# **AMIE RabbitMQ Implementation for XSEDE SSO Hub**

## AMIE Introduction

AMIE is used to send project and account information between XSEDE and the Service Provider. The data is transferred through RabbitMQ in XML.

Two RabbitMQ queues will be used for this data transfer. The queue for data from XSEDE to your site is amie.to.site\_name.xsede.org. The queue for data from your site to XSEDE is amie.from.site\_name.xsede.org.

Authentication to RabbitMQ is done using an SSL certificate. When you have an SSL Certificate ready to use please send [help@xsede.org](mailto:help@xsede.org) a request for AMIE rabbitmq queues and include the Subject DN of the certificate which can be found with the command.

**openssl x509 -noout -in <certificate file name with full path> -subject**

XSEDE provides a reference implementation to handle the RabbitMQ transfers that you are free to use. The implementation puts incoming data packets into a received directory for you and will read and send your responses from an outbox directory. You will still be responsible for generating the responses. The reference implementation is explained at the bottom of this document.

AMIE has defined transaction sequences of data packets to accomplish different account management tasks.

There are two packet transaction sequences that you will need to implement. More may be needed later if your site utilizes more account management functions through XSEDE.

The two sequences that you will need to implement to start are Project Create and Account Create. Project Create will create a project with a Project Lead (Principal Investigator). Account Create will add additional users to the project.

### Project Create transaction

Project create transactions begin with a project request created through the XSEDE Portal and approved by an XSEDE admin. This process is beyond the scope of this document.

After the project has been approved by an XSEDE admin a Request Project Create message will be sent to your site in the amie.to.site\_name.xsede.org queue.

**Request Project Create definition (bold fields required)**

|  |  |
| --- | --- |
| ***tag …*** | ***path*** |
| Abstract | abstract |

|  |  |
| --- | --- |
| AcademicDegree,**Degree**,0  AcademicDegree,**Field**,0  AcademicDegree,**Degree**,1  AcademicDegree,**Field**,1  … | academic\_degree\_list/  academic\_degree/degree  academic\_degree/field |

|  |  |
| --- | --- |
| AllocatedResource | alloc\_resource |
| AllocationType | alloc\_type |
| Applications | applications |
| Background | background |
| ChargeNumber | charge\_num |
| CitizenshipList,0  CitizenshipList,1 | citizenship/country |
| Comment | comment |
| Deliverables | deliverables |
| DiskSpace | diskspace |
| EndDate[[1]](#footnote-1) | end\_date |
| Facilities | facilities |
| GrantType | grant\_type |
| GrantNumber | grant\_num |
| Justification | justification |
| Languages | languages |
| Memory | memory |
| Methodologies | methodologies |
| Milestones | milestones |
| NsfStatusCode | nsf\_status\_code |
| OtherResources | other\_resources |
| PfosAbbreviation | pfos/abbr |
| PfosDescription | pfos/description |
| **PfosNumber** | pfos/number |
| PiBusinessPhoneComment | pi/personal\_info/business\_phone/comment |
| PiBusinessPhoneExtension | pi/personal\_info/business\_phone/extension |
| PiBusinessPhoneNumber[[2]](#footnote-2) | pi/personal\_info/business\_phone/number |
| PiCitizenship | pi/personal\_info/citizenship |
| PiCity | pi/personal\_info/city |
| PiCountry | pi/personal\_info/country |
| PiCountryOfAccess | pi/personal\_info/country\_access |
| PiDepartment | pi/personal\_info/dept |
| PiDnList, 0  PiDnList, 1  … | pi/dn\_list/dn |
| PiEmail | pi/personal\_info/email |
| PiEmpCode | pi/personal\_info/emp\_code |
| PiFax | pi/personal\_info/fax |
| PiFirstName | pi/personal\_info/first\_name |
| PiGlobalID | pi/personal\_info/global\_id |
| PiHomePhoneComment | pi/personal\_info/home\_phone/comment |
| PiHomePhoneExtension | pi/personal\_info/home\_phone/extension |
| PiHomePhoneNumber[[3]](#footnote-3) | pi/personal\_info/home\_phone/number |
| PiLastName | pi/personal\_info/last\_name |
| PiMiddleName | pi/personal\_info/middle\_name |
| PiOfficeAddress | pi/personal\_info/address/off\_address |
| PiOrganization | pi/personal\_info/organization |
| PiOrgCode | pi/personal\_info/org\_code |
| PiPersonID | pi/personal\_info/person\_id |
| PiPosition | pi/personal\_info/position |
| PiRemoteSiteID | pi/remote\_site\_id |
| PiRemoteSiteLogin | pi/remote\_site\_login |
| PiRequestedLoginList, 0  PiRequestedLoginList, 1  … | pi/req\_login\_list/req\_login |
| PiRequesterLogin | pi/requester\_login |
| PiState | pi/personal\_info/address/state |
| PiStreetAddress | pi/personal\_info/address/str\_address |
| PiStreetAddress2 | pi/personal\_info/address/str\_address2 |
| PiTitle | pi/personal\_info/title |
| PiZip | pi/personal\_info/address/zip |
| Processors | processors |
| Progress | progress |
| ProjectID | project\_id |
| **ProjectTitle** | project\_title |
| ProposalNumber | proposal\_num |
| Qualifications | qualifications |
| **ResourceList**, 0  ResourceList, 1  … | resource\_list/resource |
| RoleList, 0  RoleList, 1  … | role\_list/role |
| Sector | sector |
| **ServiceUnitsAllocated** | su\_alloc |
| Sfos, Abbreviation, 0  Sfos, Description, 0  Sfos[[4]](#footnote-4), **Number**, 0  Sfos, Abbreviation, 1  Sfos, Description, 1  Sfos, **Number**, 1  … | sfos\_list/  sfos/abbr  sfos/description  sfos/number |
| SitePersonId, **Site**, 0  SitePersonId, **PersonID**, 0  SitePersonId, **Site**, 1  SitePersonId, **PersonID**, 1  … | site\_person\_id\_list/  site\_person\_id/site  site\_person\_id/person\_id |
| **StartDate**[[5]](#footnote-5) | start\_date |
| StatementOfWork | statement\_work |
| Support | support |

