

Check 21 Guide to Connectivity Options

For FedForward®, FedReturn®, and FedReceipt® Services

Version 4.0

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Overview

The Federal Reserve Banks' *Check 21 Guide to Connectivity Options for FedForward[®], FedReturn[®], and FedReceipt[®] Services* provides an overview of connectivity options for your organization and/or vendor for deploying and supporting connectivity to facilitate the exchange of image cash letters (ICLs) with the Federal Reserve Banks. This document provides an overview of each connectivity option in order to assist your organization in selecting the best alternative:

- Description of each option for ICL transfer
- Architectural description and diagrams
- Selection considerations
- Implementation considerations

The FedForward, FedReturn and FedReceipt services are Check 21-enabled clearing services that provide your organization with the opportunity to deposit and receive ICLs. In order to facilitate efficient and effective transfer of ICLs the Federal Reserve Banks have identified a set of connectivity options designed to meet the spectrum of your organization's needs. Before your organization can deliver or receive ICLs from the Federal Reserve Banks, you must identify and implement the appropriate option and complete the enrollment and testing process for the selected FedForward, FedReturn and/or FedReceipt services. For more information on the Federal Reserve Banks' Check 21-enabled services, please visit the [Check Products & Services](#) page on FRBservices.org or contact your Account Executive.

In addition, a high-level outline of the planning, testing and implementation process is available in the [Check 21-Enabled Products Implementation Overview](#) document.

The options for transferring ICLs include the following:

- **Option 1: Customer-Initiated Manual Upload and Download via the Internet using the FedLine Web[®] Solution.** This option is a browser-based utility for ICL exchange primarily for organizations with basic performance and functionality requirements.
- **Option 2: Customer-Initiated Automated Upload and Download via the Internet using FedLine Web and Axway Secure Client software.** This option uses client software to facilitate ICL exchange with the Federal Reserve Banks via the Internet. It offers enhanced upload and download functionality and is for organizations with expanded performance and functionality requirements.
- **Option 3: Upload and Download via a Dedicated Wide Area Network (WAN) connection using the FedLine Direct[®] Solution and IBM[®] Connect:Direct[®] Secure+ software.** This option provides a scalable dedicated circuit and is primarily for organizations with high performance and functionality requirements.

Connectivity Options for ICL File Transfer

ICLs transferred between your organization and the Federal Reserve Banks must adhere to the X9 industry standards for Check Image exchange: X9.100.187 and TR-47. For more detailed information on the format please see the X9 Standards website: X9.org.

The following sections outline the connectivity options your organization can implement in order to facilitate ICL transfer.

Option 1: Customer-Initiated Manual Upload and Download via the Internet Using FedLine Web

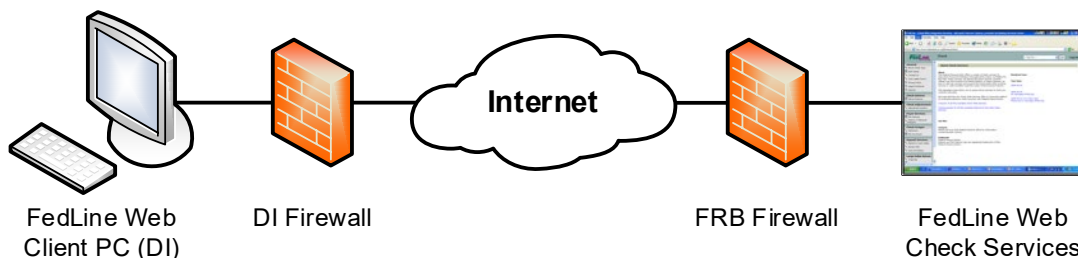
Your organization can upload or download ICLs through the Internet by using a supported web browser and logging into FedLine Web Check Services. During the implementation process, Subscribers will be issued Federal Reserve Bank credentials for the selected services to authenticate to the Check 21 services. The following Check 21-enabled clearing services are available:

- FedForward/FedReturn, which provides the ability to upload (deliver) ICLs to the Federal Reserve Banks
- FedReceipt, which provides the ability to download (receive) Forward Collection and Return ICLs from the Federal Reserve Banks

Subscribers accessing the FedForward/FedReturn option will be presented with a screen that allows them to upload files. The FedReceipt screen will present Subscribers with a list of Forward Collection and/or Returns files that are available for download. Subscribers can select a file from the list and download it.

