# Managed File Transfer (MFT) and iPaaS

## A Complete Solution

A cost-effective strategy to keep your digital transformation channels open, flexible and ready for business, now and in the future.

WHITE PAPER
Version 1.5

Thru.

# Contents



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# Digital transformation requires integration of the ever-expanding set of services and data across the extended enterprise.

The technologies which fashioned our connected world are evolving at a breakneck pace leading to unimaginable marketplace disruptions. These changes fuel an unstoppable force that demands a never-ending digitization of business known as *digital transformation*. Smart organizations adopting "Change as the only Constant" must dig to the very essence of technology deployments to maintain the agility to sustain this axiom.

Aspirationally, the newly digitally transformed enterprise would be considered one well-oiled and monolithic software machine, but in reality, required functionality is implemented by multiple on-premises and cloud applications and services.

Selection of the right integration framework is critical to tie all services in a seamlessly orchestrated solution. Evolution of integration from on-premises ESB / SOA architectures to cloud-based integration platforms as a service (iPaaS) makes other API-centric cloud-native services such as Thru® an essential component of iPaaS-driven integration framework.

Service and technology designed specifically as native iPaaS ecosystem components are reflected in the iPaaS single pane of glass for centralized audit, reporting, dashboards, notifications and other key functions. iPaaS supplies pre-built reusable connectors that allow integrators to quickly generate and publish APIs to support solutions built on a microservices architecture.

Because of this, large organizations are turning to cloud-based iPaaS platforms to provide seamless integration between disparate cloud, on-premises and hybrid enterprise software and services.

## Exponential Growth of Data Exchange Volume

> "...about 40 trillion gigabytes of data (40 zettabytes) will be generated by 2021."
>
> *The Digital Universe in 2021.*
> IDC

> "The amount of data we produce every day is truly mind-boggling. There are 2.5 quintillion bytes of data created each day at our current pace, but that pace is only accelerating with the growth of the Internet of Things (IoT). Over the last two years alone 90 percent of the data in the world was generated."
>
> *How Much Data Do We Create Every Day? The Mind-Blowing Stats Everyone Should Read.*
> Bernard Marr, Forbes.
> May 21, 2018

As almost every business process relies on the secure transfer of data, file transfer traffic—particularly managed file transfers used by enterprises to send sensitive business data between applications run by suppliers, vendors and customers—is anticipated to parallel this explosive data growth.

# Managed File Transfer and Electronic Data Interchange

Most medium and large enterprises today leverage data exchange technologies to enable data exchange integration with their business partners. The two most common classes of data exchange technologies are:

1. **Managed file transfer (MFT)** – A platform enabling the secure transfer of sensitive, large file-size or compliance-protected data between corporate entities. MFT data exchange files are usually much larger payloads over generalized protocols and APIs. MFT helps guarantee delivery and security without the overhead of parsing and transformation.
2. **Electronic data interchange (EDI)** – The computer-to-computer exchange of business documents such as purchase orders and invoices in a standardized electronic format. Current EDI standards include X12, EDIFACT, EANCOM and HL7 and enable data transfers over special EDI messaging protocols with smaller payloads. EDI data may require parsing, mapping and transformation.

These technologies are not a binary choice CIOs and IT managers are required to make when considering a data exchange. On the contrary, MFT and EDI are complementary for a successful data exchange solution. Enterprises wanting to integrate these technologies seamlessly with their cloud and on-premises data exchange workflows are turning to iPaaS to accomplish that integration.

# MFT and iPaaS: An Integrated Data Exchange Solution

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In the June 2019 *Use APIs to Modernize EDI for B2B Ecosystem Integration Report*, Gartner provides,

> A HIP is a capability framework that combines on-premises and cloud-based integration and governance capabilities, and supports a wide range of integration use cases. Although a HIP may be implemented by assembling a variety of technology building blocks — from one or more providers — it is managed as a cohesive, federated and integrated whole.[1]