**Request Project Create sample XML** (the X-PORTAL site\_person\_id will be the XSEDE username used to log into your site from the SSO hub.)

<?xml version="1.0" encoding="UTF-8"?>

<amie version="1.0">

  <request\_project\_create>

    <header>

      <date>2017-08-01T14:13:07Z</date>

      <expected\_reply\_list>

        <expected\_reply>

          <timeout>30240</timeout>

          <type>notify\_project\_create</type>

        </expected\_reply>

      </expected\_reply\_list>

      <from\_site\_name>TGCDB</from\_site\_name>

      <originating\_site\_name>TGCDB</originating\_site\_name>

      <packet\_id>1</packet\_id>

      <to\_site\_name>PSC</to\_site\_name>

      <transaction\_id>158194</transaction\_id>

    </header>

    <body>

      <abstract>The development of high-performance and distributed cyberinfrastructure – system tools, application frame- works and middleware– to support computational science has historically been a special purpose and often isolated activity in service of individual problems. On the one hand this has led to point solutions that are often missing critical features, and thus makes them unsustainable; on the other hand many solutions are redundant. This state-of-practice points to missing abstractions, design principles and systems engineering concepts for high-performance distributed cyberinfrastructure. The RADICAL team pursues a three prong research agenda in: (i) applied distributed computing, (ii) computational science and (iii) high-performance data-intensive computing.

The cyberinfrastructure – system tools, application frameworks and middleware – that will be developed, validated and scaled as a consequence of this proposal underpins and supports the science of dozens of individual PIs, projects and collaborations, ranging from bio-molecular simulations to polar/climate sciences and pharmaceutical cyber-manufacturing. We propose to use multiple XSEDE resources for cyberinfrastructure research and development. The use of multiple XSEDE resources – often times concurrently, is fundamental to both our research and development activities.</abstract>

      <academic\_degree\_list>

        <academic\_degree>

          <degree>PhD</degree>

          <field>Computer Science</field>

        </academic\_degree>

        <academic\_degree>

          <degree>PhD</degree>

          <field>Physics and Computer Science</field>

        </academic\_degree>

      </academic\_degree\_list>

      <alloc\_resource>bridges.psc.xsede</alloc\_resource>

      <alloc\_type>transfer</alloc\_type>

      <charge\_num>TG-MCB090174</charge\_num>

      <end\_date>2017-12-31</end\_date>

      <grant\_num>MCB090174</grant\_num>

      <nsf\_status\_code>F</nsf\_status\_code>

      <pfos>

        <number>340</number>

      </pfos>

      <pi>

        <dn\_list>

          <dn>/C=US/O=National Center for Supercomputing Applications/CN=Shantenu Jha</dn>

          <dn>/C=US/O=Pittsburgh Supercomputing Center/CN=Shantenu Jha</dn>

        </dn\_list>

        <personal\_info>

          <address>

            <city>Piscataway</city>

            <country>9US</country>

            <state>NJ</state>

            <str\_address>705 CoRE Building</str\_address>

            <str\_address2>Busch Campus</str\_address2>

            <zip>08854-8058</zip>

          </address>

          <business\_phone>

            <number>555-555-5555</number>

          </business\_phone>

          <email>sample@sample.edu</email>

          <first\_name>Shantenu</first\_name>

          <global\_id>600</global\_id>

          <last\_name>Jha</last\_name>

          <org\_code>0087718</org\_code>

          <organization>Rutgers, the State University of New Jersey</organizatio

n>

          <person\_id>SJHA1234P</person\_id>

        </personal\_info>

        <req\_login\_list>

          <req\_login>sjha</req\_login>

          <req\_login>jha</req\_login>

          <req\_login>ux452534</req\_login>

          <req\_login>shantenu</req\_login>

          <req\_login></req\_login>

        </req\_login\_list>

      </pi>

      <project\_id>mc3bggp</project\_id>

      <project\_title>A RADICAL Use of XSEDE: Abstractions Driven Cyberinfrastructure for XSEDE Resources</project\_title>

      <proposal\_num>MCB090174</proposal\_num>

      <record\_id>XRAS-48241-bridges.psc.xsede</record\_id>

      <resource\_list>

        <resource>bridges.psc.xsede</resource>

      </resource\_list>

      <role\_list>

        <role>allocation\_manager</role>

      </role\_list>

      <sfos\_list>

        <sfos>

          <number>0</number>

        </sfos>

      </sfos\_list>

      <site\_person\_id\_list>

        <site\_person\_id>

          <person\_id>1000522</person\_id>

          <site>Stanford</site>

        </site\_person\_id>

        <site\_person\_id>

          <person\_id>jha</person\_id>

          <site>X-PORTAL</site>

        </site\_person\_id>

      </site\_person\_id\_list>

      <start\_date>2017-01-01</start\_date>

      <su\_alloc>-250000</su\_alloc>

    </body>

  </request\_project\_create>

</amie>

After you receive a Request Project Create packet you should respond with a Notify Project Create. This is the packet where you tell XSEDE what the username and person id for the user are on resources at your site.

