The Distributed occam Protocol

MSc Project 2001
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What Is The DoP?

- Protocol to distribute occam channels over the internet
- Library that offers an interface to the internet
- Processes who want to communicate to remote processes have to plug in to this interface

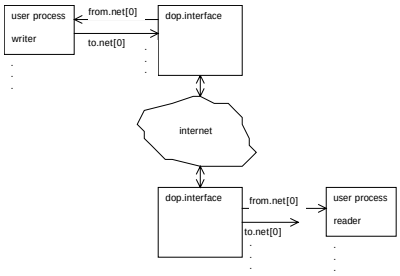
The DoP interface

- Has to be run in PARallel with the user processes
- They are connected to the interface over two arrays of channels:
  - from.net
  - to.net
- Communication mimics normal (i.e. local) channel communication

Registration of network channels

- Network channels register with the Channel Name Server (CNS)
- The reading side has to register its location by a name
- The writing side requests the reader's location by that name
- Anonymous channels: no need for the CNS as location is exchanged

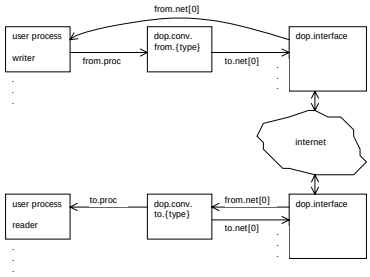
Normal channels



Data types

- The from.net and to.net channels normally use a counted array protocol
  - INT::[]BYTE
- There are conversion processes that can be plugged in between the interface and the user processes

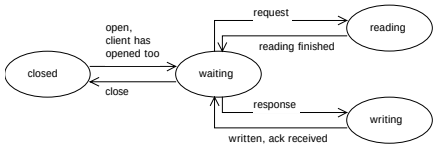
Channels with conversion



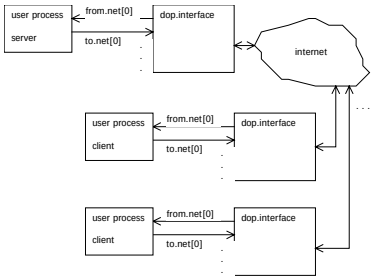
Connections

- Special network channels that enable two way communication between clients and servers
- Four primitives to control connections
  - open
  - close
  - request
  - response

Connections



Connections



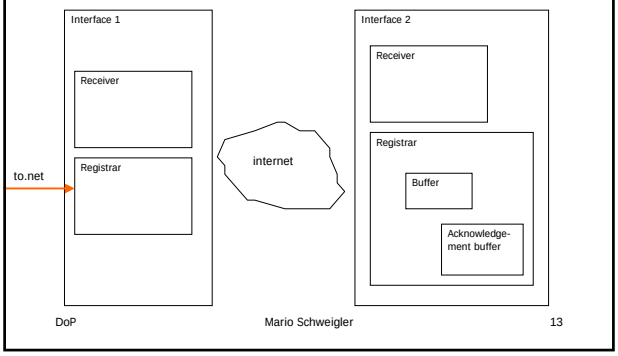
Internals

- Two main databases
  - one stores the machines together with a socket to communicate with them
  - one stores for each end point of a network channel the machine where the remote end point is (by the index in the first database)

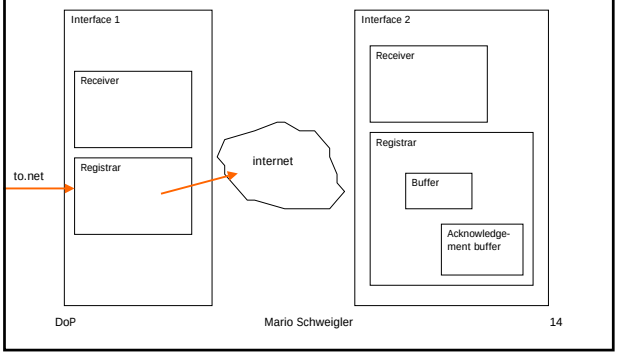
Internals

- Four processes run in parallel in the interface
  - acceptor
  - receiver
  - registrar
  - reconnector

