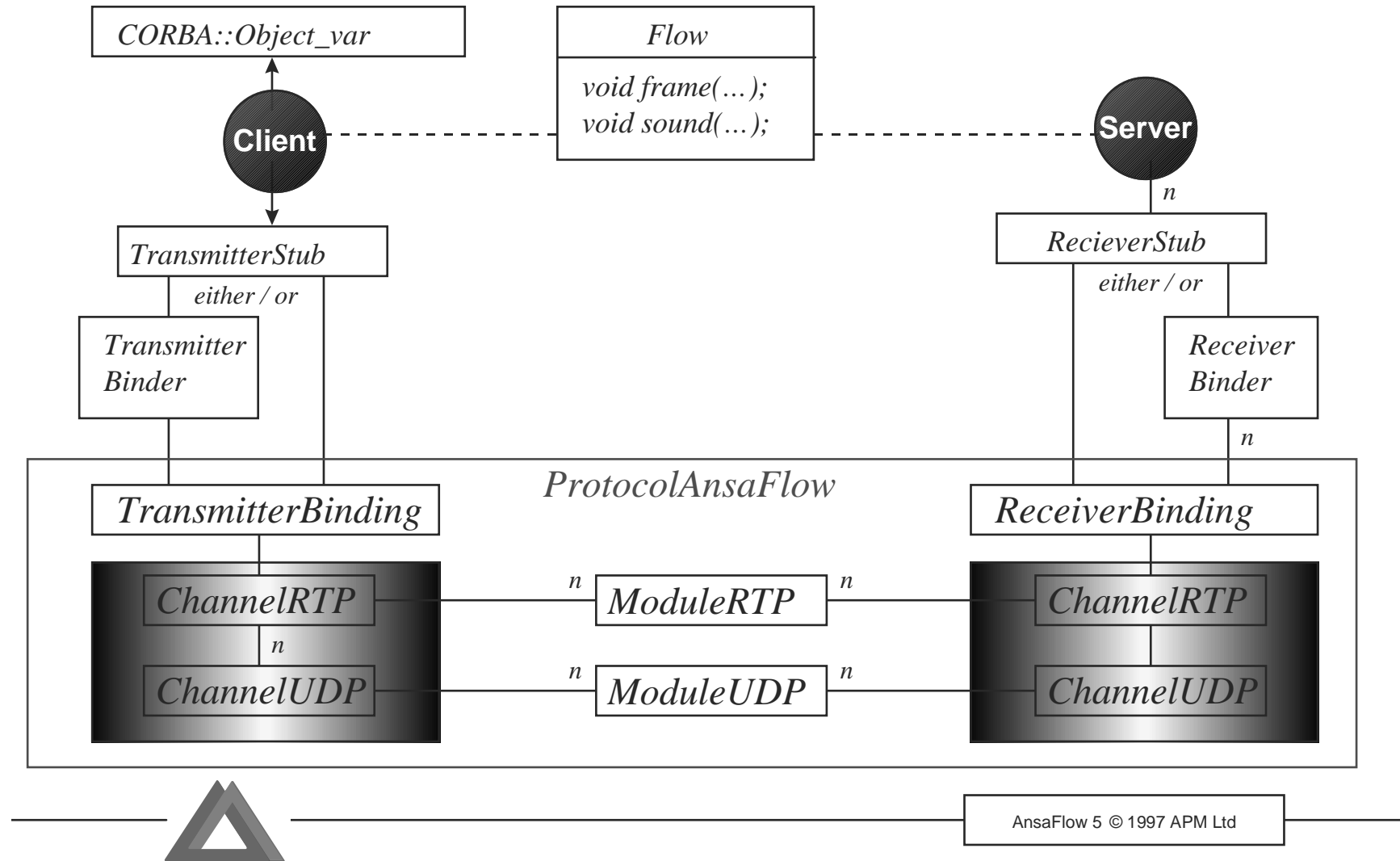


# *Binding*

- **Implicit Binding**
  - The application programmer imports/exports or sends/receives an object reference
  - A default stub and binding/channel is created with default QoS.
- **Explicit Binding**
  - The application programmer calls `CreateEndpoint()` then `Bind()`
  - A stub and binding/channel are created to the specified address (if any) and with the specified QoS.
- Bind to a Well Known Address allows a 'Transmitter First' model
- Bind to a Multicast IP Address allows Multicast Flows



