United States
Environmental
Protection
Agency

Office of Air Quality Planning and Standards
Outreach and Information Division
National Air Data Group
Research Triangle Park, NC 27711

.

AQS Submit Automation

Concept of Operations

VERSION 1.3

Date Revised: July 26, 2011

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OFFICE OF AIR QUALITY PLANNING AND STANDARDS
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Table of Contents

Revision History

Date	Version	Description of Revision or Change	Author
May 5, 2010	0.1	Initial Draft – Discussion Only	Robert Coats
Oct. 21, 2010	0.2	Update to IEEE Std. 1362-1998 format. Update contents based on current information.	Robert Coats
March 31, 2011	1.0	Initial official release.	Robert Coats
May 24, 2011	1.1	Updated operational scenarios based on correspondence with CDX about contents of EN Header. Also added appendix with EN Header Definition	Robert Coats
May 31, 2011	1.2	Updated use of EN header fields based on feedback from Steve Newman, OEI/OIC.	Robert Coats
July 26, 2011	1.3	Updated document based on feedback from EN / AQS users: • If "Stop on Error" is selected, the process will stop after Stat/CR. Also, "warnings" will stop the process. • When data is posted to production, the submission (job) status will always be set to "COMPLETE", even if individual transactions in the submitted file remained pre-production because of errors, and the error details will be available via the processing reports (e.g. "Edit Detail Report"). • When no data is posted to production because of errors, the submission status will be set to 'FAILED". • The EN Header properties, Payload Type and Schema Version were added at CDX request. • A section was added to define how AQS User-IDs are associated with Exchange Network User IDs.	R. Coats

Executive Summary

This document is the Concept of Operations for the EPA Air Quality System (AQS), Submit Automation project.

The Air Quality System (AQS) is the official repository for ambient air quality data at the US Environmental Protection Agency (EPA). AQS contains ambient air quality measurements from thousands of monitoring stations around the country that have been collecting data for many decades. AQS is an interactive system where State, Local, and Tribal (SLT) governments submit the ambient air quality data they collect. The flow of data from the SLT air pollution control agencies is critical to the success of EPA's strategic goal for maintaining and improving outdoor air quality.

This project is a direct result of an Environmental Counsel of States (ECOS) resolution and the EPA Administrator's direction in response to this resolution, to make the National Environmental Information Exchange Network the preferred way for the EPA and states to share and exchange data.

Presently, data are submitted to AQS from State, Local, and Tribal agencies via the Exchange Network and the EPA Common Data Exchange (CDX). However, at present, the users must thereafter manually log in to the AQS application to load their data into the AQS database. This project is being instigated to remove this manual step. i.e. To change the processing so that once the data has been submitted, it is automatically loaded into the AQS database.

This document describes the characteristics of the desired system enhancement from a user perspective. It communicates the overall characteristics of the proposed system enhancement to project stakeholders (AQS users, software developers, IT support staff, and EPA management). It describes both the present system, and the proposed system. It is intended to provide a definition of the proposed enhancement that can be used by management for cost-benefit and needs analysis, and to serve as the basis for a development project.

1 Scope

1.1 Identification

This document is the Concept of Operations for the EPA Air Quality System (AQS), Submit Automation project.

1.2 Document Overview

This document describes the characteristics of the desired system enhancement from a user perspective. This document is intended to communicate the overall qualitative and quantative characteristics of the proposed system enhancement to project stakeholders (AQS users, software developers, and EPA management). i.e. This is a product oriented document – i.e. it describes the resulting product characteristics.

This document is intended to provide the initial **definition** of the desired system enhancements. It is written using terminology and notation that can be verified by the users, while at the same time, is intended to be sufficiently complete and non-ambiguous to allow the scope and cost of the enhancement effort to be estimated.

This document provides the product boundaries for the system enhancement. i.e. What product/system characteristics should be or should not be included enhancement.

1.2.1 Relationship to System Development Life Cycle

This is the first work product associated with a new product/project (which can be either a completely new system or an enhancement to an existing system). It is created before and intended to serve as the basis for the following:

- Needs analysis
- Cost-benefit analysis
- Project Charter
- Detailed Requirements Definition

1.3 System Overview

1.3.1 AQS System

The Air Quality System (AQS) is the official repository for ambient air quality data at the US Environmental Protection Agency (EPA). The system is managed by the Office of Air and Radiation / Office of Air Quality Planning and Standards / Outreach and Information Division / National Air Data Group (OAR/OAQPS/OID/NADG) in Research Triangle Park (RTP), North Carolina. AQS is hosted and operated by the EPA National Computer Center (NCC), also at RTP, North Carolina. AQS is presently in production operation.

The primary purpose of AQS is to support EPA's regulatory mission, by hosting the ambient air quality monitoring data that serves as the basis for determining compliance with the Clean Air Act and amendments. Its secondary purpose is to serve as the repository of air quality data for the Air Quality Research community (both within the EPA and Academia) and the health effects research community.

AQS contains ambient measurements from thousands of monitoring stations around the country that have been collecting data for many decades. AQS is an interactive system where State, Local, and Tribal (SLT) governments submit the ambient air quality data they collect. The flow of data from the SLT air pollution control agencies is critical to the success of EPA's strategic goal for maintaining and improving outdoor air quality. AQS accepts approximately 90 million data measurements per year, facilitates the quality assurance of these values, calculates summaries at various time scales (sub-daily, daily, quarterly, and annual), and serves out about 50,000 reports per year. It is a multi-tiered Oracle application with approximately 70 forms and 35 reports with 700 users.

Presently, ambient air quality monitoring data, and its associated metadata, are submitted to AQS from a reporting SLT agency via either an Exchange Network node or via the EPA Common Data Exchange (CDX) web application. In both cases, that data is received by the EPA CDX exchange network node.

1.3.2 The National Environmental Information Exchange Network

The National Environmental Information Exchange Network (commonly referred to as just the "Exchange Network") is a partnership among States, Local agencies, Tribes, and the U.S.EPA for the purpose of sharing environmental information. The Exchange Network is a "virtual private network" that exists within the Internet. The connection point for each partner organization to the Exchange Network is a "Node". Nodes communicate with other Exchange Network nodes by use of a "protocol" that has been defined for exchanging environmental data. "Client Nodes" can also exist; they are software applications that can request services from other Exchange Network nodes, but do not provide services to other Nodes.

Each type (air, water, waste, and etc.) of environmental information exchange between partners is defined to be a "Flow". Each flow has a Flow Configuration Document, an XML schema, a Data Exchange Template, and a Trading Partner Agreement.

1.3.3 Context Diagram for Proposed Enhancement

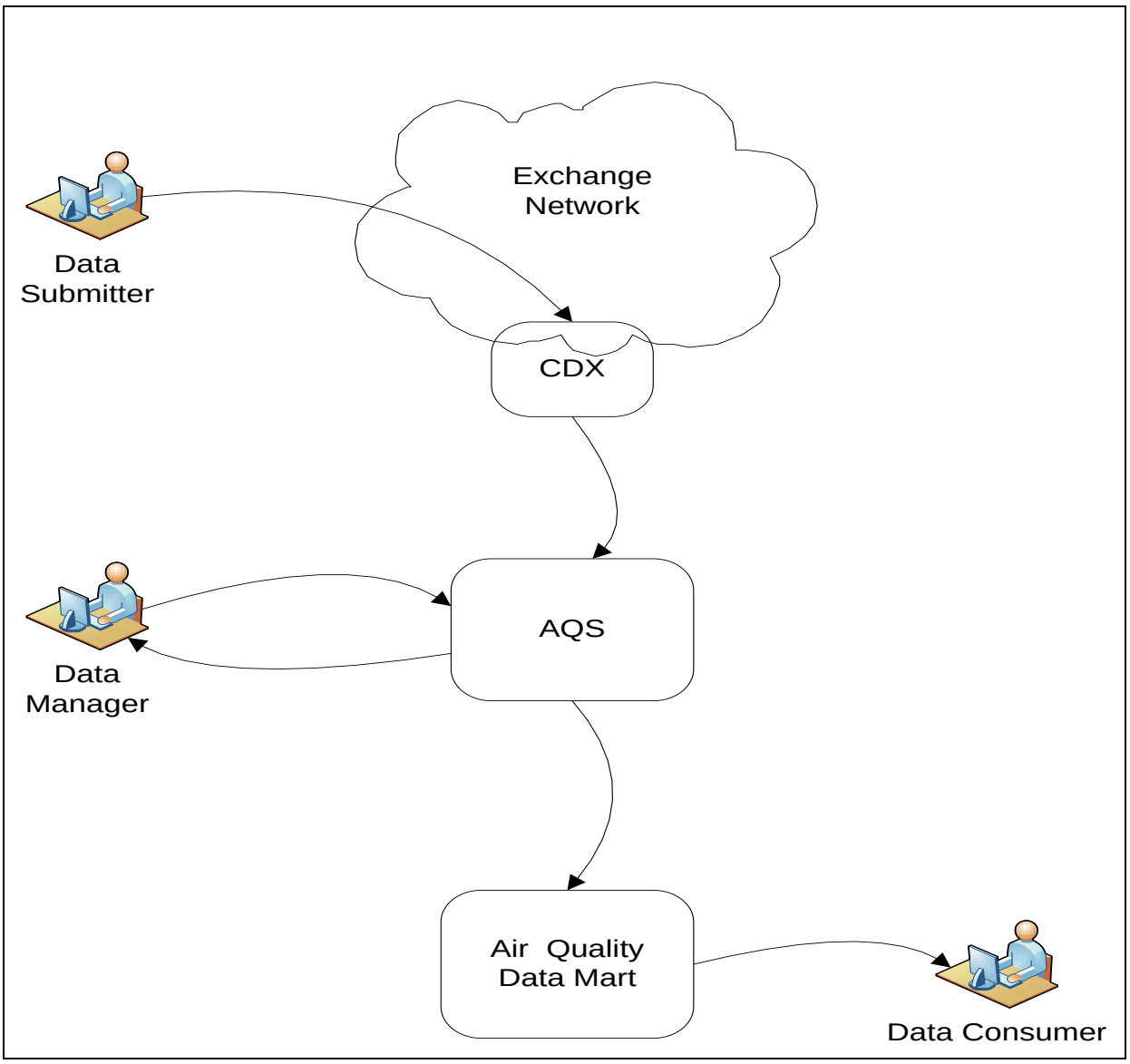

Figure 1: AQS Processing Overview

State, local, tribal user submits data to AQS via CDX (the EPA's node on the Exchange Network), and it is automatically processed (if error free) to production status . Data within AQS is managed via the AQS forms and reports application by state, local, tribal, and EPA personnel. Data from AQS is copied nightly to the Air Quality Data Mart, where it is published via a set of Exchange Network compliant web services.

