



# Remote Programming

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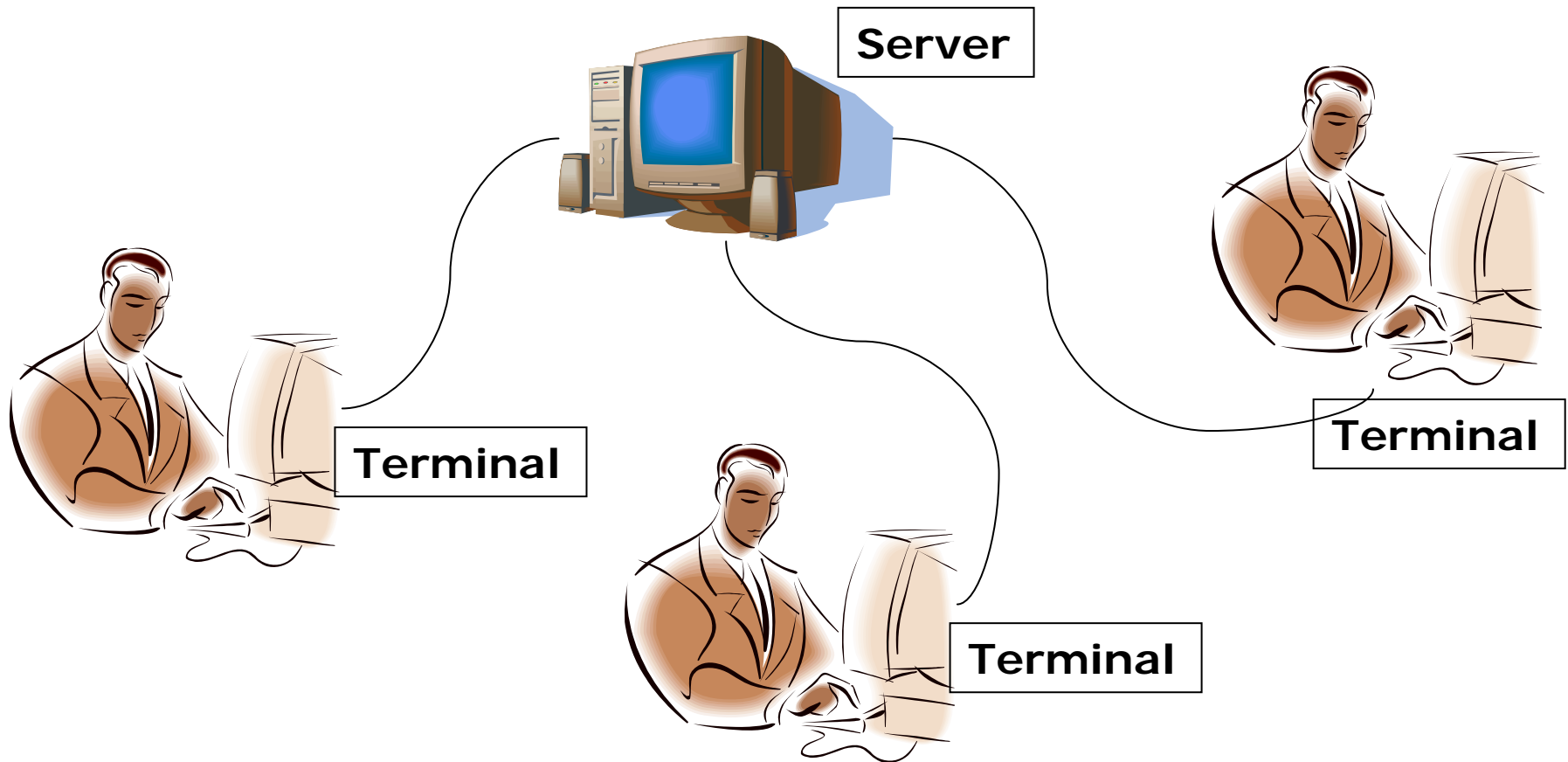
## From Servers to Clients

- 1 server shared by several users (sequential)



## From Servers to Clients

- 1 server shared by several users (parallel)