**Notify Project Create Definition** (note that only the bold tags are required. Tags with multiple fields where tags other than the first tag are bold are only required if the first tag is included.) ResourceLogin is required for every resource. All required fields except ProjectID, PiPersonID and ResourceLogin can simply be copied from the Request Project Create packet. The Resource Login should be the username for the user at your site. The PersonID is a unique identifier for the user at your site. PersonID could potentially be the same as the Login.

|  |  |
| --- | --- |
| ***tag …*** | ***path*** |
| Abstract | abstract |

|  |  |
| --- | --- |
| AcademicDegree,**Degree**,0  AcademicDegree,**Field**,0  AcademicDegree,**Degree**,1  AcademicDegree,**Field**,1  … | academic\_degree\_list/  academic\_degree/degree  academic\_degree/field |

|  |  |
| --- | --- |
| AccountActivityTime[[6]](#footnote-6) | account\_activity\_time |
| AllocationType | alloc\_type |
| Applications | applications |
| Background | background |
| BoardType | board\_type |
| Comment | comment |
| Deliverables | deliverables |
| DiskSpace | diskspace |
| EndDate[[7]](#footnote-7) | end\_date |
| Facilities | facilities |
| GrantType | grant\_type |
| **GrantNumber** | grant\_num |
| Justification | justification |
| Languages | languages |
| Memory | memory |
| Methodologies | methodologies |
| Milestones | milestones |
| NsfStatusCode | nsf\_status\_code |
| OtherResources | other\_resources |
| PfosAbbreviation | pfos/abbr |
| PfosDescription | pfos/description |
| **PfosNumber** | pfos/number |
| PiBusinessPhoneComment | pi/personal\_info/business\_phone/comment |
| PiBusinessPhoneExtension | pi/personal\_info/business\_phone/extension |
| PiBusinessPhoneNumber[[8]](#footnote-8) | pi/personal\_info/business\_phone/number |
| PiCitizenship | pi/personal\_info/citizenship |
| PiCity | pi/personal\_info/city |
| PiCountry | pi/personal\_info/country |
| PiCountryOfAccess | pi/personal\_info/country\_access |
| PiDepartment | pi/personal\_info/dept |
| PiDnList, 0  PiDnList, 1  … | pi/dn\_list/dn |
| PiEmail | pi/personal\_info/email |
| PiEmpCode | pi/personal\_info/emp\_code |
| PiFax | pi/personal\_info/fax |
| PiFirstName | pi/personal\_info/first\_name |
| PiGlobalID | pi/personal\_info/global\_id |
| PiHomePhoneComment | pi/personal\_info/home\_phone/comment |
| PiHomePhoneExtension | pi/personal\_info/home\_phone/extension |
| PiHomePhoneNumber[[9]](#footnote-9) | pi/personal\_info/home\_phone/number |
| PiLastName | pi/personal\_info/last\_name |
| PiMiddleName | pi/personal\_info/middle\_name |
| PiNotifierLogin | pi/notifier\_login |
| PiOfficeAddress | pi/personal\_info/address/off\_address |
| **PiOrganization** | pi/personal\_info/organization |
| **PiOrgCode** | pi/personal\_info/org\_code |
| **PiPersonID** | pi/personal\_info/person\_id |
| PiPosition | pi/personal\_info/position |
| PiRemoteSiteLogin | pi/remote\_site\_login |
| PiRequestedLoginList, 0  PiRequestedLoginList, 1  … | pi/req\_login\_list/req\_login |
| PiState | pi/personal\_info/address/state |
| PiStreetAddress | pi/personal\_info/address/str\_address |
| PiStreetAddress2 | pi/personal\_info/address/str\_address2 |
| PiTitle | pi/personal\_info/title |
| PiZip | pi/personal\_info/address/zip |
| Processors | processors |
| Progress | progress |
| **ProjectID** | project\_id |
| **ProjectTitle** | project\_title |
| ProposalNumber | proposal\_num |
| Qualifications | qualifications |
| RecordID | record\_id |
| **ResourceList**, 0  ResourceList, 1  … | resource\_list/resource |
| ResourceLogin, **Resource**, 0  ResourceLogin, **Login**, 0  ResourceLogin, **Resource**, 1  ResourceLogin, **Login**, 1  … | resource\_login \_list/  resource\_login/resource  resource\_login/login |
| RoleList, 0  RoleList, 1  … | role\_list/role |
| Sector | sector |
| **ServiceUnitsAllocated** | su\_alloc |
| Sfos, Abbreviation, 0  Sfos, Description, 0  Sfos[[10]](#footnote-10), **Number**, 0  Sfos, Abbreviation, 1  Sfos, Description, 1  Sfos, **Number**, 1  … | sfos\_list/  sfos/abbr  sfos/description  sfos/number |
| **StartDate**[[11]](#footnote-11) | start\_date |
| StatementOfWork | statement\_work |
| Support | support |

**Notify Project Create Sample Data** (The header section must be included with an updated date, the transaction id from the request project create packet and the from\_site\_name updated with your site’s AMIE site name. The other fields should be duplicated as shown below.