2 References

1. ***IEEE Std. 1362-1998 – IEEE Guide for Information Technology – System Definition – Concept of Operations (ConOps) Document***, Institute of Electrical and Electronics Engineers, Inc., New York NY, 1998
2. Memo: Achieving the Promise of the National Environmental Information Exchange Network, July 7, 2009, Lisa P. Jackson, EPA Administrator
3. "Exchange Network National System Flows Strategy", Draft April 6, 2010.
4. "Air Quality System (AQS) Flow Implementation Guide", July 15, 2010, http://www.exchangenetwork.net/exchanges/AQS_flow%20implementation.pdf
5. "State/EPA Commitment to the Full Implementation of the National Environmental Information Exchange Network", a resolution of the Environmental Council of States, Resolution Number 09-4, March 23, 2009.
6. "Exchange Network Document, Header Specification", Version 2.0, Jan. 9, 2008, http://www.exchangenetwork.net/dev_schema/HeaderSpecification_v2.0.pdf

3 Present System or Configuration

3.1 Background, Objectives, and Scope

As noted in the System Overview, AQS is the primary EPA repository for ambient air quality monitoring information. This includes 1) the measurement data itself, 2) the metadata for the sites (locations) where measurements are taken and the monitoring equipment utilized to collect and analyze samples, and 3) the precision and accuracy measurements that are utilized for Quality Assurance of the monitoring process.

3.2 Operational Policies and Constraints

3.2.1 Policies

AQS is governed by applicable EPA policies, Federal Government policies, and public laws. Of particular applicability to AQS are the following:

1. EPA IRM Policy Manual, Chapter 3: State/EPA Data Management, CIO 2100.0
2. EPA Capital Planning and Investment Control (CPIC) Program Policy, CIO 2120.0
3. EPA System Life Cycle Management Policy, CIO 2121.0
4. EPA Enterprise Architecture Policy, CIO 2122.0
5. EPA Information Collection Policy, CIO 2134.0
6. EPA Agency Network Security Policy, CIO 2150.0

3.2.2 Constraints

The following are constraints that are imposed by the above policies, as they relate to AQS Operations and Maintenance:

1. AQS must be hosted by the EPA National Computer Center
2. AQS must accept the submission of regulatory data exclusively from the EPA CDX.

3.3 Description of Present System or Configuration

3.3.1 Present System Logical Model

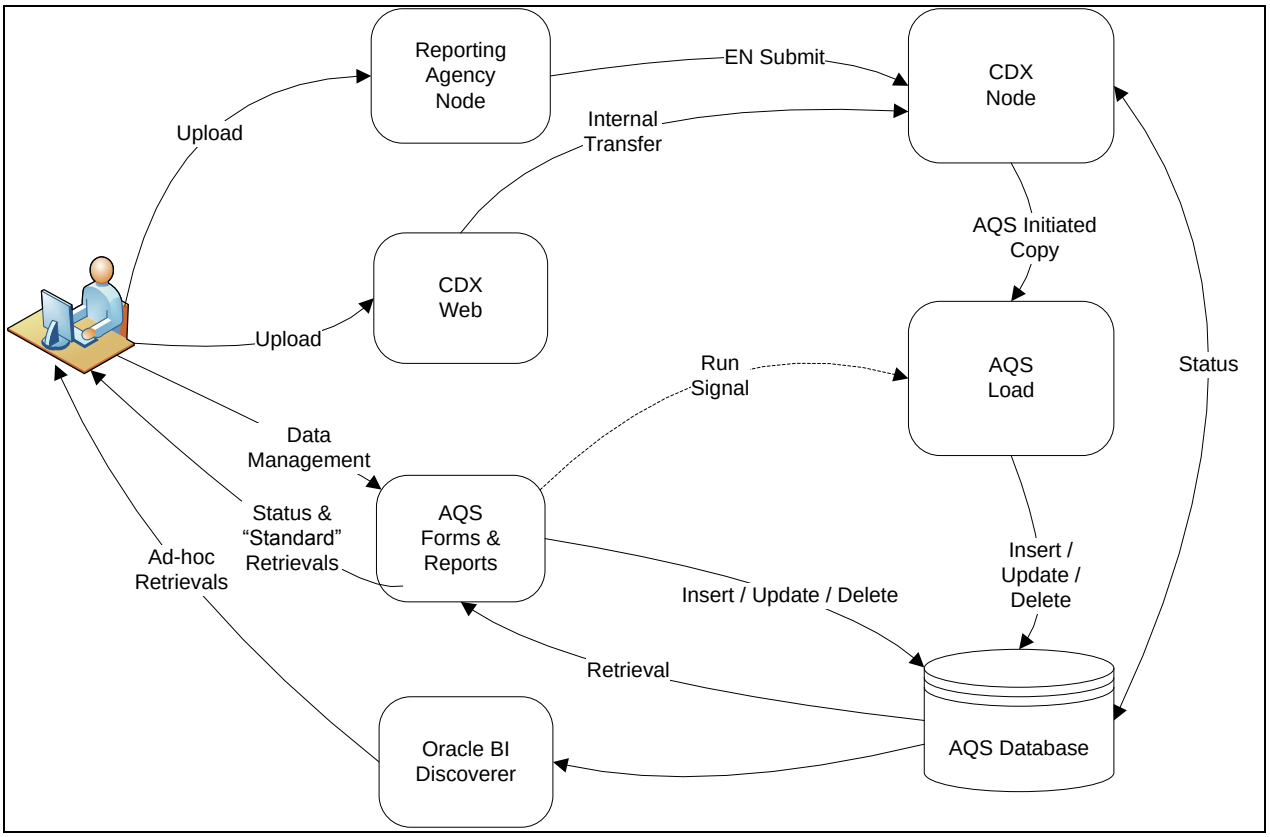

Figure 2: Present AQS Logical Model

Figure 2 shows at a logical level the AQS related components and their interfaces. (The present physical configuration (i.e. mapping of software components to IT infrastructure resources) is provided in the Appendices.) The workflows described in the next section provide a description of how the system is used.

3.3.2 Present System Work Flows

3.3.2.1 Data Submission

This workflow describes the process whereby State, Local, and Tribal agency representatives submit ambient air quality measurements, and related metadata to the AQS.

1 Data submitter collects and formats data (in one of 3 acceptable formats) for submission to AQS.
2 Submitter uploads data to CDX. This may be accomplished either via the CDX-Web facility or the Exchange Network CDX-Node interface. (No later processing is affected by the method used.)

3 Database table shared between CDX and AQS (hosted by CDX and linked from AQS via a database link) is updated with new file metadata (e.g. file name, location on CDX server, and submitter user ID).
4 Submitter interactively logs in to AQS via OAS Oracle Forms web application, and Oracle form authenticates against the AQS database (Oracle db user-id & Password)
5 Submitter accesses the AQS "Batch" form to view files that have been uploaded to CDX (via the database link and shared table).
6 Submitter executes the AQS "LOAD" operation (via a button on the form).
7 The load process retrieves the file from the CDX node and loads the data into the AQS database.
8 User receives status of LOAD operation from the Oracle Forms interface (User may execute additional processing operations (e.g. Stat/CR and Post) depending on the type of data submitted.)

3.3.2.2 Data Management

This workflow describes the process whereby State, Local, and Tribal, or EPA personnel access AQS to manage data in the AQS database.

1 User interactively logs in to AQS via OAS Oracle Forms web application, and Oracle form authenticates against the AQS database (Oracle db user-id & Password)
2 User accesses specific AQS OAS forms to perform the desired operation. OAS form accesses AQS database via active session with access control determined by the user's user-id.
3 The following types of data management operations are supported. (This is not an exhaustive list.)
   a. Correction of submitted data that contains errors (using AQS CORRECT forms)
   b. Modification of site-monitor metadata, modification of measurement data and metadata, modification of precision and accuracy data and metadata (using AQS MAINTAIN forms). Note: In all cases, users typically only modify a few records at the time, rather than a large volume of data.
   c. Creation of exceptional event definitions and flagging data for exceptional event exclusion. (via MAINTAIN forms)
   d. Concurrence with exceptional event definitions and flagging (EPA regional office personnel via MAINTAIN forms)
   e. Certification of Monitor-Years (EPA Headquarters personnel via MAINTAIN forms)
   f. Maintenance of User Profile information (via Admin/Security form)
   g. Maintenance of Configuration Tables and Code tables (via Admin forms)

3.3.2.3 Standard Retrievals

1 User interactively logs in to AQS via OAS Oracle Forms web application.
2 User access AQS Retrieval form (OAS Oracle Form) to select one of the pre-defined standard reports and enter data selection criteria.
3 Form executes the Report process (which runs under an OAS Reports Server).
4 Report is executed to generate either a print-formatted report, or a work file.
5 Delivery:

a. If the user has requested on-line delivery, the form displays a progress bar while the report is executing, and then displays the results in the user's browser window, or for http download for file extractions.
b. If the user has requested delivery to CDX, the process executes CDX-Xfer client to upload files to CDX.
c. If the user has requested EMAIL delivery, Unix sendmail is executed to create email message with link (URL) to output file. (For email delivery, user clicks on link in email and output is displayed in user's browser.)

3.3.2.4 Ad-Hoc Retrievals

1 User interactively logs in to OAS Oracle Discoverer web application, and Discoverer authenticates against the AQS database (Oracle db user-id & Password)
2 User performs ad-hoc queries against database.

3.4 Modes of Operation

1. Normal: Application executes at the EPA National Computer Center.
2. Disaster Recovery: Application executes at the designated Disaster Recovery Site.

3.5 User Classes and Other Involved Personnel

The specific classes of AQS users are as follows:

1 Read-Only User:

2 Raw-Data Update User

3 Precision and Accuracy Update User

4 Regional Admin User

5 EPA Headquarters User

6 Data Administrator

Note: These classes of users map into AQS security roles.

