



National Capital Region Interoperability Program

NCR CAD to CAD Data Exchange Technical Requirements

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**Prepared by the NCR Interoperability Program
Data Exchange Hub Project**



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

Revision History

Date	Description	Authorized by
3/21/2008	Original section compilation and draft.	Chris Wiseman
5/21/2008	DRAFT release of document.	Chris Wiseman
6/30/2008	FINAL editing of document.	Chris Wiseman
4/17/2009	Revisions to technical requirements mapping message data to the message elements.	Chris Wiseman
5/13/2009	Revisions to elements and data population usage.	Chris Wiseman
5/20/2009	Revisions to <ServiceCall> child element usage in RequestForResource message and sample messages for Due Order	Chris Wiseman
9/21/2009	Additional and modified requirements based on early integration testing with vendors and stakeholder concerns – specifically override functions.	Chris Wiseman



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

Table of Contents

1	BACKGROUND AND PURPOSE.....	1
2	CAD TO CAD DATA EXCHANGE TECHNICAL REQUIREMENTS	2
2.1	ARCHITECTURE TECHNICAL REQUIREMENTS	3
2.2	HOSTING TECHNICAL REQUIREMENTS	6
2.3	SECURITY TECHNICAL REQUIREMENTS	7
2.4	PERFORMANCE TECHNICAL REQUIREMENTS	8
2.5	LOGGING AND AUDITING TECHNICAL REQUIREMENTS.....	10
2.6	MESSAGE PROCESSING TECHNICAL REQUIREMENTS	12
2.7	ADMINISTRATIVE TECHNICAL REQUIREMENTS	22
2.8	ERROR HANDLING AND REPORTING TECHNICAL REQUIREMENTS	25
2.9	VENDOR SPECIFIC TECHNICAL REQUIREMENTS	27
	APPENDIX A: UNIT STATUS UPDATE SAMPLE MESSAGE.....	28
	APPENDIX B: REQUEST FOR RESOURCE SAMPLE MESSAGES	32

List of Tables

<i>Table 1. Architecture Technical Requirements.....</i>	<i>3</i>
<i>Table 2. Hosting Technical Requirements</i>	<i>6</i>
<i>Table 3. Security Technical Requirements.....</i>	<i>7</i>
<i>Table 4. Performance Technical Requirements.....</i>	<i>8</i>
<i>Table 5. Logging and Auditing Technical Requirements.....</i>	<i>10</i>
<i>Table 6. Message Processing Technical Requirements</i>	<i>12</i>
<i>Table 7. Administrative Technical Requirements</i>	<i>22</i>
<i>Table 8. Error Handling Technical Requirements</i>	<i>25</i>
<i>Table 9. Vendor Specific Technical Requirements</i>	<i>27</i>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

1 Background and Purpose

This document captures the Phase I technical requirements to implement Northern Virginia (NOVA) CAD-to-CAD Interoperability Data Exchanges between Fairfax County, Arlington County, and the City of Alexandria - signatories of the Northern Virginia (NOVA) Emergency Services Mutual Response Memorandum of Agreement.

These technical requirements are levied on the functional requirements derived from the *Northern Virginia (NOVA) Fire Dispatch Computer Aided Dispatch System Interface Requirements* document authored and issued with inputs from the representative jurisdictions. The interface requirements enumerated desired functionality as follows:

- Real-Time Status Changes
- Dispatched Incident Forwarding
- Pending Incident Display
- Secondary Dispatch
- Dispatch Confirmations
- Status Keeping
- Automatic Vehicle Location
- Administrative Functions
- Request for Resource with Incident Information Cancellation (**FUTURE PHASE**)
- Interoperability Notification (**FUTURE PHASE**)

Functionality will be implemented following a phased approach. Plans in the Project Charter executed between the three participants indicate the following functions will be implemented in Phase I of this project:

- Real-Time Unit Status Updates
- Request for Resource with Incident Information

Ultimately, the functionality delivered in Phase I of the project may adjust as a result of funding and priorities. As of the revision authored 5/13/2009, only Unit Status Update and Request for Resource with Incident Information will be implemented and tested in the NoVa CAD to CAD Interoperability.



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2 CAD to CAD Data Exchange Technical Requirements

The technical requirements were created after compiling functional requirements pertinent to the Phase I implementation scope and having the functional requirements distributed to the jurisdictions and reviewed with the participating jurisdictions CAD system vendors. Comments received from jurisdictions and vendors were incorporated into the functional requirements document prior to attempting to outline and build a complete set of technical requirements. The technical requirements have been grouped into these distinct areas:

- **Architecture:** Architectural Technical Requirements define the platform components and the high availability, fault tolerant, scalability, capacity, and reliability design aspects.
- **Hosting:** Hosting Technical Requirements define the constraints or capabilities of the data centers or hosting facilities utilized to position the platform.
- **Security:** Security Technical Requirements define the minimum security requirements that must be met by interfaces between systems and protections on data, cached or otherwise.
- **Performance:** Performance Technical Requirements define the required performance measurements that must be met by the external systems and the platform.
- **Logging and Auditing:** Logging and Auditing Technical Requirements define the operations that must be logged and/or audited. It also puts requirements on what level of logging or auditing is sufficient, i.e. simple text file logging or database logging.
- **Message Processing:** Message Processing Technical Requirements define how the messages are to be used in the exchange. The requirements also define specific elements of the message use.
- **Administrative:** Administrative Technical Requirements define the administrative capabilities that must be implemented in the exchange.
- **Error Handling and Reporting:** Error Handling and Reporting Technical Requirements define what must be handled and how it will be reported in the exchange.
- **Vendor Specific:** Vendor Specific Technical Requirements define any miscellaneous requirements vendors must satisfy that are not defined in the vendor specific functional requirements.

The technical requirements are written to be general and in most cases apply to the DEH Infrastructure as well as the vendor. Where the intent applies strictly to only one or the other it shall be clearly noted.

It is entirely possible that some of the technical requirements presented here appear to be duplicates or very similar in nature to the functional requirements already provided and evaluated. Please note that the technical requirement may provide clarification beyond the functional requirement.



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.1 Architecture Technical Requirements

The Architecture Technical Requirements are enumerated in this section. Architectural Technical Requirements define the platform components and the high availability, fault tolerant, scalability, capacity, and reliability design aspects. The requirements have been appropriately grouped where it is pertinent.

- Server Hardware Specifications
- Architectural Configuration
- Load Balancing
- Orchestrations and Services
- Message Persistence and Cacheing
- Distinct Platforms

Table 1. Architecture Technical Requirements

RQMT ID	Technical REQUIREMENT
Server Hardware Specifications	
2.1.1	<p>The DEH Infrastructure shall be built upon servers which meet the following minimal specifications:</p> <ul style="list-style-type: none"> • Intel-based or Intel-type processors (Dual Core or better) • Minimum 4Gb RAM per physical server • Dual 10/100/1000baseT NIC per physical server • Minimum 150 Gb usable hard drive storage in RAID, hot-swappable configuration spanning at least 2 physical disk drives <p>If these minimal specifications are reviewed and found to not meet the minimum criteria to support the required infrastructure software or database, then the minimum server requirements dictated by the software or database components shall supersede these specifications.</p>
2.1.2	<p>The CAD Vendor Systems shall be deployed on servers which meet their respective minimal specifications as dictated by their core applications and supporting modules and interfaces.</p>
Architectural Configuration	
2.1.3	<p>The DEH Infrastructure shall be architected and hosted across at least two data centers or hosting facilities to provide high availability, fault tolerance, and service and capability redundancy for regionally integrated systems.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
2.1.4	<p>The DEH Infrastructure architectural configuration design shall be based on best practices and recommendations of the vendors supplying the software suites to achieve multi-site optimization.</p> <p>These best practices implementation will achieve goals in high availability, fault tolerance, scalability, capacity, and reliability.</p>
2.1.5	<p>The CAD Vendor Systems architectural configuration design shall support the level of availability desired by each of their customers involved in this integration, respectively.</p>
Load Balancing	
2.1.6	<p>The DEH Infrastructure multi-site platform shall be fronted by a hardware load balancing component.</p> <p>This component will offer a single access point for CAD Vendor Systems to interface with the DEH Infrastructure. The component will be capable of load balancing requests between multiple sites in the DEH Infrastructure in a hot-hot site configuration or properly route requests to the responding site in a hot-warm or hot-cold site configuration.</p>
2.1.7	<p>The hardware load balancing component shall be capable of representing a virtual entry endpoint to the DEH Infrastructure (single endpoint from the CAD Vendor System perspective) irrespective of whether the responding component is in one hosting site or another.</p> <p>This represents an operating configuration for layer switches and hardware load balancing components paired in a hot-warm configuration.</p>
Orchestrations and Services	
2.1.8	<p>The DEH Infrastructure shall be capable of implementing, executing, and completing a stateful, orchestrated business process to manage the necessary interaction between the CAD Vendor Systems and the DEH Infrastructure.</p> <p>A stateful business process orchestration is required to handle the intricate logic necessary to fulfill a Request for Resource with Incident Information involving two or more external CAD Vendor Systems.</p>
2.1.9	<p>The DEH Infrastructure orchestrations shall be able to correlate both synchronous and asynchronous requests from and responses to an executing orchestration.</p>
Message Persistence and Cacheing	
2.1.10	<p>The DEH Infrastructure shall be able to persist messages in the platform software infrastructure such that orchestrations will be guaranteed to complete.</p> <p>Message persistence and guaranteed message delivery is a requirement. The vendors supplying the basic software suite components must supply this essential capability.</p>
2.1.11	<p>The DEH Infrastructure shall be able to persist data or cache data in the platform components for retrieval, as necessary, to support the functional requirements.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