<?xml version="1.0" encoding="UTF-8"?>

<amie version="1.0">

  <notify\_project\_create>

    <header>

      <date>2017-08-01T17:00:51Z</date>

      <expected\_reply\_list>

        <expected\_reply>

          <timeout>1440</timeout>

          <type>data\_project\_create</type>

        </expected\_reply>

      </expected\_reply\_list>

      <from\_site\_name>PSC</from\_site\_name>

      <originating\_site\_name>TGCDB</originating\_site\_name>

      <packet\_id>1</packet\_id>

      <to\_site\_name>TGCDB</to\_site\_name>

      <transaction\_id>158194</transaction\_id>

    </header>

    <body>

      <end\_date>2017-12-31</end\_date>

      <grant\_num>MCB090174</grant\_num>

      <pfos>

        <number>340</number>

      </pfos>

      <pi>

        <dn\_list>

          <dn>/C=US/O=Pittsburgh Supercomputing Center/CN=Shantenu Jha</dn>

          <dn>/C=US/O=National Center for Supercomputing Applications/CN=Shantenu Jha</dn>

          <dn>/DC=EDU/DC=UTEXAS/DC=TACC/O=UT-AUSTIN/O=TACC MICS CA/CN=Shantenu Jha</dn>

          <dn>/C=US/O=National Center for Supercomputing Applications/OU=People/CN=Shantenu Jha</dn>

          <dn>/DC=EDU/DC=TENNESSEE/DC=NICS/O=National Institute for Computational Sciences/CN=Shantenu Jha</dn>

          <dn>/DC=EDU/DC=UTEXAS/DC=TACC/O=UT-AUSTIN/O=TACC Classic CA/CN=Shantenu Jha</dn>

        </dn\_list>

        <personal\_info>

          <email>sample@sample.edu</email>

          <first\_name>Shantenu</first\_name>

          <last\_name>Jha</last\_name>

          <org\_code>0087718</org\_code>

          <organization>Rutgers, the State University of New Jersey</organization>

          <person\_id>SJHA1234P</person\_id>

          <uid>18900</uid>

        </personal\_info>

        <remote\_site\_login>sjha</remote\_site\_login>

      </pi>

      <project\_gid>14231</project\_gid>

      <project\_id>mc3bggp</project\_id>

      <project\_title>A RADICAL Use of XSEDE: Abstractions Driven Cyberinfrastructure for XSEDE Resources</project\_title>

      <resource\_list>

        <resource>bridges.psc.xsede</resource>

      </resource\_list>

      <start\_date>2017-01-01</start\_date>

      <su\_alloc>-250000</su\_alloc>

    </body>

  </notify\_project\_create>

</amie>

**Data Project Create** (this is a confirmation that the project has been created and the project and user mapping is confirmed. The DN list may be updated from the Request Project Create so check for updates if your site is concerned with the DNs

|  |  |
| --- | --- |
| ***tag …*** | ***path*** |
| Comment | comment |
| DnList, 0  DnList, 1  … | dn\_list/dn |
| PersonID | person\_id |
| ProjectID | project\_id |

**Data Project Create Sample** (Again the header section must be included with an updated date, the transaction id from the prior packets in the transaction, your AMIE site name as to\_site\_name and the other fields copied as below.

<?xml version="1.0" encoding="UTF-8"?>

<amie version="1.0">

  <data\_project\_create>

    <header>

      <date>2017-08-01T17:13:15Z</date>

      <expected\_reply\_list>

        <expected\_reply>

          <timeout>30240</timeout>

          <type>inform\_transaction\_complete</type>

        </expected\_reply>

      </expected\_reply\_list>

      <from\_site\_name>TGCDB</from\_site\_name>

      <originating\_site\_name>TGCDB</originating\_site\_name>

      <packet\_id>2</packet\_id>

      <to\_site\_name>PSC</to\_site\_name>

      <transaction\_id>158194</transaction\_id>

    </header>

    <body>

      <dn\_list>

        <dn>/C=US/O=National Center for Supercomputing Applications/CN=Shantenu Jha</dn>

        <dn>/C=US/O=Pittsburgh Supercomputing Center/CN=Shantenu Jha</dn>

      </dn\_list>

      <global\_id>600</global\_id>

      <person\_id>SJHA1234P</person\_id>

      <project\_id>mc3bggp</project\_id>

    </body>

  </data\_project\_create>

</amie>

**Inform Transaction Complete Definition**

|  |  |
| --- | --- |
| ***tag …*** | ***path*** |
| **DetailCode** | detail\_code |
| **Message** | message |
| **StatusCode** | status\_code |

**Inform Transaction Complete Sample** (Again the header section must be included with an updated date, the transaction id from the prior packets in the transaction, your AMIE site name as to\_site\_name and the other fields copied as below. The body can be copied exactly.)