3.5.1 Organizational Structure

There is no unifying organizational structure among the various classes of AQS users. The following are the types of organizations to which users may belong:

1 State Agencies

2 Local Agencies

3 Tribal Agencies

4 Contractors

5 EPA Regional Offices

6 EPA Headquarters Office (i.e. OAQPS)

3.5.2 Profiles of User Classes

1 Read-Only User:

   a. Who: Non privileged user. Typically state, local, tribal, or external.

   b. Access: Read-only access to all production data.

   c. Responsibility: None.

2 Raw-Data Update User

   a. Who: Typically state, local, or tribal. Sometimes EPA regional office personnel, acting on behalf of the submitting agency.

   b. Access: Write access to production raw-data (sample measurement) tables and site-Monitor metadata, and read-only access to all others.

   c. Responsibility: Data Submission.

3 Precision and Accuracy Update User

   a. Who: Typically state, local, or tribal. Sometimes EPA regional office personnel, acting on behalf of the submitting agency.

   b. Access: Write access to production precision and accuracy tables and site-Monitor metadata, and read-only access to all others.

   c. Responsibility: Data Submission.

4 Regional Admin User

   a. Who: EPA Regional Office Personnel

   b. Access: Write access to SITE regional evaluation date and to exceptional event flag concurrence. Read-only access to all other data.

   c. Responsibility: Site evaluation and exceptional event flagging concurrence.

5 EPA Headquarters User

   a. Who: OAQPS personnel.

   b. Access: Write access to SITE headquarters evaluation date, and Monitor-Year Certification.

   c. Responsibility: Site evaluation, Monitor-Year certification, and assessment of data completeness.

6 Data Administrator:

   a. Who: Application Owner or his designee

   b. Access: Full access to all AQS data

   c. Responsibility: Maintenance of AQS control and code tables.

3.5.3 Interactions Between User Classes

Data submitters, RAW_DATA_UPDATE and PRECISION_AND_ACCURACY_UPDATE, are typically State, Local, Tribal, and Contractor personnel. They are supported by regional office personnel and EPA Headquarters personnel.

Regional office personnel are supported by EPA Headquarters personnel.

3.5.4 Other Involved Personnel

The primary consumers of AQS regulatory data are the Air Quality Analysis Group (AQAG) and the Air Quality Monitoring Group (AQMG) within OAQPS. These groups are responsible for interpreting the data for making attainment/non-attainment decisions for compliance with the Federal Regulations, and for analysis of the quality assurance data and completeness information in AQS for compliance with the Federal Regulations.

3.6 Support Environment

AQS support is provided by the EPA Help Desk, who has access to NCC support personnel for resolution of IT infrastructure issues, and OAQPS personnel for resolution of software issues.

CDX support is provided by the CDX Help Desk.

4 Justification and Nature of Changes

4.1 Justification for Changes

In March 2009 the Environmental Council of States (ECOS) passed a unanimous resolution calling on all Exchange Network partners to make the Exchange Network the preferred mechanism for exchanging environmental data [5]. In response the EPA Administrator, Lisa P. Jackson, directed the EPA to make the "preferred way EPA, states, tribes, and others share and exchange data" [2].

In response to the above, the Exchange Network Governance, in cooperation with the EPA Office of Environmental Information developed a set of guidelines/criteria for defining an Exchange Network "Robust Flow" [3]. These criteria are as follows:

1. Support fully automated node-to-node flows.
2. Provide appropriately scaled EN solutions for partners of all sizes, needs, and capabilities. Some partners such as tribes and local clean air authorities may not need a fully functional node. A customized EN client or EN web client should be available to these users.
3. Support a fully automated process for reporting transaction status, processing results, and QA results from receipt by CDX through final processing in the National System.
4. Develop and make accessible stable documentation that describes all flow requirements. This includes a complete Flow Configuration Document (FCD) that is in compliance with EN procedures for version management.
5. Provide a national standard set of query/solicit services defined in the FCD whether or not data are currently published. Implement a publishing interface where published data are critical to partner business processes (such as NPDES permit information for NetDMR).
6. Have a clear path to eliminate legacy system alternatives to EN exchanges, including transition support for partners.

That document also analyzed each of the larger flows to EPA, including AQS, for compliance with these criteria. The following action items were identified for AQS:

1. Automate the (currently manual) step for loading data into the AQS.
2. Support automated messaging of the transaction status.
3. Develop a value-added, program-specific, EN Web Node Client for submission of AQS data.
4. Adopt or modify the Air Quality Data Exchange (AQDE) publishing services (which utilize the AQS Submission XML schema) as the publishing standard defined in the AQS Flow Configuration Document.
5. Discontinue use of the non-EN CDX-Web application once steps 1-3 are completed.

Requirements 1 and 2 map directly to AQS. Requirement 3 and 5 are responsibilities that have been accepted by the EPA OEI Office of Information Collection (OIC). Since publishing of air

quality data is performed by the Air Quality Data Mart, rather than by AQS, it is assigned to the Air Quality Data Mart. (i.e. Requirements 3-5 are beyond the scope of this Concept of Operations document.)

4.2 Description of Desired Changes

The above requirements map into the following AQS-specific objectives for this enhancement:

1. When a file of air quality monitoring information is submitted to AQS via the Exchange Network, it is automatically processed (loaded) by AQS without requiring the submitter to log in to the AQS application forms to manually initiate the processing.
2. If errors do not occur in the processing of a submitted file, then at the completion of the process, all submitted data is at "Production" status. (i.e. All present intermediate processes, such as load, stat/cr, and post, are automatically performed.)
3. If errors do occur in the processing of submitted data, then processing stops at the completion of the Stat/CR process.
4. AQS batch process reports (i.e. Edit Load Summary, Edit Error Detail, Scan Report, Stat Evaluation Report, or Raw Data Inventory Report) are automatically generated.
5. Status Reporting:
    a. At the completion of every SUBMIT operation, an email shall be sent to the submitting user that provides both the completion status of the operation and access to any errors reports generated.
    b. Additionally, the user shall be able to obtain the status (Pending, In-process, Completed, Failed) via the Exchange Network GET STATUS service.
    c. Any errors encountered by the SUBMIT operation shall be available to the user via the Exchange network DOWNLOAD service.

4.3 Priorities Among Changes

Various options exist for allowing user specification of the final processing step for automatic submission processing and for the system behavior when an error is encountered during automatic processing. These options are a lower priority than the base functionality.

4.4 Changes Considered but Not Included

1 The EPA OEI OIC staff have advocated removing all of the data integrity checking functionality from AQS and implementing this functionality in the CDX node. This option has been rejected because of its estimated cost (> $1M), and because that would significantly increase the complexity of access paths that do not utilize CDX (i.e. the interactive forms access to data).

2 A common authentication domain was desired for both AQS and the Exchange Network, so that users are not required to maintain two distinct user-ids and passwords in order to interact with the AQS Flow. However, consensus could not be reached between the two OEI offices, OTOP and OIC, to allow interoperability between CDX and the NCC.

3 There is a new Exchange Network error reporting XML format. Resources are not available at this time to migrate to this format for AQS Submission errors. This will be considered at a later date.

4.5 Assumptions and Constraints

1 Exchange Network criteria 2 – "Provide appropriately scaled EN solutions for partners of all sizes … A customized EN client or EN web client should be available to these users", is being addressed independently by the EPA OEI CDX personnel.

2 Exchange Network criteria 6, "Have a clear path to eliminate legacy system alternatives to EN exchanges, including transition support for partners", is taken in this context to mean elimination of CDX-Web, after the above AQS-specific node client is available. This action is the responsibility of EPA OEI CDX.

5 Proposed System Concept

5.1 Background, Objectives, and Scope

The objectives of the proposed system are to support more complete integration with the Exchange Network via implementation of the objectives provided in Section 4.2.

5.2 Operational Policies and Constraints

5.2.1 Policies

There is no change to the policies applicable to AQS.

5.2.2 Constraints

1. Data submitted to AQS must be authenticated – i.e. if data is submitted for user "XYZ", then AQS must be able to verify that XYZ indeed submitted the data.
2. Automation of the submit/load process shall maintain the present ownership and access control paradigm; i.e. data is "owned" by screening groups, and update access to the data is only allowed to users associated with the screening group.

