EGEE

MINUTES OF BAR FACE TO FACE MEETING – 12 TO13 JULY 2005

PLANNING FOR MJRA4.7

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Document Change Record

Issue	Item	Reason for Change

CONTENT

1. INTRODUCTION

1.1. PURPOSE

This document contains a minutes of BAR face to face meeting held on Tuesday 12th July 2005 and Wednesday 13th July 2005.

1.2. APPLICATION AREA

This document is for members of the JRA4 BAR team.

1.3. REFERENCES

[R1] BAR architecture	https://edms.cern.ch/file/533751/1/EGEE-JRA4-TEC-533751-BAR-arch-v0-1.doc
[R2] JRA4 Security: Component installation and basic usage guide	https://edms.cern.ch/document/565465/1
[R3] BAR Security	https://edms.cern.ch/file/571891/1
[R4] BAR specification	http://edms.cern.ch/document/501154/1

1.4. DOCUMENT EVOLUTION PROCEDURE

Document can be updated by the JRA4 BAR team.

1.5. TERMINOLOGY

Glossary

Definitions

BAR	Bandwidth Allocation and Reservation
TLS	Transport Layer Security
GDFT	Guaranteed Deadline File Transfer
VLL	Virtual Leased Line

2. VENUE

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3. DAY 1 – TUESDAY 12 JULY 2005

3.1. PRESENT

Anand Patil (AP), Kostas Kavoussanakis (KK) and Charaka Palansuriya (CP)

3.2. AGENDA

9:00 Tea/coffee, logistics

9:30 [CP/KK] Analysis of the current gLite Agreement Architecture

- Should we use it?
- If so how?

10:30 break

11:00 [CP] Work plan for MJRA4.7

11:40 [KK] Analysis of BAR requirements

- lists the ones we support and the ones we don't.

12:30 Lunch

13:30 [AP] Discussion of SA2-JRA4 document – Network Service Provision Model

14:00 [AP] BAR demo planning

14:30 [AP] BAR-NSAP security

15:00 Break

Common session

15:30 [RA] GLUE schema

16:00 [CP] gLite Service Discovery

16:30 [AP/Loukik] Discussion of SOAP encoding issue

3.3. MINUTES

AP: Wrap BAR interface with an Agreement Interface.

AP: What are network resources – a path is a network resource.

AP: Does Agreement initiator pass a list of network paths to Agreement Service?

We couldn't find an answer to this - ask Tiziana?

CP: what does getTemplate operation expects – just a schema?

Schema for the Space Reservation prototype developed by Tiziana et al does not define a type for this. Looks like any type (XML document) can be passed in – not clear.

KK: what does getTemplates do? Must we support it?

Another question to be asked from Tiziana.

3.3.1. Analysis of current gLite Agreement Architecture

CP: What do we mean by saying that BAR is an Agreement Service (AS)? CP thinks, this means BAR should support,

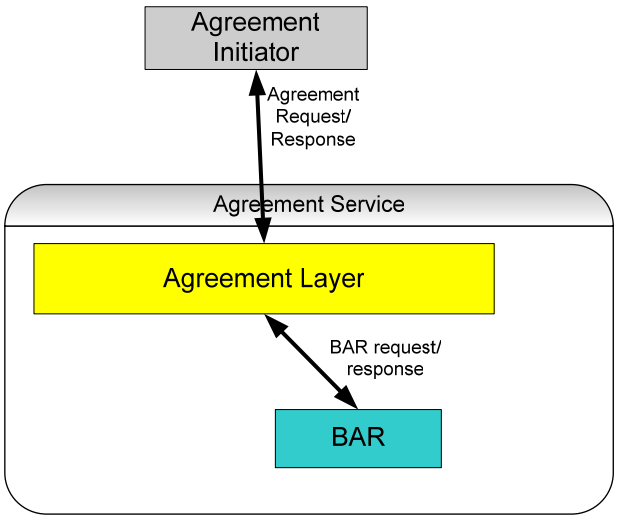
- Use of Agreement Templates to advertise service provider capabilities
- Management of agreement templates; e.g., if an agreement offer (template) fails a correct template may need to be submitted to the requestor, when template is updated, users (requestors) have to be notified.
- Reservation request have to be modelled following the agreement offer structure defined as per GRAAP working group. This implies use of WS-Agreement types as shown in the space agreement service prototype developed by Elisebetha et al.
- Use of attributes defining reservation and co-allocation requests – this needs to be specified in the agreement template/offer.

CP: Why should BAR do any of the above tasks? Clearly, BAR is a component that AS use.