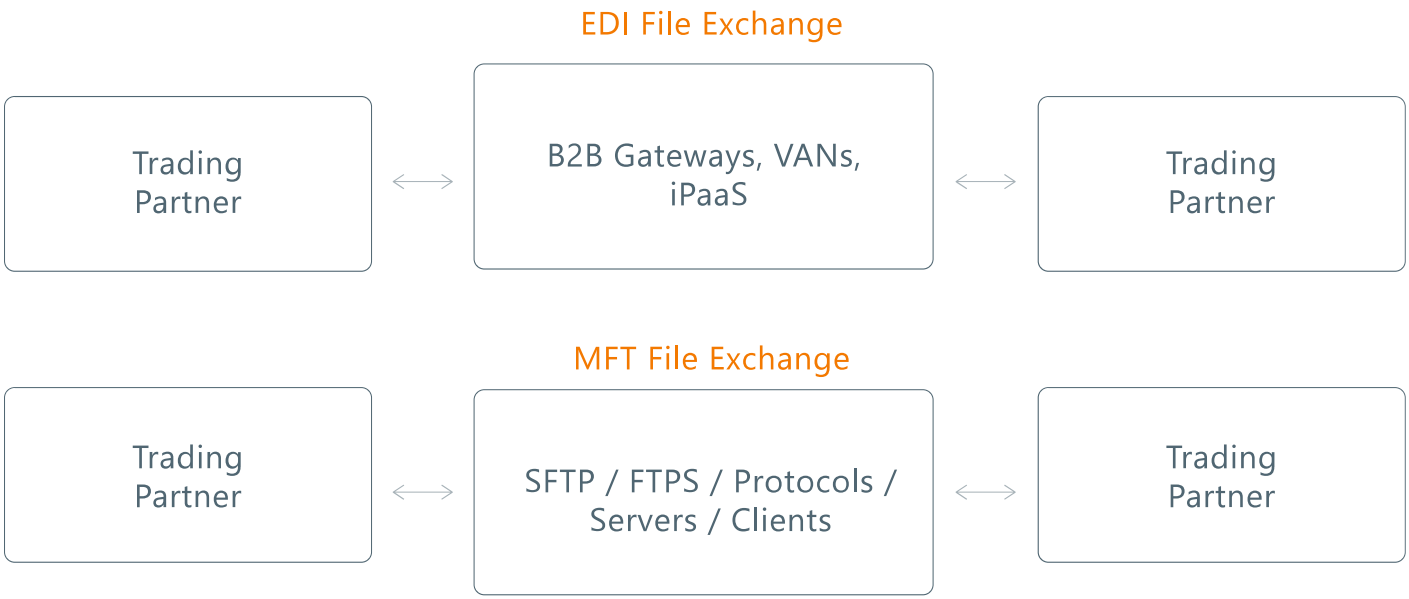
## MFT Investment

Multiple integration technologies are used in B2B solutions including enterprise service bus, iPaaS, B2B gateways, API gateways and integration brokers.

According to data from the Gartner Application Integration Pulse Survey 2019, **48%** of respondents named Integration Platform as a Service (iPaaS) and **45%** named Managed File Transfer as integration technologies their organization plans to invest in to support its critical integration scenarios in two years' time.[2] We believe this stresses the importance IT decisions place on these two technologies to enable B2B data exchange for hybrid enterprise platforms.

## EDI and MFT Data Exchange

In traditional integration architectures, EDI and MFT data exchanges are frequently configured as separate flows in EDI data exchange, using software such as B2B gateways, value-added networks (VANs) or iPaaS. For MFT data exchange, enterprises use traditional file exchange technologies such as SFTP / FTPS protocols, servers and clients.




[1] *Gartner "Use APIs to Modernize EDI for B2B Ecosystem Integration," Mark O'Neill, William McNeill, 11 June 2019*

[2] *Gartner "How to Deliver a Truly Hybrid Integration Platform in Steps," Massimo Pezzini, 9 January 2021*

## Seamless Integration with iPaaS and API-Centric Thru Platform

Leading iPaaS services are cloud-native platforms designed for API-based integration. It is beneficial for the enterprise to select managed file transfer technology built on a modern cloud platform with extensive APIs that can be part of existing integration strategies.

**Thru is a cloud-native managed file transfer platform designed as a no-code, easy-to-use, API-centric native extension of iPaaS for the modern B2B solution architecture.**

No complex LAN deployments are required; internal and external traffic is tracked in one audit and reporting interface. Thru certified connectors enable integration with the iPaaS data channel for file/data exchange and Thru published APIs enable integration with the iPaaS control channel for orchestration. Thru file transfer flows, partner organizations and endpoints are loosely coupled in a publish-subscribe model and are more flexible than other traditional MFT solutions. iPaaS platforms combined with Thru provide a comprehensive, integrated file transfer solution that supports both MFT and EDI data exchange.

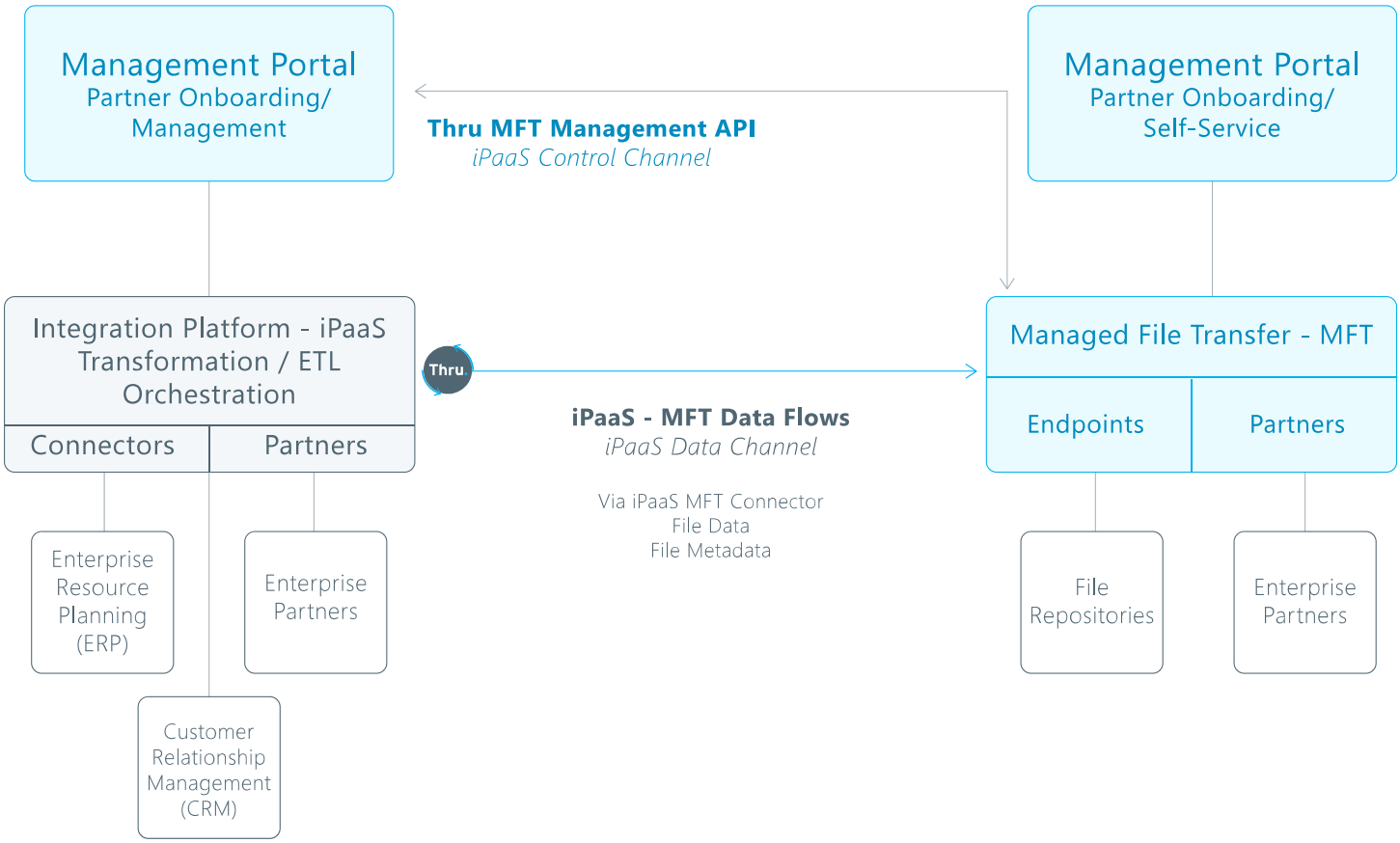
Thru complements iPaaS data exchange with features designed to exchange MFT data which has specific traffic patterns, transport protocols and delivery requirements, including unlimited payloads, limitless persistence and guaranteed delivery. A comparison of the properties of iPaaS and MFT data exchanges is shown in the table below.