5.3 Description of the Proposed System

5.3.1 Proposed System Logical Model

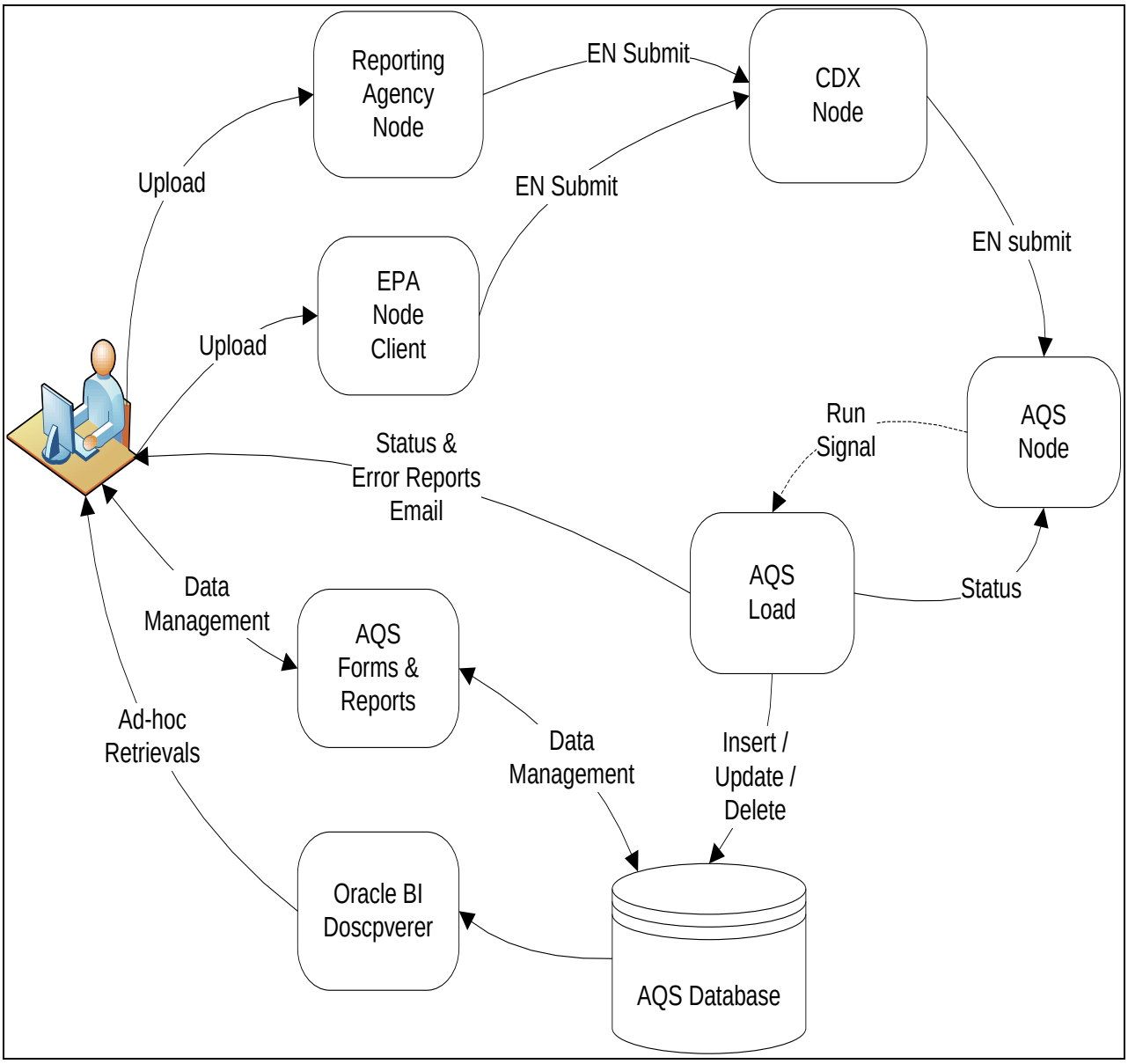

Figure 3: Proposed System Logical Model

Figure 3 provides a logical model of the AQS related components and their interfaces. This diagram shows an overview of all required processes and system accesses. The workflows for each of these processes is provided in Section 6, Operational Scenarios.

Since authentication is critical to the system concept, the sections below show the authentication interface for each process.

5.3.1.1 Data Submission

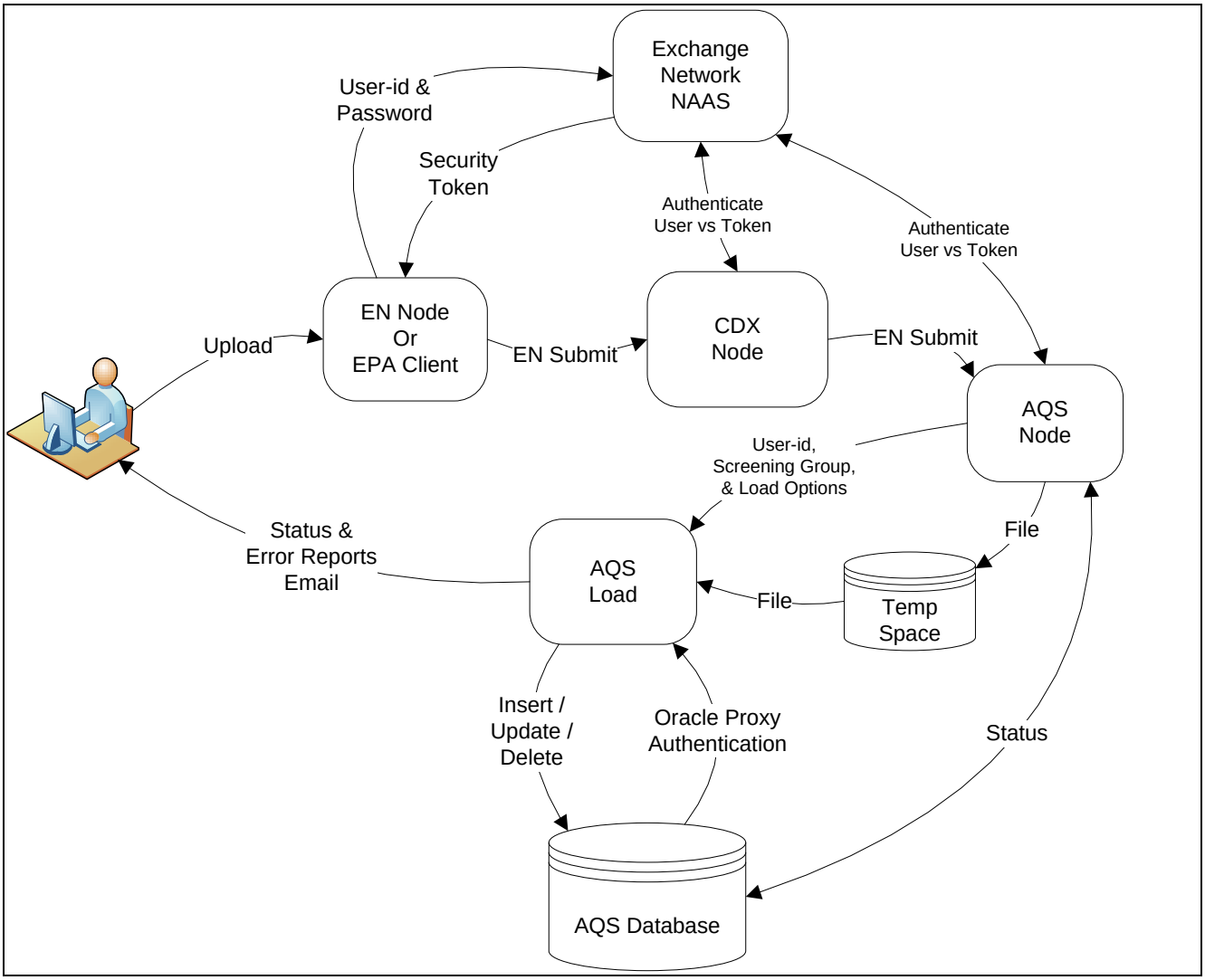

Figure 4: Submit Authentication Detail

Submission Options

Because agencies that submit data to AQS have differing business processes, it is appropriate for AQS to support different behavior to support those processes. In particular, some agencies have extensive quality assurance and data review processes that are executed before the data is submitted to AQS, while others have few QA and data review processes and depend on facilities provided by AQS to perform this needed step. The following two options shall be supported to implement these differing requirements:

1. Option for "Final Processing Step", with values: {"Stage", "Load", "Stat/CR", "Post"}. This option controls how completely submitted data is processed to become production data. (Default value is "Post")
2. Option for "Stop On Error", with values {"Yes", and "No"}. This option control whether or not whether or not processing should stop if an error is encountered or proceed for all of the

valid (non-error-containing) data. If selected, processing will stop at the end of the "Stat/CR" step. (Default value is "Yes")