AP: There should be a higher layer that defines an agreement interface and performs agreement functionality. This layer should use BAR with its current interface

CP: Agreement architecture likes to expose ALL component agreement services – compute, storage and network – as a single service. Although this may make sense for gLite Workload Management System (WMS), the resultant complex interaction could be an **over-kill** for a simple application or middleware component just want to make an advance reservation for a guaranteed bandwidth.

CP: As AP mentioned, a higher layer Agreement Service, e.g., developed for WMS, may use a BAR service. This appears to be the sensible approach. A simple BAR service exists for applications and middleware that wants to use it and a higher layer agreement service is available for WMS.



CP: An Agreement Service has its own set of operations, request types, etc.

Operations:

```
createAgreement
getTemplates
getAgreementStatus
agreementKill
```

We will not be using above names for BAR operation.

An example Agreement type:

```
<!-- createAgreement input and output -->
<xs:element
  name="createAgreementInput"
  type="glitenstype:CreateAgreementInputType"/>
<xs:element
  name="createAgreementOutput"
  type="glitenstype:AgreementReferenceType"/>
<xs:complexType name="CreateAgreementInputType">
  <xs:sequence>
    <xs:element name="userAgreementId" type="xs:string"/>
    <xs:element name="initiatorAgreementEPR"
      type="wsa:EndpointReferenceType"
      minOccurs="0"/>
    <xs:element name="AgreementOffer" type="wsag:AgreementType"/>
  </xs:sequence>
```

```
</xs:complexType>
```

CP: Direct mapping of these types to BAR types does not make sense.

CP: BAR should use proven technology to create a robust middleware component – single web service request/response interaction proven to be reliable, robust and adequate. Agreement like mechanism is immature and unproven technology. This may lead to a fragile middleware stack. We should just let EGEE-JRA1 play with these and wait for the outcome.

CP: BAR is aiming to provide a simple interface to other middleware and applications. Agreement mechanism appears to provide a more complex interface and interaction – complex to understand, use and maintain.

Conclusions:

1. We should stick to the current BAR interface.
2. BAR is inside the Agreement Service and has a predefined North interface – the one that we already defined.
3. BAR will not be using the Agreement terminology
4. BAR does not concern with JDL.

KK: We will try to reach an agreement with Tiziana on this.

[KK] Communicate AS conclusions arrived at July 05 BAR F2F meeting to Tiziana.

3.3.2. Work plan for MJRA4.7

[MB, GV and AP] Investigate GRS and relevant software and write a reporting the findings.

[MB] Write a functional specification for the L-NSAP service.

[CP] Add tasks for investigation of GRS and other relevant software and make L-NSAP task depend on it.

[AP] add task break down for NSAP development (in work plan)

[KK] Ask GV for time estimate of GRS and related investigations.

3.3.3. Analysis of BAR requirements

The current BAR prototype supports the following requirements:

- SA2-1-1: Point to point service requests
- SA2-6-1: Dynamic bandwidth reservation before transmission
- SA2.8: Scheduled reservation

- JRA4.20 Guaranteed delivery time

In addition to the above, the following BAR requirements are considered to be in scope for EGEE-1:

- SA2-13: Authorization

The following BAR requirements are not within the scope of the project, as they are not supported by the underlying network and/or are not urgent:

- SA2-1-2: Point to multipoint service requests
- SA2-1-3: Multipoint to multipoint service requests
- SA2.2: Prioritisation of requests
- SA2-3-2: Provisioning of backup service instances
- SA2-4: Encryption during transmission
- SA2-5-2: Outbound connectivity for more than best effort
- SA2-6-2: Dynamic bandwidth reservation in the middle of transmission
- SA2-6-3: Multicast dynamic bandwidth reservation before transmission
- SA2-6-4: Multicast dynamic bandwidth reservation in the middle of transmission
- SA2-7-1: Monitoring of connection quality
- SA2-7-2: Connection quality for services requests
- SA2-10: Explicit specification of network path
- SA2-14: VPN channel emulation
- JRA4.16: Prioritisation of service messages

3.3.4. Analysis of the current BAR architecture, interfaces and functionality

This was dropped.

3.3.5. Discussion of SA2-JRA4 document – Network Service Provision Model

A discussion of issues with scenarios in the Network Service Provision Model document produced by SA2.

SR = Service Request
SA = Service Activation

Scenario2:
SR-> A dedicated long term Border-to-Border reservation is made between 2 resource centres.
SA-> On-demand reservation is made for the two last miles of the end-sites

Scenario3:

SR -> On-demand Border-to-Border reservation is made between 2 resource centres.

