# GNS-WSI ver. 1

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Feb. 13, 2006

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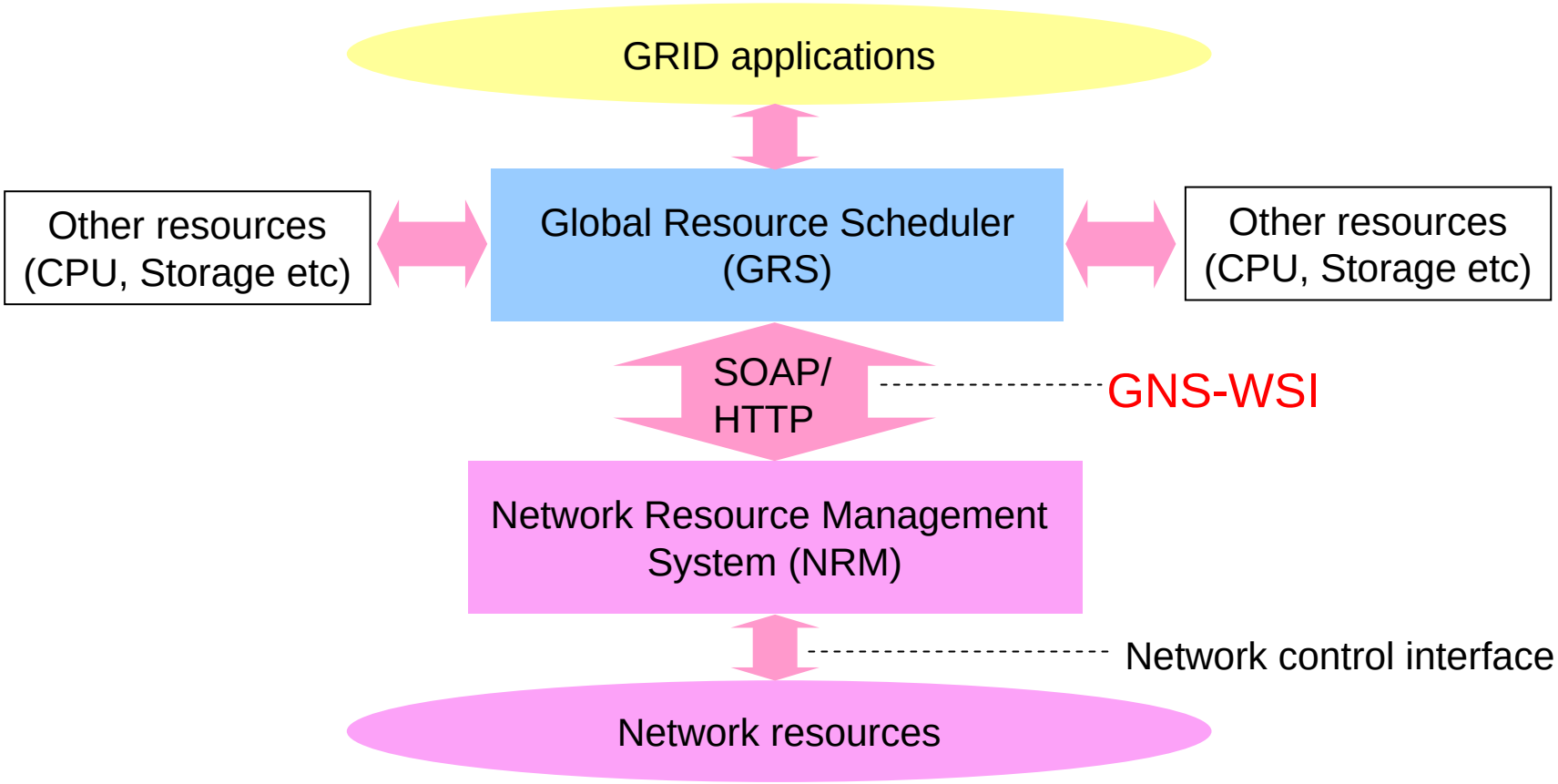
(http://www.g-lambda.net/)

# GNS-WSI

- GNS-WSI (Grid Network Services – Web Services Interface)
  - Defines the network service between GRS and NRM
- Supported services over GNS-WSI
  - Network monitoring and information service (Query/Discovery)
  - Advance reservation and data transport service (Reservation)
  - Modification of reservation (Modification)