<?xml version="1.0" encoding="UTF-8"?>

<amie version="1.0">

  <inform\_transaction\_complete>

    <header>

      <date>2017-08-01T17:40:03Z</date>

      <from\_site\_name>PSC</from\_site\_name>

      <originating\_site\_name>TGCDB</originating\_site\_name>

      <packet\_id>2</packet\_id>

      <to\_site\_name>TGCDB</to\_site\_name>

      <transaction\_id>158194</transaction\_id>

    </header>

    <body>

      <detail\_code>1</detail\_code>

      <message>Success</message>

      <status\_code>Success</status\_code>

    </body>

  </inform\_transaction\_complete>

</amie>

### Account Create Transaction

The account create transaction is very similar to the project create transaction except without the project detail. The packet sequence is request account create, notify account create, data account create, inform transaction complete. Below are the packet definitions and sample data

**Request Account Create Definition**

|  |  |
| --- | --- |
| ***tag …*** | ***path*** |

|  |  |
| --- | --- |
| AcademicDegree,**Degree**,0  AcademicDegree,**Field**,0  AcademicDegree,**Degree**,1  AcademicDegree,**Field**,1  … | academic\_degree\_list/  academic\_degree/degree  academic\_degree/field |

|  |  |
| --- | --- |
| CitizenshipList,0  CitizenshipList,1 | citizenship/country |
| Comment | comment |
| GrantNumber | grant\_num |
| NsfStatusCode | nsf\_status\_code |
| **ProjectID** | project\_id |
| **ResourceList**, 0  ResourceList, 1  … | resource\_list/resource |
| RoleList, 0  RoleList, 1  … | role\_list/role |
| SitePersonId, **Site**, 0  SitePersonId, **PersonID**, 0  SitePersonId, **Site**, 1  SitePersonId, **PersonID**, 1  … | site\_person\_id\_list/  site\_person\_id/site  site\_person\_id/person\_id |
| UserBusinessPhoneComment | user/personal\_info/business\_phone/comment |
| UserBusinessPhoneExtension | user/personal\_info/business\_phone/extension |
| UserBusinessPhoneNumber[[12]](#footnote-12) | user/personal\_info/business\_phone/number |
| UserCitizenship | user/personal\_info/citizenship |
| UserCity | user/personal\_info/city |
| UserCountry | user/personal\_info/country |
| UserCountryOfAccess | user/personal\_info/country\_access |
| UserDepartment | user/personal\_info/dept |
| UserDnList, 0  UserDnList, 1  … | user/dn\_list/dn |
| UserEmpCode | user/personal\_info/emp\_code |
| UserEmail | user/personal\_info/email |
| UserFax | user/personal\_info/fax |
| UserFirstName | user/personal\_info/first\_name |
| UserGlobalID | user/personal\_info/global\_id |
| UserHomePhoneComment | user/personal\_info/home\_phone/comment |
| UserHomePhoneExtension | user/personal\_info/home\_phone/extension |
| UserHomePhoneNumber[[13]](#footnote-13) | user/personal\_info/home\_phone/number |
| UserLastName | user/personal\_info/last\_name |
| UserMiddleName | user/personal\_info/middle\_name |
| UserOfficeAddress | user/personal\_info/address/off\_address |
| UserOrganization | user/personal\_info/organization |
| UserOrgCode | user/personal\_info/org\_code |
| UserPasswordAccessEnable[[14]](#footnote-14) | user/password\_access\_enable |
| UserPersonID | user/personal\_info/person\_id |
| UserPosition | user/personal\_info/position |
| UserRemoteSiteID | user/remote\_site\_id |
| UserRemoteSiteLogin | user/remote\_site\_login |
| UserRequestedLoginList, 0  UserRequestedLoginList, 1  … | user/req\_login\_list/req\_login |
| UserRequesterLogin | user/requester\_login |
| UserRole | user/role |
| UserState | user/personal\_info/address/state |
| UserStreetAddress | user/personal\_info/address/str\_address |
| UserStreetAddress2 | user/personal\_info/address/str\_address2 |
| UserTitle | user/personal\_info/title |
| UserZip | user/personal\_info/address/zip |

