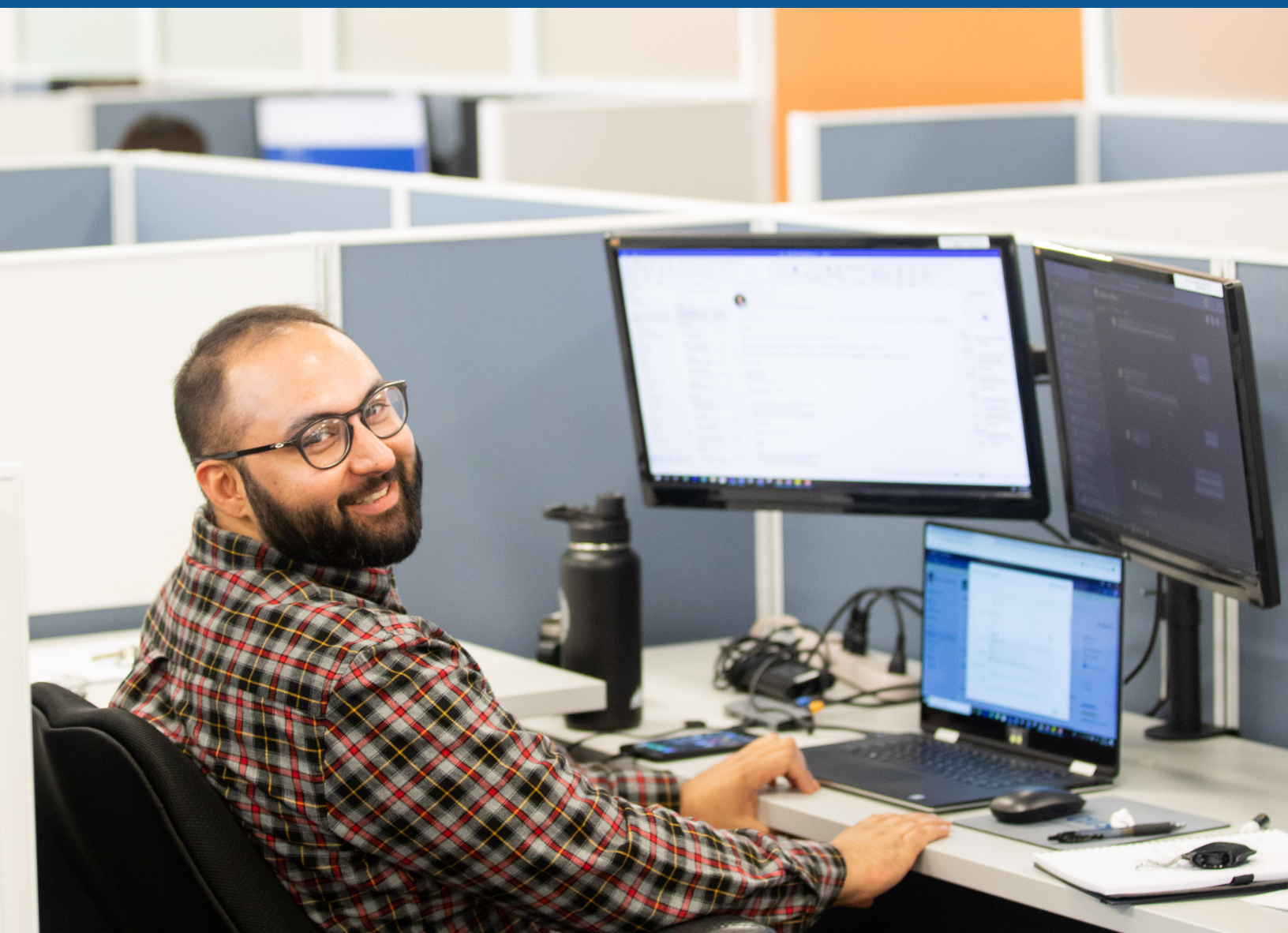




Legacy Data Conversion

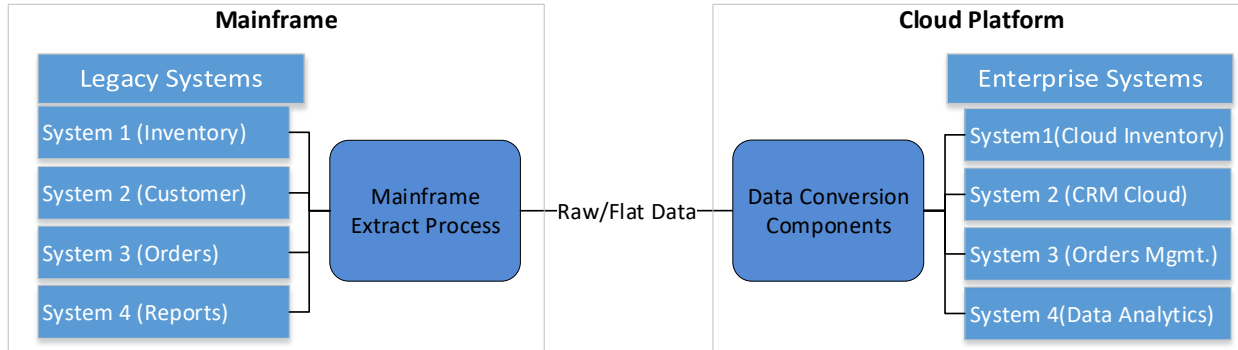
The faster, better, low risk way to migrate data



Legacy Data Conversion to Big Data Platform

Problem Statement

Convert massive amounts of business-critical legacy data from mainframe system(s) to a modern cloud based big data platform.



Success Criteria

- **Entire legacy data**, consisting of both active and inactive transactions, and any associated historical data must be converted to a new platform.
 - Legacy data may consist of many application sources and often from disparate data structures. Legacy data includes active transactions, transaction summary data, transaction logs and inactive and/or historical data. All this data is derived from a single application or multiple related dependent applications.
 - The conversion system must compare legacy data to data that was converted into the target system to ensure it matches (number of various types of entities, financials, etc.) on a transactional basis.
- **Data Accuracy**. Existing legacy data may contain inaccuracies, unknowns, and sometimes redundant and duplicate information. Data conversion process must apply appropriate validations, data format rules in accordance with the new system data expectations.
- **Data Errors and Exceptions**. Data conversion process must handle errors and exceptions that may occur during the data conversion process.
- **Data Compliance**. Data conversion process must adhere to the applicability of OWASP, PCI, ISO 27001, SOX constraints and rules.

Solution Big Picture

- Process of migrating the legacy data consists of retrieving, mapping, translating and saving it into the new data platform
- Seek and apply expert advice from legacy system business analysts and stake holders