## From Servers to Clients

- Independent Desktop Machines

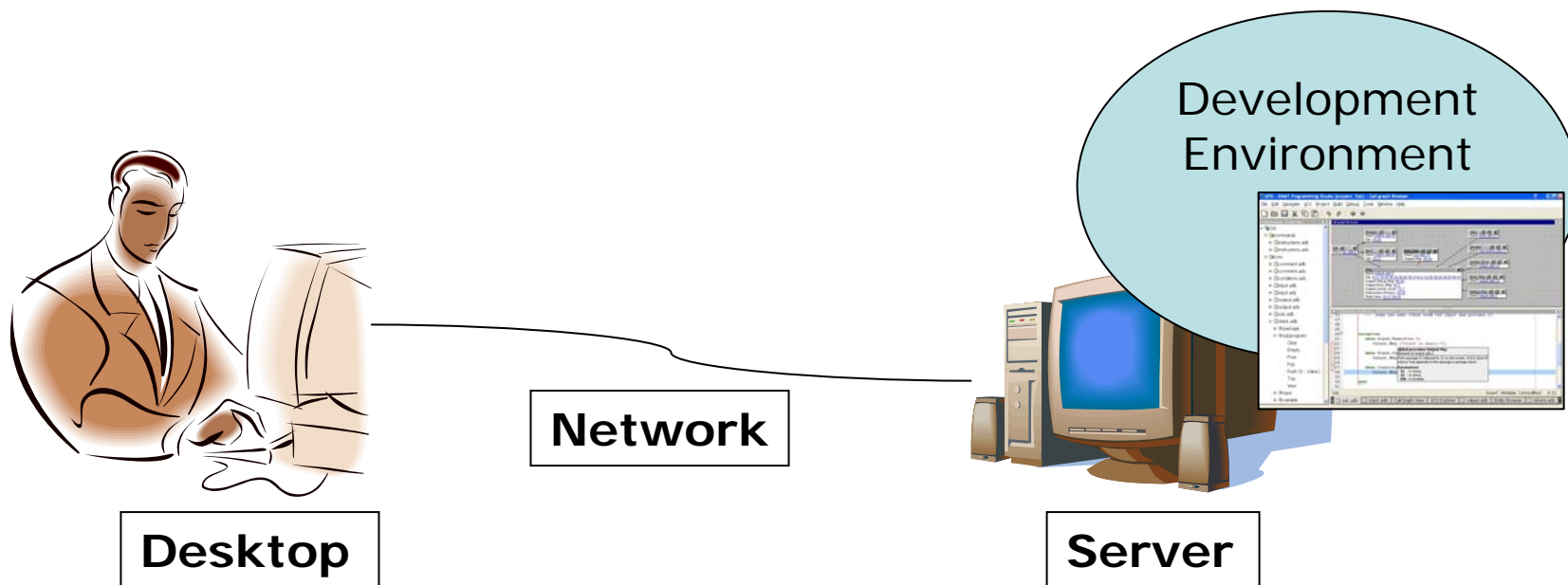


## Yes, but...

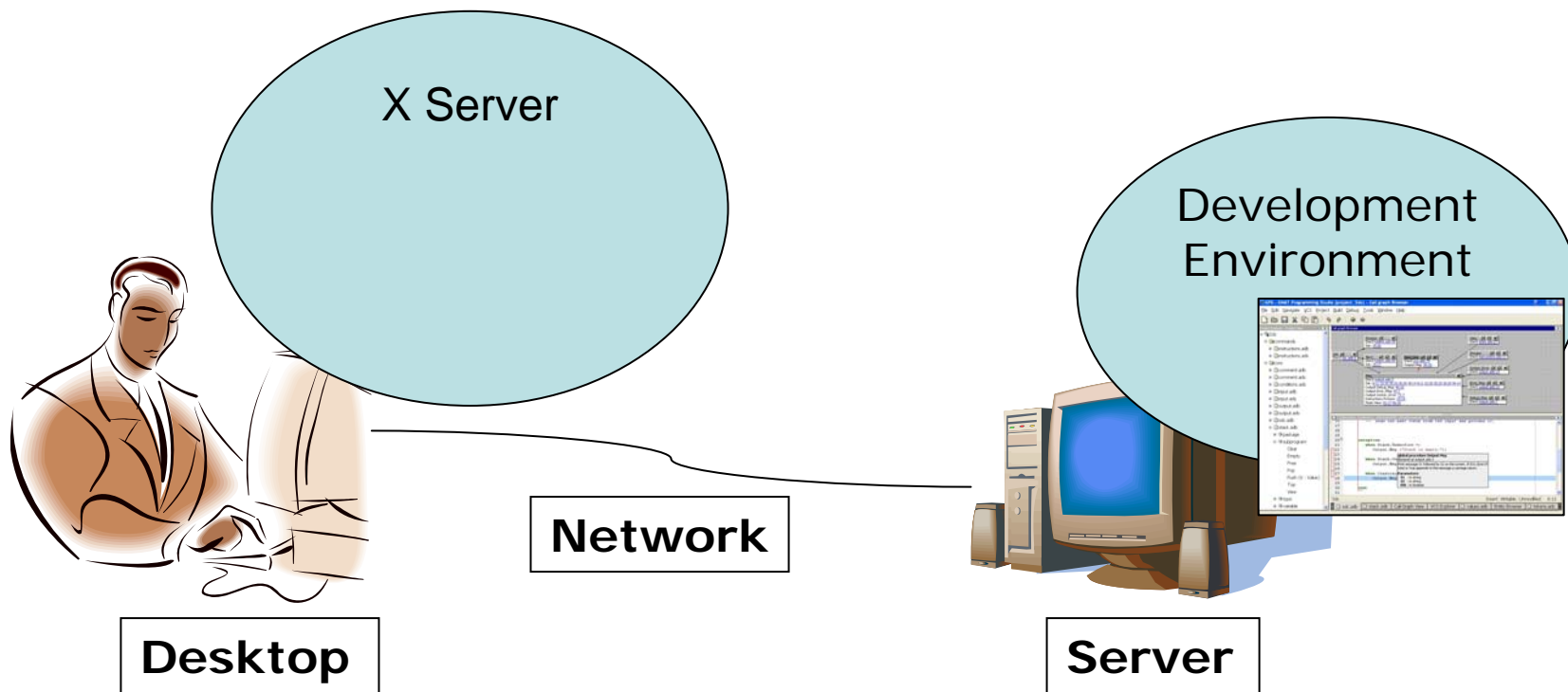
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- **Cheap & powerful machines:**
  - x86 Windows
  - x86 Linux
- **The galaxy of existing platforms not restricted to Windows & Linux:**
  - A lot of other native platforms (i.e. GNAT Pro currently supports 16 native platforms)
  - Cross platforms

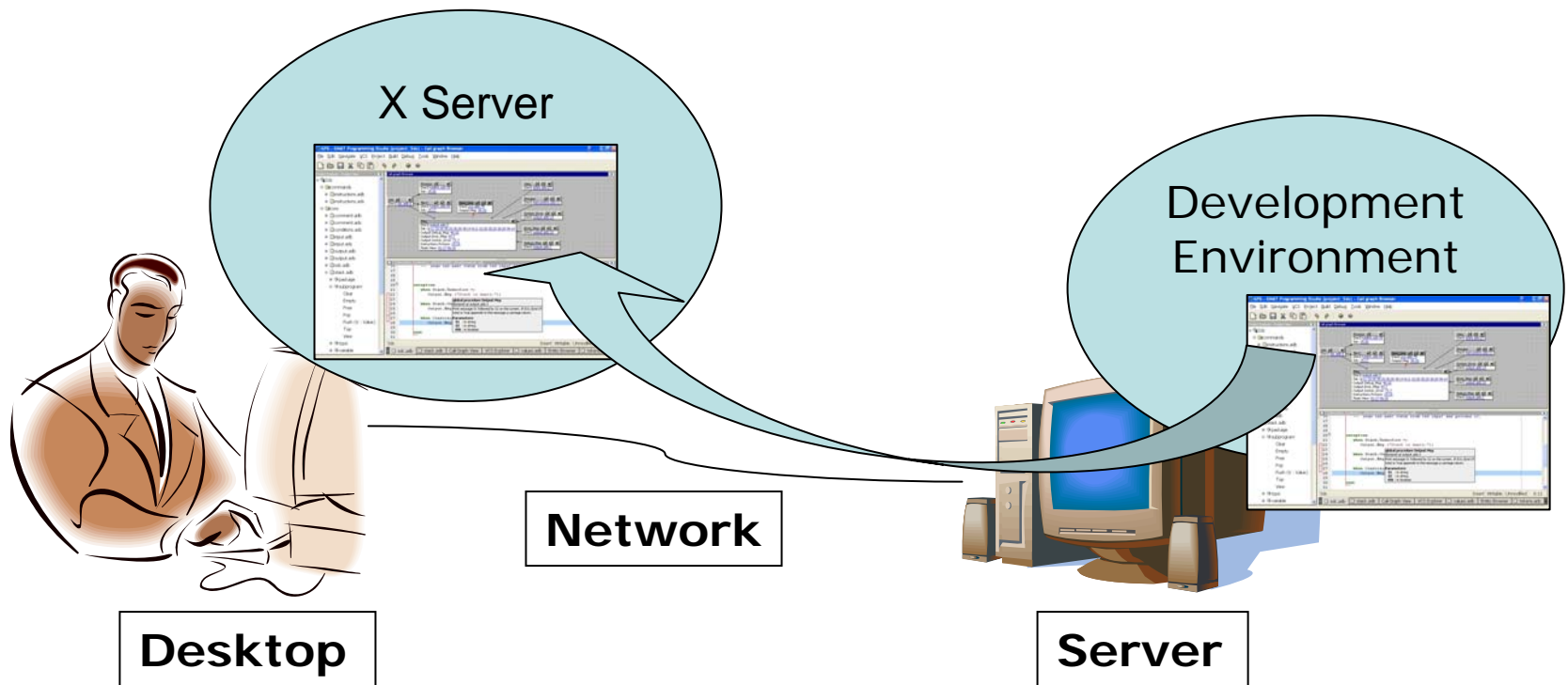
## A Standard Solution



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# A Standard Solution





## Limitations

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- **IDE takes significant processing resources**
  - Risk of server overloading if several developers on the same machine
- **IDE takes significant network bandwidth**
  - If network bandwidth not properly dimensioned, impairs IDE reactivity
- **IDE's look & feel comes from the server**

## Improving the Situation

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- **Take advantage of the Client's processing power**
  - Move computation operations from server to client
- **Decrease data transfer between server and client**
  - Replace continuous transfer of graphical events by sporadic transfer of text files