**Request Account Create Sample**

<?xml version="1.0" encoding="UTF-8"?>

<amie version="1.0">

  <request\_account\_create>

    <header>

      <date>2017-08-01T21:13:07Z</date>

      <expected\_reply\_list>

        <expected\_reply>

          <timeout>30240</timeout>

          <type>notify\_account\_create</type>

        </expected\_reply>

      </expected\_reply\_list>

      <from\_site\_name>TGCDB</from\_site\_name>

      <originating\_site\_name>TGCDB</originating\_site\_name>

      <packet\_id>1</packet\_id>

      <to\_site\_name>PSC</to\_site\_name>

      <transaction\_id>158212</transaction\_id>

    </header>

    <body>

      <academic\_degree\_list>

        <academic\_degree>

          <degree>MS</degree>

          <field>Chemical Engineering</field>

        </academic\_degree>

      </academic\_degree\_list>

      <alloc\_resource>bridges-gpu.psc.xsede</alloc\_resource>

      <grant\_num>MCB130173</grant\_num>

      <nsf\_status\_code>GS</nsf\_status\_code>

      <project\_id>mc4s9op</project\_id>

      <resource\_list>

        <resource>bridges-gpu.psc.xsede</resource>

      </resource\_list>

      <site\_person\_id\_list>

        <site\_person\_id>

          <person\_id>94270</person\_id>

          <site>SDSC</site>

        </site\_person\_id>

        <site\_person\_id>

          <person\_id>HWANGH1AP</person\_id>

          <site>PSC</site>

        </site\_person\_id>

        <site\_person\_id>

          <person\_id>hhwang8</person\_id>

          <site>X-PORTAL</site>

        </site\_person\_id>

      </site\_person\_id\_list>

      <user>

        <dn\_list>

          <dn>/C=US/O=National Center for Supercomputing Applications/CN=hyea hwang</dn>

          <dn>/C=US/O=Pittsburgh Supercomputing Center/CN=hyea hwang</dn>

          <dn>/DC=EDU/DC=UTEXAS/DC=TACC/O=MYPROXY/CN=tg829080</dn>

        </dn\_list>

        <password\_access\_enable>1</password\_access\_enable>

        <personal\_info>

          <address>

            <city>atlanta</city>

            <country>9US</country>

            <state>GA</state>

            <str\_address>2450 Test Data St</str\_address>

            <str\_address2>Apt 1</str\_address2>

            <zip>30324</zip>

          </address>

          <business\_phone>

            <comment></comment>

            <extension></extension>

            <number>555-555-5555</number>

          </business\_phone>

          <dept></dept>

          <email>sample@sample.com</email>

          <first\_name>hyea</first\_name>

          <global\_id>33991</global\_id>

          <last\_name>hwang</last\_name>

          <middle\_name></middle\_name>

          <org\_code>0087239</org\_code>

          <organization>Georgia Institute of Technology</organization>

          <person\_id>HWANGH1AP</person\_id>

          <title></title>

        </personal\_info>

        <req\_login\_list>

          <req\_login></req\_login>

        </req\_login\_list>

      </user>

    </body>

  </request\_account\_create>

</amie>

**Notify Account Create Definition** (ResourceLogin is required for each ResourceList, UserPersonId is just like PiPersonId from the Project Create transaction)

|  |  |
| --- | --- |
| ***tag …*** | ***path*** |
| AcademicDegree,**Degree**,0  AcademicDegree,**Field**,0  AcademicDegree,**Degree**,1  AcademicDegree,**Field**,1  … | academic\_degree\_list/  academic\_degree/degree  academic\_degree/field |
| AccountActivityTime[[15]](#footnote-15) | account\_activity\_time |
| Comment | comment |
| NsfStatusCode | nsf\_status\_code |
| **ProjectID** | project\_id |
| **ResourceList**, 0  ResourceList, 1  … | resource\_list/resource |
| RoleList, 0  RoleList, 1  … | role\_list/role |
| ResourceLogin, **Resource**, 0  ResourceLogin, **Login**, 0  ResourceLogin, **Resource**, 1  ResourceLogin, **Login**, 1  … | resource\_login \_list/  resource\_login/resource  resource\_login/login |
| StartDate | start\_date |
| UserBusinessPhoneComment | user/personal\_info/business\_phone/comment |
| UserBusinessPhoneExtension | user/personal\_info/business\_phone/extension |
| UserBusinessPhoneNumber[[16]](#footnote-16) | user/personal\_info/business\_phone/number |
| UserCitizenship | user/personal\_info/citizenship |
| UserCity | user/personal\_info/city |
| UserCountry | user/personal\_info/country |
| UserCountryOfAccess | user/personal\_info/country\_access |
| UserDepartment | user/personal\_info/dept |
| UserDnList, 0  UserDnList, 1  … | user/dn\_list/dn |
| UserEmpCode | user/personal\_info/emp\_code |
| UserEmail | user/personal\_info/email |
| UserFax | user/personal\_info/fax |
| UserFirstName | user/personal\_info/first\_name |
| UserGlobalID | user/personal\_info/global\_id |
| UserHomePhoneComment | user/personal\_info/home\_phone/comment |
| UserHomePhoneExtension | user/personal\_info/home\_phone/extension |
| UserHomePhoneNumber[[17]](#footnote-17) | user/personal\_info/home\_phone/number |
| UserLastName | user/personal\_info/last\_name |
| UserMiddleName | user/personal\_info/middle\_name |
| UserNotifierLogin | user/notifier\_login |
| UserOfficeAddress | user/personal\_info/address/off\_address |
| UserOrganization | user/personal\_info/organization |
| UserOrgCode | user/personal\_info/org\_code |
| UserPasswordAccessEnable[[18]](#footnote-18) | user/password\_access\_enable |
| **UserPersonID** | user/personal\_info/person\_id |
| UserPosition | user/personal\_info/position |
| UserRemoteSiteLogin | user/remote\_site\_login |
| UserRequestedLoginList, 0  UserRequestedLoginList, 1  … | user/req\_login\_list/req\_login |
| UserRole | user/role |
| UserState | user/personal\_info/address/state |
| UserStreetAddress | user/personal\_info/address/str\_address |
| UserStreetAddress2 | user/personal\_info/address/str\_address2 |
| UserTitle | user/personal\_info/title |
| UserZip | user/personal\_info/address/zip |