SA -> On-demand reservation is made for the two last miles of the end-sites

AP: BAR support scenario 3 in SA2-JRA4 document. SA2 likes to use scenario 2.

[KK] Discuss with SA2 issues with scenarios in SA2-JRA4 document – Network Service Provisioning Model

3.3.6. BAR demo planning

Plan A -> 3 stages

1) [SA2] Present how SLA is establishes as explained in the Network Service Provision Model document.
    a. BAR becomes an authorised user of relevant NSAP services.
2) [JRA4] Demo Service Request (SR) stage.
    a. Use BAR JSP client to make a GDFT reservation which starts in two days.
    b. Explain what is happening underneath; e.g., BAR negotiate the best bandwidth and time slot, configures backbone and the two last miles for Premium IP service, etc.
3) [JRA4] Present Service Activation (SA).
    a. After two days, middleware/applications can use the reservation. File transfer should occur during the agreed time slot.

3.3.7. BAR-NSAP security

No in depth discussion took place. **This is marked as out of scope for this milestone**.

AP: The security architecture for BAR-NSAP will be similar to the one between HLM and BAR with the exception that instead of using Euro Grid PMA a private CA will be used. This private CA can be mutually agreed between an end site and it's nearest NSAP. The reason is that individual networks may or may not want to use Euro Grid PMA as their CA.

3.3.8. GLUE schema

RA gave a presentation – see power point slides attached to July JRA4 F2F agenda (http://agenda.cern.ch/fullAgenda.php?ida=a054527).

Sites may be defined in terms of VOs not network domains.

3.3.9. gLite Service Discovery

CP gave a presentation – see power point slides attached to July JRA4 F2F agenda (http://agenda.cern.ch/fullAgenda.php?ida=a054527).

[CP] Ask SD developers how information is stored at backend – do they use Glue Schema?

3.3.10. Discussion of SOAP encoding issue

AP: When axis generates stubs and skeletons using document literal style of web services on wire it still seems to be sending encoding information. Using a test client with hard coded XML that does not contain encoding information the service is able to understand the request but responds with encoded information. This leads us to believe that the service is able to work without the encoded information in the request but the stubs put it in anyhow.

AP: Does this mean that we are not conforming to document literal style of web services ?

AP: What/Where is the official definitions of document literal?

CP: According to FS, WS-I basic profile 1.1 tests SOAP message for WS-I compliance.

RA: We should run these tests and if they pass be confident that we are **not** using encoding.

[FS] Do WS-I basic profile 1.1 tests on BAR-NSAP SOAP messages.

4. DAY 2 – WEDNESDAY 13 JULY 2005

4.1. PRESENT

Anand Patil (AP), Florian Scharinger (FS) and Charaka Palansuriya (CP)

4.2. AGENDA

9:00 [CP] Status of the current development

9:15 [CP] Scope of development work for MJRA4.7 (September 2005)

9:45 [FS] Managing Service IDs

10:30 Break

11:00 [FS] Fault recovery

11:45 Functional specs of
[CP] BAR
[AP/MB] NSAP and L-NSAP
[FS] Client

12:30 Lunch

13:30 High light updates to WSDLs and schemas for
[FS] BAR (query + fault types),
[AP] NSAP and L-NSAP

14:00 [CP] Plan and assign work for next milestone, MJRA4.7

14:30 [ALL] Unresolved issues

4.3. MINUTES

4.3.1. Status of the current development

The current prototype has the following features:

- GDFT
- Cancel
- Reading a BAR configuration file
- BAR-NSAP Request Mapping – do we need response (reverse) mapping?
- Client API/library
- Client JSP
- Host certificate based Client-BAR authentication

4.3.2. Desired features and enhancements for MJRA4.7 (Wish-List)

- BAR Schema – add min and max flow size –check this is in spec.
- [CP/FS] Check min and max flow size is in DJRA4.1.
- Managing Service IDs
  - Suggestion: FS: Use UUID/GUID for generation of unique IDs – Jakarta commons sandbox/id/uuid.
  - Suggestion: AP: store BAR service IDs and corresponding NSAP IDs in a table – a service ID mapping table.
- Fault recovery (optional) – marked as out of scope for this milestone.
- GDFT Request
  - Negotiation (optional)
    - Bandwidth too high -> NSAP returns bandwidth available for the time period.
    - Use of “time for average” field. This value can be used to specify the actual maximum time for a transfer. BAR needs to use this one and modifies, within the stated start and end time, the NSAP request. It was decided not to implement this negotiation for MJRA 4.7
  - [CP/FS] check BAR WSDL/schema is in synch with DJRA4.2
  - [FS] Add time for average to BAR WSDL.
- Cancel Service
  - Verifying Service IDs - NSAP will check Service IDs anyway, hence this may not have the highest priority
- Reading a BAR configuration file
  - Add max-pipe-size – can not be overridden.
  - Add “min” and “max” flow sizes
    - CP: within the max-pipe-size, what is the best size we can have