# The GNAT Pro Compilation System

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## Compilation

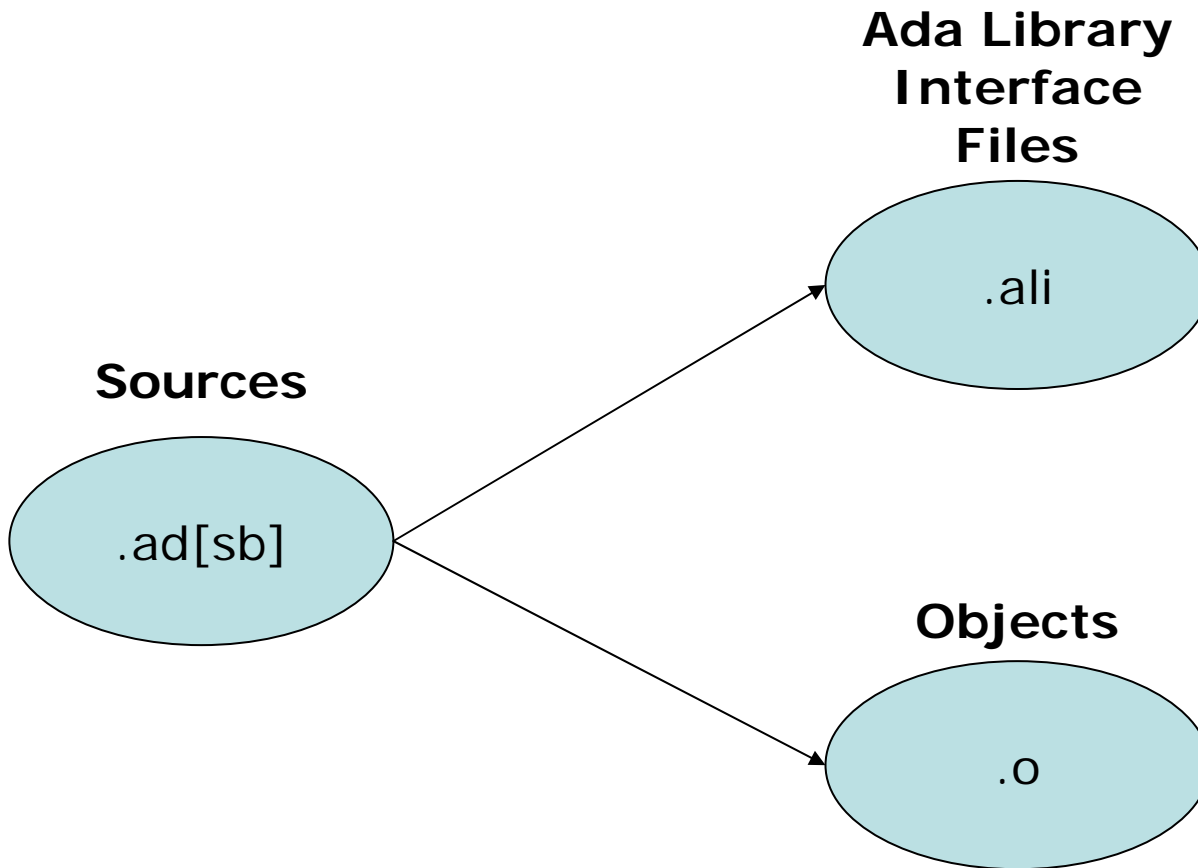
### Sources



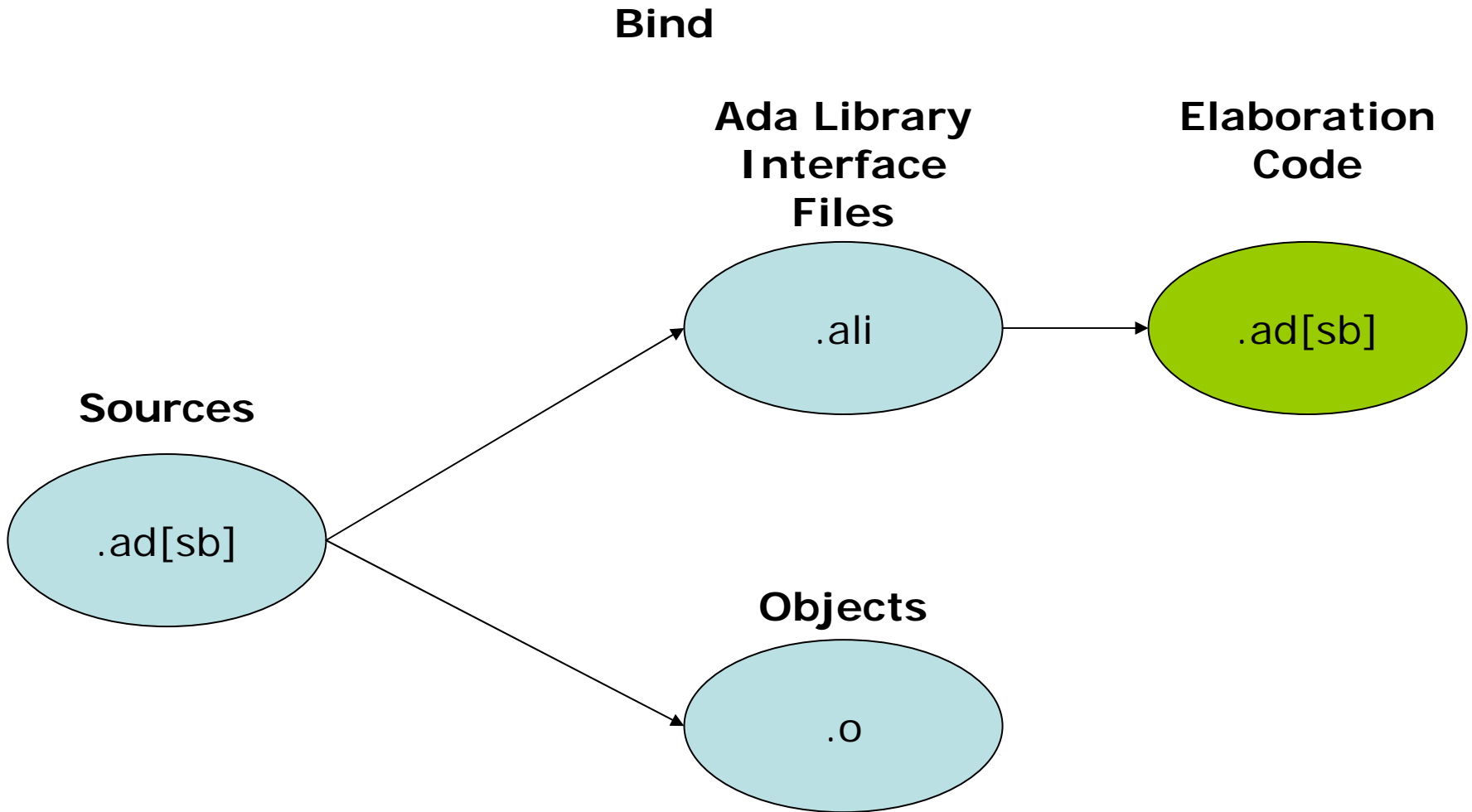
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# The GNAT Pro Compilation System