**Notify Account Create Sample**

<?xml version="1.0" encoding="UTF-8"?>

<amie version="1.0">

  <notify\_account\_create>

    <header>

      <date>2017-08-01T21:40:03Z</date>

      <expected\_reply\_list>

        <expected\_reply>

          <timeout>1440</timeout>

          <type>data\_account\_create</type>

        </expected\_reply>

      </expected\_reply\_list>

      <from\_site\_name>PSC</from\_site\_name>

      <originating\_site\_name>TGCDB</originating\_site\_name>

      <packet\_id>1</packet\_id>

      <to\_site\_name>TGCDB</to\_site\_name>

      <transaction\_id>158212</transaction\_id>

    </header>

    <body>

      <project\_id>mc4s9op</project\_id>

      <resource\_list>

        <resource>bridges-gpu.psc.xsede</resource>

      </resource\_list>

      <user>

        <dn\_list>

          <dn>/C=US/O=National Center for Supercomputing Applications/CN=hyea hwang</dn>

          <dn>/C=US/O=Pittsburgh Supercomputing Center/CN=hyea hwang</dn>

          <dn>/DC=EDU/DC=UTEXAS/DC=TACC/O=MYPROXY/CN=tg829080</dn>

        </dn\_list>

        <personal\_info>

          <email>sample@sample.com</email>

          <first\_name>hyea</first\_name>

          <last\_name>hwang</last\_name>

          <org\_code>0087239</org\_code>

          <organization>Georgia Institute of Technology</organization>

          <person\_id>HWANGH1AP</person\_id>

          <uid>56059</uid>

        </personal\_info>

        <remote\_site\_login>hwangh</remote\_site\_login>

      </user>

    </body>

  </notify\_account\_create>

</amie>

**Data Account Create Definition**

|  |  |
| --- | --- |
| ***tag …*** | ***path*** |
| Comment | comment |
| DnList, 0  DnList, 1  … | dn\_list/dn |
| PersonID | person\_id |
| ProjectID | project\_id |

**Data Account Create Sample**

<?xml version="1.0" encoding="UTF-8"?>

<amie version="1.0">

  <data\_account\_create>

    <header>

      <date>2017-08-01T21:43:29Z</date>

      <expected\_reply\_list>

        <expected\_reply>

          <timeout>30240</timeout>

          <type>inform\_transaction\_complete</type>

        </expected\_reply>

      </expected\_reply\_list>

      <from\_site\_name>TGCDB</from\_site\_name>

      <originating\_site\_name>TGCDB</originating\_site\_name>

      <packet\_id>2</packet\_id>

      <to\_site\_name>PSC</to\_site\_name>

      <transaction\_id>158212</transaction\_id>

    </header>

    <body>

      <dn\_list>

        <dn>/C=US/O=National Center for Supercomputing Applications/CN=hyea hwang</dn>

        <dn>/C=US/O=Pittsburgh Supercomputing Center/CN=hyea hwang</dn>

        <dn>/DC=EDU/DC=UTEXAS/DC=TACC/O=MYPROXY/CN=tg829080</dn>

      </dn\_list>

      <global\_id>33991</global\_id>

      <person\_id>HWANGH1AP</person\_id>

      <project\_id>mc4s9op</project\_id>

    </body>

  </data\_account\_create>

</amie>

**Inform Transaction Complete**

See Inform Transaction Complete for Project Create Transaction. Packet definition is the same.

### RabbitMQ Message Format

The content of the messages is given by the example data for the packets provided above. You also need to provide header data with the message length. A sample publish in Ruby:

write\_exchange.publish(content,headers: {message\_length: content.length}, :priority *=>* priority, :routing\_key *=>* config['amie']['write\_exchange'] + '.queue')  
success = ch.wait\_for\_confirms

Priority can be included as a number from 1 to 10, but is not yet implemented on the central AMIE server. Your write exchange is amie.from.site.xsede.org and the queue is amie.from.site.xsede.org.queue.

### RabbitMQ Connection

The following are the parameters needed for the RabbitMQ Connection

**host:** info1.dyn.xsede.org  
**port:** 5671  
**vhost:** xsede  
  
**tls:** true  
  
*# If using X.509 Authentication (preferred)  
# filename with full path of crt file***tls\_cert:** /path/to/crt/host.xsede.org.crt  
  
*# filename with full path of key file***tls\_key:** /path/to/key/host.xsede.org.key  
  
*# filenames with full path of ca certificate chain***tls\_ca\_certificates:** - /path/to/ca\_crt/ca.crt  
**auth\_mechanism:** EXTERNAL  
**verify\_peer:** true

## **AMIE RabbitMQ Transfer Reference Implementation**

We have provided a reference implementation for interacting with the RabbitMQ queues. The reference implementation is available at <https://github.com/ResearchComputing/amie_rabbitmq>. It will read the packet XML data from the read queue and write it to xml files in a directory you define on your file system. It will also read your response XML files from a directory you define and publish them to the write queue. You will still be responsible for generating the response packets correctly however you would like.

The reference implementation is written in Ruby and tested in Ruby 2.4.1. It requires the ruby gems daemons, bunny, nokogiri, and nori.

The reference implementation will run as a daemon on your server listening for incoming messages and monitoring an outgoing directory to send your responses. Because RabbitMQ won’t reprocess failed transfers with the same running process and sometimes the listener loses connection to the RabbitMQ queue we recommend having a cron job restart the daemon hourly.

Extract the tar file to the location of your choosing. The config file is in config/settings.yml.example. Copy this to settings.yml and edit as necessary. The folders you define for received\_folder and out\_folder are where you will read and write packets respectively.