5.3.1.2 Data Management & Standard Retrievals

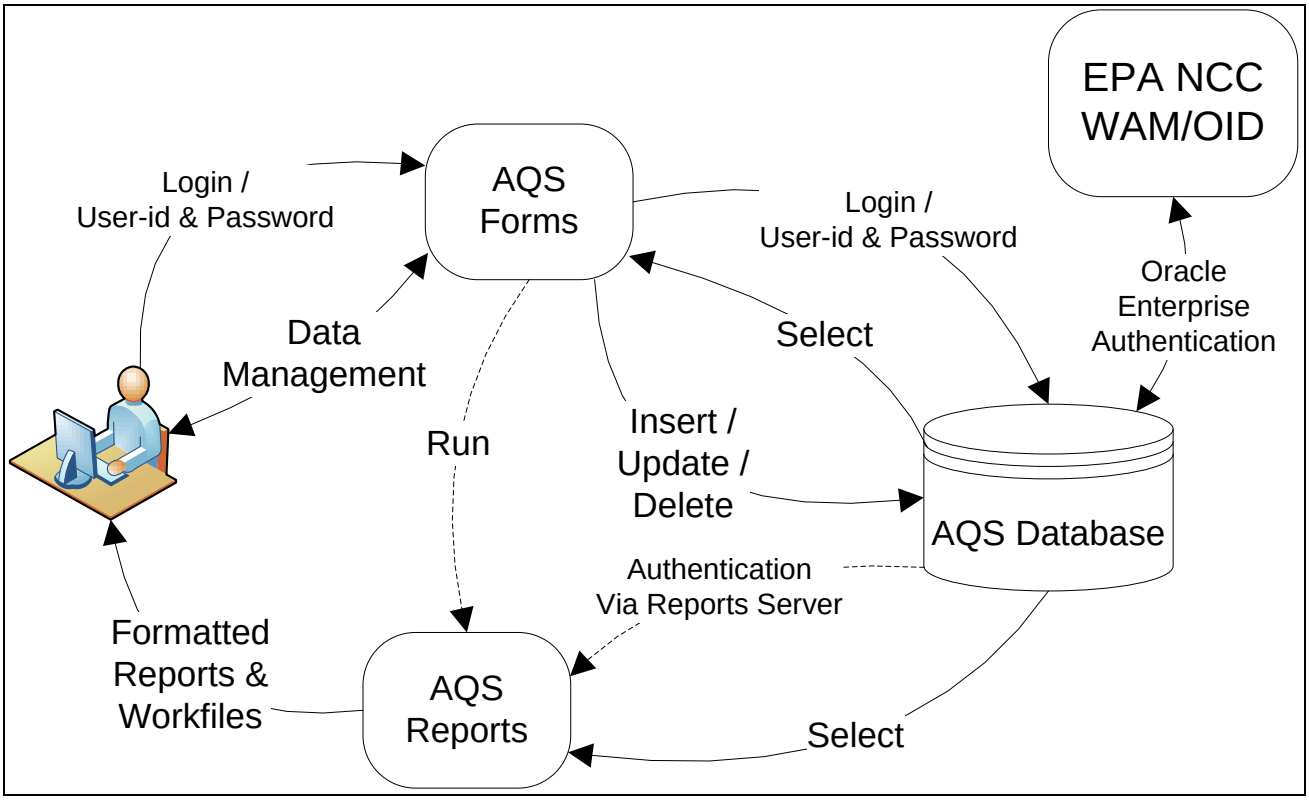

Figure 5: Interactive Authentication Detail

5.3.1.3 Ad-Hoc Retrievals

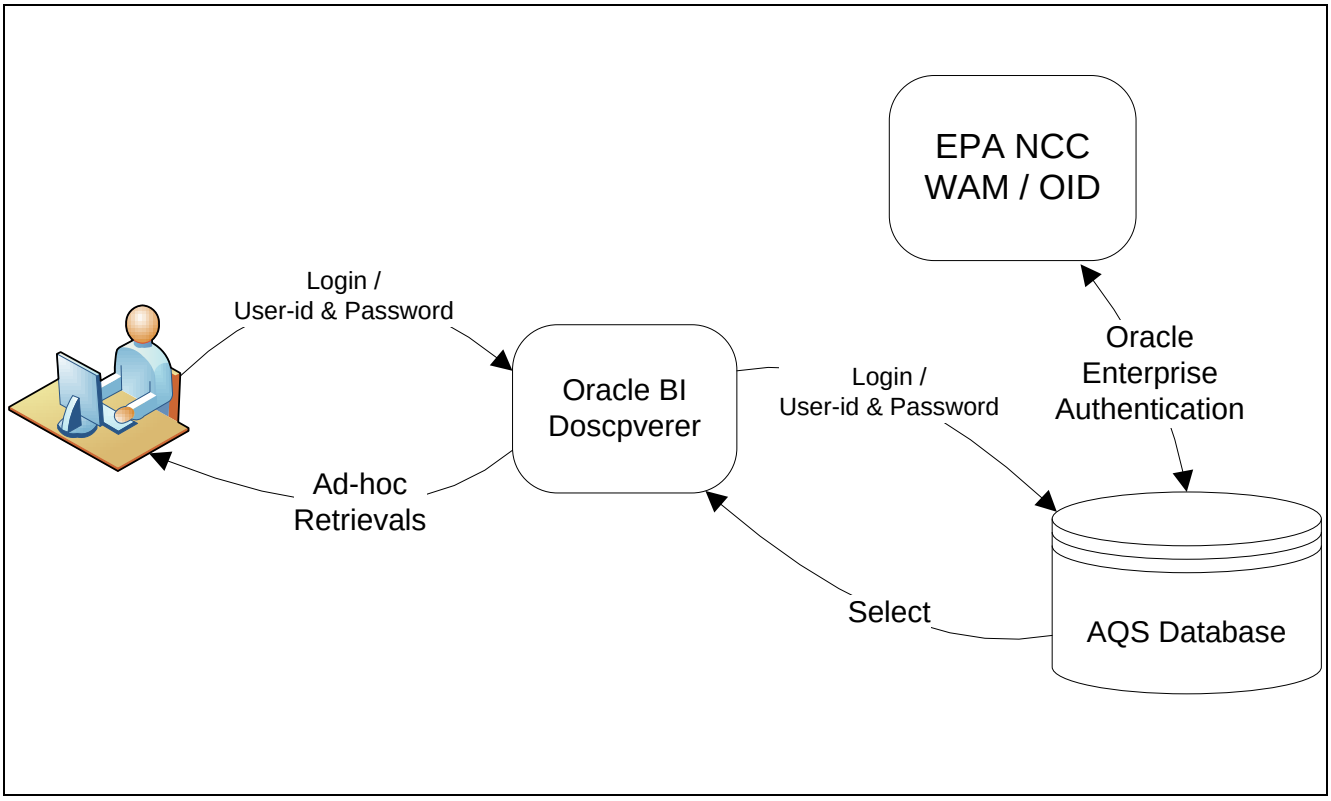

Figure 6: Ad-Hoc Authentication Detail

5.4 Modes of Operation

1. Normal: Application executes at the EPA National Computer Center.
2. Disaster Recovery: Application executes at the designated Disaster Recovery Site.

5.5 User Classes and Other Involved Personnel

The specific classes of AQS users are as follows:

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2 Raw-Data Update User

3 Precision and Accuracy Update User

4 Regional Admin User

5 EPA Headquarters User

6 Data Administrator

Note: These classes of users map into AQS security roles.

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There is no unifying organizational structure among the various classes of AQS users. The following are the types of organizations to which users may belong:

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3 Tribal Agencies

4 Contractors

5 EPA Regional Offices

6 EPA Headquarters Office (i.e. OAQPS)

5.5.2 Profiles of User Classes

1 Read-Only User:

   a. Who: Non privileged user. Typically state, local, tribal, or external.

   b. Access: Read-only access to all production data.

   c. Responsibility: None.

2 Raw-Data Update User

   a. Who: Typically state, local, or tribal. Sometimes EPA regional office personnel, acting on behalf of the submitting agency.

   b. Access: Write access to production raw-data (sample measurement) tables, and read-only access to all others.

   c. Responsibility: Data Submission.

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   a. Who: Typically state, local, or tribal. Sometimes EPA regional office personnel, acting on behalf of the submitting agency.

   b. Access: Write access to production precision and accuracy tables, and read-only access to all others.

   c. Responsibility: Data Submission.

4 Regional Admin User

   a. Who: EPA Regional Office Personnel

   b. Access: Write access to SITE regional evaluation date and to exceptional event flag concurrence. Read-only access to all other data.

   c. Responsibility: Site evaluation and exceptional event flagging concurrence.

5 EPA Headquarters User

   a. Who: OAQPS personnel.

b. Access: Write access to SITE headquarters evaluation date, and Monitor-Year Certification.

c. Responsibility: Site evaluation, Monitor-Year certification, and assessment of data completeness.

6 Data Administrator:

a. Who: Application Owner or his designee

b. Access: Full access to all AQS data

c. Responsibility: Maintenance of AQS control and code tables.

5.5.3 Interactions Among User Classes

Data submitters, RAW_DATA_UPDATE and PRECISION_AND_ACCURACY_UPDATE, are typically State, Local, Tribal, and Contractor personnel. They are supported by regional office personnel and EPA Headquarters personnel.

Regional office personnel are supported by EPA Headquarters personnel.

5.5.4 Other Involved Personnel

The primary consumers of AQS regulatory data are the Air Quality Analysis Group (AQAG) and the Air Quality Monitoring Group (AQMG) within OAQPS. These groups are responsible for interpreting the data for making attainment/non-attainment decisions for compliance with the Federal Regulations, and for analysis of the quality assurance data and completeness information in AQS for compliance with the Federal Regulations.

5.5.5 Support Environment

AQS support is provided by the EPA Help Desk, who have access to NCC support personnel for resolution of IT infrastructure issues, and OAQPS personnel for resolution of software issues.

CDX support is provided by the CDX Help Desk.

6 Operational Scenarios

The following are representative samples of user interactions with the proposed system. Note: For Data Management operations, CORRECT, is an example intended to show processing and authentication for an interactive AQS Forms and Reports user; all other existing functionality shall remain in place.

6.1 Submission From Reporting Agency Node

1 User performs login to agency (State, Local, or Tribal) node using Exchange Network user-id and password.

   a. Reporting Agency node performs EN Authenticate operation against NAAS by sending the user-id and password (MD5 digest or more sophisticated methods allowed by EN)

   b. NAAS authenticates user-id and password.

   c. NAAS generates EN Security Token and returns to Reporting Agency Node.

2 User interacts with reporting agency node to select data submission and provides the following information:

   a. Payload document (Note: May be derived from agency data system rather than provided by the user as a file.)

      i) Document Name: Note: This name will be passed through to AQS to allow the user to identify the submitted data.

      ii) Document Contents

   b. AQS User ID

   c. AQS Screening Group

   d. AQS Load Options (Note: If these are omitted the receiving AQS node will provide default values)

      i) Final Processing Step {“Stage”,” Load”, “Stat/CR”, “Post}

      ii) Stop On Error {“Yes”, “No”}

3 Reporting Agency node creates EN Header, zips the combined Header and Payload file, and performs EN SUBMIT operation. Final document (including the Submit SOAP message and the EN Header) contains at least the following information:

   a. EN Security Token (SOAP Submit message; encodes user’s EN User-id)

   b. Document Name: User’s name for the file. (SOAP Submit message)

   c. Document Type: “ZIP” (SOAP Submit message)

   d. AQS User-ID (EN Header Field: ApplicationUserIdentifier)

   e. AQS Screening Group Name (EN Header Property: Screening Group)

   f. AQS Load Options (EN Header)

i) Property: Final Processing Step

ii) Property: Stop On Error

g. Payload document.

h. Payload Type: The format of the file submitted (EN Header Property: "XML", "FLAT" for delimited file, or "CARD" for card-image data) (CDX Requirement)

i. Schema Version: EN Header Property: If the submission is an XML file, then this must be there XML Schema Version Number. (CDX Requirement)

4 Reporting Agency node waits for Transaction ID to be returned by CDX Node.

5 EPA CDX Node receives EN Submit

a. CDX interfaces to the NAAS to verify that the security token is valid for the user, and extracts the user's EN User-ID. (SOAP fault generated if security token is not valid or if document is not zip file containing single XML Header.)

b. CDX sets the transaction status to 'RECEIVED" and returns a "CDX Transaction ID" to the submitting node. (At this point all synchronous portions of the submission are completed. All remaining steps are performed asynchronously.)

c. CDX performs CDX specific data management functions, such as XML validation and archiving submitted data. If these operations fail, the transaction status is set to 'FAILED".

d. The CDX Node authenticates to the NAAS, and forwards all submitted information to AQS Node, via an EN SUBMIT operation. (Note: The original EN UserID is encoded in the new Security Token so that it can be extracted by the AQS Node, to determine the ID of the original submitter.)

6 AQS Node receives EN Submit

a. The AQS Node interfaces to the NAAS to verify that the security token is valid and extracts the original submitter's EN user-id. (SOAP fault generated if not valid.)

b. The AQS Node validates that the EN User-ID is authorized to submit data for the AQS user-id and Screening Group provided in the EN header. (Internal AQS lookup)

c. The AQS Node saves the payload document to temporary storage on the server with a unique name and saves the submission metadata (from step #3 above) into the AQS database.

d. If any of the above operations fail, the AQS Node sets the transaction status to 'FAILED" and sends a SUBMIT RESPONSE message to CDX with the failure reason, and processing stops.

e. If all of the above operations are successful, the AQS Node sets the transaction status to 'PROCESSING" and sends a SUBMIT RESPONSE message to CDX.