# Service parameters

| Parameter | Usage | Value | Remarks |
|---|---|---|---|
| Site ID | ID to specify A and Z points | String | Name or ID of sites |
| Bandwidth | Bandwidth of the resource | Positive integer (kbit/s) | |
| Reception ID | ID managed by NRM for each request | Integer ($-2^{32}$ ~ $2^{32}-1$) | |
| LSP ID | Resource identification in each request | Integer ($-2^{32}$ ~ $2^{32}-1$) | Reception ID-unique |
| Latency | Latency between end points | Positive integer (msec) | |
| Availability | Network protection of network resource | Integer ($-2^{32}$ ~ $2^{32}-1$) | 0 = Un-protected<br>1 = Protected |
| Reservation time | Start time and end time of the reservation | xsd:dateTime | YYYY-MM-DDTHH:MM:SSZ |
| Response code | Process result of messages over GNS-WSI | Integer ($-2^{32}$ ~ $2^{32}-1$) | Included in SOAP response of NRM |
| Status code | Status of the network resource | Integer ($-2^{32}$ ~ $2^{32}-1$) | |

# Resource status and error handling

## Response code

| Value | Description |
|---|---|
| 0 | Ack |
| 100-199 | System error |
| 200-299 | Parameter error |
| 300-399 | State busy |
| 400-499 | Reception ID designation error |
| 500-599 | LSP ID designation error |
| 600-699 | Internal error |