        - AP: 0.6*(max-pipe-size) - i.e., 60% of max pipe size. This can be overridden by the client (provide new values in the request). L-NSAP should be able to determine the actual Max bandwidth.
    - [GV] Investigate practicality of using Min and Max bandwidth values defined in DJRA4.1.
- BAR-NSAP Request Mapping – do we need response (reverse) mapping?
    - Add response mapping.
    - [CP/FS] Investigate further generalisation of Request Mapper class
- Client API/library
    - Add query and VLL functionality.
- Client JSP - enhancements?
    - Add new functions – query and VLL
    - Response page for the query and VLL

  Idea would be to move the error checking from the JSP to the Client API, however, this is time consuming, and since another client (r.g. command line based) is not intended to be implemented, this won't be done within the next milestone.
- Security
    - Client-BAR
        - Ability to extract roles from certificates
        - Role base authorisation
        - [AKP] How does VOMS define roles and can be queried.
        - Every one can query
        - Only selected roles can create reservations
        - Only owners can cancel requests.
        - [AKP, FS] Investigate workflow of user certificate exchange (is user certificate passed forward from the Client Browser over the JSP Servier to the BAR Service). How to ensure that Edinburgh HLM cannot contact Cambridge BAR? Should this be enforced at all?
        - [AKP] Can we create our own roles on the long run?
    - BAR-NSAP
        - Use private CA with roles.
        - EGEE has a single role
        - If BAR contact with a signed CA certificate then BAR is authorise to perform operations
- **Auditing**
    - Do we need to audit at all?
    - Who will use this information?
    - Does HLM do logging and bookkeeping anyway?
    - Possible usage:
        - Reports

- Statistics
- Security

4.3.3. Scope of development work for MJRA4.7 (September 2005)

MJRA4.7 will address the following areas for the BAR prototype (i.e., things we will tackle from above wish-list; note that ones marked as "Optional" are likely to be dropped from this milestone – these will only be attempted in this milestone if extra effort is available):

- Development of a BAR service
  - Enhance Guaranteed Deadline File Transfer (GDFT) operation
  - Implements Virtual Leased Line (VLL) operation
  - Implements "query" operation
  - **Optional**: Enhance "Cancel" operation
    - Verification of Service Ids
    - Optional: Check service ID exists
    - Optional: check service is not already cancelled.
  - Axis fault handling
  - Application fault handling
  - **Optional**: Auditing
    - Transaction log – Who, When, What
    - Log values of BAR and NSAP requests/responses
    - Q: Can we use gLite Logging and Book keeping service?
    - Other usage:
      - Generate reports and statistics
      - Analysis of anomalies
  - Security:
    - Client-BAR
      - Adding user/host certificate support
        - Ability to extract roles from **user/host** certificates (or should this just be host/server certificate).
        - Role base authorisation
          - Check with AKP
        - [AKP] How does VOMS define roles and can be queried.
      - Every authenticated user can query
      - Only selected roles can create reservations
      - **Optional**: Only owners can cancel requests.

        - Q: Does HLM send server certificate or end user certificate?
        - Q: Can we insert our own roles in HLM?
    - **Optional**: BAR-NSAP
        - Use private CA with roles.
        - EGEE has a single role
        - If BAR contact with a signed CA certificate then BAR is authorise to perform **all** operations.

- Client API/library
    - Add query and VLL functionality.

- Client JSP - enhancements?
    - Add new functions – query and VLL
    - Response page for the query and VLL

- **Optional**: Service Discovery
    - Use SD API but don't rely on a specific implementation – could try a mock implementation.

- Development of a NSAP service to support the BAR's GDFT, VLL, "query" and "Cancel" requests. **This may not happen if AP to work on L-NSAP tasks**.
    - Generate unique service IDs - UUID
    - Stored and manage Service IDS
        - Investigate CSV file management library
        - Decide on secondary storage issue.
            - Do we use a RDBMS that supports JDBC API.
            - Investigate serialisation technique
    - When Cancel
        - Check if service ID exists
        - Check whether reservation is cancelled/complete.
        - If all is ok then cancel – update status.
    - Query
        - Check if the service ID exists
        - If yes -> return data
    - **Optional**: Security
        - Optional: Implement private CA based mechanism

- Development of a dummy L-NSAP service.