| iPaaS Data Exchange | Thru Data Exchange |
|---|---|
| **Extensive set of APIs and connectors** | General file protocols and APIs |
| Near real-time or not real-time and synchronous | Batch, near real-time or not real-time and synchronous |
| Small to medium payloads | **Unlimited payloads** |
| No or limited persistence | **Unlimited persistence** |
| **Data transformation / ETL** | No data transformation |
| Mostly point-to-point | **Publish / subscribe, any to any** |
| Guaranteed delivery requires special programming | **Guaranteed delivery built-in, unlimited payloads** |

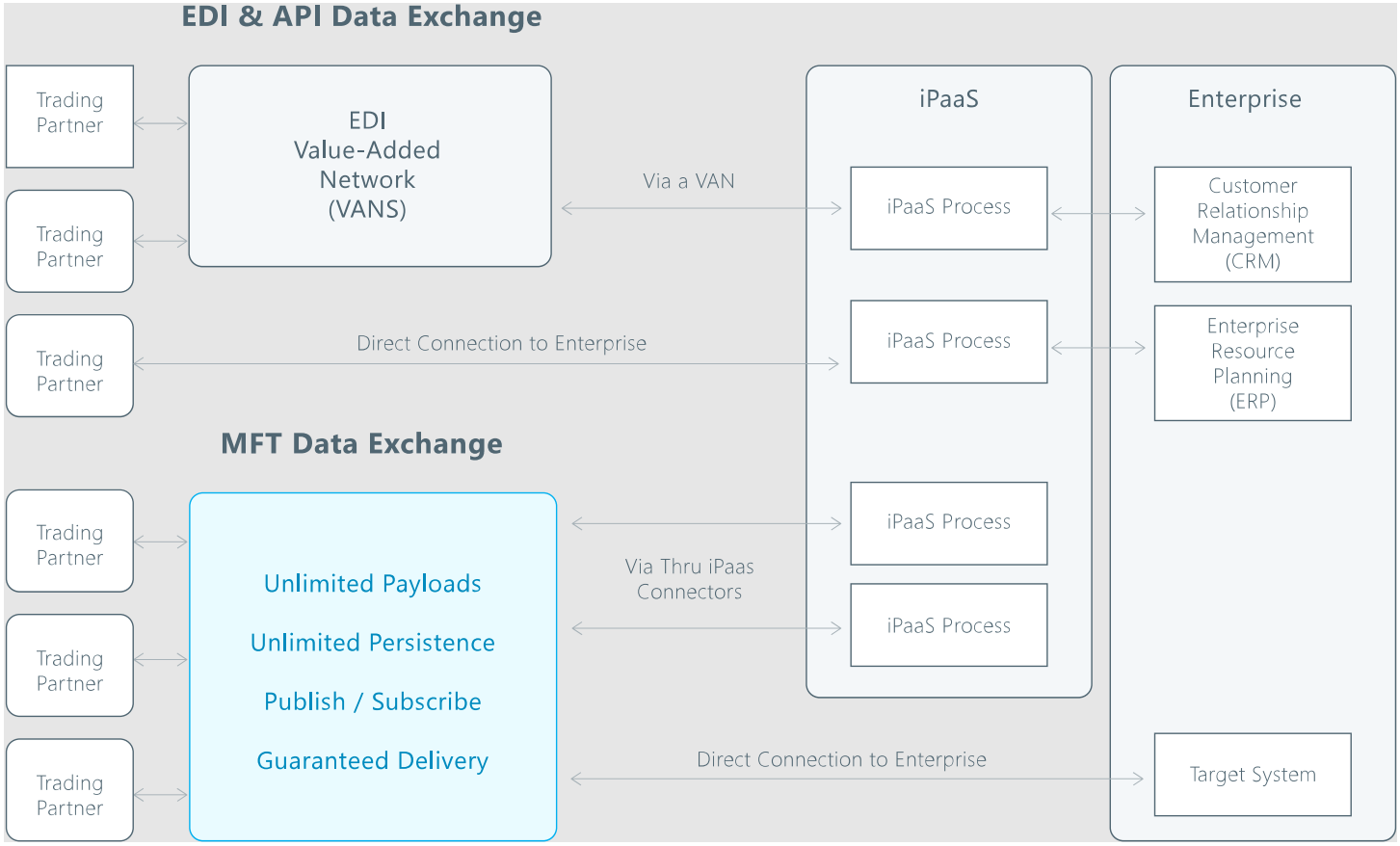
Thru iPaaS-certified connectors link MFT data flows to iPaaS process flows to pass files over the data channel. For example, files from multiple external partner endpoints may require processing by the same iPaaS process. In this case, multiple external partner endpoints can subscribe to a single Thru data flow linked to a single iPaaS flow. If there is a break in connection by one partner endpoint, there is no impact to the other endpoints using the same MFT and iPaaS flows. The publish-subscribe model used by Thru enables flexible but simple and stable configurations of partners and endpoints in linked iPaaS-MFT flows of the solution. In use cases where iPaaS should not carry file payloads, Thru implements direct traffic between source and target endpoints that can be orchestrated by iPaaS via the Thru API (control channel).