## Compilation

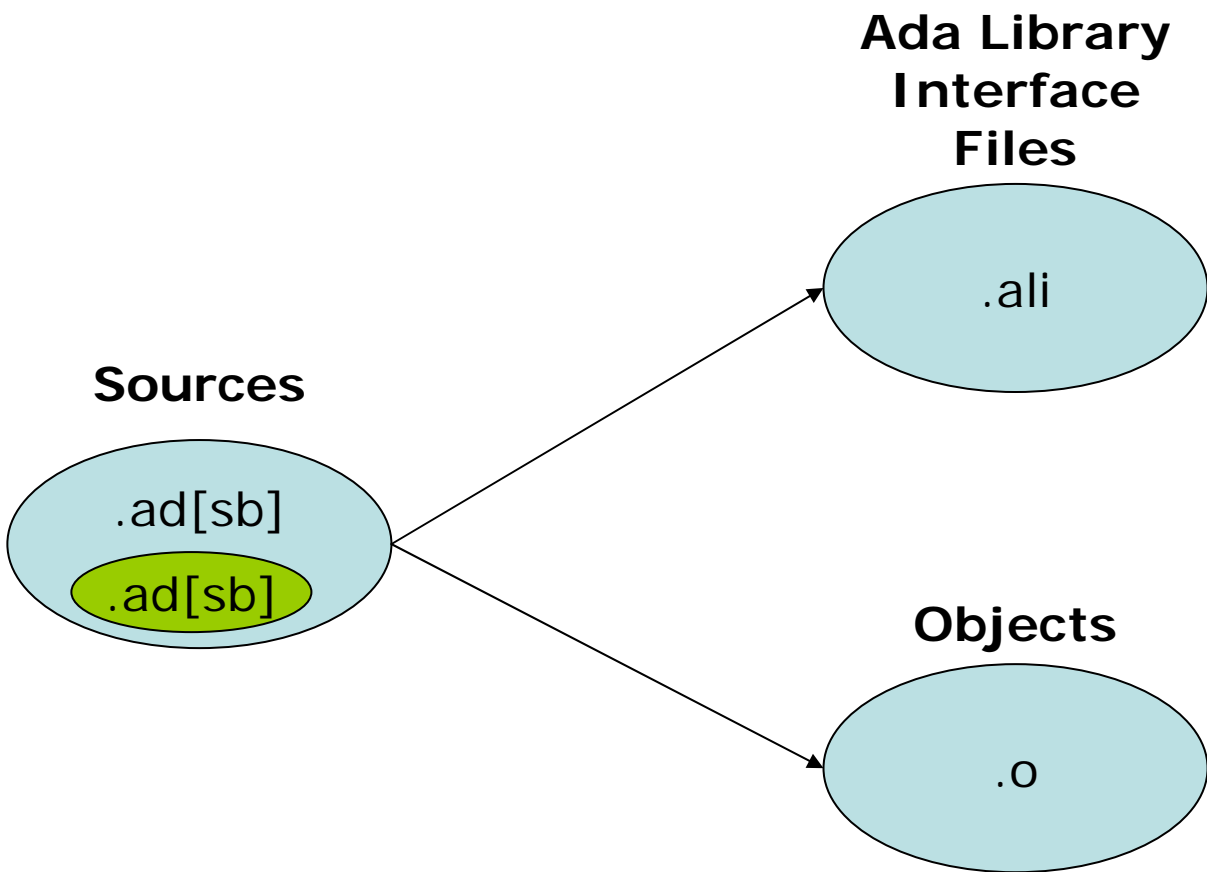


# The GNAT Pro Compilation System



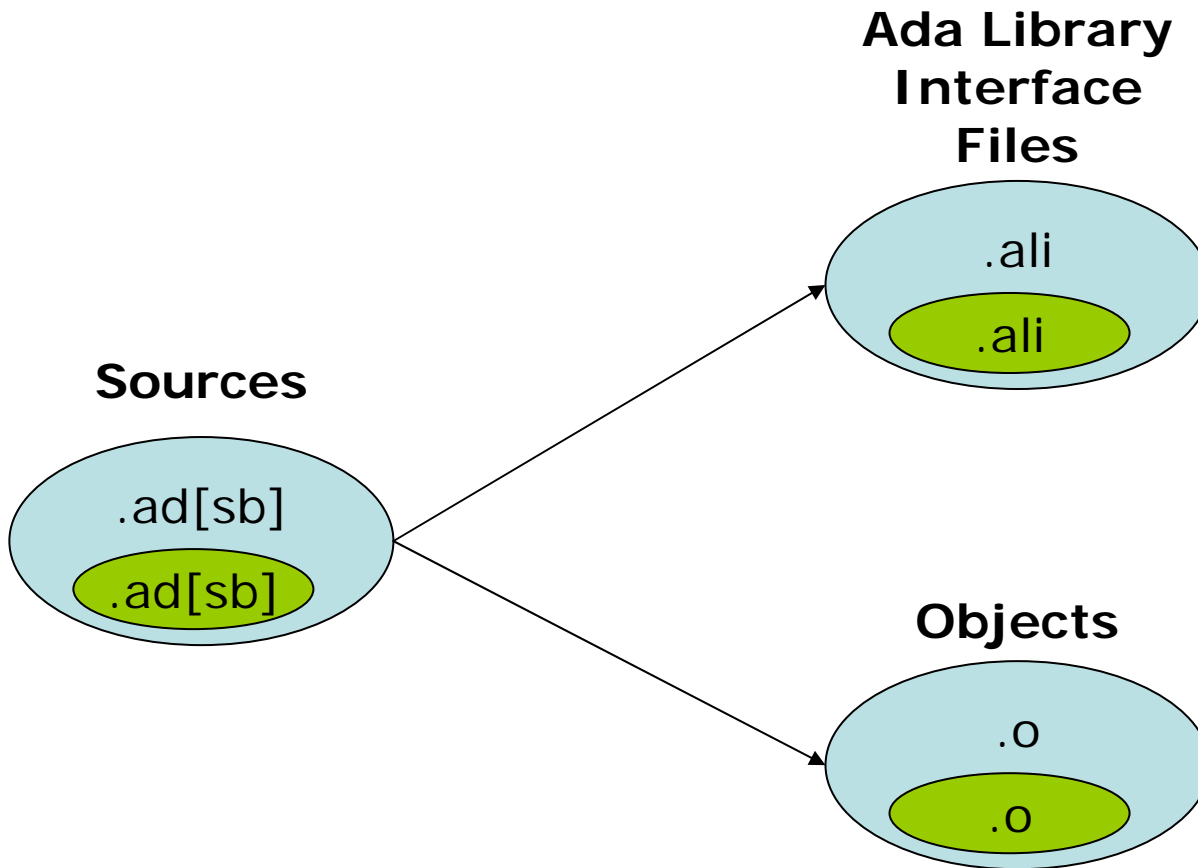
# The GNAT Pro Compilation System

## Link (phase 1)



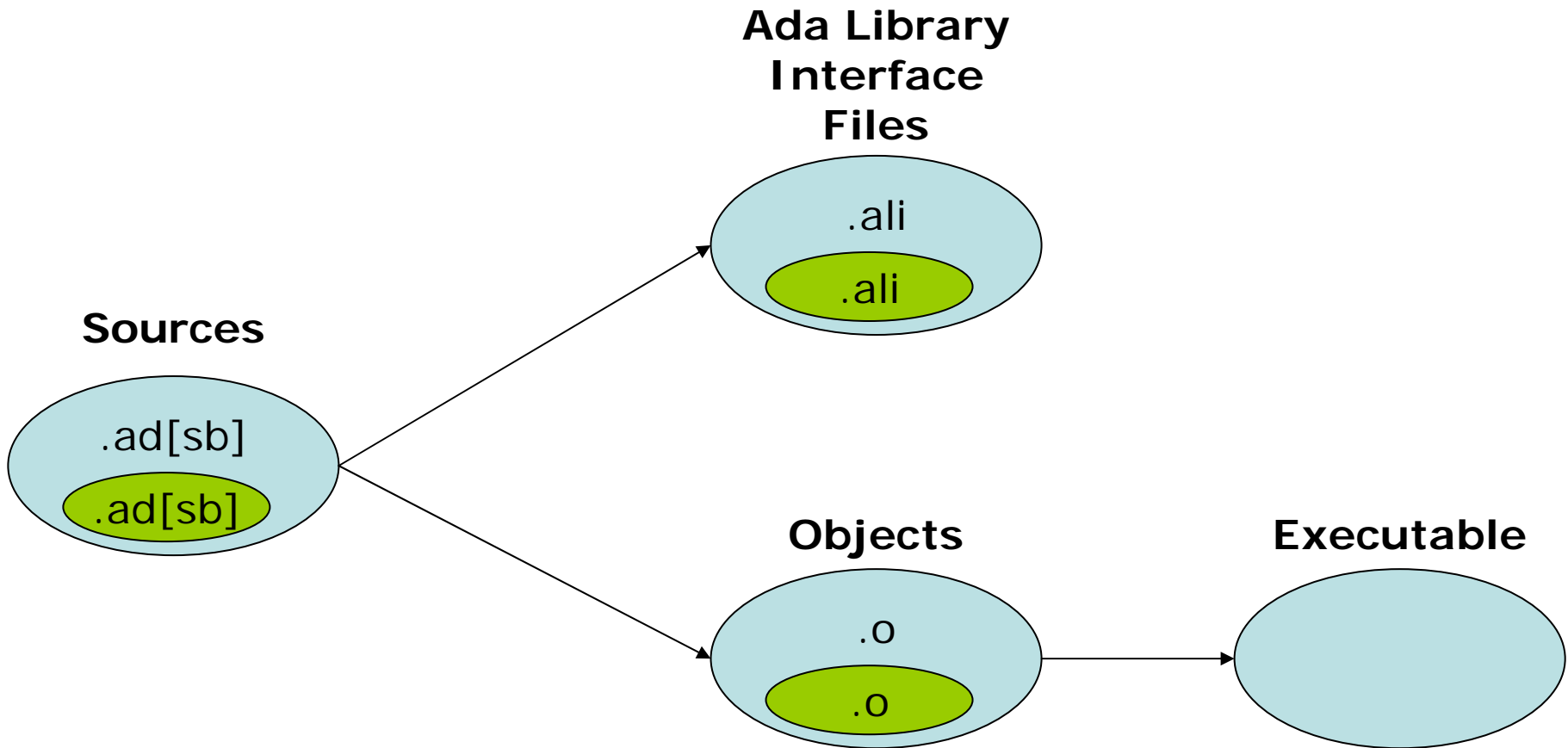