Distinct Platforms	
2.1.12	The DEH Infrastructure shall provide three distinct platforms: 1) a development platform, 2) a test and integration platform, and 3) an acceptance test / production platform.
2.1.13	<p>The DEH Infrastructure development platform shall contain a single-server instance of the infrastructure core software components with no front end load balancing component.</p> <p>The development platform will be utilized to develop the base orchestration and service interaction between the DEH local test harness and the DEH Infrastructure. It will not be used to validate the load balancing, hardware switching, or multi-site aspects.</p>
2.1.14	<p>The DEH Infrastructure test and integration platform shall contain multi-server deployed instances of the infrastructure core software components.</p> <p>The test and integration platform will be utilized to validate the base orchestration and service interactions between the CAD Vendor Systems and the DEH Infrastructure</p>
2.1.15	<p>The DEH Infrastructure acceptance test / production platform shall contain multi-site, multi-server deployed instances of the infrastructure core software components with front-end load balancing and hardware switching.</p> <p>The acceptance test / production platform will be utilized to formally validate and test the interoperability against an acceptance test plan with all participating CAD Vendor Systems. It will validate the aspects of load balancing, hardware switching, persistent orchestrations, and multi-site aspects.</p> <p>The acceptance test / production platform will become the de facto DEH Infrastructure production platform once acceptance testing has been conducted and successfully passed.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.2 Hosting Technical Requirements

The Hosting Technical Requirements are enumerated in this section. Hosting Technical Requirements define the constraints or capabilities of the data centers or hosting facilities utilized to position the platform. The requirements have been appropriately grouped where it is pertinent.

- Hosting Network
- Hosting Services

Table 2. Hosting Technical Requirements

RQMT ID	Technical REQUIREMENT
Hosting Network	
2.2.1	The hosting facilities or data centers chosen for the DEH Infrastructure shall support gigabit Ethernet network rates (1000BaseT). The server specifications call for gigabit capable network cards. The facility ought to support the performance capability of the server hardware.
2.2.2	The hosting facilities or data centers chosen for the DEH Infrastructure shall support or guarantee a pipe rate equivalent to at least a dedicated T1 line. A T1 channel represents 1.5 Mb/s bandwidth.
2.2.3	The DEH Infrastructure shall design the distributed site architecture making every attempt to leverage the NCR regional iNets (NCRNet) network backbone. The test and integration and production platform designs will attempt to leverage iNets backbone for connectivity between the sites and connectivity between the CAD Vendor Systems in the jurisdictions where possible. It is more likely that the NCRNet can be leveraged fully if jurisdictional data centers are chosen to host the DEH Infrastructure rather than commercial hosting facilities.
Hosting Services	
2.2.4	The facility chosen to host the DEH Infrastructure production platform shall supply independent backup power generation with automatic power generation backup engagement. A power outage should not take down the platform.
2.2.5	The facility chosen to host the DEH Infrastructure production platform shall supply independent cooling to the servers and components hosted in the facility.



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.3 Security Technical Requirements

The Security Technical Requirements are enumerated in this section. Security Technical Requirements define the minimum security requirements that must be met by interfaces between systems and protections on data, cached or otherwise. The requirements have been appropriately grouped where it is pertinent.

- System to System Communication

Table 3. Security Technical Requirements

RQMT ID	Technical REQUIREMENT
System to System Communication	
2.3.1	Communications between the CAD Vendor Systems and the DEH Infrastructure shall be secured by encryption and firewall IP filtering. Encryption is utilized to ensure privacy and identification. Firewall IP filtering is utilized to ensure identification. Only requests from “known” originating IP addresses will be allowed through to the DEH Infrastructure.
2.3.2	The DEH Infrastructure and CAD Vendor Systems secure encryption shall be implemented using approved RSA encryption algorithms and third-party signed certificates to identify platforms to each other.



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.4 Performance Technical Requirements

The Performance Technical Requirements are enumerated in this section. Performance Technical Requirements define the required performance measurements that must be met by the external systems and the platform. The requirements have been appropriately grouped where it is pertinent.

- Unit Status Update
- Request for Resource with Incident Information (R2I2)
- Interoperability Notification (**FUTURE PHASE**)

Table 4. Performance Technical Requirements

RQMT ID	Technical REQUIREMENT
Unit Status Update	
2.4.1	The CAD Vendor Systems shall issue unit status messages on a periodic basis, on a status changing triggered basis, or be able to use both methods, periodic and triggered, to issue unit status messages.
2.4.2	The CAD Vendor Systems shall be able to issue unit status messages on a periodic basis on at least a 1 message per unit per second frequency.
2.4.3	The DEH Infrastructure shall be able to respond with a synchronous UnitStatusUpdate response within 2 seconds of receiving a UnitStatusUpdate request message from an external CAD Vendor System.
2.4.4	Unit Status updates shall be realized within the overall exchange (interaction between external CAD systems) with three request periods. This means unit statuses in a local jurisdiction being pushed to the DEH will be reflected in remote, mutual aid unit status(es) in another jurisdiction receiving unit status update responses within three request periods. Thus, if the request period is 5 seconds, all unit statuses should be reflected within 15 seconds.
Request for Resource with Incident Information (R2I2)	
2.4.5	The CAD Vendor Systems shall issue R2I2 messages when events/incidents are created, modified, or cancelled with respect to the units.
2.4.6	The CAD Vendor Systems shall be able to issue R2I2 messages to the DEH Infrastructure within 5 seconds of the event being dispatched in the CAD Vendor System.
2.4.7	The DEH Infrastructure shall be able to issue R2I2 messages to external CAD Vendor Systems within 5 seconds of receiving an R2I2 message from an external CAD Vendor System.



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
2.4.8	<p>R2I2 communications between the originating CAD Vendor System, the DEH Infrastructure, and the destination CAD Vendor System(s) shall be realized within the overall exchange (interaction between external CAD systems) within 10 seconds.</p> <p>An event dispatched or modified post-dispatch in a local CAD Vendor System should be reflected in other remote CAD Vendor System(s) within 10 seconds.</p>
Interoperability Notification (FUTURE PHASE)	
<p><u>Interoperability Notification will be implemented in a future phase of the CAD to CAD Interoperability Exchange. The requirements in this section will not be validated to determine acceptance.</u></p>	
2.4.9	<p>The CAD Vendor Systems shall issue Interoperability Notification messages when CAD Vendor System conditions surrounding the interoperability are met as defined in the Functional Requirements.</p>
2.4.10	<p>The CAD Vendor Systems shall be able to issue an Interoperability Notification message to the DEH Infrastructure within 5 seconds of conditions being met in the CAD Vendor System.</p>
2.4.11	<p>The DEH Infrastructure shall be able to issue Interoperability Notification messages to external CAD Vendor Systems within 5 seconds of receiving an Interoperability Notification message from an external CAD Vendor System.</p>
2.4.12	<p>Interoperability Notification communications between the originating CAD Vendor System, the DEH Infrastructure, and the destination CAD Vendor System(s) shall be realized within the overall exchange (interaction between external CAD Vendor Systems) within 10 seconds.</p> <p>An Interoperability Notification originating in a local CAD Vendor System should be reflected in other remote CAD Vendor Systems within 10 seconds.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.5 Logging and Auditing Technical Requirements

The Logging and Auditing Technical Requirements are enumerated in this section. Logging and Auditing Technical Requirements define the operations that must be logged and/or audited. Requirements dictate the level of logging or auditing deemed sufficient, i.e. simple text file logging or database logging. The requirements have been appropriately grouped where it is pertinent.