- Investigate the use of GRS and other existing software to solve the last mile problem.
- Generate a report with findings and recommendations.
- If this is possible, investigate the use of NSAP interface for L-NSAP.
- Write L-NSAP functional spec

- Deployment of BAR on two end sites.
- Deployment of NSAP on at least two NRENs and on GEANT (backbone).

4.3.4. Managing Service IDs

Use prefix to generate a unique ID; i.e., <bar_prefix>:<nsap_serviceID>
Q: Should we use a RDBMs? If a RDBMS is used anyway then this decision should be revised.

4.3.5. Fault recovery

Not discussed – **marked as out of scope for this milestone**.

4.3.6. Fault Types

[AP] Revise fault types in NSAP WSDL

[FS] Add fault types to BAR WSDL

[FS] Investigate Fault Type handling with Axis 1.2.

[FS] Remove Failure Reason, Additional Info and Result parameters from BAR schema – this going to be implemented in fault types.

Suggestion: Remove Failure Reason and Additional Info and move them to WSDL fault types

[FS] Check timeout exception has to be explicitly checked

[AP] Provide list of NSAP exceptions to FS and CP

4.3.7. Functional specs of

Discussed above.

4.3.8. Highlight updates to WSDLs and schemas for

[CP/FS] check BAR WSDL/schema is in synch with DJRA4.1

BAR Schema

QueryServiceResponseType

Status: Add CANCELLED

Require re-calculation of File Size

[FS] Add query response base type and extend it for GDFT query response and VLL query responses.

Consider adding the following Fault Types to BAR WSDL/Schema,

- Connection
  - Time out
  - Connection refused
  - Service not found/un-reachable
- Security – AA fault types
- Request processing
  - Invalid Service IDs
  - Missing parameters
  - NSAP application faults
- Optional: Service Discovery
  - Study existing faults/Exception

4.3.9. Plan and assign work for next milestone

Refer to MJRA4.7 work plan for task assignment.

The meaning of the System Testing document was discussed. This should cover manual end-to-end tests to be done by a non-developer. That is, someone not familiar with the code must be able to run the tests defined in here and know the expected results.

[CP] Create a skeleton system test document – create a document with basic structure. The aim is to evolve this into a useful document for the deliverable due in December 2005.

5. LIST OF ACTIONS

[GV] Investigate practicality of using Min and Max bandwidth values defined in DJRA4.1

[GV, MB and AP] Investigate GRS and relevant software and write a reporting the findings.

[MB] Write a functional specification for the L-NSAP service.

[AP] add task break down for NSAP development (in work plan)

[AP] Revise fault types in NSAP WSDL

[AP] Provide list of NSAP exceptions to FS and CP

[KK] Communicate AS conclusions arrived at July 05 BAR F2F meeting to Tiziana.

[KK] Discuss with SA2 issues with scenarios in SA2-JRA4 document – Network Service Provisioning Model

[KK] Ask GV for time estimate of GRS and related investigations.

[CP] Add tasks for investigation of GRS and other relevant software and make L-NSAP task depend on it.

[CP] Ask SD developers how information is stored at backend – do they use Glue Schema?

[CP] Create a skeleton system test document – create a document with basic structure

[CP/FS] Check min and max flow size is in DJRA4.1.

[CP/FS] check BAR WSDL/schema is in synch with DJRA4.1

[CP/FS] Investigate further generalisation of the Request Mapper class

[FS] Do WS-I basic profile 1.1 tests on BAR-NSAP messages.

[FS] Add time for average to BAR WSDL.

[FS] Add fault types to BAR WSDL

[FS] Investigate Fault Type handling with Axis 1.2

[FS] Remove Failure Reason, Additional Info and Result parameters from BAR schema – this going to be implemented in fault types. Suggestion: Remove Failure Reason and Additional Info and move them to WSDL fault types

[FS] Check timeout exception has to be **explicitly** checked

[FS] Add query response base type and extend it for GDFT query response and VLL query responses

[FS, AKP] Investigate workflow of user certificate exchange. How to ensure that Edinburgh HLM cannot contact Cambridge BAR? Should this be enforced at all?

[AKP] How does VOMS define roles and can be queried.

[AKP] Can we create our own roles on the long run?