# The GNAT Pro Compilation System

## Link (phase 1)



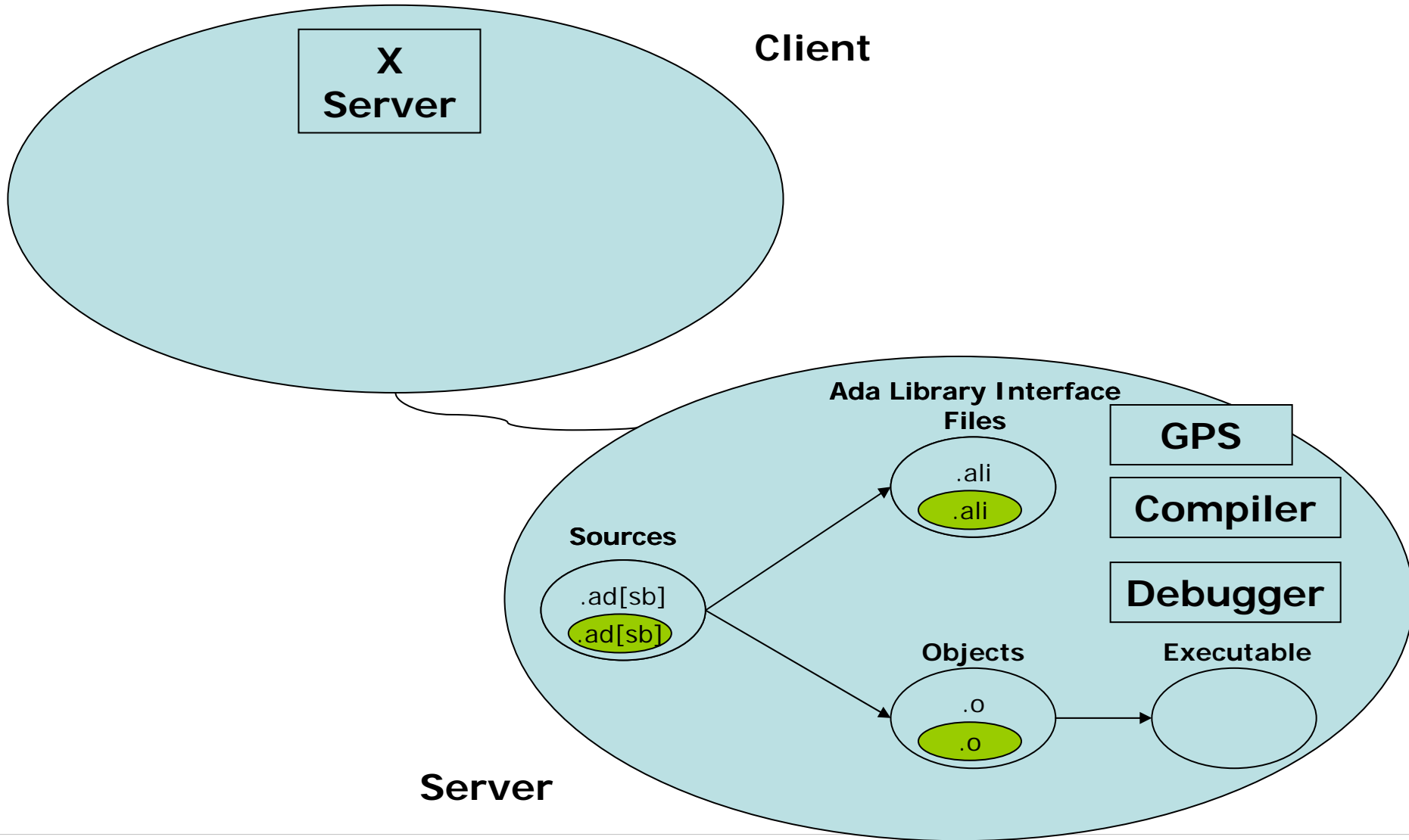
# The GNAT Pro Compilation System

## Link (phase 2)

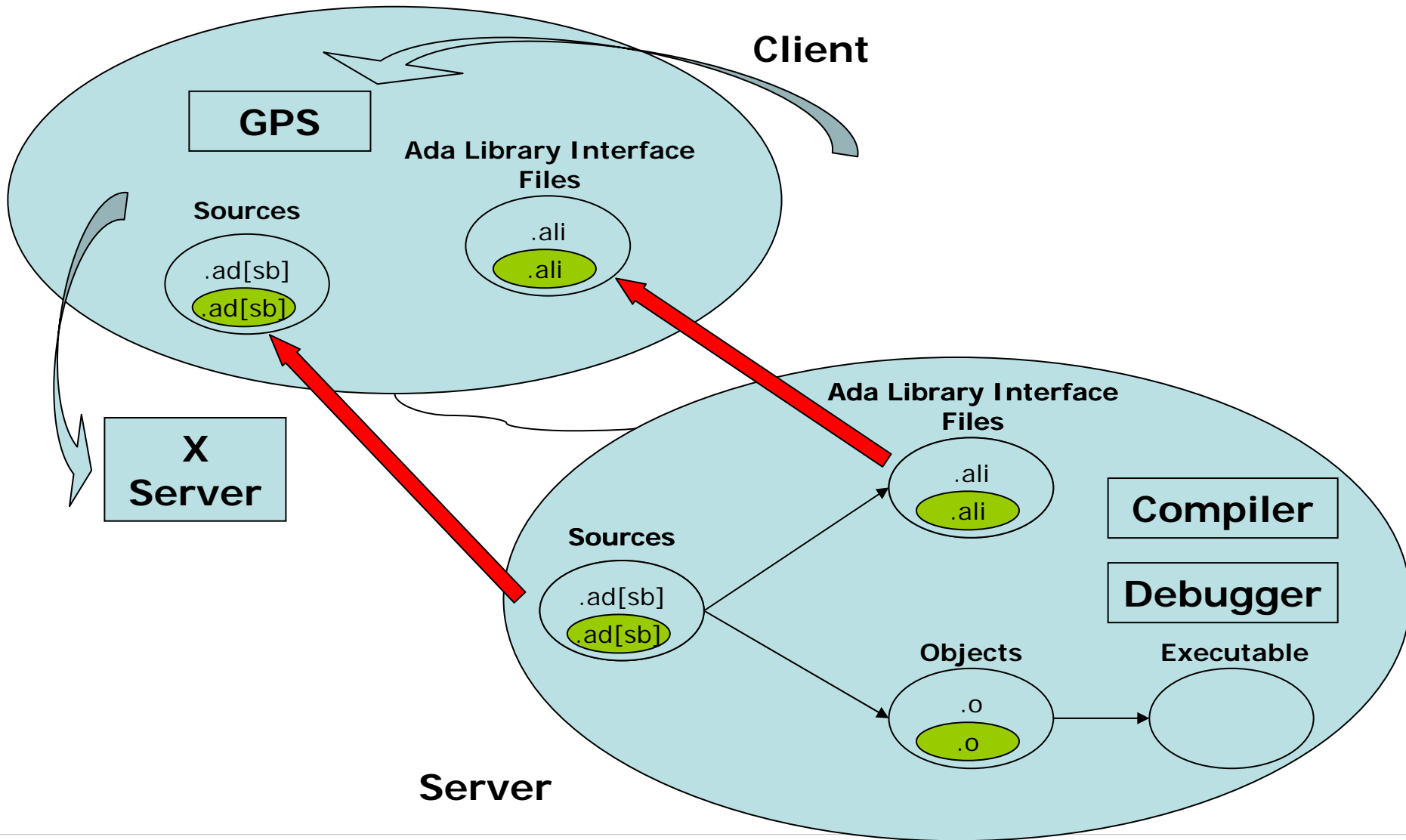