Security

Connectivity and data encryption is provided by a mutually authenticated session using Federal Reserve Bank-issued credentials.



Considerations in Selecting Option 1

File transfer via Internet using FedLine Web is a manual process requiring a Subscriber to perform associated functions. In addition, it does NOT provide mid-file recovery which provides automatic resumption of the file transfer in the event of a communication line disruption. With this option, file transfer must be manually restarted from the beginning if there are any communication problems.

Your organization must have an Internet connection with sufficient bandwidth to transfer your daily check volume at the desired deadlines. Check image files are much larger than most other application data files. A single check, front and back, typically averages around 25,000 bytes. By identifying the number of checks in your organization's files, capacity requirements can be determined.

The Federal Reserve Banks recommend that your organization coordinate with your internet service provider to evaluate your Internet connection speed and daily usage patterns. Achievable transfer rates are impacted by many factors, but two that can have a significant influence include available bandwidth and your organization's operating environment.

Determining available bandwidth should include the following key parameters:

- Upload and download bandwidths provided by Internet service providers (ISPs). These may differ significantly
- Shared applications concurrently using available bandwidth during anticipated transfer times
- Your organization's internal network capacity

Assessing your organization's operating environment and the achievable network utilization level can be complex and can vary significantly based on the following key parameters:

- Version of Microsoft® Windows® used and its maintenance level
- Workstation/server hardware and configuration settings
- Web browser
- Shared workload on the workstation /server
- Transfer file size

Please refer to the [FedLine Web Hardware and Software Requirements](#) for information about supported versions of Microsoft Windows, supported web browsers, and other requirements for accessing Federal Reserve Financial Services via the FedLine Web Solution.

The current Federal Reserve Banks' security infrastructure limits file transfer time of a particular file to one hour in duration, thus consideration must be given to assure effective file transfer.

Should your organization's ISP service become unavailable, upload or download of ICLs cannot occur unless a contingency location or alternate ISP is available.

Implementation Considerations When Selecting Option 1

If a sufficient transfer rate cannot be achieved during the desired file transfer window and/or contingency service has not been established, your organization should consider one or all of the following:

- Implementing additional bandwidth
- Making adjustments to the operating environment

Lead time for implementation of such enhancements should be considered in scheduling implementation of Check 21 services.

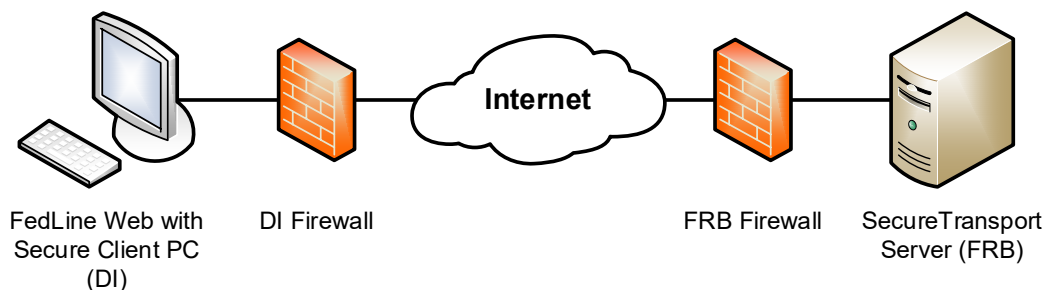
Option 2: Customer-Initiated Automated Upload and Download via the Internet Using FedLine Web and Axway Secure Client

Your organization can add automation and more robust functionality by purchasing and installing Axway Secure Client software. Axway offers Secure Client for multiple operating systems, including versions of Microsoft Windows and Linux®. Secure Client communicates with the Federal Reserve Banks' SecureTransport server to facilitate file transfers.

Similar to Option 1, connectivity and data encryption is provided by a mutually authenticated session using Federal Reserve Bank-issued credentials. These credentials will be used by the Secure Client software to connect to the Federal Reserve Bank's SecureTransport server. Your organization can customize the Secure Client application to automatically upload and download ICLs at designated times. In addition, Secure Client offers mid-file recovery capabilities, providing the ability to resume file transfers in the event of communication disruptions.