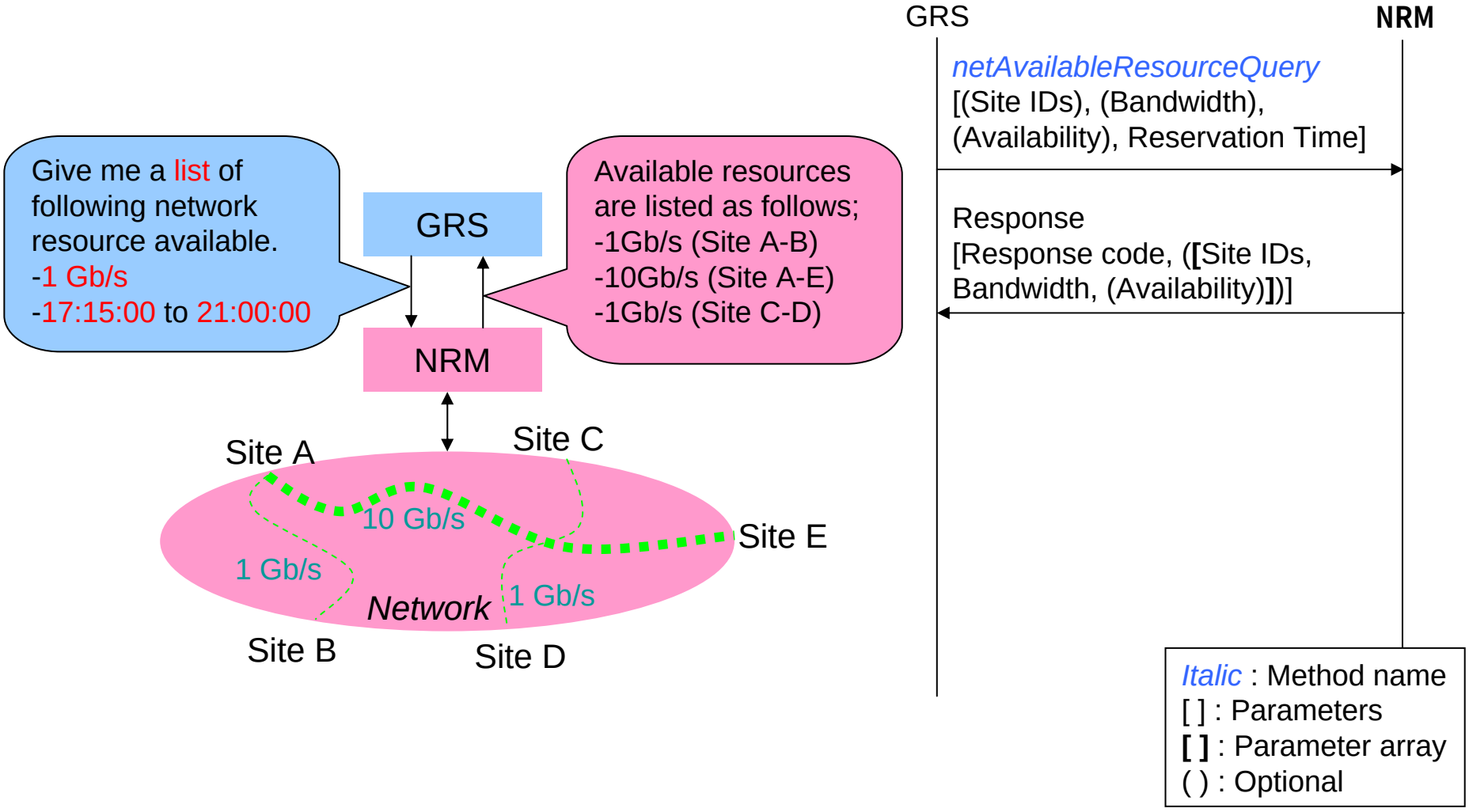
## Status code

| Value | Description |
|---|---|
| 0 | *Reserved code* |
| 1 | Available |
| 2 | Not available |
| 3 | Queued * |
| 4 | Queuing error |
| 5 | Queuing modified |
| 6 | Queuing modification error |
| 7 | Queuing cancelled |
| 8 | Reserving |
| 9 | Reserved ** |
| 10 | Reservation error |
| 11 | Reserve modified |
| 12 | Reservation modification error |
| 13 | Releasing |
| 14 | Released |
| 15 | Release error |

* Queued : The reservation request has been scheduled and will be effective.
** Reserved : The network resource has been reserved and effective to carry the traffic.

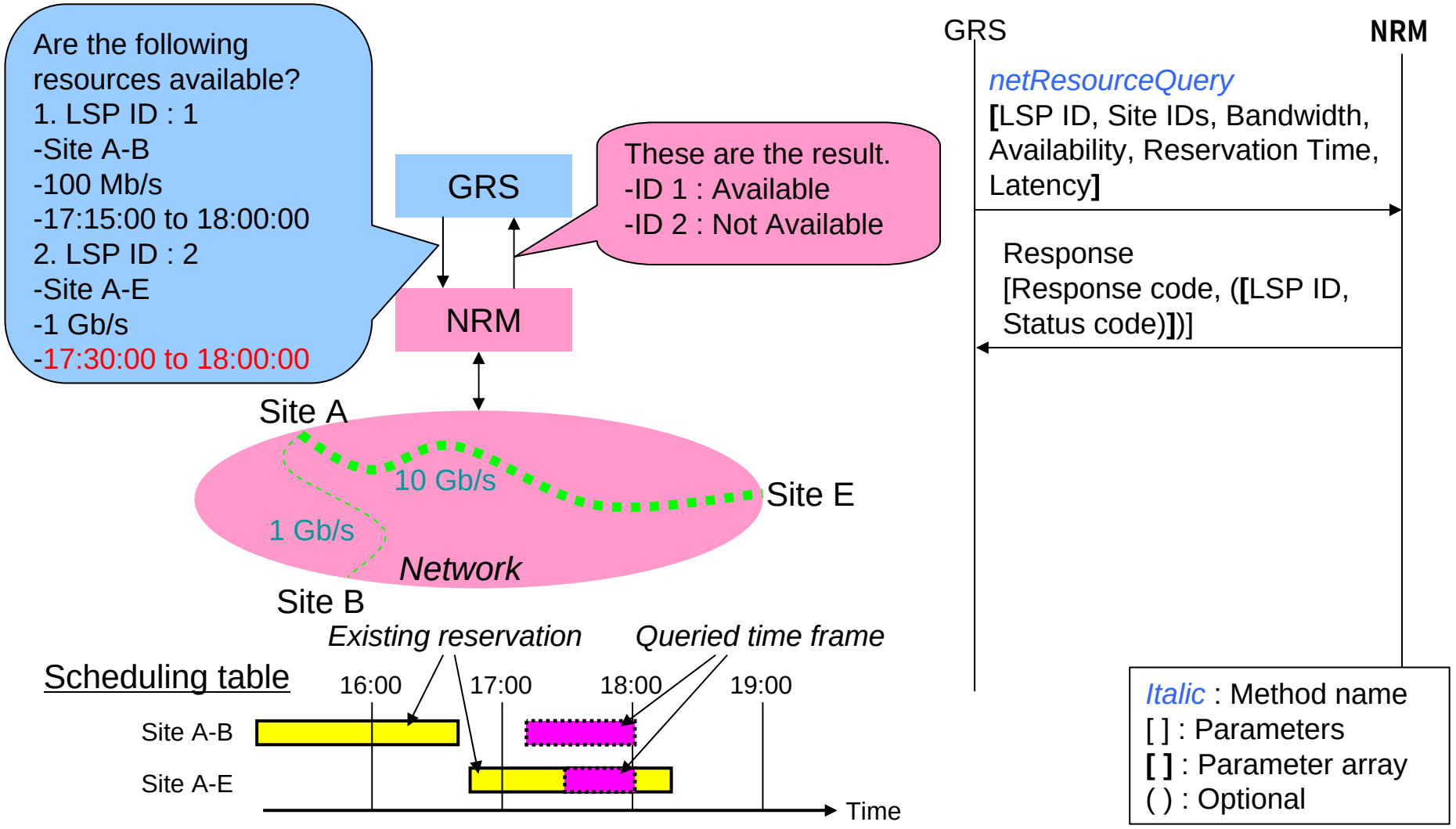
# Information services (1)