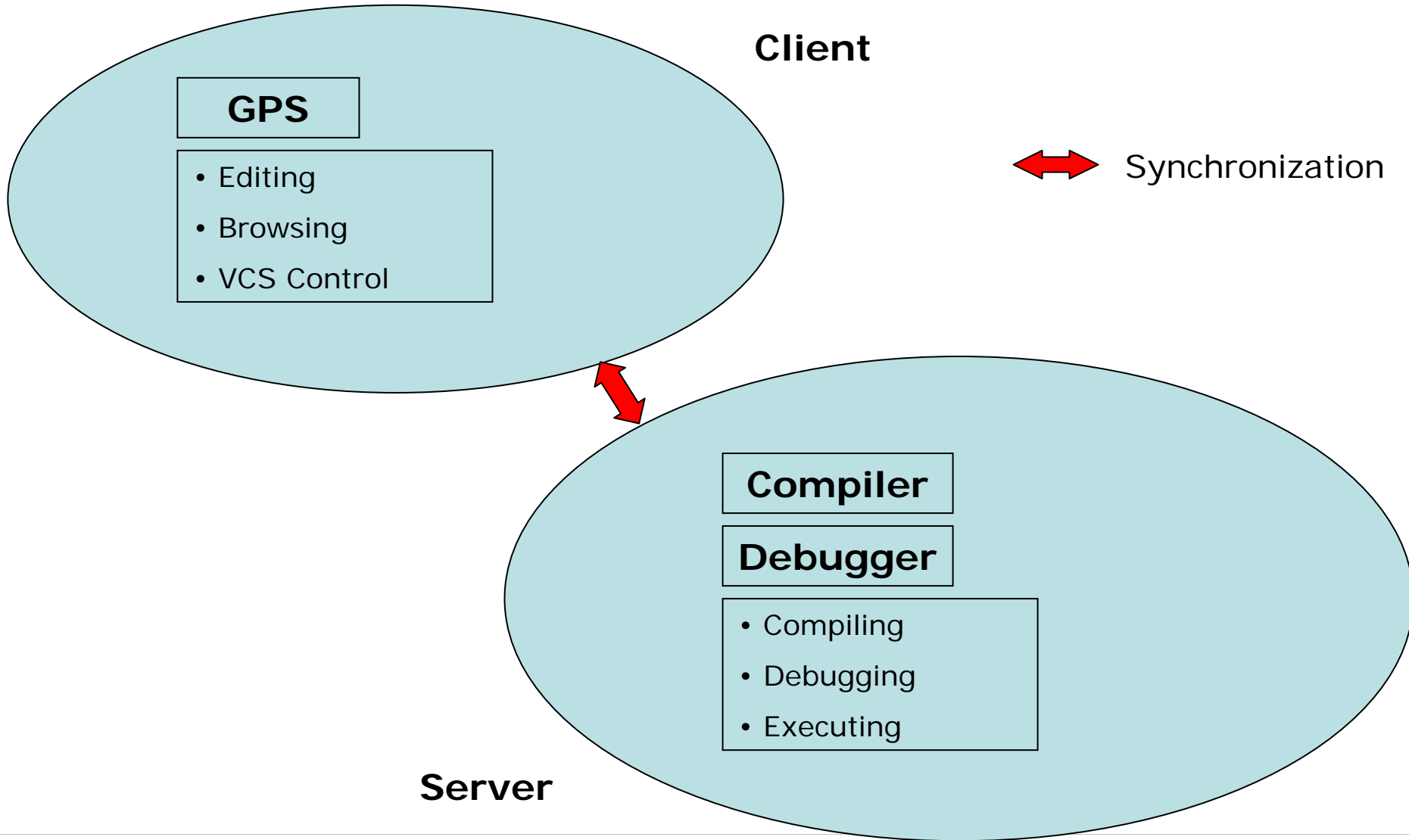
## Remote Development: Better Use of the Client



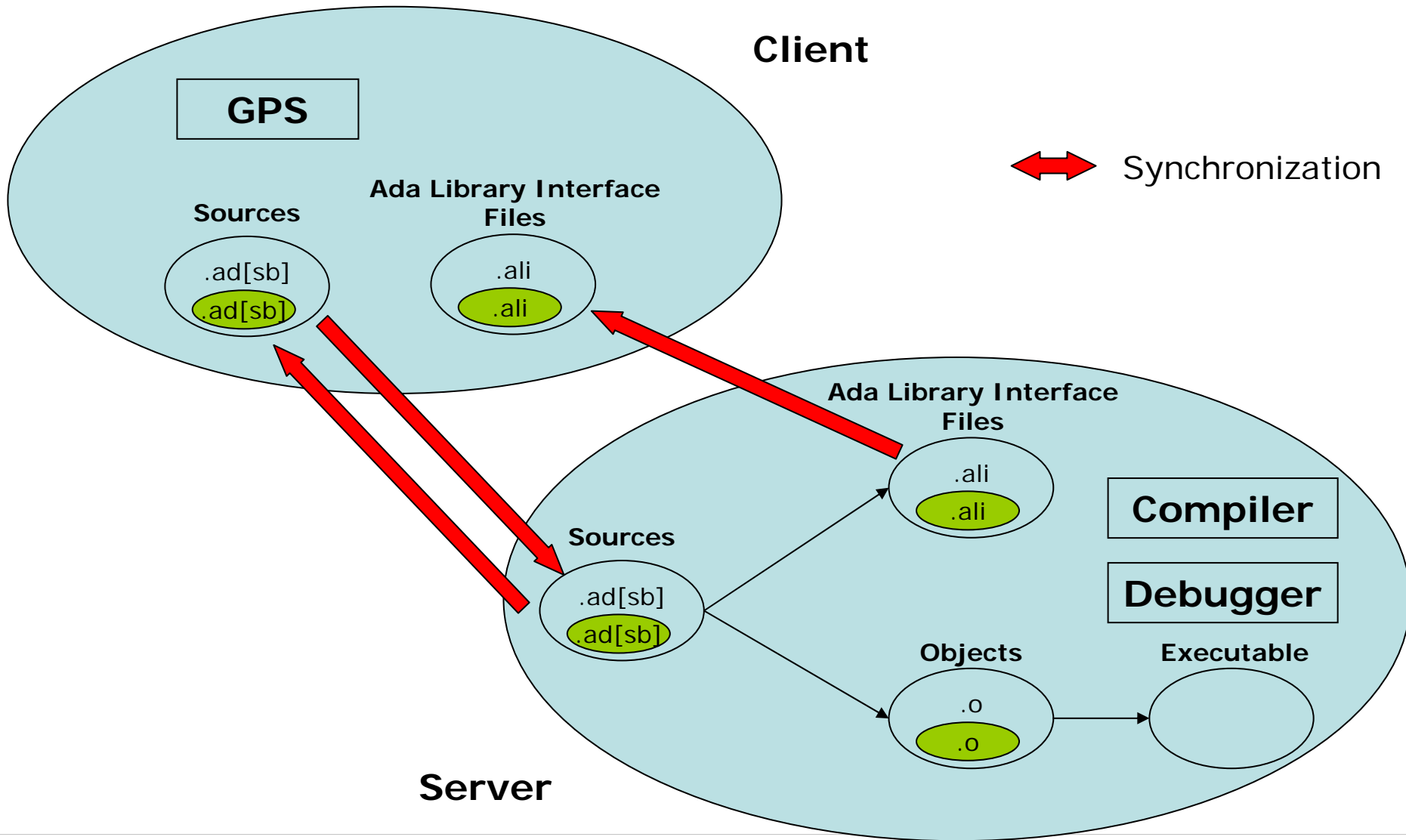
## Remote Development: Better Use of the Client