# Protocol AnsaFlow Class Diagram

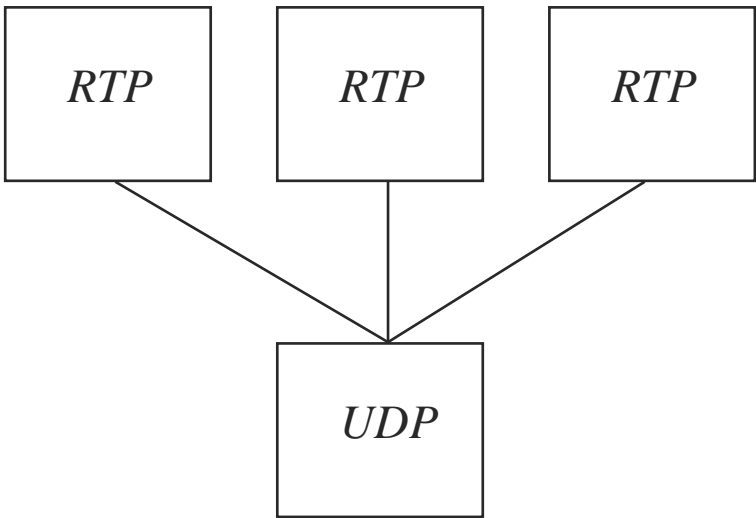


# *Layered Protocol*

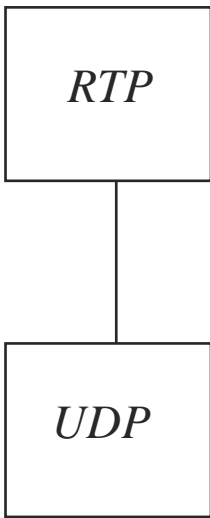
- Protocol Bindings
  - Encapsulate Knowledge of Application Data Representation (alignment, endianness, ...)
- ChannelRTP
  - Offers a 'Connected' Interface
  - Encapsulates Knowledge of Protocol Headers (Real Time Protocol)
- ChannelUDP
  - Offers a 'Connectionless' Interface
  - Encapsulates Knowledge of Network Transport (UDP sockets over IP)