- Logging
- Auditing

Table 5. Logging and Auditing Technical Requirements

RQMT ID	Technical REQUIREMENT
Logging	
2.5.1	<p>The CAD Vendor Systems shall leverage their native system log mechanisms to note issuance and acknowledgement of R2I2 messages.</p> <p>The system logging mechanism should be able to demonstrate that messages are issued to the DEH Infrastructure successfully and under the right conditions, e.g. event/incident dispatch, post-dispatched event/incident modification, and event/incident cancellation.</p> <p>System logging mechanism can be as mundane as text logs. However, the text log should demonstrate the issuance of the R2I2 message and the acknowledgement that the DEH Infrastructure received/accepted the message.</p>
2.5.2	<p>The CAD Vendor Systems shall leverage their native system log mechanisms to note receipt of R2I2 messages from the DEH Infrastructure.</p> <p>The system logging mechanism should be able to demonstrate that messages were received from the DEH Infrastructure successfully. Additionally, any responses to the DEH Infrastructure, synchronous or asynchronous, should be noted in system logs.</p>
2.5.3	<p>The CAD Vendor Systems shall not be required to log every discrete unit status update message, whether issued or received.</p> <p>It is noted that the number and frequency of unit status update messages is too great to reasonably log. However, if a logging level can be assigned to these types of messages more granular than general logging, perhaps a debug level, then they could be readily verified.</p>
2.5.4	<p>The DEH Infrastructure shall log the receipt and issuance of all R2I2 messages using general platform text logging mechanisms.</p>
Auditing	
2.5.4	<p>The CAD Vendor Systems shall not be required to implement formal auditing mechanism to track R2I2 messages.</p> <p>It will be left to their discretion to what level of auditing capabilities they desire to implement or leverage based on current capabilities.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
2.5.5	<p>The DEH Infrastructure shall be able to audit or track all R2I2 message traffic, both in and out of the DEH Infrastructure.</p> <p>The auditing feature will track messages originating from an external CAD Vendor System issued to the DEH Infrastructure as well as messages that originate from the DEH Infrastructure that are issued to external CAD Vendor Systems.</p> <p>Auditing the R2I2 message traffic, correlating the distinct messages, and reporting on metrics and patterns will be accomplished using activity monitoring tools.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.6 Message Processing Technical Requirements

The Message Processing Technical Requirements are enumerated in this section. Message Processing Technical Requirements define how the messages are to be used in the exchange. The requirements also define specific elements of the message use. The requirements have been appropriately grouped where it is pertinent.

- Unit Status Update
- Request for Resource with Incident Information (R2I2)
- Interoperability Notification (**FUTURE PHASE**)

