National Data Exchange (N-DEx)
Connections Overview

Version 1.0

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Record of Changes		
Date	**Description**	**Revision**
11/1/2016	Initial Draft version.	1.0
	Revision of initial draft	

The purpose of this document is to provide agencies an informational overview on the available options for data submission and user search connections with the N-DEx System. An N-DEx System Connections Overview diagram is provided as Attachment 1.

Data Submission Methods

The N-DEx System supports four data transfer methods:

1. **Secure File Transfer Protocol (SFTP)**
   The SFTP method is preferred by agencies performing periodic extracts, e.g. nightly or weekly, from their records system as bulk uploads to the N-DEx System. N-DEx System SFTP servers are available on the public internet.

   - Agency submits to a directory on the N-DEx System
   - Set up with a user account and a public/private key pair
   - Agency may submit data manually or with a data adapter (built by the agency, a vendor, or the N-DEx Integration Team.)
   - Preferred method of connectivity is via the public internet.

2. **Web Service**
   A web service is the ability for one device to communicate to another device over the internet and is designed to allow applications to 'talk' to each other (even if the applications are using different technologies). This method is preferred by agencies that choose to do submissions and updates to the N-DEx System as the transactions are processed in their system.

   The N-DEx System supports the Logical Entity eXchange Specification (LEXS) Publication and Discovery (PD) web service. An agency who wishes to use this web service for data submission is required to create a web services client and invoke the N-DEx System Ingest Web Service. The preferred method of connectivity is via the public internet.

3. **Physical Media**
   For agencies with no means to electronically transmit data to the N-DEx System, an external physical media device (CD, DVD, hard drive, etc.) may be used. Due to the sensitivity of the data and potential for Personally Identifiable Information (PII), all data on the physical media must be encrypted before submitting to the Criminal Justice Information Services (CJIS) Division. The method for encrypting and decrypting must first be discussed with CJIS Division technical staff. The physical media must be sent using a secure, traceable method.

   Steps for data submission using physical media method:

   - The agency loads data onto an external physical media device, such as a CD, hard drive, DVD, Drobo, etc.
   - The agency then encrypts the data (to protect the data which may contain PII).
   - The agency sends the external physical media to the CJIS Division using a secure, traceable logistics method (such as FedEx, UPS, etc.)

4. **N-DEx System Manual Web Portal**
   Agencies with a low number of incident reports or no electronic record management system (RMS) may log into the N-DEx System web portal and manually type incident information

into an online form. This method does not require an agency to map their data to one of the N-DEx System Specifications.

Pros	Cons
SFTP • Quicker connection. • N-DEx System data mapping support. • Fewer components. LEXS PD • Submit files individually, rather than in batches. Physical Media • Does not require an interface. Manual Web Portal • Allows for one record entry.	SFTP • None noted at this time. LEXS PD • More components than SFTP and may be more difficult to troubleshoot. Physical Media • Takes longer to get data into the N-DEx System. • Requires resources for someone to load data onto the media device. Manual Web Portal • Requires access to the N-DEx System interface. • Can be time consuming.

Figure 1: Data Submission Methods Pros and Cons

User Search Connection Options

The N-DEx Program Office provides three options for agencies to access the N-DEx System:

1. **Web Services**
   - LEXS SR (Search and Retrieval)
     o Allows N-DEx System LEXS Partners to process subscription requests within the N-DEx System.
     o Provides results when another N-DEx System user (Portal or LEXS) searches for the same or similar terms, or views the same record.
   - LEXS SN (Subscription and Notification)
     o Allows N-DEx System users to set the same types of subscriptions and receive the same types of notifications from outside partner systems.

Simple Object Access Protocol	Representational State Transfer
• Is a Protocol. • Requires more bandwidth than REST. • Defines its own security. • <Services.ndex.fbi.gov>	• Is an Architectural Style. • Requires less bandwidth than SOAP. • Inherits security measures from the underlying transport. • <www.ndex.fbi.gov>

Figure 2: Differences between web service types: Simple Object Access Protocol (SOAP) vs. Representational State Transfer (REST)

2. N-DEx Portal Access via Law Enforcement Enterprise Portal (LEEP)

An agency may allow its users to obtain a LEEP account for accessing the N-DEx System.