Security

Data encryption is provided by a mutually authenticated session using Federal Reserve Bank-issued credentials.



Considerations in Selecting Option 2

File transfer via the Internet using FedLine Web and Axway Secure Client software is suggested for consideration by organizations whose data delivery needs do not require a dedicated circuit.

Session transfer time for a single file is limited to one hour. If the desired performance cannot be achieved via an internet connection Option 3 should be evaluated.

Your organization can purchase Secure Client software directly from Axway utilizing the on-line store for Federal Reserve Banks customers at <https://usfrbstore.axway.com>.

Options 1 and 2 are Internet based services and require an Internet connection with enough available bandwidth to support your data transfer requirements. Check image files can be much larger than other application data files. A single check, front and back, is typically around 25,000 bytes. Capacity requirements can be derived by identifying the number of checks in your daily files, inbound and/or outbound, and any associated operational workflows.

The Federal Reserve Banks recommend that your organization coordinate with your internet service provider to evaluate your Internet connection speed and daily usage patterns. Achievable transfer rates are impacted by many factors, but two that can have a significant influence include available bandwidth and the organization's operating environment.

Determining available bandwidth should include the following key parameters:

- Upload and download bandwidths provided by Internet service providers (ISPs). These may differ significantly
- Shared applications concurrently using available bandwidth during anticipated transfer times
- Your organization's internal network capacity

Assessing your organization's operating environment and the achievable network utilization level can be complex and can vary significantly based on the following key parameters:

- Version of Microsoft® Windows® used and its maintenance level
- Workstation/server hardware and configuration settings
- Web browser
- Shared workload on the workstation /server
- Transfer file size

The current Federal Reserve Banks' security infrastructure limits file transfer time of a particular file to one hour in duration, thus consideration must be given to assure effective file transfer.

Should your organization's ISP service become unavailable, upload or download of ICLs cannot occur unless a contingency location or alternate ISP is available.

Organizations that initially selected Option 1 can upgrade to Option 2 at any point.

Implementation Considerations When Selecting Option 2

1. Adequate lead time and resources to obtain, install, set up, and complete training for the Secure Client application should be considered.
2. If the Secure Client scheduling functionality will be used a workflow analysis of inbound and outbound files should be done.

Scripting Considerations with Axway Secure Client

Microsoft Windows

Secure Client for Microsoft Windows can run with either a graphical user or through command line entries.

Scripts can be run from a Windows-based scheduler program to upload and download files between the customer network and the Federal Reserve Banks along with custom processing scripts written by the customer. Please contact Axway for support on custom scripting using Secure Client for Microsoft Windows.

Linux

Customers may use the scheduler feature within Secure Client or create a CRON job within Linux operating systems for regularly scheduled execution. Please contact Axway for support on custom scripting using Secure Client for Linux.

Scheduling and Execution of Custom Scripts

The Federal Reserve Banks require at least a 15 minute script interval for interrogating the system for new FedReceipt files for download. For customers with volumes of greater than 45,000 checks per day, there may be added benefits in using a Linux platform and client over the Microsoft Windows client for a higher degree of script customization and efficiency in file retrieval.

Option 3: Upload and Download via a Dedicated WAN Connection Using FedLine Direct and IBM Connect:Direct Secure+

Your organization can initiate upload and download of ICLs automatically or manually with the Check 21 Large File Delivery (LFD) service. This service utilizes the FedLine Direct Solution and IBM Connect:Direct Secure+ software. Connectivity is established between your organization's Connect:Direct Secure+ software and authenticates with the Federal Reserve Banks' Connect:Direct Secure+ software using Federal Reserve Bank-issued server certificate credentials.