■Discovery of available resources
SOAP method : *netAvailableResourceQuery*



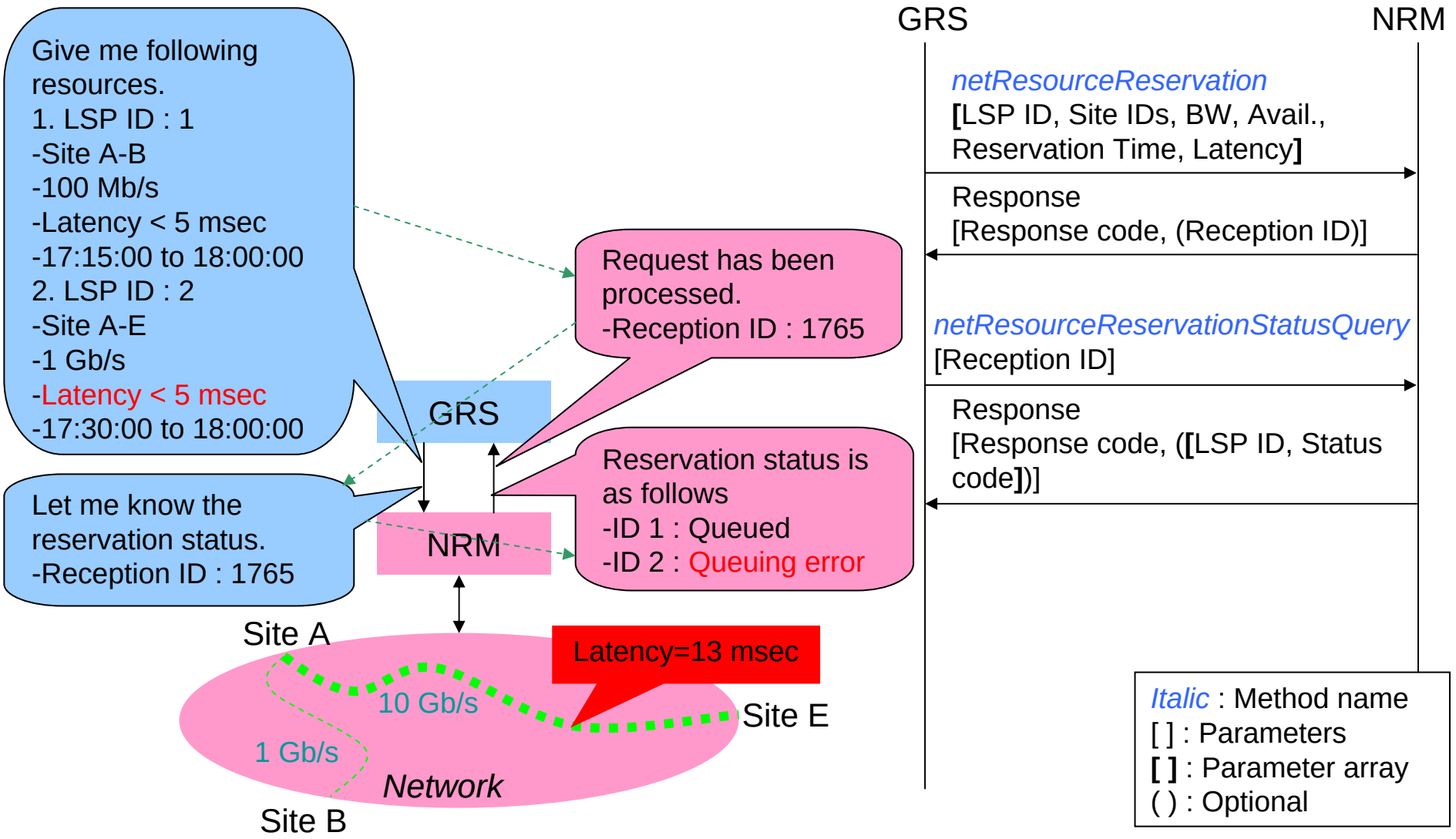
# Information services (2)

