

# RPC

REMOTE PROCEDURE CALL

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# ONC-RPC

OPEN NETWORK COMPUTING RPC

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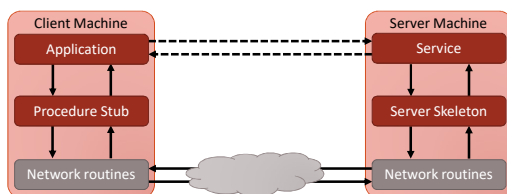
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# Panoramica

Chiamate remote come locali (il più possibile)

- Diverse problematiche
- Passaggio parametri
  - Gestione errori di rete
  - Semantica chiamata etc.



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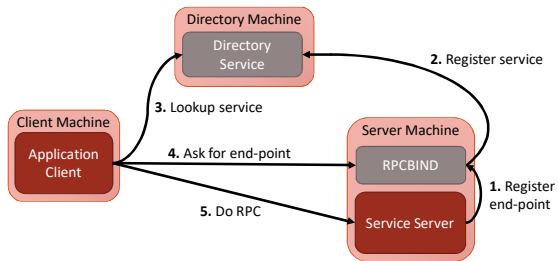
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## Binding e chiamata RPC



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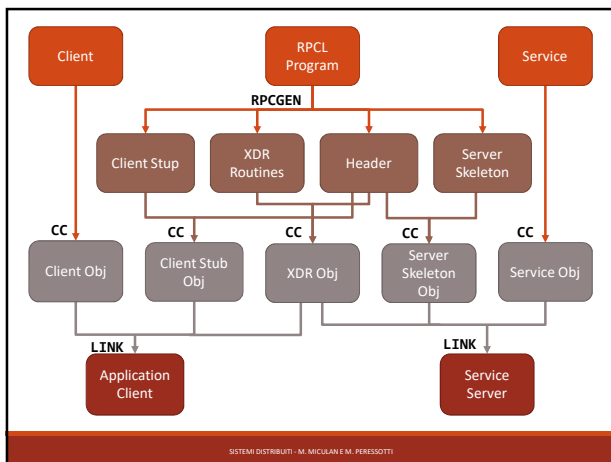
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## Esempio di RPCL

RPCGEN supporta le macro (ma non le riporta nei file generati)  
`#define PROGRAM_NUMBER 123456`  
`#define VERSION_NUMBER 1`

Un '%' a inizio riga indica di includere il resto della riga in ogni file  
`%define FOO BAR`

Definizione di tipi strutturati (saranno definiti come typedef)  
`struct operands {int x; int y;};`

Il programma vero e proprio (nomi numerici, ma esposti come #define nel .h)  
`program SIMP_PROG {`  
`version SIMP_VERSION {`  
`int ADD(operands) = 1;`  
`int SUB(operands) = 2;`  
`} = VERSION_NUMBER;`  
`} = PROGRAM_NUMBER;`

Generazione dei file: `rpcgen -C simp.x`

Generazione dei template per client e server, flag `-sc` e `-ss` rispettivamente

Altri generatori e.g.: `jrpcgen` (Java) `pyrpcgen` (Python)

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## Array (non omogenei)

```
<value>
  <array>
    <data>
      <value><boolean>1</boolean></value>
      <value><string>Del testo</string></value>
      <value><int>-91</int></value>
      <value><double>42.14159265</double></value>
    </data>
  </array>
</value>
```

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## Struct

```
<value>
  <struct>
    <member>
      <name>givenName</name>
      <value><string>Marco</string></value>
    </member>
    <member>
      <name>familyName</name>
      <value><string>Peressotti</string></value>
    </member>
    <member>
      <name>age</name>
      <value><int>26</int></value>
    </member>
  </struct>
</value>
```

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## Richiesta XML-RPC

```
POST /xmlrpc HTTP 1.1
User-Agent: xmlrpccli.py/1.0
Host: 192.168.56.2
Content-Type: text/xml
Content-Length: 266

<?xml version="1.0"?>
<methodCall>
  <methodName>add</methodName>
  <params>
    <param>
      <value><int>2</int></value>
      <value><int>5</int></value>
    </param>
  </params>
</methodCall>
```

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## Risposta (successo)

```
HTTP/1.1 200 OK
Date: Fri, 14 Mar 2014 01:20:04 GMT
Connection: close
Content-Type: text/xml
Content-Length: 146
<?xml version="1.0"?>
<methodResponse>
  <params>
    <param>
      <value><int>5</int></value>
    </param>
  </params>
</methodResponse>
```

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## Risposta (fallimento)

```
HTTP/1.1 200 OK
Date: Fri, 14 Mar 2014 01:24:32 GMT
Connection: close
Content-Type: text/xml
Content-Length: 146
<?xml version="1.0"?>
<methodResponse>
  <fault>
    <value>
      <string>No such method!</string>
    </value>
  </fault>
</methodResponse>
```

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