7 The AQS Node executes the AQSLOAD process.

8 AQSLOAD performs the following:

a. Uses Oracle Proxy Authentication to connect to Oracle as the AQS Submitting User

b. Loads the contents of the payload document into the AQS database

c. Generates the AQS "batch" status/error reports. (Always generate the Load/Edit Summary Report; generate the Load/Edit Detail Report if any load errors are encountered.)

d. Depending on the "Final Processing Step" option, the AQS processes Stat/CR is executed.

e. If Stat/CR is executed, then the AQS "Scan Report" and "Stat/Eval Report" are generated.

f. Depending on the options provided and any errors encountered, the AQS process POST is executed. Note: For making this decision, any "warnings" from AQSLOAD or statistical anomalies detected by the Stat/CR process will stop the process if "Stop On Error" is requested.

g. If POST is executed, then the AQS "Raw Data Inventory" report is generated.

h. URLs of the generated reports are determined from their position in the directory hierarchy.

i. The user's email address is determined from the AQS database, and an email is generated that contains both the processing log and the URLs of the generated reports.

a. When data is posted to production, the submission (job) status will always be set to "COMPLETE", even if individual transactions in the submitted file remained pre-production because of errors, and the error details will be available via the processing reports (e.g. "Edit Detail Report"), and the number of AQS transactions processed successfully and in error are stored in the AQS database in association with the Transaction ID.

j. When no data is posted to production because of errors, the submission status will be set to 'FAILED"and the failure reason is associated with the Transaction ID.

9 The AQS Node creates a zip archive with the processing job log and any generated reports, and performs an EN SUBMIT operation to CDX for the Transaction ID.

10 The CDX Node receives the SUBMIT message and saves the status information for the Transaction ID.

11 The AQS Node generates a NOTIFY message to CDX for the Transaction ID with the Status and processing detail information.

12 The CDX Node receives the NOTIFY message and saves the status information for the Transaction ID.

13 If the EN Header field, SenderAddress, is not null, then the CDX Node will send an email to this address with the transaction status and processing details.

6.2 Submission From EPA-CDX Node Client Web Interface ("CDX EN Service Center")

1 User performs login to EPA-CDX node client using Exchange Network user-id and password.

   a. Node client performs EN Authenticate operation against NAAS by sending the user-id and password.

   b. NAAS authenticates user-id and password.

   c. NAAS generates EN Security Token and returns to EPA EN Web Client.

2 User interacts with node client to select data submission and provides the following information:

   a. Payload document

   b. AQS User ID

   c. AQS Screening Group

   a. AQS Load Options (Note: If these are omitted the receiving AQS node will provide default values)

      i) Final Processing Step {"Stage", "Load", "Stat/CR", "Post"}

      i) Stop On Error {"Yes", "No"}

3 Node client creates EN Header, zips the combined Header and Payload file, and performs EN Submit operation. Final XML document (including the Submit SOAP message and the EN Header) contains at least the following information:

   a. EN Security Token (SOAP Submit message; encodes user's EN User-id)

   b. Document Name: User's name for the file. (SOAP Submit message)

   c. Document Type: "ZIP" (SOAP Submit message)

   d. AQS User-ID (EN Header Property: Aqs.UserID)

   e. AQS Screening Group Name (EN Header Property: Screening Group)

   f. AQS Load Options (EN Header)

      i) Property: Final Processing Step

      i) Property: Stop On Error

   b. Payload document: Note: The CDX node client will accept a file that can contain any one of the following: An XML document, an AQS delimited input transaction file, or an AQS card-image input transaction file.

   b. Payload Type: The format of the file submitted (EN Header Property: "XML", "FLAT" for delimited file, or "CARD" for card-image data) (CDX Requirement)

   c. Schema Version: EN Header Property: If the submission is an XML file, then this must be there XML Schema Version Number. (CDX Requirement)

4 Node client waits for Transaction ID to be returned by CDX Node.

5 EPA CDX Node receives EN Submit

   a. CDX interfaces to the NAAS to verify that the security token is valid for the user, and extracts the user's EN User-ID. (SOAP fault generated if security token is not valid or if document is not zip file containing single XML Header.)

   b. CDX sets the transaction status to 'RECEIVED" and returns a "CDX Transaction ID" to the submitting node. (At this point all synchronous portions of the submission are completed. All remaining steps are performed asynchronously.)

   c. CDX performs CDX specific data management functions, such as XML validation and archiving submitted data. If these operations fail, the transaction status is set to 'FAILED".

   d. The CDX Node authenticates to the NAAS, and forwards all submitted information to AQS Node, via an EN SUBMIT operation. (Note: The original EN UserID is encoded in the new Security Token so that it can be extracted by the AQS Node, to determine the ID of the original submitter.)

6 AQS Node receives EN Submit

   a. The AQS Node interfaces to the NAAS to verify that the security token is valid and extracts the original submitter's EN User-id. (SOAP fault generated if not valid.)

   b. The AQS Node validates that the EN User-ID is authorized to submit data for the AQS user-id and Screening Group provided in the EN header. (Internal AQS lookup)

   c. The AQS Node saves the payload document to temporary storage on the server with a unique name and saves the submission metadata (from step #3 above) into the AQS database.

   d. If any of the above operations fail, the AQS Node sets the transaction status to 'FAILED" and sends a SUBMIT RESPONSE message to CDX with the failure reason, and processing stops.

   e. If all of the above operations are successful, the AQS Node sets the transaction status to 'PROCESSING" and sends a SUBMIT RESPONSE message to CDX.

7 The AQS Node executes the AQSLOAD process.

8 AQSLOAD performs the following:

   a. Uses Oracle Proxy Authentication to connect to Oracle as the AQS Submitting User

   b. Loads the contents of the payload document into the AQS database

   c. Generates the AQS "batch" status/error reports. (Always generate the Load/Edit Summary Report; generate the Load/Edit Detail Report if any load errors are encountered.)

   d. Depending on the "Final Processing Step" option, the AQS processes Stat/CR is executed.

e. If Stat/CR is executed, then the AQS "Scan Report" and "Stat/Eval Report" are generated.

f. Depending on the options provided and any errors encountered, the AQS process POST is executed. Note: For making this decision, any "warnings" from AQSLOAD or statistical anomalies detected by the Stat/CR process will stop the process if "Stop On Error" is requested.

g. If POST is executed, then the AQS "Raw Data Inventory" report is generated.

h. URLs of the generated reports are determined from their position in the directory hierarchy.

i. The user's email address is determined from the AQS database, and an email is generated that contains both the processing log and the URLs of the generated reports.

j. When data is posted to production, the submission (job) status will always be set to "COMPLETE", even if individual transactions in the submitted file remained pre-production because of errors, and the error details will be available via the processing reports (e.g. "Edit Detail Report"), and the number of AQS transactions processed successfully and in error are stored in the AQS database in association with the Transaction ID.

k. When no data is posted to production because of errors, the submission status will be set to 'FAILED"and the failure reason is associated with the Transaction ID.

9 The AQS Node creates a zip archive with the processing job log and any generated reports, and performs an EN SUBMIT operation to CDX for the Transaction ID.

10 The CDX Node receives the SUBMIT message and saves the status information for the Transaction ID.

11 The AQS Node generates a NOTIFY message to CDX for the Transaction ID with the Status and processing detail information.

12 The CDX Node receives the NOTIFY message and saves the status information for the Transaction ID.

13 If the EN Header field, SenderAddress, is not null, then the CDX Node will send an email to this address with the transaction status and processing details.

6.3 Status / Error Retrieval via Email

1 User receives email from AQSLOAD process or CDX.

2 User reviews processing log and clicks on URL of any interesting reports.

3 When URL clicked, web browser session starts and displays requested report.

6.4 Status / Error Retrieval via Node or EPA-CDX EN Service Center

1 User performs login to either agency node or CDX EN Service Center using Exchange Network user-id and password.

   a. Node client performs EN Authenticate operation against NAAS by sending the user-id and password (MD5 digest or more sophisticated methods allowed by EN)

   a. NAAS authenticates user-id and password.

   b. NAAS generates and returns EN Security Token.

2 User interacts with node to select EN GET_STATUS operation using the CDX Transaction ID returned by a previous submit operation.

3 User Node sends GET_STATUS message to CDX node.

4 EPA CDX Node receives EN GET_STATUS

   a. CDX interfaces to the NAAS to verify that the security token is valid for the user.

   b. CDX Node receives status information and returns it to user node.

5 User node receives status information.

6 If status information shows that the submission is complete (either with or without errors), then the user interacts with the node to select the EN DOWNLOAD operation and provides the Transaction ID.

7 User Node sends DOWNLOAD message to CDX node.

8 EPA CDX Node receives EN DOWNLOAD

   a. CDX interfaces to the NAAS to verify that the security token is valid for the user.

   b. CDX Node returns any files associated with the transaction ID (e.g. XML Validation report, AQS Submission Log and processing reports) to the requestor.

9 User node receives information.

10 User displays job log and reports as desired.

6.5 Correction of Submission Errors

1 User accesses URL of AQS Web application from browser.

2 AQS web application displays login page.

3 User supplies AQS user-id and password

4 AQS login form connects to AQS database using the supplied user-id and password.

5 AQS database interfaces to WAM-OID to authenticate the user-id and password.

6 AQS application displays the “Session” form for the user to select screening group.

7 User selects screening group authorized to process uploaded data.

8 User selects “CORRECT” form from AQS menu.

9 User utilizes AQS CORRECT facilities (AQS transaction type specific editor) to change submitted data to correct errors and saves result.

10 User selects “BATCH” from AQS menu.

11 User is presented with the default processing options and has opportunity to override.

a. "Final Processing Step" (Post)

b. "Stop on error" ("Yes")

c. Process data for entire screening group or specific session ("Screening Group")

12 On Batch form, user selects "Submit Corrected Data" button.

13 AQS Batch Form executes AQSLOAD process passing the following information:

a. AQS User-id

b. AQS Password

c. AQS Screening Group

d. Processing options

14 AQS Load performs the following:

a. Uses the user's AQS user-id and password to connect to Oracle.

b. Loads the contents of the staging table (for the single session or entire screening group) into the production database.

c. Generates the AQS "batch" status/error reports

d. Depending on the provided options and any errors encountered by the LOAD step, the AQS processes Stat/CR and POST are executed

e. If Stat/CR is executed, then the AQS "Scan Report" and "Stat/Eval Report" are generated.

f. If POST is executed, then the AQS "Raw Data Inventory" report is generated.

g. URLs of the generated reports are determined from their position in the directory hierarchy.

h. The user's email address is determined from the AQS database, and an email is generated that contains both the processing log and the URLs of the generated reports.

a. The Submission status is updated in the AQS database. (Note: If only data for specific session is processed, then the status is updated for the original Transaction ID.)