■Discovery of resources between designated sites
SOAP method : *netResourceQuery*



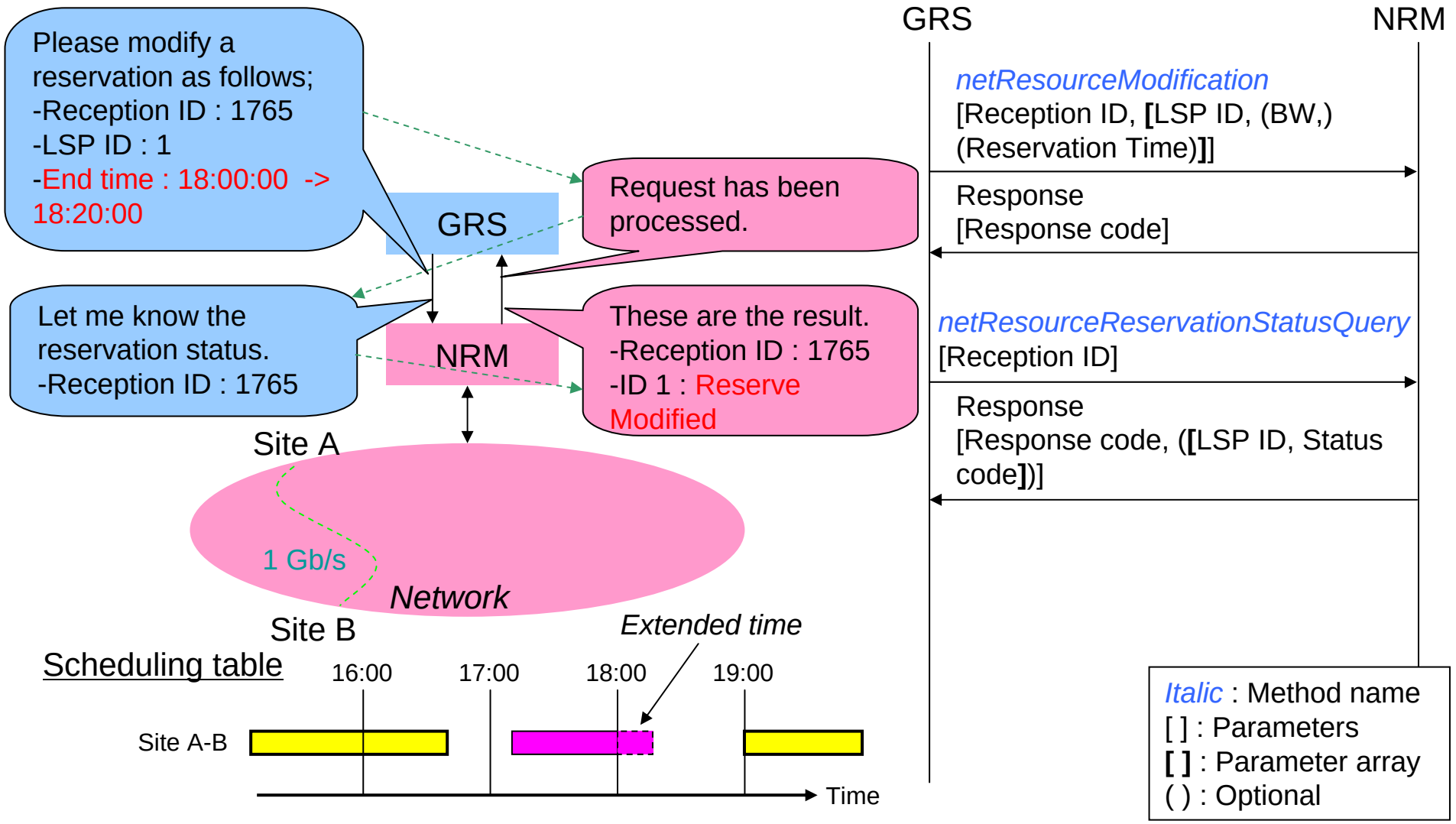
# Advance reservation service

■Reservation of network resources in advance of the job execution
SOAP method : *netResourceReservation*