Table 6. Message Processing Technical Requirements

RQMT ID	Technical REQUIREMENT
Unit Status Update	
2.6.1	<p>The CAD Vendor Systems shall use the LEITSC CAD RMS IEPD Unit Status Update message schema extended by the DEH to implement Unit Status Update messages.</p> <p>This message contains the elements necessary to pass the following important data elements to the DEH Infrastructure:</p> <ul style="list-style-type: none"> • <UnitStatusUpdate> Root Element • <Payload> Child Element • <ExchangeMetadata> Child Element <p>Refer to the sample message contained in the Appendices of this technical requirements document for an example. The schema package will be available for download on the ncrnet.us website CAD Exchange IEPD.</p> <p>http://www.ncrnet.us/cad-exchange</p>
2.6.2	<p>The ExchangeMetadata element shall be populated with data elements to timestamp and correlate the message and identify the submitter, respectively.</p> <p>There are multiple <ExchangeMetadata> elements and each instance of this element contains distinct and separate child elements with pertinent data.</p> <p>Required fields in these child elements are as follows indicated by XPath notation:</p> <p>For each UnitStatusUpdate message:</p> <p>//ExchangeMetadata/DataSubmitterMetadata:</p> <ul style="list-style-type: none"> • Organization ID as: <p>/OrganizationIdentification/IdentificationID</p> <p>The Organization ID operating the CAD Vendor System. This is the identifier representing the local jurisdiction organization, e.g. “FFXRMS” or “FCFD” or “FFXFIRE”, etc. DEH and Vendors will agree on this field or DEH will supply the expected value of this field to Vendors for population.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>REQUIRED</p> <ul style="list-style-type: none"> Organization Name as: /OrganizationName <p>The spelled out name of the jurisdiction, city, county and/or organization name, e.g. “Fairfax County” or “Fairfax County Fire and Rescue”</p> <p>REQUIRED</p> <p>For each UnitStatusUpdate message: //ExchangeMetadata/TransactionMetadata:</p> <ul style="list-style-type: none"> Terminal ID as: /MetadataAugmentation/TerminalID/IdentificationID <p>A CAD Vendor System terminal identifying data element. This can be populated at the discretion of the vendor or jurisdiction to identify potentially the specific terminal or perhaps the logged in operator that submitted the message to the DEH. This could be used to map to a specific host system instance of the CAD or even a workstation – for Vendor use.</p> <p>OPTIONAL</p> <ul style="list-style-type: none"> Submission Date/Time as: /MetadataAugmentation/SubmissionDateTime/DateRepresentation <p>- Timestamp message is submitted to the exchange as request or response.</p> <p>REQUIRED</p> <ul style="list-style-type: none"> Message Sequence Number as: /MetadataAugmentation/MessageSequenceNumber/IdentificationID <p>A sequence number that will be used for message request and response correlation. If submitted to the exchange by a CAD Vendor System, the exchange will use this sequence number in the response.</p> <p>REQUIRED</p>
2.6.3	<p>The Payload element shall be populated with the ServiceCallAssignedUnit element(s) and child elements to identify the unit owner, pass specific unit status, and specific local and remote incident identifiers.</p> <p>The ServiceCallAssignedUnit element multiplicity is 0 to n, thus any number of units and unit statuses can be sent with a single UnitStatusUpdate message. We encourage a periodic, block status update from CAD Vendor Systems.</p> <p>Required fields in these child elements are as follows indicated by XPath</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>notation:</p> <p>For each unit included in a UnitStatusUpdate message:</p> <p>//ServiceCallAssignedUnit:</p> <ul style="list-style-type: none"> • Unit ID as: <p style="margin-left: 20px;">/OrganizationLocalIdentification/IdentificationID</p> <p>The Unit ID within the CAD Vendor System. This is the unit identifier as it is represented or cataloged to the local jurisdiction, e.g. “E206” or “ENG410” OR how it needs to be supplied to the jurisdiction at the interface in order for it to be recognized by the jurisdiction. NOTE: The OrganizationIdentification /IdentificationID element will be populated with the same Unit ID value as the OrganizationLocalIdentification/IdentificationID.</p> <p>REQUIRED</p> • Unit Status Timestamp as: <p style="margin-left: 20px;">/OrganizationStatus/StatusDate/DateRepresentation</p> <p>Timestamp status was changed or updated in the issuing CAD Vendor System.</p> <p>REQUIRED</p> • Unit Status as: <p style="margin-left: 20px;">/OrganizationStatus/StatusDescriptionText</p> <p>The status being updated for the unit, e.g. “AVAILABLE”, “DISPATCHED”, “EN ROUTE”, “ON SCENE”, “1” etc. This status description text will be the status text that a CAD Vendor System receiving the UnitStatusUpdate response expects to receive.</p> <p>REQUIRED</p> • Event / Incident ID(s) as: <p style="margin-left: 20px;">/Incident/LocalIncidentId/IdentificationID</p> <p>The local incident ID in the local CAD Vendor System if the unit is dispatched (encumbered) to a local incident</p> <p>REQUIRED – on the Unit Status Update request if the unit is encumbered/dispatched to a local incident</p> <p style="margin-left: 20px;">/Incident/RemoteIncident/RemoteIncidentId/IdentificationID</p> <p>The remote incident ID in the local CAD Vendor System if the unit is dispatched (encumbered) to a local incident which was created or updated as a result of a mutual aid request from another jurisdiction</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>REQUIRED – on the Unit Status Update request if the unit is encumbered/dispatched to a local incident that is correlated to a remote incident within the local CAD Vendor System</p> <p>Additional child elements of //Payload/ServiceCallAssignedUnit are capable of passing Resource information associated with the unit as well as geographic and location information. If the CAD Vendor System has this information readily available and would like to populate these fields, this will be added value. The DEH maintains that all users will be moving to an AVL based recommendation algorithm in the very near future and unit information containing location will be critical when it comes to recommending mutual aid units.</p>
2.6.4	Requirement 2.6.4 has been rescinded.
Request for Resource with Incident Information (R2I2)	
2.6.5	<p>The CAD Vendor Systems shall use the LEITSC CAD RMS IEPD Request for Resource message schema extended by the DEH to implement Request for Resource request and response messages.</p> <p>This message contains the elements necessary to pass the following important data elements to the DEH Infrastructure:</p> <ul style="list-style-type: none"> • <RequestForResource> Root Element • <ExchangeMetadata> Child Element • <Payload> Child Element <p>Refer to the sample messages contained in the Appendices of this technical requirements document for an example or the elements used in the request form of the message and the elements used in the response form of the message. The schema is the same for each, but the context is important in distinguishing between request and response. The schema package will be available for download on the ncrnet.us website CAD Exchange IEPD.</p> <p>http://www.ncrnet.us/cad-exchange</p>
2.6.6	<p>The ExchangeMetadata element shall be populated with data elements to timestamp and correlate the message and identify the submitter, respectively.</p> <p>There are multiple <ExchangeMetadata> elements and each instance of this element contains distinct and separate child elements with pertinent data.</p> <p>Required fields in these child elements are as follows indicated by XPath notation:</p> <p>For each RequestForResource message:</p> <p>//ExchangeMetadata/DataSubmitterMetadata:</p> <ul style="list-style-type: none"> • Organization ID as: <ul style="list-style-type: none"> /OrganizationIdentification/IdentificationID <p>The Organization ID operating the CAD Vendor System. This is the identifier representing the local jurisdiction organization, e.g. “FFXRMS” or “FCFD” or “FFXFIRE”, etc. DEH and Vendors will agree on this field or DEH will supply the expected value of this field to Vendors for population.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>REQUIRED</p> <ul style="list-style-type: none"> Organization Name as: <p>/OrganizationName</p> <p>The spelled out name of the jurisdiction, city, county and/or organization name, e.g. "Fairfax County" or "Fairfax County Fire and Rescue"</p> <p>REQUIRED</p> <p>For each RequestForResource message:</p> <p>//ExchangeMetadata/TransactionMetadata:</p> <ul style="list-style-type: none"> Terminal ID as: <p>/MetadataAugmentation/TerminalID/IdentificationID</p> <p>A CAD Vendor System terminal identifying data element. This can be populated at the discretion of the vendor or jurisdiction to identify potentially the specific terminal or perhaps the logged in operator that submitted the message to the DEH. This could be used to map to a specific host system instance of the CAD or even a workstation – for Vendor use.</p> <p>OPTIONAL</p> <ul style="list-style-type: none"> Submission Date/Time as: <p>/MetadataAugmentation/SubmissionDateTime/DateRepresentation</p> <p>- Timestamp message is submitted to the exchange as request or response.</p> <p>REQUIRED</p> <ul style="list-style-type: none"> Message Sequence Number as: <p>/MetadataAugmentation/MessageSequenceNumber/IdentificationID</p> <p>A sequence number that will be used for RequestForResource operation Request message and Response message correlation. Vendors will generate this message sequence number for their requests and the DEH will provide the same message sequence number in the responses.</p> <p>RequestForResourceUpdate operations, which also use the RequestForResource message schema in the request, are required to use the Message Sequence Number originally</p> <p>REQUIRED</p>
2.6.7	<p>The Payload element, in a Request for Resource request, shall be populated with the ServiceCall element plus child elements and ServiceCallAssignedUnit element(s) plus child elements to pass specific incident information and requested units.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>The ServiceCall element has multiplicity 1.</p> <p>The ServiceCallAssignedUnit element has multiplicity 1 to n.</p> <p>Required fields in these child elements are as follows indicated by XPath notation:</p> <p>For the ServiceCall element included in a RequestForResource message:</p> <p>//ServiceCall:</p> <ul style="list-style-type: none"> • Incident ID as: <p style="margin-left: 40px;">/ActivityIdentification/IdentificationID</p> <p>This is the incident id or event id in the CAD Vendor System creating the RequestForResource message requesting mutual aid.</p> <p>REQUIRED</p> • Event Type Description or Nature Code Description as: <p style="margin-left: 40px;">/ActivityDescriptionText</p> <p>This is the description of the event type or nature code value – spelled out, e.g. “Dog Attack” or “Chest Pain”. The description text is optional, the element should be present.</p> <p>REQUIRED</p> • Dispatched Date/Time as: <p style="margin-left: 40px;">/ServiceCallDispatchedDate</p> <p>The date/time of dispatch in the CAD Vendor System that originated the Request for Resource for mutual aid.</p> <p>REQUIRED</p> • Event Type or Nature Code as: <p style="margin-left: 40px;">/ServiceCallAugmentation/CallTypeText</p> <p>This is the event type or nature code as a string which is expected by the CAD Vendor System receiving the RequestForResource message. This value should suffice to be populated in the event or incident that must be created for updated as a result of receiving this message.</p> <p>REQUIRED</p> • Radio Channel as: <p style="margin-left: 40px;">/ServiceCallAugmentation/Staging/ContactRadioChannelText</p> <p>This is the radio channel that the units from the jurisdiction supplying mutual aid should communicate on to interface with the jurisdiction which requested mutual aid.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>REQUIRED</p> <ul style="list-style-type: none"> Location Address Information as: <p>The <ServiceCallResponseLocation> element has a 1 to n multiplicity. It is used to supply the general location address information of the event or incident. Another instance of it will be utilized to supply the firebox information of the event or incident.</p> <p>/ServiceCallResponseLocation/LocationAddress/StructuredAddress/AddressDeliveryPoint/LocationStreet/StreetName</p> <p>A 1 to n listing of information about the street address. Can be multiple <StreetName> elements as in the example message to indicate a street address with the first and possibly a suite or apartment number with the second, etc.</p> <p>REQUIRED</p> <p>/ServiceCallResponseLocation/LocationAddress/StructuredAddress/LocationCityName</p> <p>The city in the location full address.</p> <p>REQUIRED</p> <p>/ServiceCallResponseLocation/LocationAddress/StructuredAddress/LocationStateUSPostalServiceCode</p> <p>The state in the location full address.</p> <p>REQUIRED</p> <p>/ServiceCallResponseLocation/LocationAddress/StructuredAddress/LocationPostalCode</p> <p>The postal/zip code in the location full address.</p> <p>REQUIRED</p> <ul style="list-style-type: none"> Firebox Information as: <p>/ServiceCallResponseLocation/ServiceCallResponseLocationaugmentation/Firebox</p> <p>The firebox value used by the jurisdiction making the request for mutual aid.</p> <p>REQUIRED</p> <ul style="list-style-type: none"> Unit Due Order as: <p>/ActivityReasonText</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>A space-delimited text String of the Units dispatched on the full incident in the Unit ID representation of the originating, requesting jurisdiction.</p> <p>For each ServiceCallAssignedUnit included in a RequestForResource request message:</p> <p>The data element details of each unit requested follows:</p> <p>//ServiceCallAssignedUnit:</p> <ul style="list-style-type: none"> • Unit ID as: <p style="padding-left: 40px;">/OrganizationLocalIdentification/IdentificationID</p> <p>The Unit ID within the CAD Vendor System. This is the unit identifier as it is represented or cataloged to the local jurisdiction, e.g. “E206” or “ENG410” OR how it needs to be supplied to the jurisdiction at the interface in order for it to be recognized by the jurisdiction. NOTE: The OrganizationIdentification/IdentificationID element will be populated with the same Unit ID value as the OrganizationLocalIdentification/IdentificationID.</p> <p>REQUIRED</p>
2.6.7.1	Requirement 2.6.7.1 has been rescinded.
2.6.7.2	Requirement 2.6.7.2 has been rescinded.
2.6.8	<p>The Payload element, in a Request for Resource response, shall be populated with the ServiceCall element plus child elements and ServiceCallAssignedUnit element(s) plus child elements to disposition the status of the requested mutual aid units.</p> <p>The information is identical to the Payload element in the Request for Resource request except that the ServiceCallAssignedUnit elements utilize the status elements returned in the Request for Resource response. Specifically, the ServiceCallAssignedUnit elements contain a status disposition and a local incident id. See below:</p> <p>The ServiceCall element has multiplicity 1 – identical to the request.</p> <p>The ServiceCallAssignedUnit element has multiplicity 1 to n – the multiplicity in the response should be equal to the multiplicity in the request.</p> <p>The additional ServiceCallAssignedUnit required child elements in the response are as follows indicated by XPath notation:</p> <p>//ServiceCallAssignedUnit:</p> <ul style="list-style-type: none"> • Unit ID as: <p style="padding-left: 40px;">/OrganizationLocalIdentification/IdentificationID</p> <p>The Unit ID within the CAD Vendor System. This is the unit identifier as it</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>is represented or cataloged to the local jurisdiction, e.g. “E206” or “ENG410” OR how it needs to be supplied to the jurisdiction at the interface in order for it to be recognized by the jurisdiction. NOTE: The OrganizationIdentification/IdentificationID element will be populated with the same Unit ID value as the OrganizationLocalIdentification/IdentificationID.</p> <p>REQUIRED</p> <ul style="list-style-type: none"> Disposition Status of the Event/Incident Assignment as: /OrganizationStatus/StatusDescriptionText This is the disposition as to whether the CAD System receiving the request for mutual aid was able to assign the unit(s) requested. The possible response disposition status description text values are: ”ASSIGNED” – Request was forwarded to the remote jurisdiction to request mutual aid units. The remote jurisdiction responded that the unit requested was available and assigned to the event/incident created/modified. ”REJECTED” – Request was forwarded to the remote jurisdiction to request mutual aid units. The remote jurisdiction responded that the unit could not be assigned to the incident. The reason is irrelevant to the response. ”TIMEOUT” – Request was forwarded to the remote jurisdiction to request mutual aid units. The remote jurisdiction did not respond within a reasonable period of time (typically 10 seconds) to supply an explicit “ASSIGNED” or “REJECTED” status on the unit(s) requested. The DEH marked this status on the units in the response message. ”UNREACHABLE” – Request could not be forwarded to the remote jurisdiction to request the mutual aid units (signifies network or connectivity problem). The DEH marked this status on the units in the response message. ”OVERRIDE” – Request was not forwarded to the jurisdiction which owns the unit(s) requested. The remote jurisdiction has configured itself to be in an override status where they will not supply mutual aid to the jurisdiction. The DEH will mark this status on the units in the response message. <p>REQUIRED</p> <p>The DEH Infrastructure will reconcile these unit availability responses and the correlating event/incident identifiers against the orchestration to complete the full process of requesting mutual aid.</p>
	<p>Interoperability Notification (FUTURE PHASE)</p>
	<p><u>Interoperability Notification will be implemented in a future phase of the CAD to CAD Interoperability Exchange. The requirements in this section will not be validated to determine acceptance.</u></p>
2.6.9	<p>The LEITSC CAD RMS IEPD schema does not support a standard notification</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
	<p>or broadcast message.</p> <p>A simpler schema shall be provided and utilized for this function until the IEPD supports the function.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.7 Administrative Technical Requirements