15 The user sees the job status on the Batch form and retrieves the status/error reports from either the email, the buttons on the batch form, or an EN Node or Client using Transaction ID.

6.6 Ad-Hoc Retrieval

1 User accesses URL of Oracle Discoverer application from browser.

2 Oracle Discoverer web application displays login page.

3 User supplies AQS user-id and password

4 Oracle Discoverer login form connects to AQS database using the supplied user-id and password.

5 AQS database interfaces to WAM-OID to authenticate the user-id and password.

6 Oracle Discoverer application opens to allow user ad-hoc queries.

6.7 Association of Exchange Network User-IDs with AQS User_IDs

1 For new users:

   a. User obtains AQS User-ID via published registration process at http://www.epa.gov/ttn/airs/airsaqs/registration.htm

   b. If user does not already have Exchange network user-id (indicted on AQS registration form), the AQS Federal account manager will initiate the creation of an EN User ID for the new AQS user.

2 For existing users when Submit Automation project is implemented: The AQS Federal account manager will initiate the creation of an EN User ID for the new AQS user.

3 User logs into AQS application, accesses the User Profile form (Admin/Security menu pick) and types in their EN User-ID in the corresponding field on the form. (Note: This is a change. - The CDX help desk will no longer be able to perform this function.)

4 Thereafter, when a submission is made by the EN User-ID / AQS User-ID it will be processed. If the association has not been defined, then the submission will be rejected with an "Access Denied" error.

7 Summary of Impacts

7.1 Operational Impacts

7.1.1 User Interface for Data Submission

The user interface for both Reporting Agency Node users and CDX Web users will change. This will have the following impacts.

1 Users will need retraining for new CDX Dashboard user interface.

2 Reporting agency nodes will need to be re-programmed to allow the new flow processes.

7.1.2 User Account Registration

New account registration is anticipated to utilize the EPA Portal self-registration process instead of the present TSSMS based process.

7.1.3 User Password Reset

It is anticipated that the EPA Portal will allow user self-service password resets.

7.1.4 Removal of Need for Manual Submission

User operational procedures will change to remove the need for the manual step previously required to login to AQS to submit the uploaded data.

7.2 Organizational Impacts

7.2.1 Submitting Agencies

1 Users will need retraining for new user interface.

2 Reporting agency nodes will need to be re-programmed to allow the new flow processes.

7.2.2 CDX Organization

The CDX organization will need to develop the required EN Node Web Client with the capabilities to generate an EN header meeting AQS requirements.

7.2.3 EPA NCC Organization

The EPA NCC will need to perform the following:

1 Configure WAM/OID to host AQS user ids. (Request: Support 3-character ids for existing users and 8-character ids for new users, or users with a conflict (e.g. Federal employees with LAN ids).

2 Configure AQS database to support enterprise authentication. Each user will need to keep their Oracle ID but be configured to be "identified globally".

3 Configure the proxy user to be used for automatic submission to be allowed to connect on behalf of all AQS users.

4 Host the AQS Node software, instead of the AQS Web Services servlet, on the AQS Oracle Application Server.

7.2.4 EPA Regional Offices

1 Utilize the EPA Node Client instead of Web CDX when submitting data on behalf of external users.

7.2.5 EPA OAQPS/OID/NADG

1 Develop and deploy AQS Node.

2 Update AQSLOAD facility to support updated submission process.

7.3 Impacts During Development

The EPA firewalls will need to be configured to support communication on ports 1521 and 443 between the CDX Test environment and the development servers phoenix.rtp.epa.gov and hermes.rtp.epa.gov.

8 Analysis of Proposed System

8.1 Summary of Proposed Improvements

8.1.1 Increased Efficiencies for Reporting Agencies

It is expected that the automation of the AQS submission process will improve the efficiency of operations for most reporting agencies.

8.1.2 Increased Utilization of Exchange Network

It is the perception of the Exchange Network governance that the major roadblock to reporting agencies use of the Exchange Network for submission of air quality data is the present manual load step required. The expectation is that automation of the AQS load process will remove this roadblock and that most agencies will thereafter significantly increase their use of the Exchange Network for sharing/exchanging air quality data.

8.2 Disadvantages and Limitations

8.2.1 Cost for Reporting Agencies

All agencies that presently use Exchange Network nodes for submitting AQS data will need to reprogram these nodes to support the new submission process. (Estimated cost: $10K each)

8.3 Alternatives and Trade-offs Considered

8.3.1 Complete EN NAAS Based Authentication

The AQS program staff considered the exclusive use of the Exchange Network NAAS facility for authentication. Investigation revealed that it is not technically feasible to use NAAS authentication with Oracle Discoverer, and expensive to program the Oracle forms environment to utilize NAAS for authentication.

9 Notes

9.1 Acronyms and Abbreviations

Acronym	Definition
AQS	Air Quality System
CDX	Common Data Exchange
EN	Exchange Network
IT	Information Technology
NAAS	Network Authentication and Authorization Service
OAS	Oracle Application Server
XML	Extensible Markup Language

Appendices

Present AQS Physical Mapping to IT Infrastructure

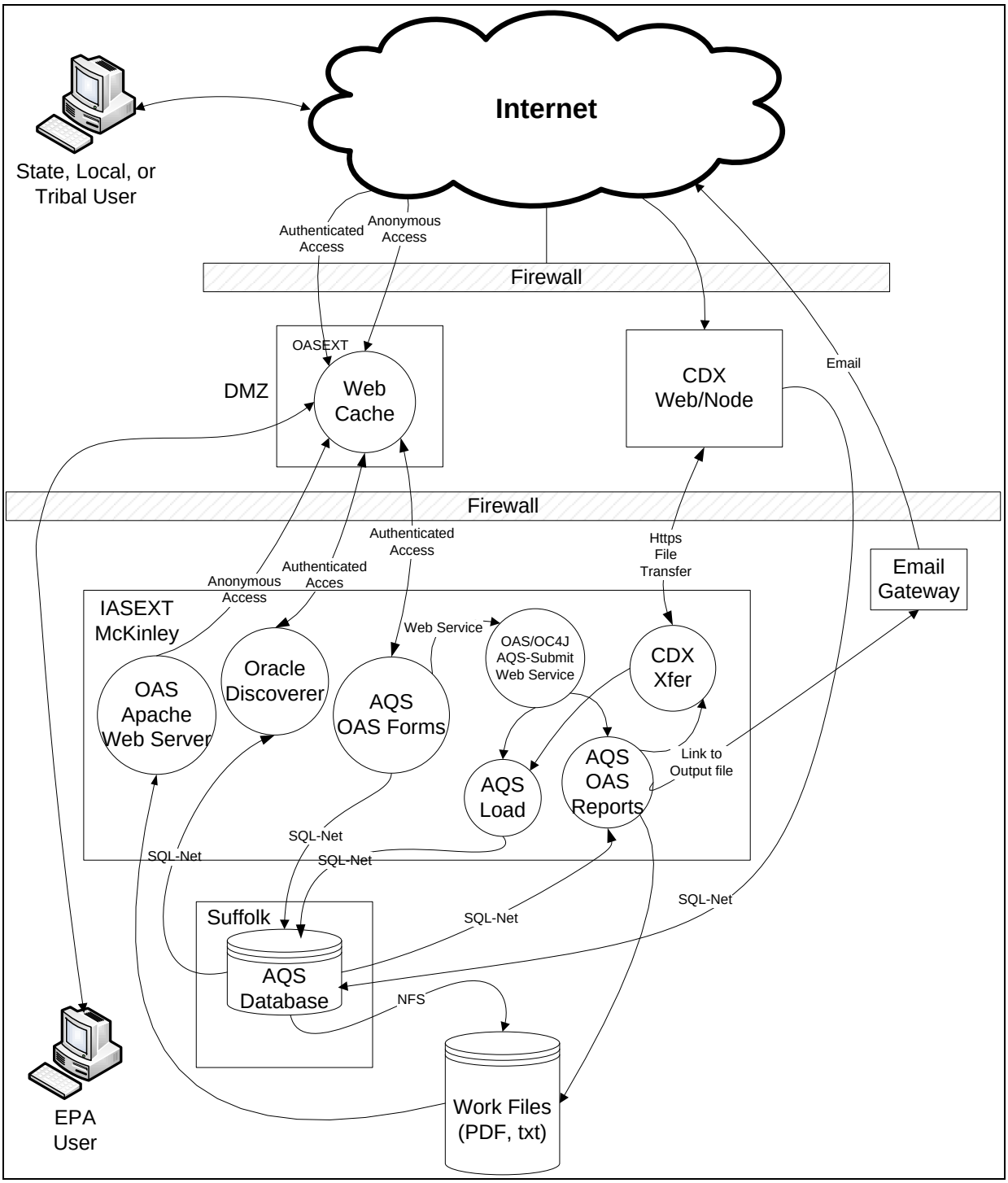

Figure 7: AQS Physical Mapping to IT Infrastructure

The following provides an explanation of the above diagram elements:

OASEXT Web Cache:	Provides Internet accessible interface to OAS, without actually hosting any application components. Redirects all web requests to OAS components inside firewall. This includes proxy of web pages hosted by IASEXT for anonymous access.
CDX Web/Node	EPA Central Data Exchange. Common end-point for user file uploads to EPA national systems. (From the AQS perspective, this is a "black box" to accept input from either the CDX Web application or an Exchange Network Node.)
Email Gateway	Common EPA interface to Internet (SMTP) email.
OAS Oracle Discoverer	Component of OAS that provides ad-hoc access to Oracle database.
OAS AQS Forms	OAS facility that has been used to provide user interface to AQS. Consists of both OC4J servlet that executes within the OAS infrastructure and a Java applet that downloads to the user's browser.
OAS Apache Web Server	Responds to file access requests from Web Cache.
AQS-Submit Servlet	Java/Apache-Axis facility, developed by AQS staff, running under OAS OC4J container to allow asynchronous execution of background processes for loading and reporting/extracting data.
CDX-Xfer	Stand-alone Java program, developed by CDX staff, to upload and download files to and from CDX respectively.
OAS Reports	OAS facilities for executing application specific report modules (*.rep modules)
AQS Load	Set of shell scripts and C-programs designed to parse input files (card-image, delimited transaction, and XML) and load their data into the AQS database. (Executes the application processes: Load, Stat/CR, and Post).
AQS Database	Oracle database that hosts AQS data. Authentication is via user provided user-id and password using the Oracle database's native authentication.
Work Files	Set of temporary report outputs and extracted data files. May be written by both AQS database and the AQS Reports environment. Individual files served to users via anonymous access.
IASEXT	NCC server configured to support Extranet applications (i.e. Internet accessible applications requiring user-id and password authentication.