- Users request access to the N-DEx System via LEEP (requires CJIS Systems Officer [CSO] approval.)
- LEEP administrators activate the N-DEx indicator on the user's account configuration; user will see the N-DEx System icon on the LEEP screen.
- User clicks on the N-DEx System icon to be redirected to the N-DEx System portal (front end).

3. N-DEx System Portal Access via Direct Portal Identity Provider (IdP)
An agency may become an IdP through its own system.
- The agency acts as its own IdP and grants the N-DEx System access to its users.
- Users access the N-DEx System portal (front end).
- Allows the agency to manage its own users rather than relying on LEEP and the N-DEx Program Office to resolve user access issues

Pros	Cons
LEXS SR • Can be implemented into a new or pre-existing portal or application. N-DEx System Portal via LEEP (user) • Agency supports security requirements (TLSv1.2, etc.) for connection to N-DEx System. N-DEx System Portal via LEEP • Agency can manage its own users. N-DEx System Direct Portal (IdP) • Agency manages its own users. • Agency does not have to go to LEEP and then to the N-DEx System portal.	LEXS SR • Requires an agency to understand and handle LEXS to search and retrieve records and display results. • Multiple components involved. N-DEx System Portal via LEEP (user) • Users are managed by LEEP. N-DEx System Portal via LEEP • Users will be directed to LEEP and then will click on N-DEx System to reach the N-DEx System portal. • Agency must support Security Assertion Markup Language (SAML). N-DEx System Direct Portal (IdP) • Agency must support SAML Assertions.

Figure 3: Pros and Cons of user search connection options.

The following information is required to establish an N-DEx System connection:

- Agency Name.
- Agency and Technical point-of-contact names and contact information.
- Connection Type.
- Originating Agency Identifier (ORI).

Listed below are additional requirements based on connection type:

- **SFTP** – The agency must create a public/private key pair and provide the N-DEx System with the public key.
- **Web Services (LEXS SR & LEXS PD) –** The agency must create a key store and Certificate Signing Request (CSR) and provide the N-DEx Program Office with the CSR; when the Enterprise SFTP server is deployed and operational, this connection will require a public/private key pair.
- **Direct Portal (IdP) -** SAML issuer Uniform Resource Identifier (URL) and CSR.

N-DEx PROGRAM OFFICE

📞 304.625.0555

🕐 M-F 7:30 AM - 4:00 PM ET

✉ <ndex@leo.gov>

📍 1000 Custer Hollow Road
Clarksburg, WV 26306

After business hours or during the weekend, please contact the CJIS Division Help Desk at 304.625.HELP (4357).

N-DEx Connections Overview

Agency RMS

Manual Submission

N-DEx Data Submission Secure FTP	N-DEx Data Submission LEXS-PD Web Service	N-DEx Data Submission Web Portal
Public Internet	**Public Internet**	**Public Internet**
Connection Type	Connection Type	Connection Type

Data Submission

User Access

Connection Type	Connection Type
Public Internet	**Public Internet**
N-DEx User Access Web Portal	**N-DEx User Access LEXS-SR Web Service**

N-DEx Portal (Attributes)
UserID
Employer ORI
First Name
Identity ProviderID
Last Name

If Public Internet – a 2 way SSL certification process needed (N-DEx provides a WSDL with specifications to establish). Certificates are used to sign the web service requests.

LEXS-SR (Attributes)
Employer ORI (ORI)
First Name (PersonGivenName)
Identity ProviderID (SystemID)
Last Name (PersonSurName)
UserID (UserID)

Agency Produced User Interface

LEEP Users (Individual Logon)

Agency Produced Interface

Legend:

Security Assertion Markup Language (SAML) is an XML-based open standard data format for exchanging authentication and authorization data between parties, in particular, between an identity provider and a service provider. (http://en.wikipedia.org/wiki/Security_Assertion_Markup_Language)
Law Enforcement Enterprise Portal (LEEP) is a gateway providing law enforcement agencies, intelligence groups, and criminal justice agencies access to beneficial resources. (www.fbi.gov)
Logical Entity Exchange Specifications Search and Retrieval (LEXS SR), Publish and Discovery (LEXS PD), and Subscription and Notification (LEXS SN) are comprehensive, NIEM-based, framework for the development of information exchanges.
(http://www.drupalshowcase.com/drupal-showcase/department-justice-community-site-logical-entity-exchange-specification-lexs)
Web Portal – a website that brings information together from diverse sources in a uniform way.
(http://en.wikipedia.org/wiki/Web_portal)