The Administrative Technical Requirements are enumerated in this section. Administrative Technical Requirements define the administrative capabilities that must be implemented in the exchange for use by the jurisdictions which are participating. The requirements have been appropriately grouped where it is pertinent. These requirements are not applicable to the CAD system Vendors:

- Command & Control Console (CCC) Functions
- CAD System Administration (FUTURE PHASE)

Table 7. Administrative Technical Requirements

RQMT ID	Technical REQUIREMENT
Command & Control Console	
2.7.1	<p><u>A set of Command & Control Console functions will be developed in the DEH Infrastructure to allow participating jurisdictions to do the following:</u></p> <ol style="list-style-type: none"> 1. Update Jurisdiction Operational Status 2. Request Jurisdiction Health Status 3. Request Jurisdiction Unit Status 4. Perform Exchange Centric Unit Administrative Functions
2.7.2	<p>CCC functions shall be exposed via DEH Infrastructure published web services.</p> <p>A portal to access the CCC functions we be developed for the CAD to CAD Interoperability to augment the DEH Infrastructure.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
2.7.3	<p>Jurisdictions participating in the CAD to CAD Exchange shall be capable of setting their Jurisdiction Operational Status using the CCC portal and CCC functions.</p> <p>Jurisdiction Operating Statuses are as follows:</p> <ol style="list-style-type: none"> 1. NORMAL: This is the default, typical jurisdiction operating status. A jurisdiction is FULLY participating in the CAD to CAD Exchange with respect to mutual aid. The jurisdiction: <ul style="list-style-type: none"> - IS providing unit status updates - IS requesting mutual aid - IS supplying mutual aid 2. EMERGENCY OVERRIDE: A jurisdiction is PARTIALLY participating in the CAD to CAD Exchange with respect to mutual aid. The jurisdiction: <ul style="list-style-type: none"> - IS providing unit status updates - IS requesting mutual aid - NOT supplying mutual aid 3. SYSTEM OVERRIDE: A jurisdiction is NOT participating in the CAD to CAD Exchange with respect to mutual aid. The jurisdiction: <ul style="list-style-type: none"> - IS providing unit status updates - NOT requesting mutual aid - NOT supplying mutual aid <p>A jurisdiction should always send unit status updates, regardless of their jurisdiction operational status, unless there are connectivity issues between the jurisdiction and the DEH Infrastructure.</p>
2.7.4	<p>The DEH Infrastructure will filter unit status values in UnitStatusUpdate Response messages and the unit status disposition values in RequestForResource Response messages based on a jurisdiction operational status setting as follows:</p> <ol style="list-style-type: none"> 1. If a jurisdiction is in NORMAL operational status: <ul style="list-style-type: none"> - UnitStatusUpdate response message unit statuses will reflect the true unit statuses within their local owning jurisdiction. - RequestForResource response message unit status disposition values will reflect the ASSIGNED or REJECTED status value as marked by the jurisdiction or the UNREACHABLE or TIMEOUT value as marked by the DEH Infrastructure. 2. If a jurisdiction is in EMERGENCY OVERRIDE or SYSTEM OVERRIDE operational status: <ul style="list-style-type: none"> - UnitStatusUpdate response message unit statuses will be returned to other jurisdictions as an unavailable or busy equivalent. - RequestForResource response message unit status disposition values will reflect the OVERRIDE status value as marked by the DEH Infrastructure.



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
2.7.5	<p>Jurisdiction participating in the CAD to CAD Exchange shall be able to review a Jurisdiction Health view using the CCC portal and CCC functions.</p> <p>The health view will show when the DEH Infrastructure last received a message from a jurisdiction. The portal will visually color-code or use other graphical means to display a jurisdiction health.</p>
2.7.6	<p>Jurisdiction participating in the CAD to CAD Exchange shall be able to review a Jurisdiction Unit Status view using the CCC portal and CCC functions.</p> <p>The unit status view will display the unit statuses of jurisdictions. The portal will offer filtering to display by jurisdiction for all units, only local units, or only mutual aid units.</p>
2.7.7	<p>Jurisdiction participating in the CAD to CAD Exchange shall be able to perform exchange centric unit administrative functions using the CCC portal and CCC functions.</p> <p>The unit administrative view will allow jurisdictions to:</p> <ol style="list-style-type: none"> 1. Add local or mutual aid units 2. Remove local or mutual aid units 3. Place a local unit in a “logged-off” state <p>When a local unit is in a “logged-off” state, the DEH Infrastructure will report that unit status to other remote jurisdictions as an equivalent unavailable or busy unit status in UnitStatusUpdate response messages.</p>
2.7.8	<p>The CAD Vendor Systems shall continue to use the native mechanisms for entering and registering units into their systems.</p> <p>Units entered must be cataloged with their local CAD system representation.</p>
CAD System Administration (FUTURE PHASE)	
	<p><u>CAD System Administration interfaces for electronically managing new jurisdictions, their associated local and mutual aid units, unit statuses, and event types / nature codes will be implemented in a future phase. Requirements in this section need not be validated in order to accept the overall interoperability into production.</u></p>
2.7.9	<p>The DEH Infrastructure shall have, at a minimum, an interface capable of allowing CAD systems to be entered, registered, and identified with in the overall exchange.</p> <p>This data will correlate to elements of identifying data expected in the R2I2 messages. A develop interface capable of modifying database tables or mappings within the deployable software components shall suffice for Phase I of the project.</p>
2.7.10	<p>The CAD Vendor Systems shall continue to use the native mechanisms for entering and registering system information, specifically agency, owner, originating, and identifying information into their systems.</p> <p>The information entered or that will be included with issued message metadata must be provided to the DEH.</p>



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.8 Error Handling and Reporting Technical Requirements

The Error Handling and Reporting Technical Requirements are enumerated in this section. Error Handling Technical Requirements define the operations that must be logged and/or audited. The requirements have been appropriately grouped where it is pertinent.

- Error Handling
- Error Reporting

Table 8. Error Handling Technical Requirements

RQMT ID	Technical REQUIREMENT
Error Handling	
2.8.1	<p>The DEH Infrastructure will attempt to handle all exceptions encountered including:</p> <ul style="list-style-type: none"> • Schema Validation / Message Formatting: Issues with the format or schema adherence by messages used in the exchange. • Web Service Receive / Send: Issues related to jurisdiction to DEH and DEH to jurisdiction communications. • Internal Service Interaction: Issues within the DEH Infrastructure core services. • Data Mapping and Translation Deficiencies: Issues mapping and translating unit ids, unit statuses, or event type codes between jurisdictions. • Database Interactions: Issues retrieving or storing information in the underlying database.
2.8.2	<p>The DEH Infrastructure must be able to properly map and translate values in the participating jurisdictions for unit identifications, unit statuses, and event type codes (nature codes).</p> <p>In the case that a unit id is not recognized or cannot be mapped or translated, the DEH Infrastructure will throw an exception indicating that a particular unit is not recognized for the jurisdiction submitting the request.</p> <p>In the case that a unit status is not recognized or cannot be mapped or translated, the DEH Infrastructure will throw an exception, handle the exception by logging it, reporting it in the Application Event Log, and will translate the status to a value for the equivalent MUTUAL AID status value.</p> <p>In the case that an event type code is not recognized or cannot be mapped or translated, the DEH Infrastructure will throw an exception, handle the exception by logging it, reporting it in the Application Event Log, and will translate the status to a value for the equivalent MUTUAL AID status value.</p>
Error Reporting	



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

RQMT ID	Technical REQUIREMENT
2.8.3	Errors caught by the various DEH Infrastructure layers will be logged to local server exchange log files and propagated to the server Application Event Log for an application identified as “CAD2CAD”.
2.8.4	Operational software separate from the exchange mechanisms shall be utilized to monitor the Application Event Logs for “CAD2CAD” entries and notify the proper parties.
2.8.5	Notification should begin at the first level with emails and escalate to pages and/or direct phone calls based on the errors received.