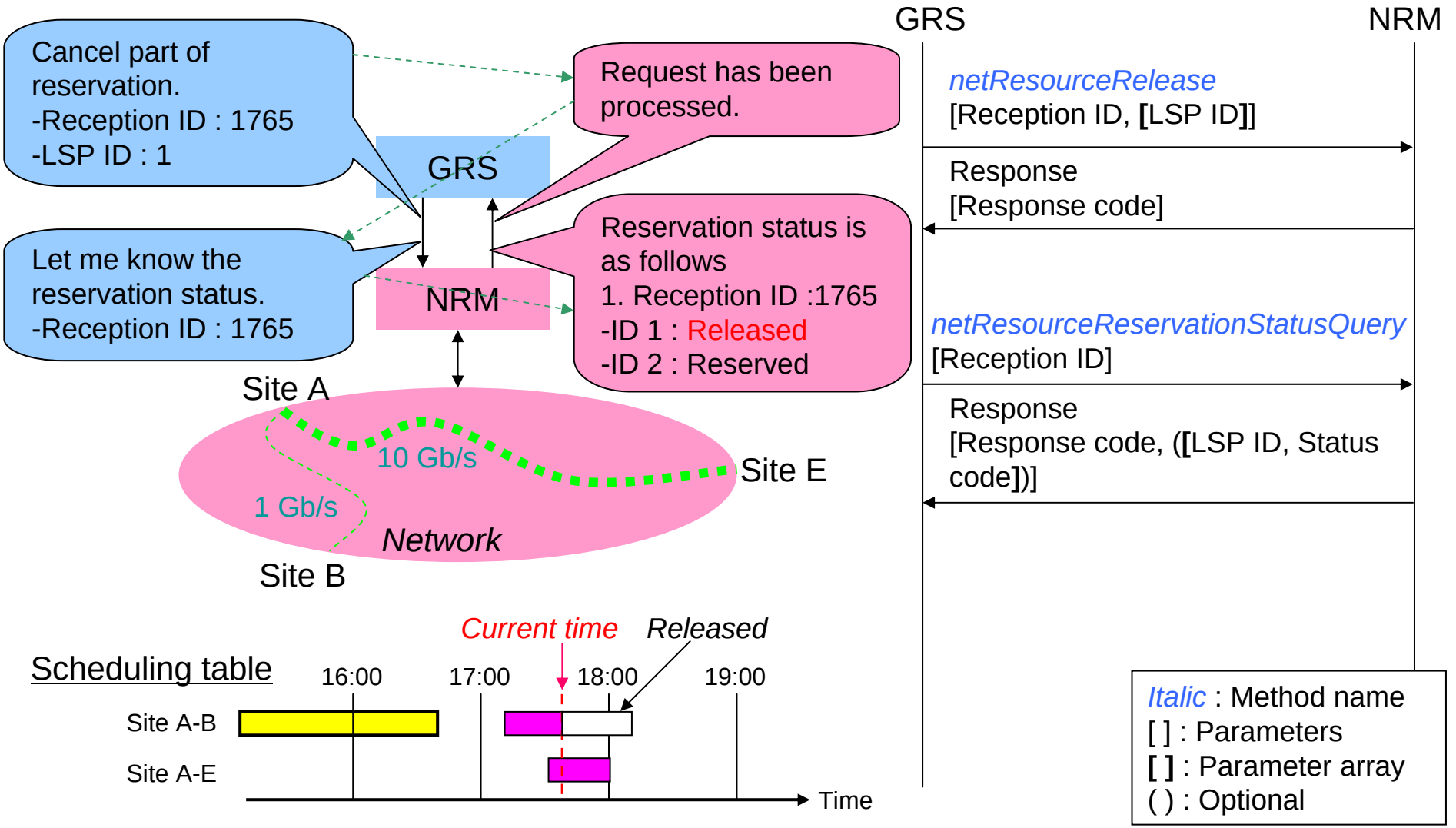
# Reservation modification service

■Modification of queued reservation or on-going reservation
SOAP method : *netResourceModification*