- Listen, understand and ascertain the data complexity. Engaging legacy system business users and knowledgeable resources is the most critical aspect for a successful conversion
- Build a robust and flexible data validation, data format rules engine to apply data rules upfront, during and post data conversion process
- Build a flexible, highly scalable and performant conversion system, which can apply complex data mapping and format rules

The Top Three Data Migration Approaches, Where do you Start?

To help you get the most out of your data conversion journey, we've listed out a few things you'll want to do before choosing an approach:

1. Take an App Inventory: Do a careful analysis of your legacy application landscape.

- From how many apps source data originates?
- Are there any vendor deadlines to retire a legacy system?
- Are there any state or regulatory agency defined data rules to apply to retiring legacy data?

2. Understand Your Goals: Identify what you're trying to accomplish with your data conversion efforts.

- What are your organization's short-term goals and objectives?
- What are your organization's long-term goals and objectives?
- What's the return on investment (ROI) look like?

3. Budget and Timeline: Take some time to look at your overall budget, timeline, and outcomes.

- What is the cost to realize and the level of effort needed?
- What's the projected value once reached?
- Is there a hard deadline you need to meet?

Once you have a good high-level view of what you're trying to accomplish as well as an understanding of the reality of your current view, you can begin to analyze the different options you have and how they align to your vision. Now let's look at the individual approaches.