Proposed AQS Mapping to IT Infrastructure

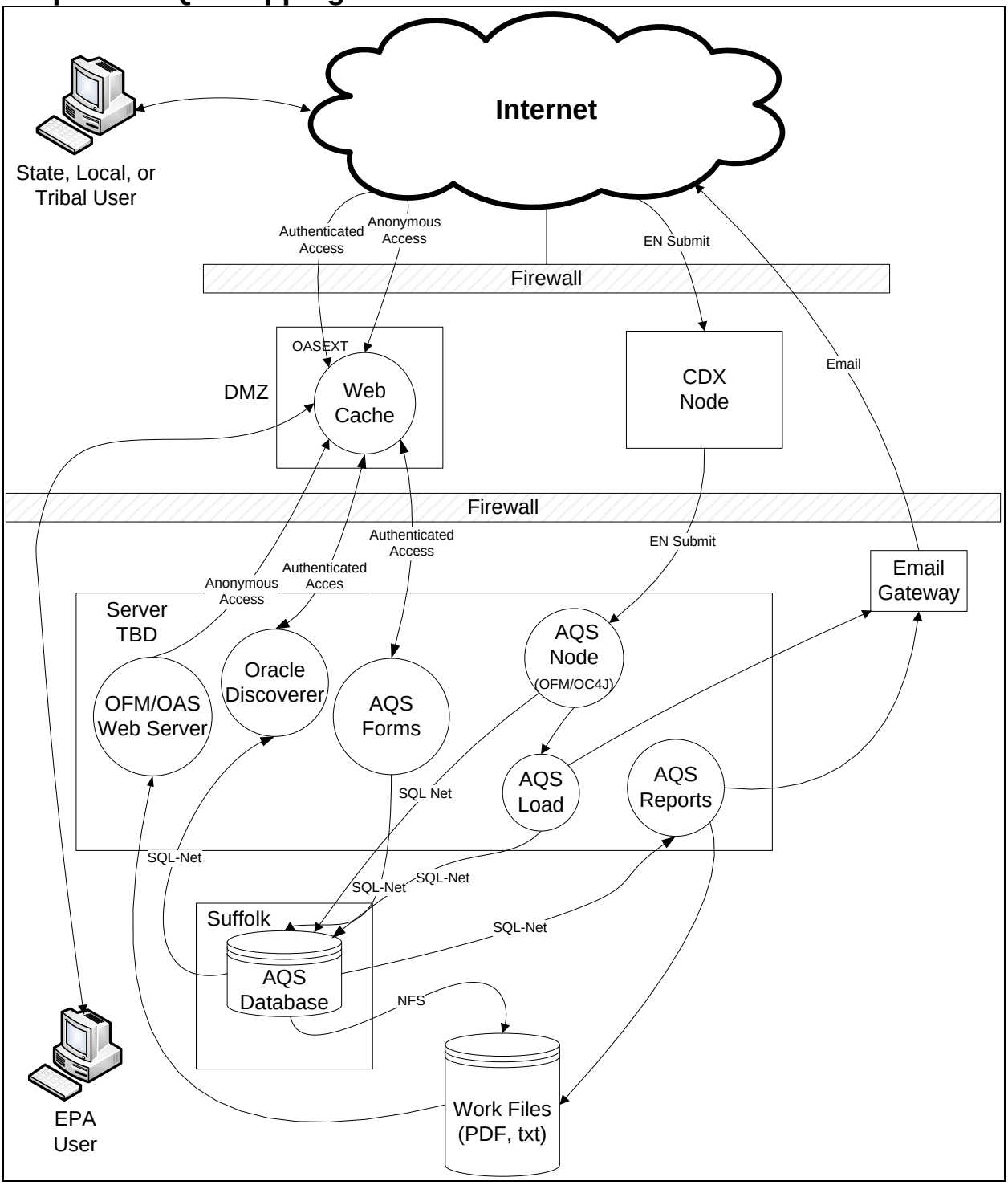

Figure 8: Proposed mapping to IT Infrastructure

Note: Since OAS version 10g does not support the Java version required for an exchange network node (1.6), the AQS server will have to be updated to Oracle Fusion Middleware (OFM) version 11g. The server to host this is to be determined.

Exchange Network Header Definition and AQS Use

Element Name	Required	AQS Use
AuthorName: Originator of the document. This should be the name of a person or a network node ID if the document is automatically generated.	Yes	Not Used by AQS.
OrganizationName: The organization to which the author belongs. It may be a state name, an organization name or a company name. For submissions to the CDX node, this should be the name of the organization.	Yes	Not Used by AQS.
DocumentTitle: Title of the document.	Yes	Not Used by AQS.
CreationDateTime: This is a timestamp that marks when the document, including payloads and header part, was created.	Yes	Not Used by AQS.
Keywords: Words that best describe the payload. Multiple keywords should be separated by commas. This is for transaction categorization and searching.	No	Not Used by AQS.
Comment: Additional comments for processors.	No	Not Used by AQS.
DataFlowName: The name of the data flow associated with the payload. It could be the name of the data source for Query results.	No	AQS
DataServiceName: Name of a data service that generated the document. This is the name of the procedure that was used to initiate the creation of the payload. This would apply only for Query and Solicit and would not be applicable for Download and Submit.	No	N/A
SenderContact: The sender's additional contact information. It could contain sender's electronic address and/or telephone numbers where the author can be reached.	No	Not Used by AQS.
ApplicationUserIdentifier: The user ID for the backend AQS system – different from the NAAS user ID.	Conditional: Required if property **AQS.UserID** is not provided.	AQS User-ID
SenderAddress: A well-formed URI where result/report can be sent. Currently the Network will make use of the Notification mechanism at the Document Level as	No	Email address, that will receive email notifications from the CDX Node (in addition to the AQS notifications automatically sent.) Note: If no CDX

described in the Protocol and Specification. Note that this could contain multiple addresses, including that of the submitter and/or other technical people related to contents of the payload.		notification is desired, leave blank.
Property Begin Tag: Other properties of the document (use name value pairs). This is an extension mechanism to cover any other elements that are not defined in the specification.	Yes	<hdr:Property>
Property: AQS.UserID Same information as in the field, ApplicationUserIdentifier. If both are populated, they must be identical.	Conditional: Required if **Application UserIdentifier** is not provided.	<hdr:PropertyName> AQS.UserID </hdr:PropertyName> <hdr:PropertyValue> A valid AQS application user id. </hdr:PropertyValue>
Property: AQS.ScreeningGroup	Yes	<hdr:PropertyName> AQS.ScreeningGroup </hdr:PropertyName> <hdr:PropertyValue> The AQS screening group that owns the monitors related to the submission. </hdr:PropertyValue>
Property: AQS.FinalProcessingStep Option to tell AQS the last step of the AQS Load process that will be performed on the user's data. (Defaults to "Post")	No	<hdr:PropertyName> AQS.FinalProcessingStep </hdr:PropertyName> <hdr:PropertyValue> Member of the set: {"Stage"," Load", "Stat/CR"," Post"}. </hdr:PropertyValue>
Property: AQS.StopOnError Option to tell AQS whether or not to stop processing of valid input transactions if any one of the transactions submitted contains an error. (Defaults to "Yes")	No	<hdr:PropertyName> AQS.StopOnError </hdr:PropertyName> <hdr:PropertyValue> Member of the set: {"Yes", "No"}. </hdr:PropertyValue>
Property: AQS.PayloadType Specification of the format of the submitted data.	Yes	<hdr:PropertyName> AQS.PayloadType </hdr:PropertyName> <hdr:PropertyValue> Member of the set: {"XML", "FLAT","CARD"}. </hdr:PropertyValue>
Property: AQS.SchemaVersion	Yes if AQS.FileType = "XML"	<hdr:PropertyName> AQS.ShemaVersion </hdr:PropertyName> <hdr:PropertyValue>

		The schema version
Property End Tag	Yes	</hdr:Property>
Signature: An XML signature associated with the document (Use http://www.w3.org/2000/09/xmldsig#)	No	Not Used by AQS.
id: A unique identifier for the document. This is an attribute of ExchangeNetworkDocument and provides a unique Id for each document in the payload.	Yes	Not Used by AQS.

Glossary

Term	Definition
Screening Group	An AQS abstraction related to data ownership. Each agency that submits data to AQS may create one or more Screening Groups, for the organizing or partitioning their data. All monitor-related metadata, measurement data, and QA data is owned by a screening group.
Exchange Network Node	A partner's point of presence on the EN consisting of a server (hardware and software) enabled with web services that allow partners to automatically provide and receive information via the Network and to publish data for use by other EN partners.
Exchange Network Client	A stand-alone application (i.e., software code) that lets partners submit data, request data, and receive results from an EN request. Clients differ from nodes in that they cannot respond to queries from other nodes and so cannot publish data. Clients also need more manual (vs. automated) steps, for example, to extract data and generate and review reports before submission.
EPA Common Data Exchange (CDX)	Serves as EPA's centralized electronic report receiving system. It receives data from partners and directs the data to EPA's program-specific National Systems (e.g., AQS, WQX, etc.).
CDX Node	CDX Node is EPA's node on the EN, allowing EPA to receive, send, and provide information via the Network. CDX Node can also publish EPA data for use by other EN partners.
CDX Web	A legacy CDX application that receives data (flat file or XML format) via standard web browsers. CDX Web applications are not consistent with EN protocols (e.g., they have a separate authentication and authorization service from the EN) and typically involve more manual steps than a node-to-node ex-change of data.
eXtensible Markup Language	A flexible language for creating common information formats and sharing both the format and content of data over the Internet and elsewhere. The electronic language that expresses and transports data standards and transaction sets. XML uses an extensible set of tags to describe the meaning of data.