Thru provides a set of management APIs which enables integration with the iPaaS control channel to orchestrate MFT in multiple ways: manage file transfer configurations, trigger transfer processes based on external events and onboard partners in a single iPaaS-centric hybrid integration platform.

iPaaS and MFT data exchanges are shown in the diagram below.



The iPaaS + Thru combined solution provides enterprises with an integrated platform to support all data exchange between trading partners and enterprises. This is accomplished with a combination of direct EDI / iPaaS, direct MFT and hybrid MFT-to-iPaaS exchanges in cases where data transformation is required for files coming from MFT sources, as illustrated below.




MFT data exchange is applicable when larger payloads are delivered over general file transfer protocols and guaranteed delivery is a requirement. Because Thru is built on a cloud file system with elastic scalability, these files will be stored in MFT until delivery is successful, regardless of the file size or number. In cases where the files picked up by MFT data exchange require data transformation or mapping, the data will be routed from MFT to iPaaS processes via Thru iPaaS connectors and the iPaaS will route the data to the enterprise.

# Thru Value for iPaaS–Based Enterprise Solutions

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## Essential Features

The following tables highlight the essential features in Thru that have been designed to drive business value for enterprise customers adopting modern solutions.

| CLOUD SERVICE |
| --- |
| No on-premises software deployment required |
| No maintenance |
| Elastic scale, pay for what you need, easily meet SLAs |
| Continuous delivery of feature improvements, no need for maintenance downtime |

| DISTRIBUTED HYBRID ARCHITECTURE OPTION |
| --- |
| Thru Node (MFT agent) is a runtime that allows file transfers within a network |
| Orchestration of file transfers is in the cloud |

| NO CODE |
| --- |
| Web-based configuration and management |
| Developer skill set is not required |

| API-CENTRIC NATIVE MFT EXTENSION OF IPAAS |
| --- |

| Integration with iPaaS Data Channel Using Thru Native Connectors |
| --- |
| Offloads file transfer management complexity from iPaaS logic to Thru |
| Simplifies iPaaS process design using Thru native iPaaS connectors as building blocks within iPaaS design tools |
| Scalable HTTPS-based transfer of file data between Thru and the iPaaS data channel via Thru native iPaaS connectors |
| Ability to pass file metadata between Thru and iPaaS |

| Orchestration of MFT by iPaaS Control Channel or by Other Applications Using Thru APIs |
| --- |
| Complete configuration of MFT flow processes via Thru configuration APIs |
| Event-driven automation to trigger file transfers and signal transfer states via Thru event APIs |
| Partner onboarding via Thru onboarding APIs |

# Essential Features

(CONTINUED)

| PARTNER ONBOARDING AND MANAGEMENT |
| --- |
| Easy and fast partner onboarding option via web portal with no coding or deployment |
| Ongoing management and customization of existing partner integrations can be offloaded to partners |

| GUARANTEED DELIVERY OF LARGE FILE DATA AND METADATA SETS |
| --- |
| Persistent cloud storage ensures zero data loss. Files are stored until successful delivery or deletion by retention policies |
| Checkpoint restart capability supported for all protocols |
| Durable flows survive restart |

| PUBLISH-SUBSCRIBE DESIGN |
| --- |
| Simple configurations replace multiple point-to-point connections with flexible subscriptions that connect organization endpoints to file transfer flows and iPaaS processes in a loosely coupled system |
| Dynamic data routing between all subscribed source and target endpoints and iPaaS connections. Subscribers can be added, modified or deleted at any time and the flow dynamically adjusts |
| Event-driven architecture and asynchronous parallel processing improve performance, reliability and scalability |

| SINGLE PANE OF GLASS MANAGEMENT |
| --- |
| Internal and external file exchange scenarios are configured, managed and audited in a uniform way |
| Internal exchange between file servers on corporate private network segments without leaving the corporate firewall, orchestrated via Thru cloud |
| External file exchange between file servers on corporate private network and partners |
| Stop / start control of file flows without downtime |
| Delivery exceptions, retries and alerts |

| SUBSCRIPTION-BASED LICENSE MODEL |
| --- |
| Most cost-effective and easily adaptable strategy to budget and scale, enterprise customers pay for what they use |

## Business Value

- **Streamline complex configurations** to reduce troubleshooting, support and maintenance costs and improve SLAs.
- **Eliminate cost** of development, deployment and infrastructure.
- **Accelerate solution delivery and time to value** by minimizing integration time.
- **Reduce integration costs** by moving file transfer logic from integration platforms to no-code Thru service.
- **Reduce risk of business disruption** by ensuring file delivery and service uptime.
- **Reduce support costs** with easy partner onboarding.