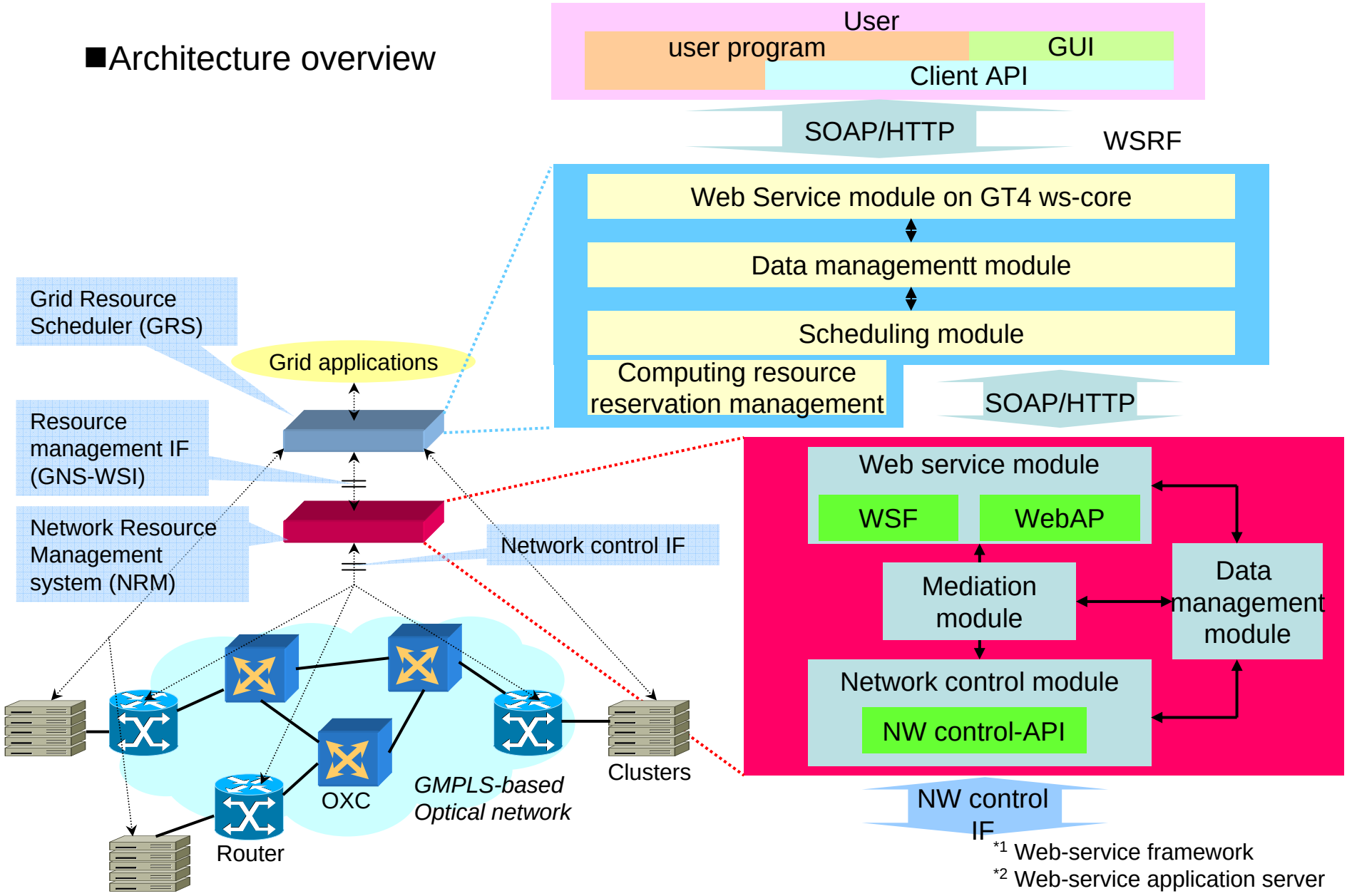
# Reservation cancel service

■Cancellation of queued reservation or on-going reservation
SOAP method : *netResourceRelease*



