NMC Result Codes

NMC Working Group – July 16 2011, OGF 32

# Background

Implementations of the perfSONAR protocols (perfSONAR-MDM, perfSONAR-PS) have independently used result and status codes to convey information about the system for many years. These codes are not standard, and do not follow a prescribed format. The current landscape features “developer chosen” messages and formats, and may be returned in situations that do or do not warrant the return of some form of status message.

The NMC-WG (Network Measurement Control Working group), charged with standardizing the protocols used by servers and clients of the perfSONAR framework, has been charged with defining a common standard for error messages and result codes. This document will describe:

* A hierarchy of result codes based loosely on similar efforts in other protocols
* Guidelines for the use of these codes within software
* Guidelines for the types of textual messages that will accompany these codes

These recommendations come from the meeting at OGF 32, and are subject to the will of the working group. Comments and opinions are expected within a 3 week window (starting July 18th 2011, ending August 8th 2011), the final results will be inserted into the NMC base document.

# Proposed Result Codes

The proposed result code hierarchy is as follows:

* http://perfsonar.net/status/
  + informational/
    - protocol\_version/
    - data\_limitation/
    - service\_contact/
  + successful/
  + redirection/
  + clienterror/
    - bad\_message/
    - bad\_request/
    - authentication\_failed/
    - unauthorized/
    - message\_not\_allowed/
    - event\_type\_not\_allowed/
    - request\_too\_large/
    - request\_timeout/
    - protocol\_not\_allowed/
  + servererror/
    - data\_fetch\_error/
    - too\_busy/
    - administrative\_down/

# Categories

The following categories were chosen to classify perfSONAR errors.

# Informational

This represents valid responses for informational requests. Using just the top level, e.g. “http://perfsonar.net/status/informational” is considered to be acceptable. The following subclasses were identified:

* ***protocol\_version***: Returns the version of the NMC protocol in use
* ***data\_limitation***: Returns a message indicating that responses will be limited to a pre-set range or size
* ***service\_contact***: Returns the contact information (e.g. administrative contacts, etc.) for the service

# Successful

This represents valid responses for any form of successful interaction. Using just the top level, e.g. “http://perfsonar.net/status/success” is considered to be the only acceptable response.

# Redirection

This represents valid responses for any form of redirection that the service deems acceptable. Using just the top level, e.g. “http://perfsonar.net/status/redirection” is considered to be the only acceptable response. This redirection activity is assumed to be “temporary”, e.g. clients are not permitted to cache/store this direction for any reason.

# Clienterror

This represents an error issued to a client based on the request. Using just the top level, e.g. “http://perfsonar.net/status/clienterror” is considered to be acceptable, but not standard. The following subclasses were identified:

* ***bad\_message***: Returns a message indicating there is a syntactic (XML based) or semantic (logical structure of request) error. Context will be given in human readable text.
* ***bad\_request***: Request was send to wrong endpoint on the node/service in question
* ***authentication\_failed***: The service could not determine who the user really was
* ***unauthorized***: The user is not allowed to request the content/resource
* ***message\_not\_allowed***: The wrong type of message was sent to the service (indicates a deeper level of semantic checking beyond ‘bad\_message’)
* ***event\_type\_not\_allowed***: The eventType is not allowed or unsupported by this service (indicates a deeper level of semantic checking beyond ‘bad\_message’)
* ***request\_too\_large***: The request message was too large, or there were too many requests from a given service.
* ***request\_timeout***: The request has taken too long to service
* ***protocol\_not\_allowed***: Version of NMC, SOAP, HTTP, TCP, etc was not understood between the client and server.

# Servererror

This represents an error issued to a client based on the behavior of the service that s serving the request. Using just the top level, e.g. “http://perfsonar.net/status/servererror” is considered to be acceptable, but not standard. The following subclasses were identified:

* ***data\_fetch\_error***: The request is valid, but there is an underlying problem with the service backend.
* ***too\_busy***: The service is unable to act on the request at this time due to internal limitations/problems.
* ***administrative\_down***: The service has been configured to not respond.

# Next Steps

After ratification, these items will be included in the base protocol document.