# Use Cases: Integrations

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## USE CASE 1:

# Energy company field operations and research transfers big data to iPaaS data processing and enterprise applications and systems

### Business Processes

An energy company generates and processes large amounts of data daily. Big data includes research data such as well level economics and predictive analytics, field data such as geological and geophysical exploration and other data types such as drilling and fracking. Production data volumes can exceed 10TB of data per day. Every day, reports generated on big data are sent to company backend systems. This information is digested by enterprise resource planning (ERP), accounting and analytics tools to help the company quickly discover and remedy equipment malfunctions, choose optimal well locations, discover areas of production efficiency and make informed business decisions.

To ensure the success of its data driven processes, the company decided to improve its file transfer system. A cloud-native model was adopted to eliminate the expense and time investment associated with managing data centers and on-premises equipment. The primary business objective was to migrate to a modern, cloud-based architecture using iPaaS with Thru native iPaaS connector to orchestrate the flow of data via APIs and consolidate file exchange management under the Thru solution to streamline file transfer operations.

### Onboarding Process in Thru Portal by Enterprise Administrators

1. Configure file transfer flows which send the files to iPaaS for data processing or directly to enterprise business applications or file repositories.
2. Configure multiple organizations for external partners, operators or internal departments.
3. Link organizations with relevant file transfer flows depending on type of data produced by organization.

### Data Flows

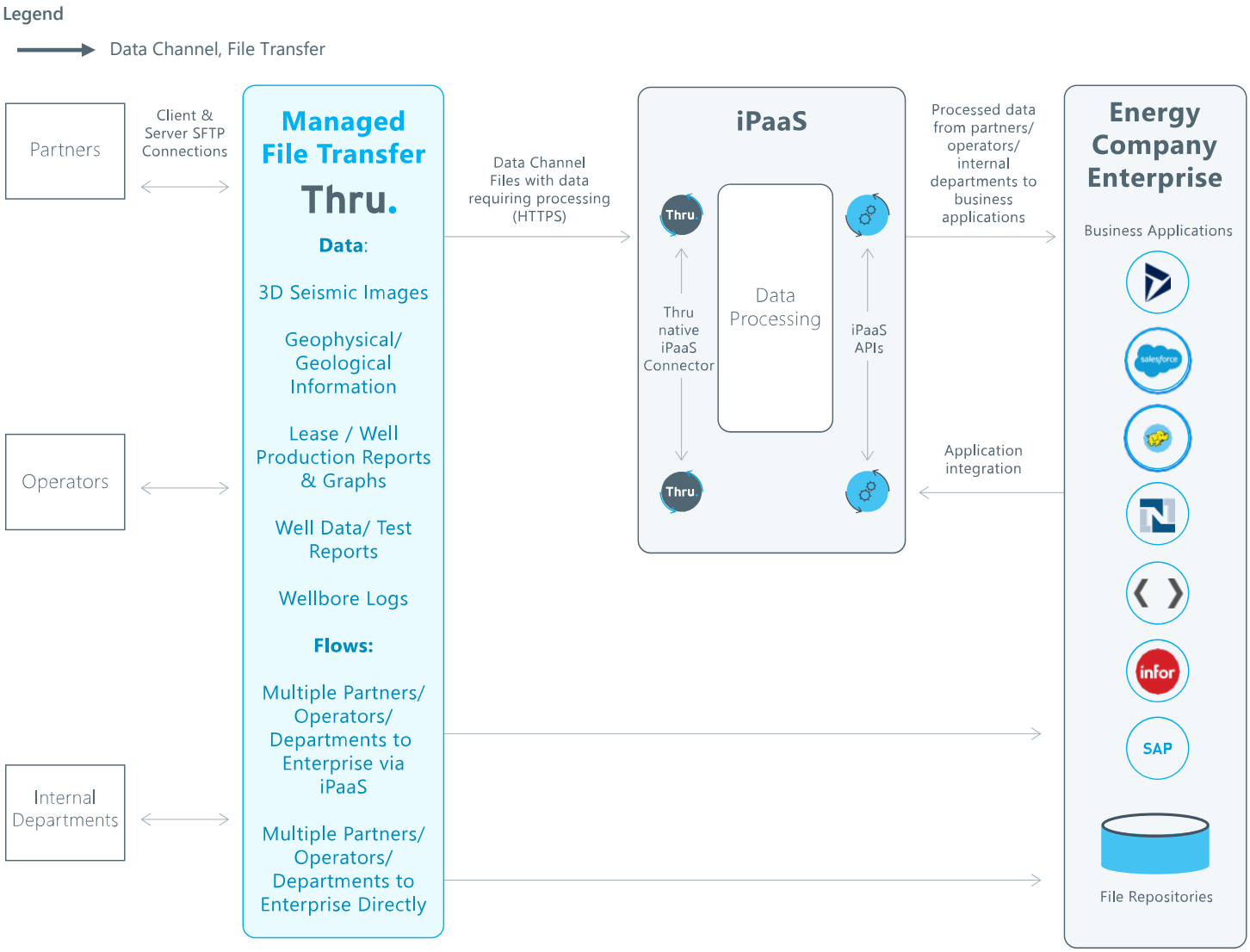
Partners, operators and internal departments send the files to Thru using SFTP and FTPS client and server connections.