## Remote Development: Dispatched Operations



# Remote Development: Optimized Data Flow



## Remote Programming in GPS

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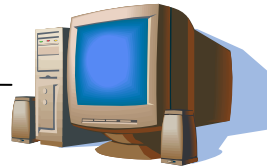
- **Synchronization via rsync or via a shared file system**
- **Connection via rsh, ssh, etc.**
- **Support of Multiple Server Configurations**
- **Definition of 3 Remote Operation Categories**
  - Compilation
  - Debug
  - Execution
- **Independent Server Assignment for each Category**

## Handling of Various Scenarios

- Taking advantage of the CPU of the client



**Linux**



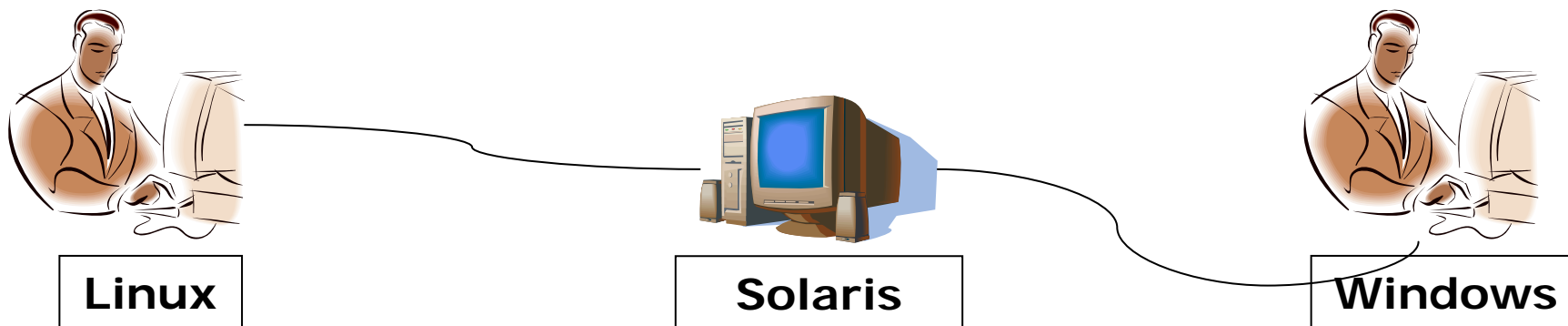
**Solaris**



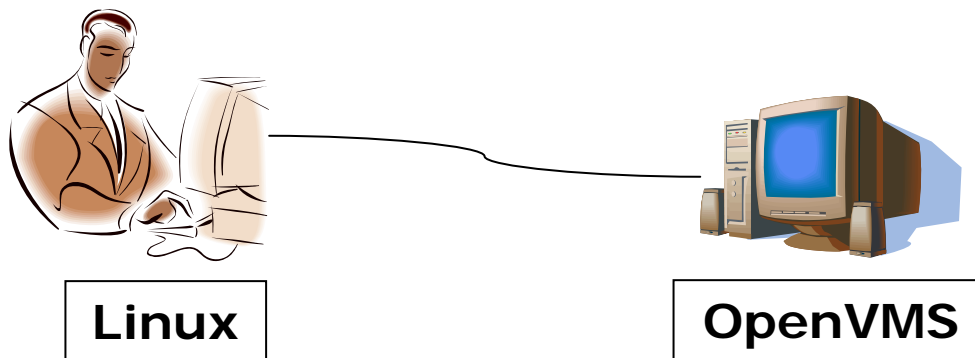
**Windows**

## Handling of Various Scenarios

- Taking advantage of the CPU of the client

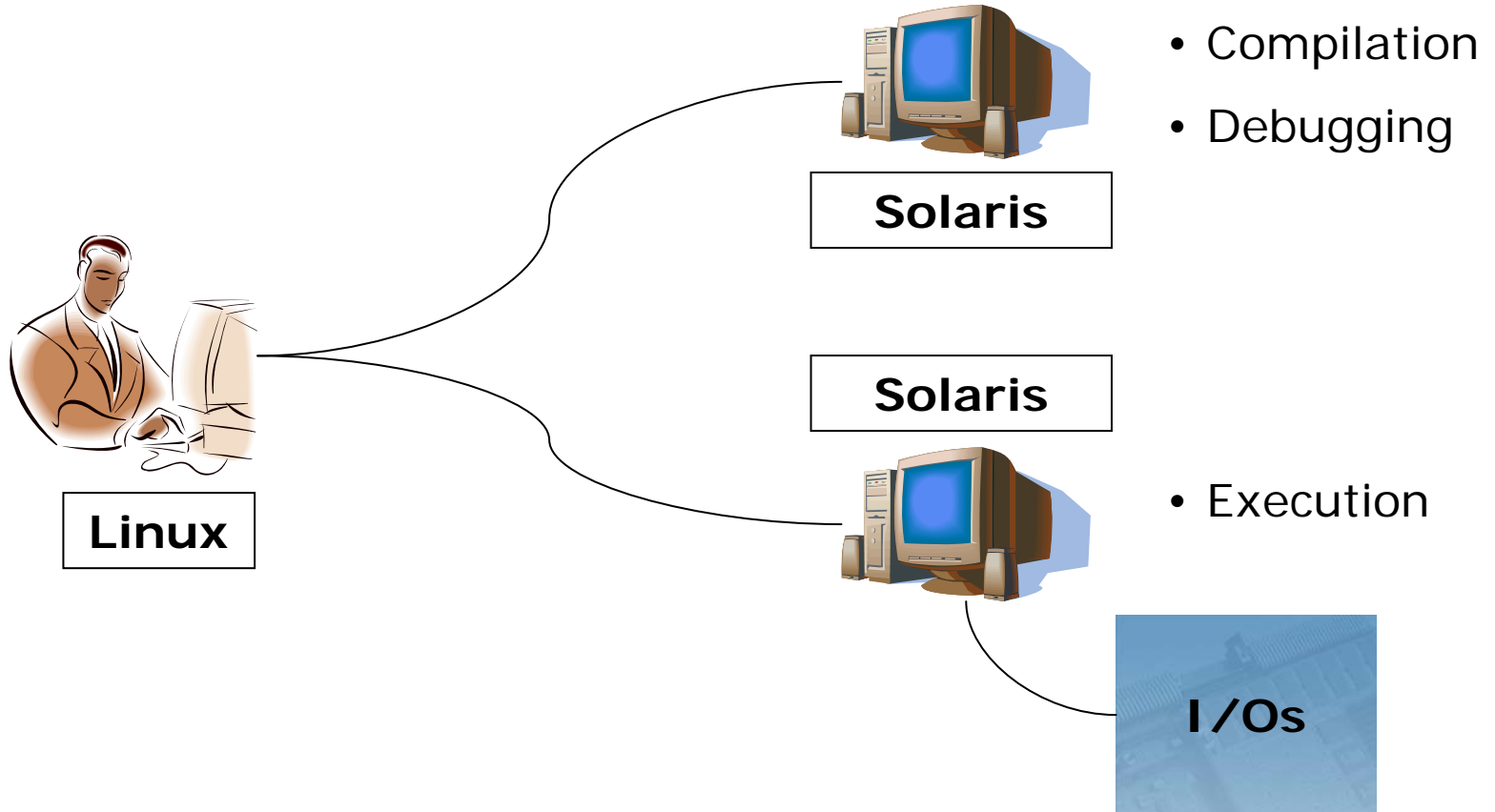