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

2.9 Vendor Specific Technical Requirements

The Vendor Specific Technical Requirements are enumerated in this section. Vendor Specific Technical Requirements define any miscellaneous requirements vendors must satisfy that are not defined in the general functional requirements for all vendors or the vendor specific functional requirements. The requirements have been appropriately grouped where it is pertinent.

- N/A – There are no vendor specific technical requirements noted in the technical requirements. Vendors must strive to implement the functional and technical requirements.

Table 9. Vendor Specific Technical Requirements

RQMT ID	Technical REQUIREMENT
Vendor Specific	
N/A	N/A



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

Appendix A: Unit Status Update Sample Message

The LEITSC CAD RMS Update Status Update IEPD schema was extended by the DEH to implement full functionality in the exchange. The most noteworthy modifications or extensions involve the multiplicities in the Payload child element(s) and the inclusion of additional identifiers for unit local incident identifier and remote incident identifier. This is the most current sample Unit Status Update request message at the time this document is being published:

```
<?xml version="1.0" encoding="UTF-8"?>
<UnitStatusUpdate xmlns="http://leitsc-lib/2.0/1.0/doc/UnitStatusUpdate"
xmlns:unit="http://leitsc-lib/2.0/UnitStatusUpdate" xmlns:ns="http://niem.gov/niem/niem-core/2.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <unit:Payload>
    <unit:ServiceCallAssignedUnit>
      <ns:OrganizationIdentification>
        <ns:IdentificationID>E100</ns:IdentificationID>
      </ns:OrganizationIdentification>
      <ns:OrganizationLocalIdentification>
        <ns:IdentificationID>E100</ns:IdentificationID>
      </ns:OrganizationLocalIdentification>
      <ns:OrganizationStatus>
        <ns:StatusDate>
          <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-03-04T17:36:46-05:00</ns1:DateRepresentation>
        </ns:StatusDate>
        <ns:StatusDescriptionText>DISPATCHED</ns:StatusDescriptionText>
      </ns:OrganizationStatus>
      <unit:Incident>
        <unit:RemoteIncident>
          <unit:RemoteIncidentId>
            <ns:IdentificationID>200</ns:IdentificationID>
          </unit:RemoteIncidentId>
        </unit:RemoteIncident>
        <unit:LocalIncidentId>
          <ns:IdentificationID>100</ns:IdentificationID>
        </unit:LocalIncidentId>
      </unit:Incident>
    </unit:ServiceCallAssignedUnit>
    <unit:ServiceCallAssignedUnit>
      <ns:OrganizationIdentification>
        <ns:IdentificationID>E104</ns:IdentificationID>
      </ns:OrganizationIdentification>
      <ns:OrganizationLocalIdentification>
        <ns:IdentificationID>E104</ns:IdentificationID>
      </ns:OrganizationLocalIdentification>
      <ns:OrganizationStatus>
        <ns:StatusDate>
          <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-03-04T17:36:46-05:00</ns1:DateRepresentation>
        </ns:StatusDate>
        <ns:StatusDescriptionText>DISPATCHED</ns:StatusDescriptionText>
      </ns:OrganizationStatus>
      <unit:Incident>
        <unit:RemoteIncident>
          <unit:RemoteIncidentId>
            <ns:IdentificationID>201</ns:IdentificationID>
          </unit:RemoteIncidentId>
        </unit:RemoteIncident>
        <unit:LocalIncidentId>
          <ns:IdentificationID>101</ns:IdentificationID>
        </unit:LocalIncidentId>
      </unit:Incident>
    </unit:ServiceCallAssignedUnit>
  </unit:Payload>
</UnitStatusUpdate>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

```
</unit:Incident>
</unit:ServiceCallAssignedUnit>
<unit:ServiceCallAssignedUnit>
  <ns:OrganizationIdentification>
    <ns:IdentificationID>E105</ns:IdentificationID>
  </ns:OrganizationIdentification>
  <ns:OrganizationLocalIdentification>
    <ns:IdentificationID>E105</ns:IdentificationID>
  </ns:OrganizationLocalIdentification>
  <ns:OrganizationStatus>
    <ns:StatusDate>
      <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-03-
04T17:36:46-05:00</ns1:DateRepresentation>
    </ns:StatusDate>
    <ns:StatusDescriptionText>DISPATCHED</ns:StatusDescriptionText>
  </ns:OrganizationStatus>
  <unit:Incident>
    <unit:RemoteIncident>
      <unit:RemoteIncidentId>
        <ns:IdentificationID>202</ns:IdentificationID>
      </unit:RemoteIncidentId>
    </unit:RemoteIncident>
    <unit:LocalIncidentId>
      <ns:IdentificationID>102</ns:IdentificationID>
    </unit:LocalIncidentId>
  </unit:Incident>
</unit:ServiceCallAssignedUnit>
<unit:ServiceCallAssignedUnit>
  <ns:OrganizationIdentification>
    <ns:IdentificationID>E106</ns:IdentificationID>
  </ns:OrganizationIdentification>
  <ns:OrganizationLocalIdentification>
    <ns:IdentificationID>E106</ns:IdentificationID>
  </ns:OrganizationLocalIdentification>
  <ns:OrganizationStatus>
    <ns:StatusDate>
      <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-03-
04T17:36:46-05:00</ns1:DateRepresentation>
    </ns:StatusDate>
    <ns:StatusDescriptionText>DISPATCHED</ns:StatusDescriptionText>
  </ns:OrganizationStatus>
  <unit:Incident>
    <unit:RemoteIncident>
      <unit:RemoteIncidentId>
        <ns:IdentificationID>203</ns:IdentificationID>
      </unit:RemoteIncidentId>
    </unit:RemoteIncident>
    <unit:LocalIncidentId>
      <ns:IdentificationID>103</ns:IdentificationID>
    </unit:LocalIncidentId>
  </unit:Incident>
</unit:ServiceCallAssignedUnit>
<unit:ServiceCallAssignedUnit>
  <ns:OrganizationIdentification>
    <ns:IdentificationID>E107</ns:IdentificationID>
  </ns:OrganizationIdentification>
  <ns:OrganizationLocalIdentification>
    <ns:IdentificationID>E107</ns:IdentificationID>
  </ns:OrganizationLocalIdentification>
  <ns:OrganizationStatus>
    <ns:StatusDate>
      <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-03-
04T17:36:46-05:00</ns1:DateRepresentation>
    </ns:StatusDate>
    <ns:StatusDescriptionText>DISPATCHED</ns:StatusDescriptionText>
  </ns:OrganizationStatus>
  <unit:Incident>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

```
<unit:RemoteIncident>
  <unit:RemoteIncidentId>
    <ns:IdentificationID>204</ns:IdentificationID>
  </unit:RemoteIncidentId>
</unit:RemoteIncident>
<unit:LocalIncidentId>
  <ns:IdentificationID>104</ns:IdentificationID>
</unit:LocalIncidentId>
</unit:Incident>
</unit:ServiceCallAssignedUnit>
<unit:ServiceCallAssignedUnit>
  <ns:OrganizationIdentification>
    <ns:IdentificationID>E108</ns:IdentificationID>
  </ns:OrganizationIdentification>
  <ns:OrganizationLocalIdentification>
    <ns:IdentificationID>E108</ns:IdentificationID>
  </ns:OrganizationLocalIdentification>
  <ns:OrganizationStatus>
    <ns>StatusDate>
      <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-03-
04T17:36:46-05:00</ns1:DateRepresentation>
    </ns>StatusDate>
    <ns>StatusDescriptionText>DISPATCHED</ns>StatusDescriptionText>
  </ns:OrganizationStatus>
<unit:Incident>
  <unit:RemoteIncident>
    <unit:RemoteIncidentId>
      <ns:IdentificationID>205</ns:IdentificationID>
    </unit:RemoteIncidentId>
  </unit:RemoteIncident>
  <unit:LocalIncidentId>
    <ns:IdentificationID>105</ns:IdentificationID>
  </unit:LocalIncidentId>
</unit:Incident>
</unit:ServiceCallAssignedUnit>
<unit:ServiceCallAssignedUnit>
  <ns:OrganizationIdentification>
    <ns:IdentificationID>E400</ns:IdentificationID>
  </ns:OrganizationIdentification>
  <ns:OrganizationLocalIdentification>
    <ns:IdentificationID>E400 Ladder</ns:IdentificationID>
  </ns:OrganizationLocalIdentification>
  <ns:OrganizationStatus>
    <ns>StatusDate>
      <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-03-
04T17:36:46-05:00</ns1:DateRepresentation>
    </ns>StatusDate>
    <ns>StatusDescriptionText>DISPATCHED</ns>StatusDescriptionText>
  </ns:OrganizationStatus>
<unit:Incident>
  <unit:RemoteIncident>
    <unit:RemoteIncidentId>
      <ns:IdentificationID>206</ns:IdentificationID>
    </unit:RemoteIncidentId>
  </unit:RemoteIncident>
  <unit:LocalIncidentId>
    <ns:IdentificationID>106</ns:IdentificationID>
  </unit:LocalIncidentId>
</unit:Incident>
</unit:ServiceCallAssignedUnit>
</unit:Payload>
<unit:ExchangeMetadata>
  <unit:DataSubmitterMetadata>
    <ns:OrganizationIdentification>
      <ns:IdentificationID>FFXRMS</ns:IdentificationID>
    </ns:OrganizationIdentification>
    <ns:OrganizationName>Fairfax County</ns:OrganizationName>
  </unit:DataSubmitterMetadata>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