**File traffic to the enterprise via iPaaS:** Files containing data which requires processing are routed to iPaaS data channel by a Thru flow configured to link with iPaaS. Files are picked up by iPaaS using the Thru native iPaaS connector. Once iPaaS completes required data processing, data is ingested in enterprise business applications by using iPaaS APIs. The main role of iPaaS in the solution is to manage application integrations via APIs.

**Direct file traffic to the enterprise:** Files containing data which does not require transformations are routed by the Thru flow configured to target enterprise file repositories (SFTP servers/clients, S3 buckets, other) and business applications.

## USE CASE 1, DIAGRAM:

# Energy company field operations and research transfers big data to iPaaS data processing and enterprise applications and systems



## USE CASE 2:

# Food manufacturer requires regular flow of data with several hundred wholesalers

### Business Processes

A food manufacturer has a network of several hundred wholesalers who are the backbone of the supply chain. Products are shipped from the manufacturer to the wholesalers, and then the wholesalers distribute to the retailers. Data is collected from the retailers and fed back to the wholesalers, who in turn feed it back to the manufacturer. The supply chain requires a regular flow of data from wholesalers to the manufacturer enterprise about inventory levels, orders and other data points that impact food sales by location. The collected data provides the manufacturer enterprise with business-critical insight and allows it to adapt to changing market conditions. Additionally, wholesalers must have visibility to which products are available and which shipments are on the way.

The manufacturer requires data to be exchanged with wholesalers in a certain way:

1. The manufacturer broadcasts the product master list to every wholesaler once a day. The same data goes to all manufacturers.
2. The manufacturer sends bills-of-lading (BOLs) to every wholesaler: It is a list of shipments coming to the wholesaler from the manufacturer. Every file has different content, specific to each wholesaler, and is sent at various times of the day.
3. Every wholesaler must send his warehouse inventory file to the manufacturer every day. The files are ready to transfer at various times of day across all US time zones.

The wholesalers have relatively low IT infrastructure and few technical resources to manage systems required to transfer this business-critical data.

The existing B2B exchange legacy system was developed in-house over many decades. Onboarding of wholesalers was inefficient due to the point-to-point integration process and deployment complexity. Enterprise back-end integration was progressively more difficult and required continuous maintenance. The custom legacy code had evolved over decades. It was increasingly difficult and costly to maintain and troubleshoot the code and infrastructure, given limited knowledge transfer.

The food manufacturer decided to invest in a new cloud-based solution based on iPaaS for the integration of back-end applications and chose Thru for bi-directional file exchange with the wholesalers. Thru extends iPaaS to the external wholesalers by integrating iPaaS data channel with Thru file flows using the Thru native iPaaS connector in a simple plug-and-play manner. The Thru cloud-native platform eliminated the need to maintain code and infrastructure and provided single pane of glass visibility into all file transfer activity and troubleshooting for both the food manufacturer and its wholesalers.

## USE CASE 2:

# Food manufacturer requires regular flow of data with several hundred wholesalers
(CONTINUED)

### Onboarding Process for Wholesalers

Thru's no-code architecture enables fast and easy onboarding and management of the wholesaler organization units by the manufacturer's administrators in the Thru administration web portal. The wholesaler self-service portals are automatically provisioned as part of the onboarding process. The publish-subscribe design enables flexible and simple connection of the wholesaler organization units and endpoints to Thru data flows to send and receive file data from the food manufacturer. Thru automates distribution, configuration, management and monitoring of Thru Agent endpoints which are deployed on the wholesalers' servers.