# *Quality of Service 1 - Resource Sharing*



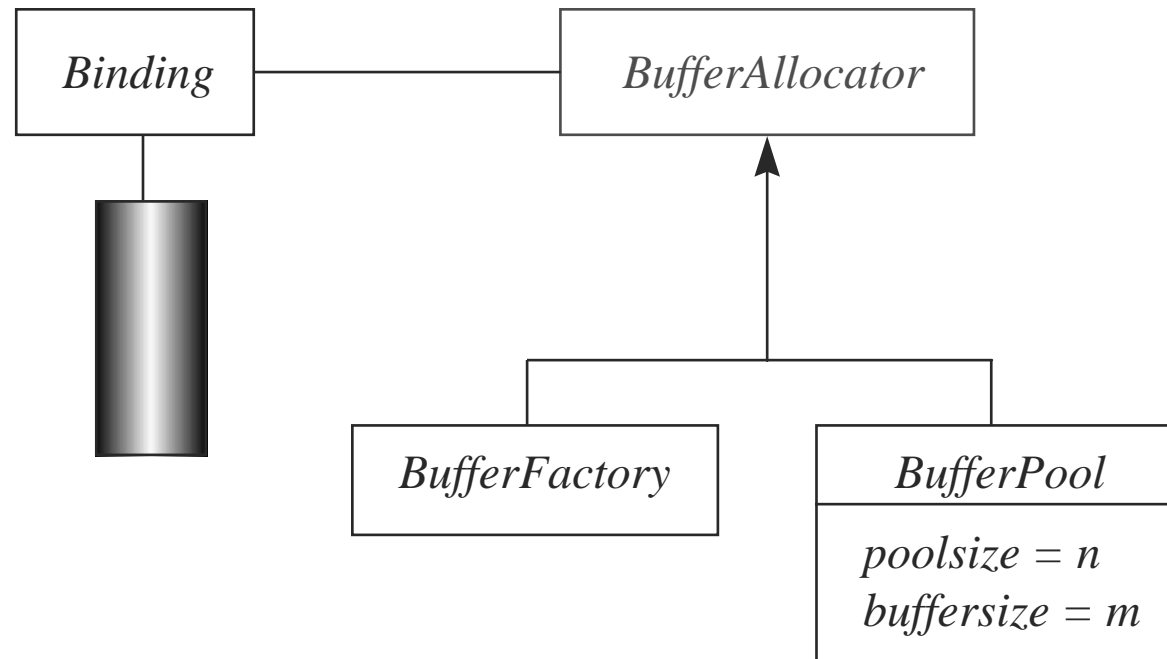
*Sharing or Multiplexing*



*Dedicated Socket Resource*

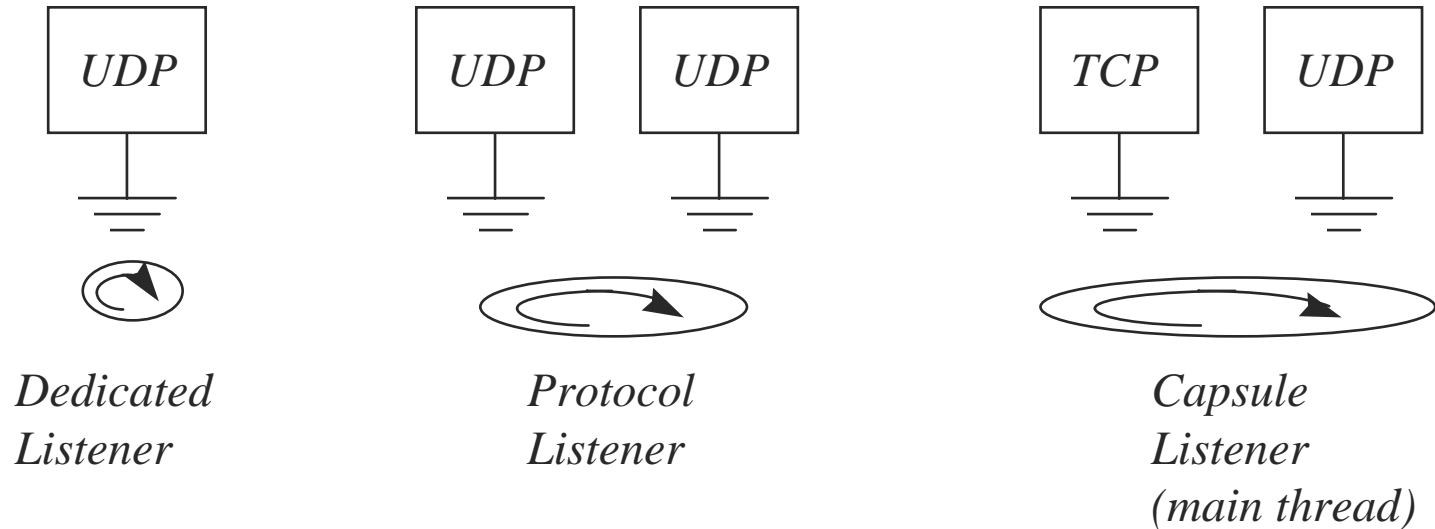


## *Quality of Service 2 - Resource Preallocation*

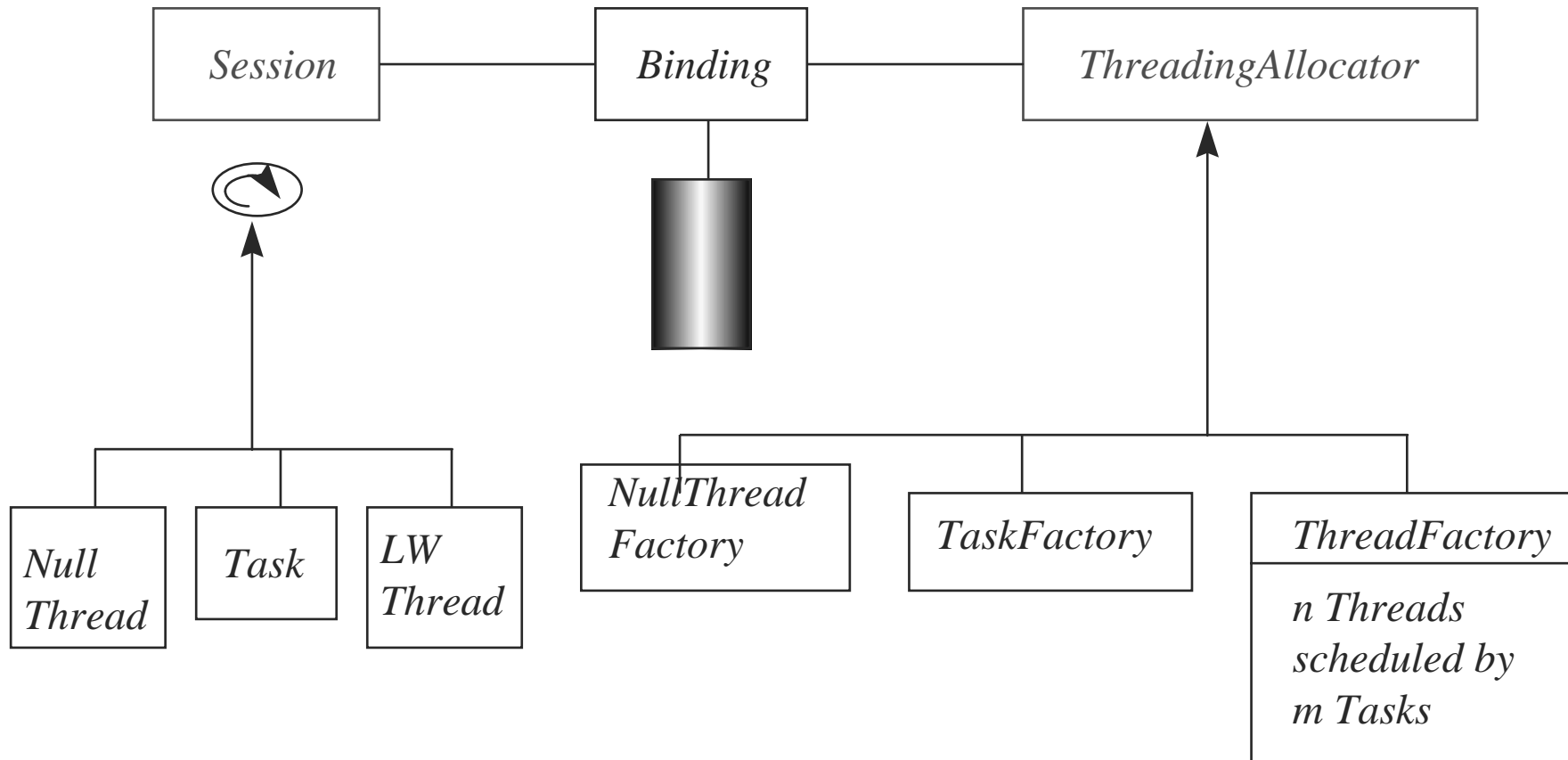




# *Quality of Service 3 - Socket Listening*



# Quality of Service 4 - Session Dispatch



# *Summary of ProtocolAnsaFlow*

- Distributed Multimedia Flows
- CORBA Object Model
- RTP Protocol Headers, UDP Transport
- Implicit or Explicit Binding, including ‘Transmitter First’
- Declarative QoS to specify
  - Resource Sharing
  - Resource Preallocation
  - Channel Listening
  - Session Dispatch.