```
</unit:ExchangeMetadata>
<unit:ExchangeMetadata>
  <unit:TransactionMetadata>
    <unit:MetadataAugmentation>
      <unit:TerminalID>
        <ns:IdentificationID>gcrider</ns:IdentificationID>
      </unit:TerminalID>
      <unit:SubmissionDateTime>
        <ns1:DateRepresentation xmlns:ns1="http://niem.gov/niem/niem-core/2.0"
xmlns:ns="http://niem.gov/niem/proxy/xsd/2.0" xsi:type="ns:dateTime">2009-04-
02T16:49:24.921-04:00</ns1:DateRepresentation>
      </unit:SubmissionDateTime>
      <unit:MessageSequenceNumber>
        <ns:IdentificationID>1238705364921</ns:IdentificationID>
      </unit:MessageSequenceNumber>
    </unit:MetadataAugmentation>
  </unit:TransactionMetadata>
</unit:ExchangeMetadata>
</UnitStatusUpdate>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

Appendix B: Request for Resource Sample Messages

The LEITSC CAD RMS Request for Resource IEPD schema was extended by the DEH to implement full functionality in the exchange. The most noteworthy modifications or extensions involve the multiplicities and elements in the Payload child element(s) (Units or Resources are allowed). This is the most current sample Request for Resource request message at the time this document is being published:

Request for Resource with Incident Information Request Message

```
<?xml version="1.0" encoding="UTF-8"?>
<ns9:RequestForResource xmlns:ns9="http://leitsc-lib/2.0/1.2/doc/RequestForResource"
xmlns:ns1="http://niem.gov/niem/structures/2.0" xmlns:ns10="http://leitsc-
lib/2.0/UnitStatusUpdate" xmlns:ns11="http://leitsc-lib/2.0/1.0/doc/UnitStatusUpdate"
xmlns:ns2="http://niem.gov/niem/domains/emergencyManagement/2.0"
xmlns:ns3="http://niem.gov/niem/niem-core/2.0" xmlns:ns4="http://leitsc-
lib/2.0/RequestForResource" xmlns:ns5="http://niem.gov/niem/domains/screening/2.0"
xmlns:ns6="http://niem.gov/niem/domains/jxdm/4.0" xmlns:ns7="http://niem.gov/niem/ansi-
nist/2.0" xmlns:ns8="http://niem.gov/niem/domains/intelligence/2.0">
  <ns4:Payload>
    <ns4:ServiceCall>
      <ns3:ActivityIdentification>
        <ns3:IdentificationID>100</ns3:IdentificationID>
      </ns3:ActivityIdentification>
      <ns3:ActivityDescriptionText>Dog Attack</ns3:ActivityDescriptionText>
      <ns6:ServiceCallDispatchedDate>
        <ns3:DateTime>2009-05-12T12:37:45.402-04:00</ns3:DateTime>
      </ns6:ServiceCallDispatchedDate>
      <ns4:ServiceCallAugmentation>
        <ns4:CallTypeText>ALS</ns4:CallTypeText>
      </ns4:ServiceCallAugmentation>
      <ns4:ServiceCallAugmentation>
        <ns4:Staging>
          <ns3:ContactRadioChannelText>4</ns3:ContactRadioChannelText>
        </ns4:Staging>
      </ns4:ServiceCallAugmentation>
      <ns4:ServiceCallResponseLocation>
        <ns3:LocationAddress>
          <ns3:StructuredAddress>
            <ns3:AddressDeliveryPoint xmlns="http://leitsc-
lib/2.0/1.2/doc/RequestForResource" xmlns:ns="http://niem.gov/niem/niem-core/2.0"
xmlns:ns1="http://niem.gov/niem/domains/jxdm/4.0" xmlns:ns10="http://niem.gov/niem/ansi-
nist/2.0" xmlns:ns11="http://leitsc-lib/2.0/1.2/doc/RequestForResource"
xmlns:ns2="http://niem.gov/niem/structures/2.0" xmlns:ns4="http://leitsc-
lib/2.0/UnitStatusUpdate" xmlns:ns5="http://niem.gov/niem/domains/intelligence/2.0"
xmlns:ns6="http://leitsc-lib/2.0/1.0/doc/UnitStatusUpdate"
xmlns:ns7="http://niem.gov/niem/domains/jxdm/4.0" xmlns:ns8="http://leitsc-
lib/2.0/RequestForResource" xmlns:ns9="http://niem.gov/niem/domains/screening/2.0"
xmlns:req="http://leitsc-lib/2.0/RequestForResource"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
              <ns:LocationStreet>
                <ns:StreetName>12014 Puddle Place</ns:StreetName>
                <ns:StreetName>Suite 300</ns:StreetName>
              </ns:LocationStreet>
            </ns3:AddressDeliveryPoint>
            <ns3:LocationCityName>Nokesville</ns3:LocationCityName>
            <ns3:LocationState xmlns:ns13="http://niem.gov/niem/usps_states/2.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:type="ns13:USStateCodeType">VA</ns3:LocationState>
            <ns3:LocationPostalCode>20181</ns3:LocationPostalCode>
          </ns3:StructuredAddress>
        </ns3:LocationAddress>
      </ns4:ServiceCallResponseLocation>
      <ns4:ServiceCallResponseLocation>
        <ns4:ServiceCallResponseLocationAugmentation>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

```
<ns4:Firebox>999</ns4:Firebox>
</ns4:ServiceCallResponseLocationAugmentation>
</ns4:ServiceCallResponseLocation>
<ns4:ActivityReasonText>E101 E102 E103 E110</ns4:ActivityReasonText>
</ns4:ServiceCall>
<ns4:ServiceCallAssignedUnit ns1:id="0">
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>E101</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationLocalIdentification>
    <ns3:IdentificationID>E101</ns3:IdentificationID>
  </ns3:OrganizationLocalIdentification>
</ns4:ServiceCallAssignedUnit>
<ns4:ServiceCallAssignedUnit ns1:id="1">
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>E102</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationLocalIdentification>
    <ns3:IdentificationID>E102</ns3:IdentificationID>
  </ns3:OrganizationLocalIdentification>
</ns4:ServiceCallAssignedUnit>
<ns4:ServiceCallAssignedUnit ns1:id="2">
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>E103</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationLocalIdentification>
    <ns3:IdentificationID>E103</ns3:IdentificationID>
  </ns3:OrganizationLocalIdentification>
</ns4:ServiceCallAssignedUnit>
<ns4:ServiceCallAssignedUnit ns1:id="3">
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>E110</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationLocalIdentification>
    <ns3:IdentificationID>E110</ns3:IdentificationID>
  </ns3:OrganizationLocalIdentification>
</ns4:ServiceCallAssignedUnit>
<ns7:TransactionOriginatingOrganization>
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>D1</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationName>Dummy</ns3:OrganizationName>
</ns7:TransactionOriginatingOrganization>
</ns4:Payload>
<ns4:ExchangeMetadata>
  <ns4:DataSubmitterMetadata>
    <ns3:OrganizationIdentification>
      <ns3:IdentificationID>D1</ns3:IdentificationID>
    </ns3:OrganizationIdentification>
    <ns3:OrganizationName>Dummy</ns3:OrganizationName>
  </ns4:DataSubmitterMetadata>
</ns4:ExchangeMetadata>
<ns4:ExchangeMetadata>
  <ns4:TransactionMetadata>
    <ns4:MetadataAugmentation>
      <ns4:TerminalID>
        <ns3:IdentificationID>gcrider</ns3:IdentificationID>
      </ns4:TerminalID>
      <ns4:SubmissionDateTime>
        <ns3>DateRepresentation xmlns:ns13="http://niem.gov/niem/proxy/xsd/2.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns13:dateTime">2009-05-
12T12:37:45.402-04:00</ns3>DateRepresentation>
      </ns4:SubmissionDateTime>
      <ns4:MessageSequenceNumber>
        <ns3:IdentificationID>1242146265402</ns3:IdentificationID>
      </ns4:MessageSequenceNumber>
    </ns4:MetadataAugmentation>
  </ns4:TransactionMetadata>
</ns4:ExchangeMetadata>
</ns9:RequestForResource>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