### Data Flows

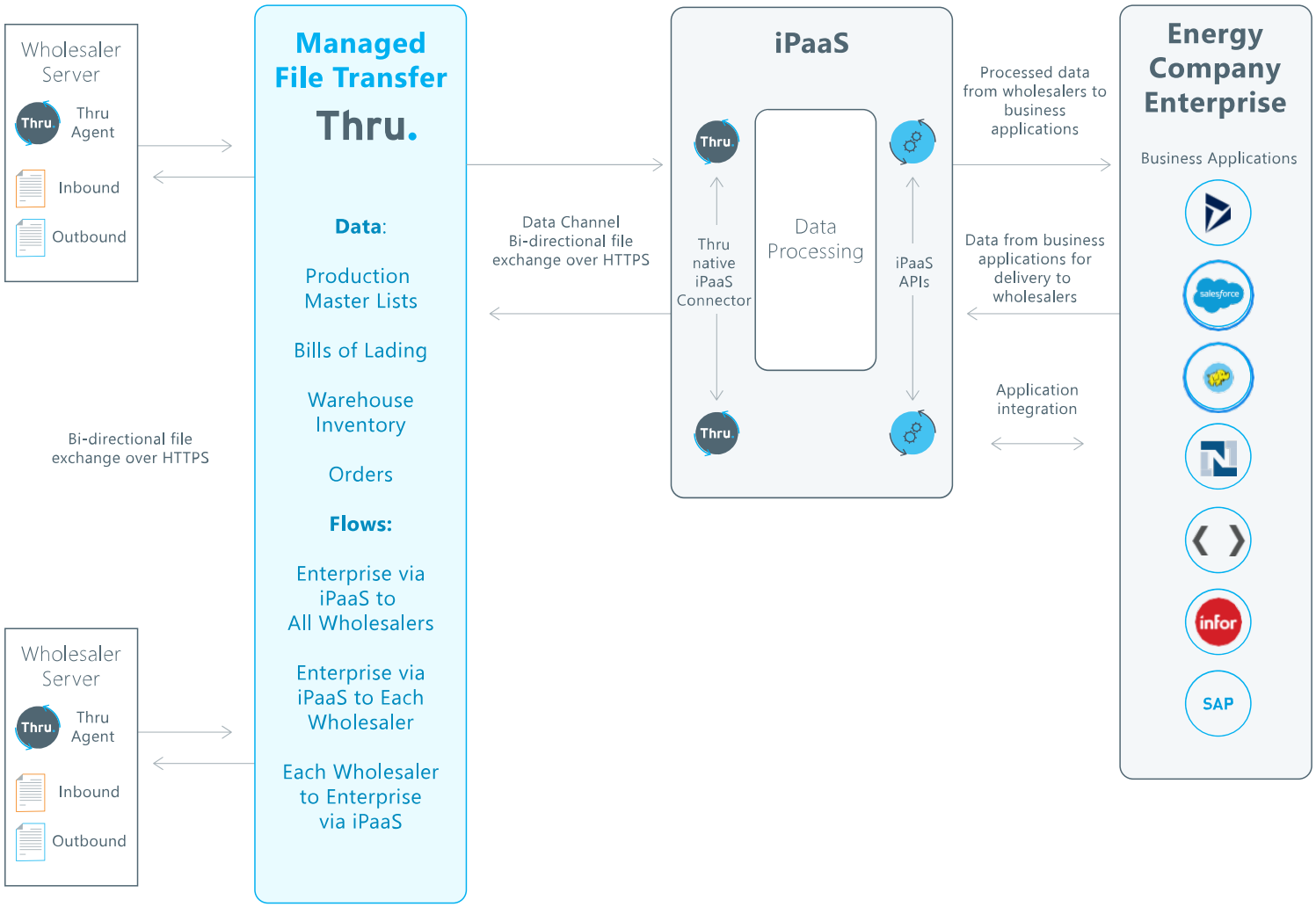
Files are exchanged between wholesalers and Thru over HTTPS protocol using the lightweight Thru Agent which is installed on the wholesalers' servers using an automated distribution and configuration process by the Thru platform.

Two flows are configured in Thru and all wholesaler organizations are subscribed to both flows:

1. Flow from iPaaS to wholesaler servers supports two modes:
    - **Broadcast mode** delivers each file from the manufacturer via iPaaS to all wholesaler organizations subscribed to the flow.
    - **Private delivery mode** delivers the file from the manufacturer via iPaaS to the specific wholesaler; addressing is defined by iPaaS logic.
2. Flow from the wholesaler to iPaaS delivers the files from all wholesalers to the manufacturer.

## USE CASE 2, DIAGRAM:

# Food manufacturer requires regular flow of data with several hundred wholesalers



## USE CASE 3:

# Insurance agencies send batches of claims to the enterprise for data quality validation, processing and analysis

### Business Processes

Insurance agencies send batches of claims and accompanying information in files to the enterprise for data processing and analysis. The data is validated before processing. Invalid data is reported to the orchestrating system and sent back to the insurance agency. Valid data is processed, and files are routed to the cloud archive storage after processing.

As part of digital transformation, the enterprise decided to replace its existing solution with a modern architecture built around iPaaS as the integration, API management and orchestration platform. Thru was selected as the file transfer and routing system orchestrated by iPaaS.

### Control Processes and Monitoring

The iPaaS platform receives the following information on the events in solution components and calls the Thru Control Channel API to trigger file transfers and route to the required destinations. The file transfer and routing are defined by the business rules defined in iPaaS:

1. **Events from Thru:** File traffic events on files arriving to Thru and accompanying files metadata.
    - **Action:** Call Thru Control Channel API to transfer the files to one of the destinations: data processing / business intelligence (BI) or cloud archive storage.
2. **Events from Data Processing / BI:** Quality of data OK or poor and accompanying file metadata.
    - **If data quality is poor:** Call Thru Control Channel API to transfer the file with poor quality data back to the insurance agency.
    - **If data is processed successfully:** Call Thru Control Channel API to transfer the processed file to the cloud archive storage.

### Data Flows

The insurance agencies send the files with insurance claims and accompanying documentation to Thru over SFTP / FTPS client and server connections and over web APIs / HTTPS. Thru uses the same set of protocols to return files with data quality issues back to the insurance agencies.

On command channel calls from iPaaS, Thru pushes the data files to the data processing / BI application or to the cloud archive storage.