The way of communication



The way of communication



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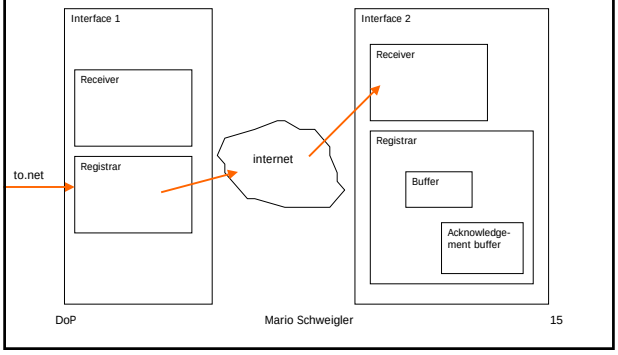

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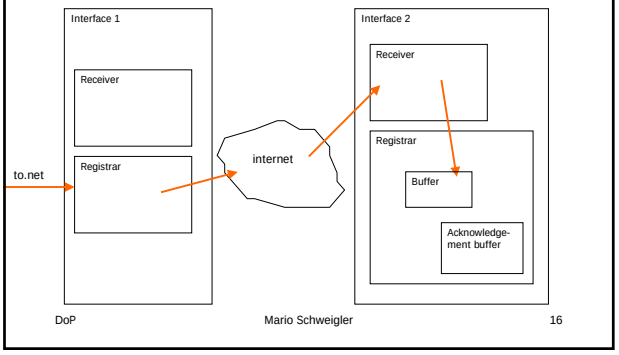

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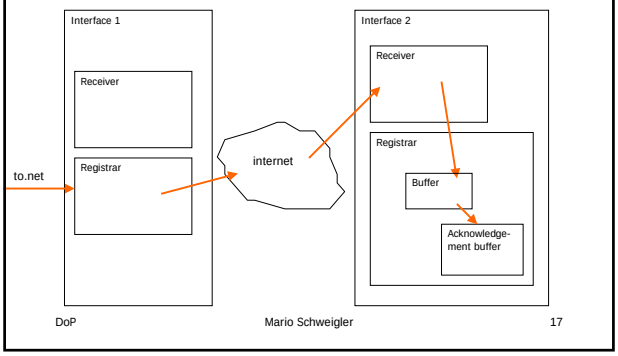

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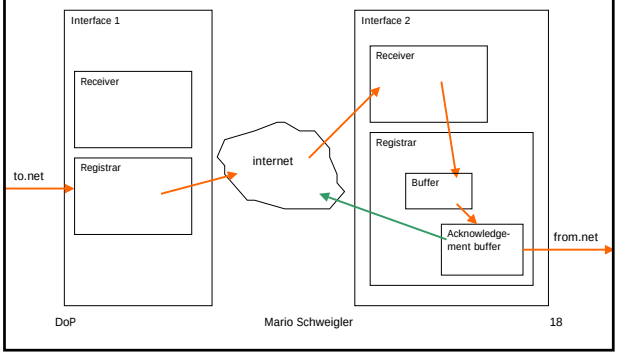

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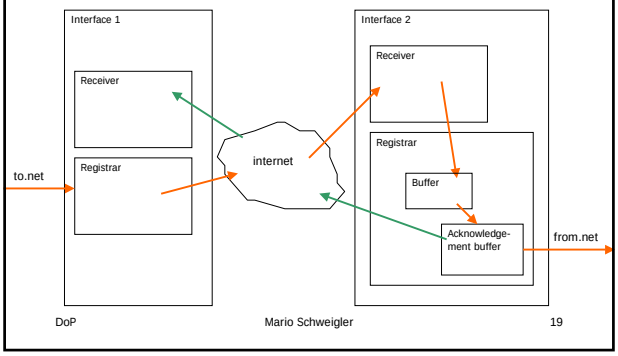

The way of communication