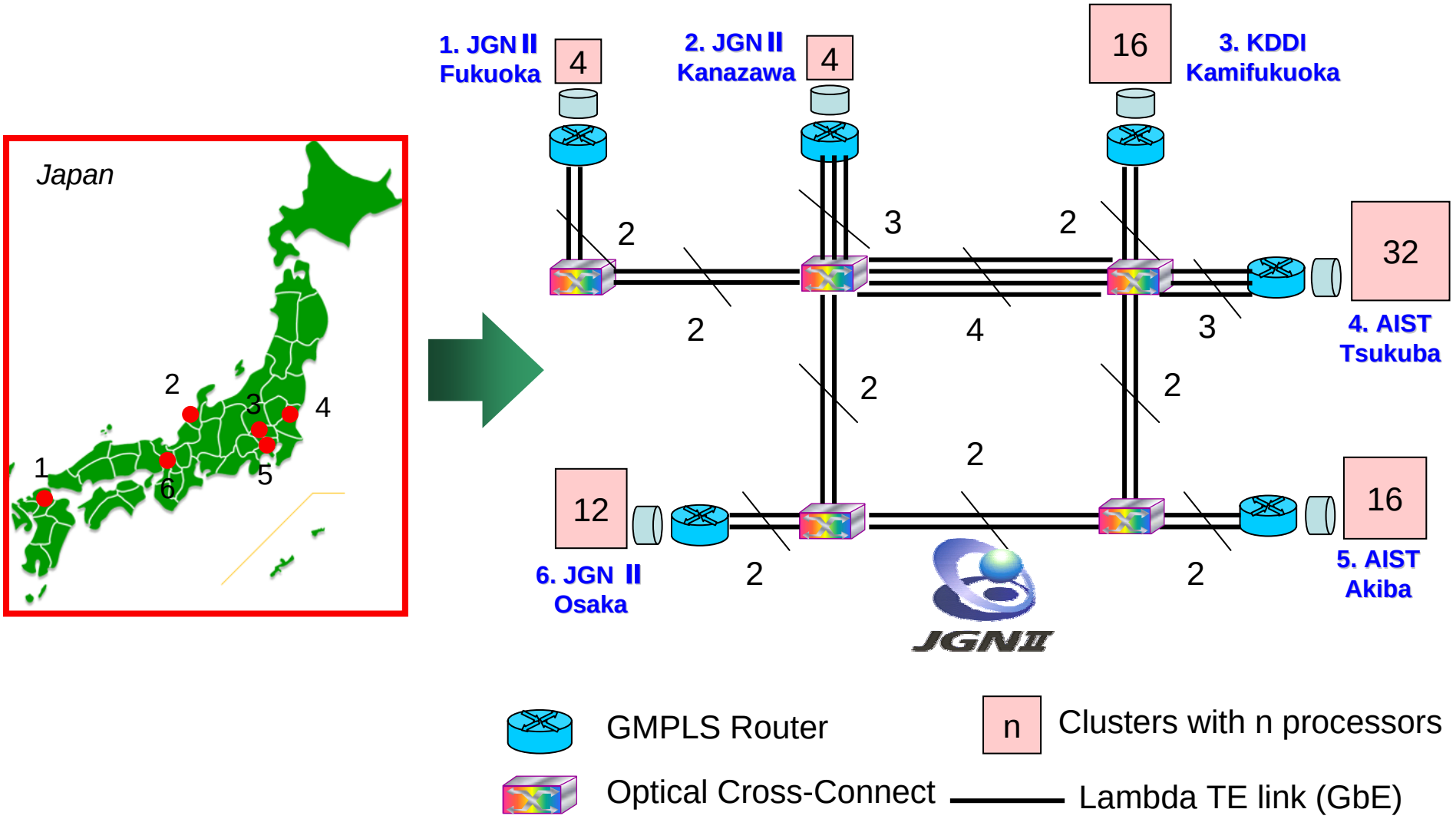
# Demonstrations of G-lambda

■Architecture overview



# Demonstration of G-lambda

- Experimental setup for *iGRID2005*, *SC|05*, *JGN Symposium(Japan)*.



# Findings and enhancement to the next version

1. Treatment of network performance
   - How the network service can guarantee the negotiated latency?
     - Managing RTT of GMPLS tunnels connecting cluster sites
       - We utilized this approach with the static routing of GMPLS tunnels
     - Introducing dynamic and detailed resource management and measurement
   - Restructuring network performance parameters
     - Parameter restructuring (Generalizing service level parameter with QoS, SLA, etc.)
     - Possibility of flexible negotiation frameworks (WS-Agreement, JSDL, etc.)
2. Enhancement of the service opportunity
   - Non-suitability of current deterministic reservation for general business use cases
   - Support of temporal reservation in the advance reservation procedure
3. WSRF support
   - Stateful messaging and processing
   - Simplification of ID-related parameters
4. Restructuring response code and status code to be more informative
   - Addition of error message or probable cause to describe reason of process errors and un-availability of resources
   - Providing additional information to help roll-back process of GRS
5. Renaming of parameters
   - Generalization and avoiding confusion of parameter names
     - “LSP ID” will be changed to “Path ID”
     - etc.

# G-lambda project
# http://www.g-lambda.net/

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