Configuration

*# rabbit mq authentication***message\_queue:  
 host:** info1.dyn.xsede.org  
 **port:** 5671  
 **vhost:** xsede  
  
 **tls:** true  
  
 *# If using X.509 Authentication (preferred)  
 # filename with full path of crt file* **tls\_cert:** /path/to/host.xsede.org.crt  
  
 *# filename with full path of key file* **tls\_key:** /path/to/host.xsede.org.key  
  
 *# filenames with full path of ca certificate chain* **tls\_ca\_certificates:** - /path/to/ca.crt  
 **auth\_mechanism:** EXTERNAL  
 **verify\_peer:** true  
  
**amie:** *# TGCDB for central AMIE instance or local site name as defined in AMIE for local instance* **local\_site:** TGCDB  
 *# TGCDB for local instance or remote site name as defined in AMIE for central instance* **remote\_site:** ~AMIE SITE NAME~  
 *# name of the rabbitmq exchanges provided by XSEDE* **write\_exchange:** amie.to.~site~.xsede.org  
 **read\_exchange:** amie.from.~site~.xsede.org  
  
 *# folders for transfer,processing, and logging of AMIE XML packets. Use full path  
 # in\_folder is where you will read incoming packets from*

*# out\_folder is where you will write your response packets*

*# packets that can’t be sent are moved into the respective failed folders*

*# when outgoing packets are sent they are moved to the wait folder, when XSEDE has*

*# responded they are moved to the done folder*

**in\_folder:** /path/rabbitmq\_in  
 **received\_folder:** /path/received  
 **out\_folder:** /path/outbox  
 **done\_folder:** /path/done  
 **wait\_folder:** /path/wait  
 **out\_failed\_folder:** /path/out\_failed  
 **in\_failed\_folder:** /path/in\_failed  
 **log\_folder:** /path/logs  
  
*# List of all valid packet types. To prioritize a packet type give a higher number from 1 to 10. Priority is not turned on in the RabbitMQ server, so just leave this section alone.***valid\_packet\_types:  
 data\_account\_create:** 1  
 **data\_project\_create:** 1  
 **notify\_account\_create:** 1  
 **notify\_account\_inactivate:** 1  
 **notify\_account\_reactivate:** 1  
 **notify\_person\_duplicate:** 1  
 **notify\_person\_ids:** 1  
 **notify\_project\_create:** 1  
 **notify\_project\_inactivate:** 1  
 **notify\_project\_modify:** 1  
 **notify\_project\_reactivate:** 1  
 **notify\_project\_resources:** 1  
 **notify\_project\_usage:** 1  
 **notify\_user\_create:** 1  
 **notify\_user\_modify:** 1  
 **notify\_user\_reactivate:** 1  
 **notify\_user\_suspend:** 1  
 **request\_account\_create:** 1  
 **request\_account\_inactivate:** 1  
 **request\_account\_reactivate:** 1  
 **request\_person\_merge:** 1  
 **request\_project\_create:** 1  
 **request\_project\_inactivate:** 1  
 **request\_project\_modify:** 1  
 **request\_project\_reactivate:** 1  
 **request\_project\_resources:** 1  
 **request\_user\_create:** 1  
 **request\_user\_modify:** 1  
 **request\_user\_reactivate:** 1  
 **request\_user\_suspend:** 1  
 **inform\_transaction\_complete:** 1  
 **response:** 1

You also need to edit the rabbit\_transfer\_control.rb script with the path to the rabbit\_transfer.rb script.

When the configuration is complete and ruby and the required ruby gems are installed you can run the script like:

ruby rabbit\_transfer.rb –c config/settings.yml

If things are working the we recommend running the daemon with a cron job like:

0 \* \* \* \* /path/to/ruby /path/to/app/rabbit\_transfer\_control.rb restart -- -c /path/to/app/conf/settings.yml

That should all be one line. The double dash tells the control script to pass the following parameters to the rabbit\_transfer.rb script.

1. XML date format yyyy-mm-dd [↑](#footnote-ref-1)
2. PiBusinessPhoneNumber is required if PiBusinessPhoneComment or PiBusinessPhoneExtension is present. [↑](#footnote-ref-2)
3. PiHomePhoneNumber is required if PiHomePhoneComment or PiHomePhoneExtension is present. [↑](#footnote-ref-3)
4. Sfos is not required. However, if an Sfos is specified, then the Number is required. [↑](#footnote-ref-4)
5. XML date format yyyy-mm-dd [↑](#footnote-ref-5)
6. XML datetime format yyyy-mm-dd**T**hh:mm:ss**-**hh:mm or yyyy-mm-dd**T**hh:mm:ss**Z** [↑](#footnote-ref-6)
7. XML date format yyyy-mm-dd [↑](#footnote-ref-7)
8. PiBusinessPhoneNumber is required if PiBusinessPhoneComment or PiBusinessPhoneExtension is present. [↑](#footnote-ref-8)
9. PiHomePhoneNumber is required if PiHomePhoneComment or PiHomePhoneExtension is present. [↑](#footnote-ref-9)
10. Sfos is not required. However, if an Sfos is specified, then the Number is required. [↑](#footnote-ref-10)
11. XML date format yyyy-mm-dd [↑](#footnote-ref-11)
12. UserBusinessPhoneNumber is required if UserBusinessPhoneComment or UserBusinessPhoneExtension is present. [↑](#footnote-ref-12)
13. UserHomePhoneNumber is required if UserHomePhoneComment or UserHomePhoneExtension is present. [↑](#footnote-ref-13)
14. XML Boolean – value should be one(1) for true, zero(0) for false. [↑](#footnote-ref-14)
15. XML datetime format yyyy-mm-dd**T**hh:mm:ss**-**hh:mm or yyyy-mm-dd**T**hh:mm:ss**Z** [↑](#footnote-ref-15)
16. UserBusinessPhoneNumber is required if UserBusinessPhoneComment or UserBusinessPhoneExtension is present. [↑](#footnote-ref-16)
17. UserHomePhoneNumber is required if UserHomePhoneComment or UserHomePhoneExtension is present. [↑](#footnote-ref-17)
18. XML Boolean – value should be one(1) for true, zero(0) for false. [↑](#footnote-ref-18)