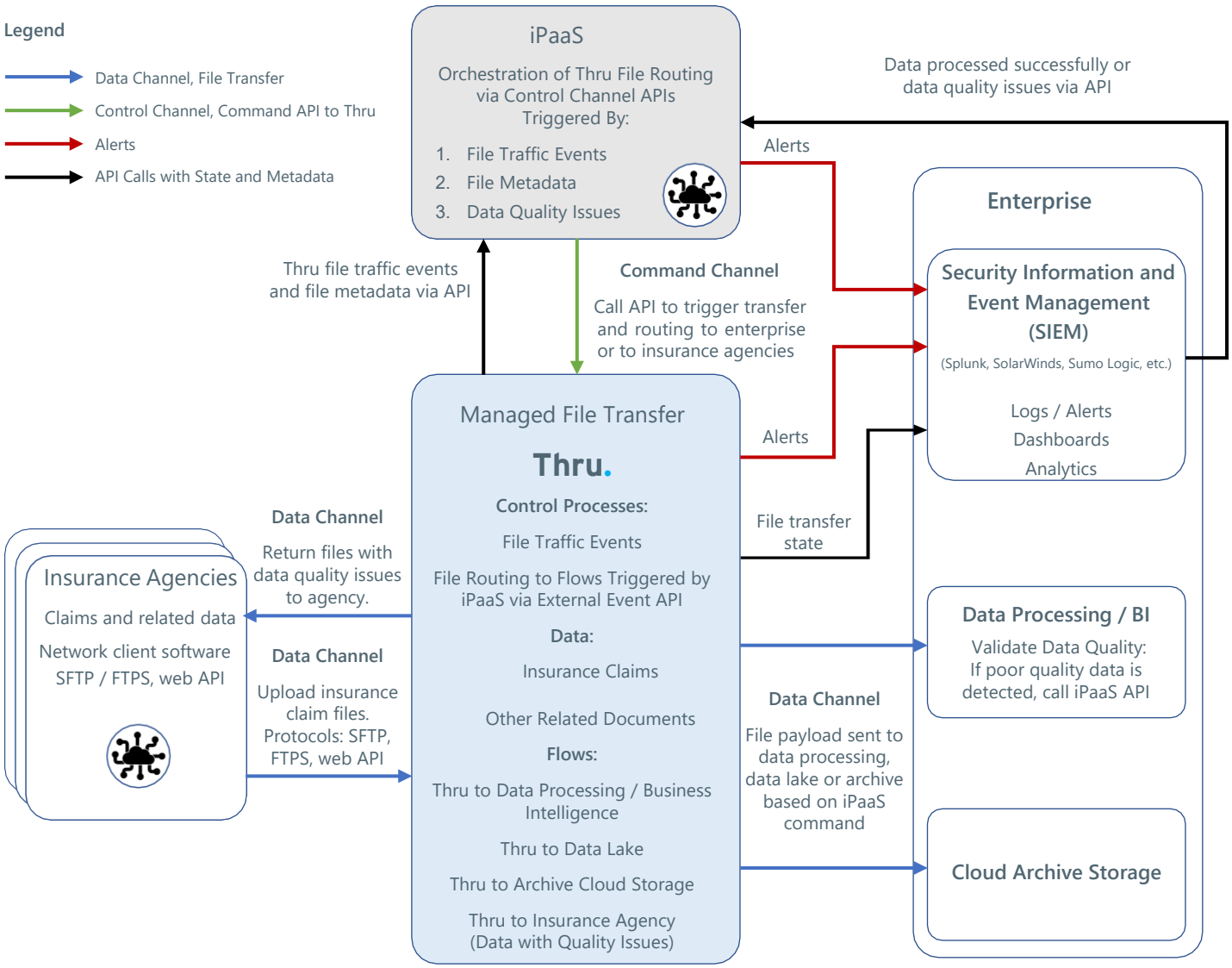
## USE CASE 3 + DIAGRAM:

# Insurance agencies send batches of claims to the enterprise for data quality validation, processing and analysis (CONTINUED)

## Data Flows (Continued)

The following flows are configured in Thru:

1. Flow from insurance agencies to data processing / BI application endpoint. Agencies subscribe to the flow with any file transfer protocol endpoint required by the specific agency.
2. Flow from insurance agencies to cloud archive storage.
3. Flow from data processing / BI application endpoint to insurance agency endpoints which process the data with quality issues.



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## API-Centric,
## Cloud-Native MFT Service

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## API-Centric, Cloud-Native MFT Service that Enhances Integration Platforms for a Comprehensive B2B Data Integration Solution

Thru is the leading provider of cloud-native secure file transfer solutions. Coding or scripting used in traditional MFT is replaced with robust web-based configuration and management tools for partner onboarding and file transfer configuration. Easy-to-use, point-and-click deployment from any browser eliminates the need for IT involvement.

Thru keeps sensitive information private and provides a higher level of security than unmanaged file sharing solutions or FTP / SFTP servers. The single pane management dashboard provides real-time updates on file delivery, activity tracking and alerts. Governance and compliance features include performance monitoring, reporting, auditability and end-to-end verification of encryption and delivery.

Seamlessly integrated with iPaaS platforms using native iPaaS connectors, Thru's native integration offers the ability to orchestrate data file transfers from within the iPaaS framework. Thru integrates with popular iPaaS platforms via API-based connectors published in iPaaS application exchanges. These connectors, native to iPaaS platforms, bring MFT functionality to the iPaaS ecosystem without having to write scripts or have deep understanding of the intricacies of the endpoint's protocols. This instant integration saves developers hours of manual coding and scripting normally required when integrating a legacy MFT system with an iPaaS.

## For More Information

To learn more about how Thru's managed file transfer solution can increase your enterprise's operational efficiencies, visit **thruinc.com**.

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Thru, Inc., (thruinc.com) is the leading provider of cloud-native secure file transfer solutions. Since 2002, we have offered market-first technologies designed to tackle the most demanding and complex file transfer challenges. Our customers include Fortune Global 500 manufacturing, retail, logistics, transportation, financial services, consumer goods and energy companies with diverse and unique business processes requiring enterprise-grade, scalable secure file transfer technology.

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