Request for Resource with Incident Information Response Message

```
<?xml version="1.0" encoding="UTF-8"?>
<ns11:RequestForResource xmlns:ns11="http://leitsc-lib/2.0/1.2/doc/RequestForResource"
xmlns:ns1="http://niem.gov/niem/structures/2.0" xmlns:ns10="http://niem.gov/niem/ansi-
nist/2.0" xmlns:ns12="http://niem.gov/niem/appinfo/2.0"
xmlns:ns2="http://niem.gov/niem/domains/emergencyManagement/2.0"
xmlns:ns3="http://niem.gov/niem/niem-core/2.0" xmlns:ns4="http://leitsc-
lib/2.0/UnitStatusUpdate" xmlns:ns5="http://niem.gov/niem/domains/intelligence/2.0"
xmlns:ns6="http://leitsc-lib/2.0/1.0/doc/UnitStatusUpdate"
xmlns:ns7="http://niem.gov/niem/domains/jxdm/4.0" xmlns:ns8="http://leitsc-
lib/2.0/RequestForResource" xmlns:ns9="http://niem.gov/niem/domains/screening/2.0">
  <ns8:Payload>
    <ns8:ServiceCall>
      <ns3:ActivityIdentification>
        <ns3:IdentificationID>100</ns3:IdentificationID>
      </ns3:ActivityIdentification>
      <ns3:ActivityDescriptionText>Dog Attack</ns3:ActivityDescriptionText>
      <ns7:ServiceCallDispatchedDate>
        <ns3:DateTime>2009-05-12T12:37:45.402-04:00</ns3:DateTime>
      </ns7:ServiceCallDispatchedDate>
      <ns8:ServiceCallAugmentation>
        <ns8:CallTypeText>ALS</ns8:CallTypeText>
      </ns8:ServiceCallAugmentation>
      <ns8:ServiceCallAugmentation>
        <ns8:Staging>
          <ns3:ContactRadioChannelText>4</ns3:ContactRadioChannelText>
        </ns8:Staging>
      </ns8:ServiceCallAugmentation>
      <ns8:ServiceCallResponseLocation>
        <ns3:LocationAddress>
          <ns3:StructuredAddress>
            <ns3:AddressDeliveryPoint xmlns="http://leitsc-
lib/2.0/1.2/doc/RequestForResource" xmlns:ns="http://niem.gov/niem/niem-core/2.0"
xmlns:ns1="http://niem.gov/niem/domains/jxdm/4.0"
xmlns:ns2="http://niem.gov/niem/structures/2.0" xmlns:req="http://leitsc-
lib/2.0/RequestForResource" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
              <ns:LocationStreet>
                <ns:StreetName>12014 Puddle Place</ns:StreetName>
                <ns:StreetName>Suite 300</ns:StreetName>
              </ns:LocationStreet>
            </ns3:AddressDeliveryPoint>
            <ns3:LocationCityName>Nokesville</ns3:LocationCityName>
            <ns3:LocationState xmlns:ns14="http://niem.gov/niem/usps_states/2.0"
xsi:type="ns14:USStateCodeType">VA</ns3:LocationState>
            <ns3:LocationPostalCode>20181</ns3:LocationPostalCode>
          </ns3:StructuredAddress>
        </ns3:LocationAddress>
      </ns8:ServiceCallResponseLocation>
      <ns8:ServiceCallResponseLocation>
        <ns8:ServiceCallResponseLocationAugmentation>
          <ns8:Firebox>999</ns8:Firebox>
        </ns8:ServiceCallResponseLocationAugmentation>
      </ns8:ServiceCallResponseLocation>
      <ns8:ActivityReasonText>E101 E102 E103 E110</ns8:ActivityReasonText>
    </ns8:ServiceCall>
    <ns8:ServiceCallAssignedUnit ns1:id="0">
      <ns3:OrganizationIdentification>
        <ns3:IdentificationID>E101</ns3:IdentificationID>
      </ns3:OrganizationIdentification>
      <ns3:OrganizationLocalIdentification>
        <ns3:IdentificationID>E101</ns3:IdentificationID>
      </ns3:OrganizationLocalIdentification>
      <ns3:OrganizationStatus>
        <ns3:StatusDescriptionText>ASSIGNED</ns3:StatusDescriptionText>
      </ns3:OrganizationStatus>
      <ns8:Incident>
        <ns8:LocalIncidentId>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

```
<ns3:IdentificationID>100</ns3:IdentificationID>
  </ns8:LocalIncidentId>
</ns8:Incident>
</ns8:ServiceCallAssignedUnit>
<ns8:ServiceCallAssignedUnit ns1:id="1">
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>E102</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationLocalIdentification>
    <ns3:IdentificationID>E102</ns3:IdentificationID>
  </ns3:OrganizationLocalIdentification>
  <ns3:OrganizationStatus>
    <ns3:StatusDescriptionText>ASSIGNED</ns3:StatusDescriptionText>
  </ns3:OrganizationStatus>
</ns8:Incident>
  <ns8:LocalIncidentId>
    <ns3:IdentificationID>100</ns3:IdentificationID>
  </ns8:LocalIncidentId>
</ns8:Incident>
</ns8:ServiceCallAssignedUnit>
<ns8:ServiceCallAssignedUnit ns1:id="2">
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>E103</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationLocalIdentification>
    <ns3:IdentificationID>E103</ns3:IdentificationID>
  </ns3:OrganizationLocalIdentification>
  <ns3:OrganizationStatus>
    <ns3:StatusDescriptionText>REJECTED</ns3:StatusDescriptionText>
  </ns3:OrganizationStatus>
</ns8:Incident>
  <ns8:LocalIncidentId>
    <ns3:IdentificationID>100</ns3:IdentificationID>
  </ns8:LocalIncidentId>
</ns8:Incident>
</ns8:ServiceCallAssignedUnit>
<ns8:ServiceCallAssignedUnit ns1:id="3">
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>E110</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationLocalIdentification>
    <ns3:IdentificationID>E110</ns3:IdentificationID>
  </ns3:OrganizationLocalIdentification>
  <ns3:OrganizationStatus>
    <ns3:StatusDescriptionText>ASSIGNED</ns3:StatusDescriptionText>
  </ns3:OrganizationStatus>
</ns8:Incident>
  <ns8:LocalIncidentId>
    <ns3:IdentificationID>100</ns3:IdentificationID>
  </ns8:LocalIncidentId>
</ns8:Incident>
</ns8:ServiceCallAssignedUnit>
<ns10:TransactionOriginatingOrganization>
  <ns3:OrganizationIdentification>
    <ns3:IdentificationID>D1</ns3:IdentificationID>
  </ns3:OrganizationIdentification>
  <ns3:OrganizationName>Dummy</ns3:OrganizationName>
</ns10:TransactionOriginatingOrganization>
</ns8:Payload>
<ns8:ExchangeMetadata>
  <ns8:DataSubmitterMetadata>
    <ns3:OrganizationIdentification>
      <ns3:IdentificationID>FFXRMS</ns3:IdentificationID>
    </ns3:OrganizationIdentification>
    <ns3:OrganizationName>Fairfax County</ns3:OrganizationName>
  </ns8:DataSubmitterMetadata>
</ns8:ExchangeMetadata>
<ns8:ExchangeMetadata>
  <ns8:TransactionMetadata>
    <ns8:MetadataAugmentation>
```



NCR Interoperability Program (NCRIP)

NCR CAD to CAD Data Exchange Technical Requirements

```
<ns8:TerminalID>
  <ns3:IdentificationID>gcrider</ns3:IdentificationID>
</ns8:TerminalID>
<ns8:SubmissionDateTime>
  <ns3:DateRepresentation xmlns:ns14="http://niem.gov/niem/proxy/xsd/2.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="ns14:dateTime">2009-05-
12T12:37:45.402-04:00</ns3:DateRepresentation>
</ns8:SubmissionDateTime>
<ns8:MessageSequenceNumber>
  <ns3:IdentificationID>1242146265402</ns3:IdentificationID>
</ns8:MessageSequenceNumber>
</ns8:MetadataAugmentation>
</ns8:TransactionMetadata>
</ns8:ExchangeMetadata>
</ns11:RequestForResource>
```