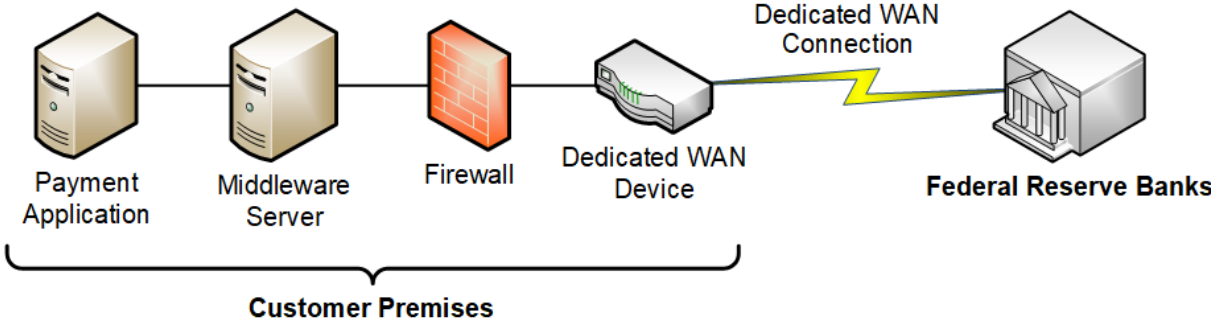
Transfers of files can be automated or manual. Similar to Option 2, the ConnectDirect Secure+ software provides mid-file recovery capability in the event of a transmission disruption.

File delivery for FedReceipt files can be delivered automatically as soon as the files become available. This process follows the same authentication process as above, except the Federal Reserve Banks' Connect:Direct Secure+ software initiates the file transfer session and 'pushes' the file. Whereas Options 1 and 2 utilize a 'pull' methodology for file delivery this option offers a 'push' alternative with highly customizable functionality.

Security

The FedLine Direct Solution uses a private IP network. This network uses Ethernet technology and provides private groupings in order to segment traffic to discrete areas of the network. Security is provided through point-to-point router links with a dedicated WAN connection.

The network provides the ability to deploy highly scalable connection alternatives. As part of the FedLine Direct Solution, the Federal Reserve Banks provide and maintain the routers and circuits for specified customer locations. Your organization is responsible for its firewall and server infrastructure including the Connect:Direct Secure+ software to support ICL transfer.



Considerations in Selecting Option 3

File transfer via the Check 21 LFD service is suggested if your organization has processing and functionality needs that are not met by Options 1 and 2.

Your organization must provide the host system running Connect:Direct Secure+ software. If your organization is not currently utilizing Connect:Direct Secure+ software, you should contact IBM for the associated costs since they can vary based on system configurations.

Lead times for implementing a FedLine Direct connection can vary from 90 to 120 business days. In some cases, the lead time may be even longer based on specific site considerations.

Lead times for increasing bandwidth are typically two to four weeks from the commitment date depending on the complexity of the request.

Connectivity for contingency processing should be considered. These plans may require a direct network connection to a contingency site.

Organizations that initially select other connectivity options may deploy Option 3 at any point in the future. Typically, Option 1 is deployed in conjunction with Option 3 for testing and contingency purposes.

Implementation Considerations When Selecting Option 3

1. Bandwidth and location assessments need to occur as early in the process as possible in order to determine a preliminary schedule for deployment.
2. If your organization is not currently using Connect:Direct Secure+ software, adequate lead time and resources need to be allocated to obtain, install and set up the software.
3. An organization can set up multiple concurrent Connect:Direct sessions to maximize their throughput. The default number of concurrent sessions that can be set up is 12, but can be more or less depending on the speed of the selected circuit and the platform running Connect:Direct.
4. Circuit installation lead time needs to be considered in scheduling deployment of the Check 21 LFD service via FedLine Direct.

Comparison of Connectivity Options for ICL Transfer

The following table provides a summary of the key features and differences of the three connectivity options:

Feature / Characteristic	<u>Option 1</u> Internet with FedLineWeb	<u>Option 2</u> Internet with FedLine Web and Axway Secure Client	<u>Option 3</u> Direct Network Connection with FedLine Direct and Connect:Direct
Certificate Keystores	X	X	X
File Transfer Options	<ul style="list-style-type: none"> • Push to Upload • Pull to Download 	<ul style="list-style-type: none"> • Push to Upload • Pull to Download 	<ul style="list-style-type: none"> • Push to Upload and Download
Mid-File Recovery		X	X
Scheduling		X	X
Unattended Automation		X	X
Command Line Input		X	X
Bandwidth Throttling		X	X
Email Notification		X	