- Support of a configuration for which no GPS is available



## Handling Various Scenarios

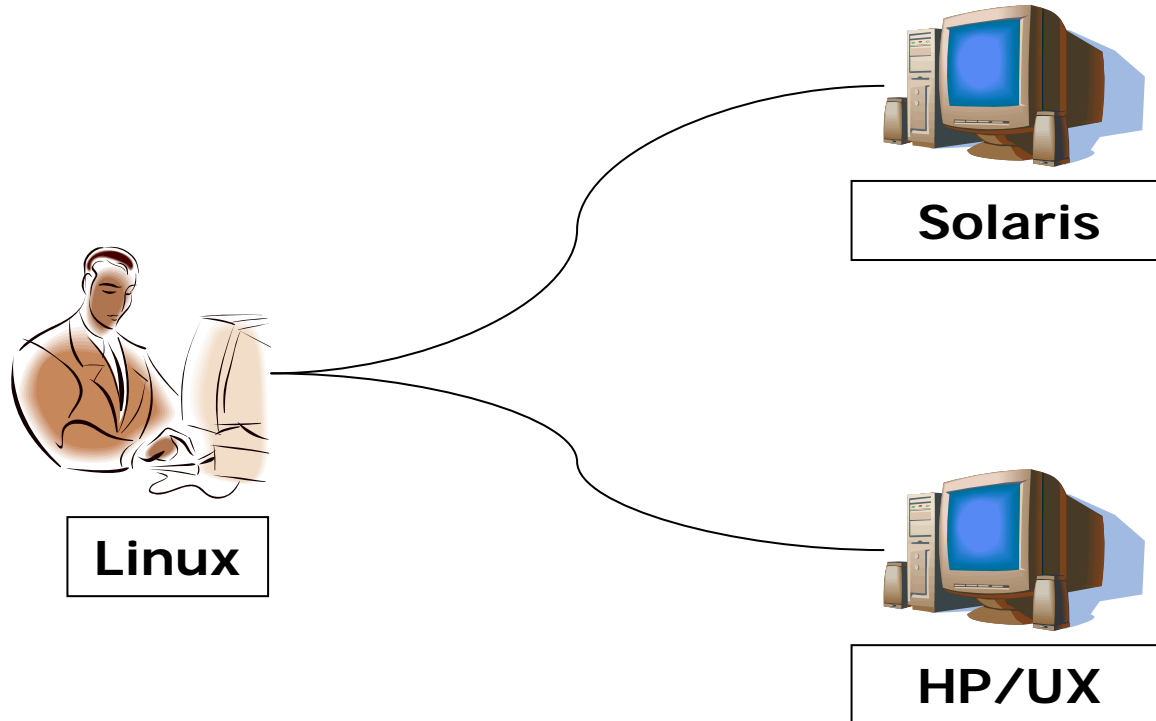
- Execution on a Dedicated Machine





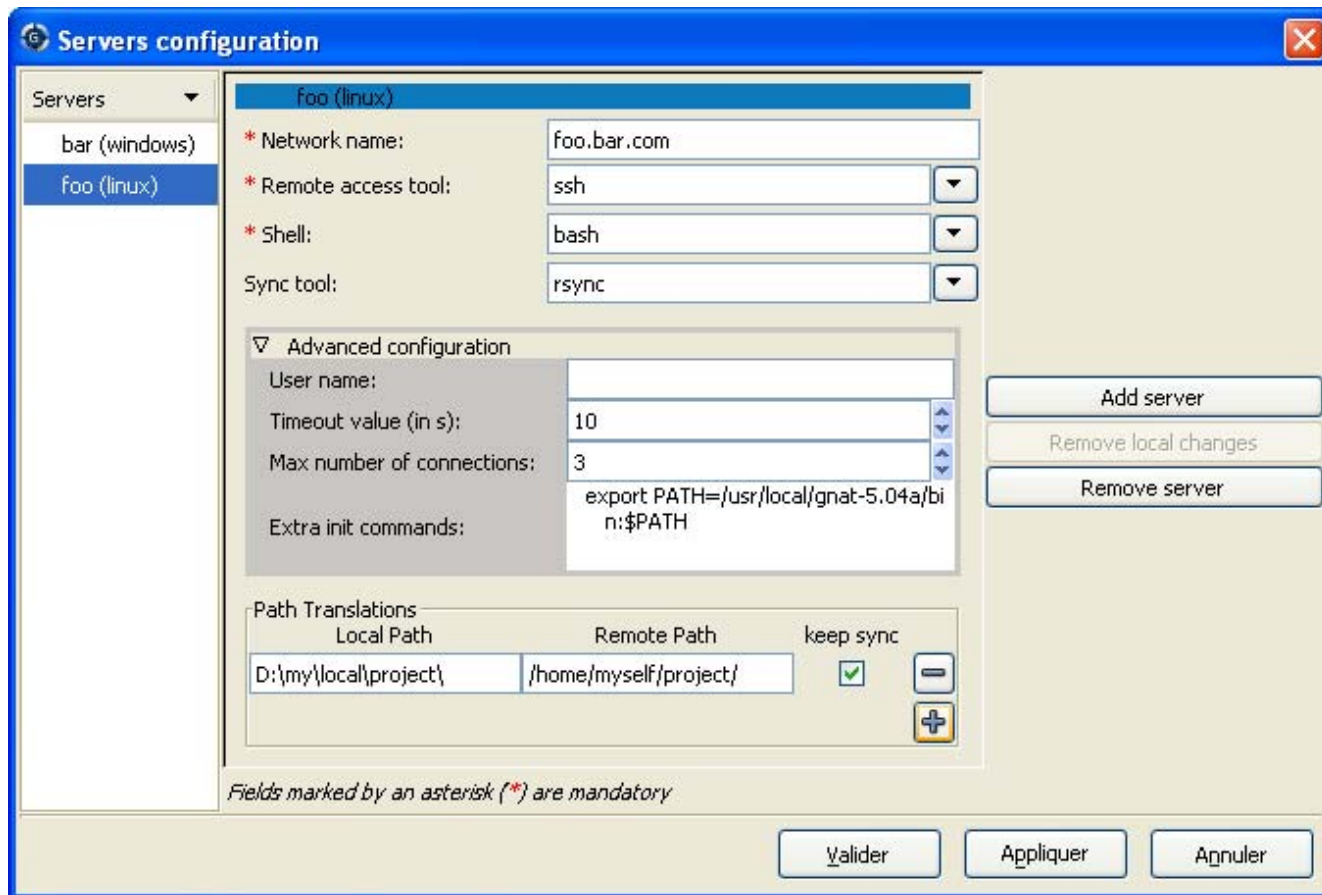
## Handling of Various Scenarios

- Parallel Development on Several Platforms



## AdaCore Remote Programming Support

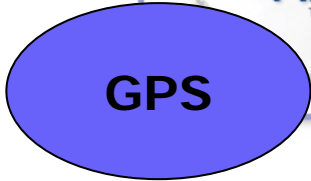
- Will come in GPS 4.0.0 (to be released in July)
- Customers will automatically have access to it



## GPS and GNAT Pro

The GNAT Pro subscription package includes:

Powerful Tool Suite



Support & Online Consulting





# Thanks for Your Attention!

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Michaël Friess

For more Information:

- Please visit us at our booth
- You can send me an email ([friess@adacore.com](mailto:friess@adacore.com))