Three Different Data Conversion Approaches

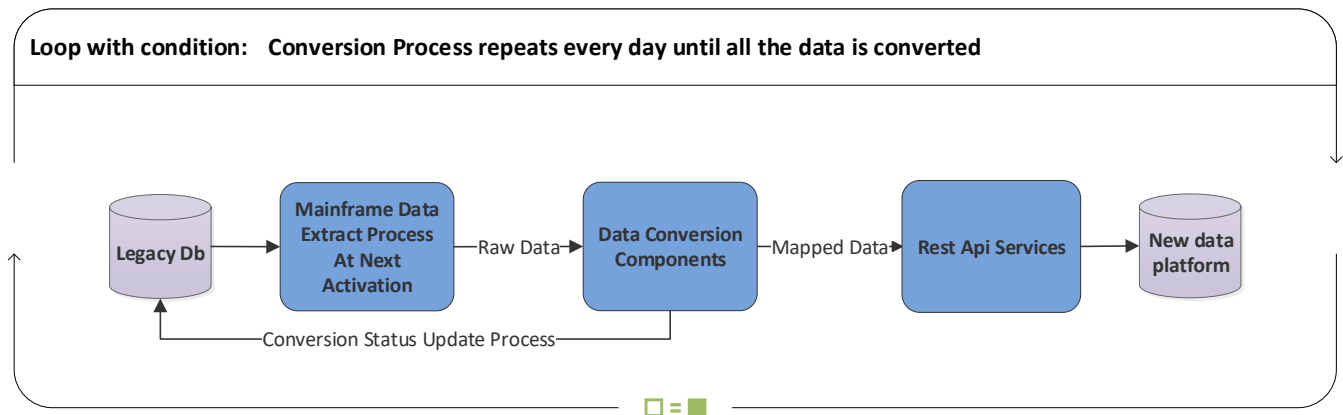
1. **At-Next Activation Approach** — Convert at certain business intervals
2. **Big Bang Approach** — One time lift and shift
3. **Phased Approach** — Selection based on region and time intervals

At-Next Activation Approach – Convert at Specific Business Intervals

About this Approach

In this approach, legacy data is converted incrementally when transactions re-activated at a specific frequency in the business life cycle. Data conversion is done in chunks at a predetermined activation time rather than converting the entire data in one shot. This approach requires running legacy system and new platform systems in parallel and converting the legacy data in phases. Conversion happens at a predetermined time of the business cycle. For instance, at a certain recurring frequency, legacy data is converted and activated in the new platform. All historic and associated data will also be converted. Any applicable dependent data is sent to downstream systems. After successful conversion, legacy data becomes read-only in legacy system and active in the new system.

How is it Done?



On receiving a recurring activation trigger event in the legacy system, transaction data is retrieved from the legacy system. Extract process locks the legacy record and makes it read only. The conversion process maps, translates from legacy raw data format to new data format. Corresponding data validation and mapping rules are applied during the mapping process and mapped data is posted to the new system. On successful response from the new system, conversion process notifies the dependent applications indicating the given transaction conversion is completed. On error, exception details are logged, and the failed transaction record is unlocked and made active again in the legacy system.

Pros of At-Next Activation Approach

- Zero downtime during conversion
- Data conversion is slow and methodical, resulting in high quality and reliable data in the new system. Direct benefit is seamless migration of existing customers to the new system and improved opportunities to cross sell
- On data conversion failure, if any, legacy system is activated to service the original data as if nothing happened and it will be tried again to convert after all the exceptions are resolved
- Ability to adapt and apply data mapping rules as we learn the new destination system data rules, especially if the new system is also coming online in the same timeframe
- Ensures highest data quality as conversion happens in smaller data chunks. Easier to assess and validate the data integrity in the new system
- Controlled migration, easier to implement with appropriate throttling mechanisms

Cons of At-Next Activation Approach

- Both legacy source system and the new systems are active at the same time, until all the conversion is done
- A fail proof process needs to be in place to prevent duplicate data being converted to the new system
- Additional processes need to be built to make sure all the required business data is converted that are not covered as part of the at-next activation process. For instance, a new process needs to be built to identify the conversion status indicating if a given record is in the old system or in the new system
- Data conversion is a long process depending on the amount of data to be converted

Common Challenges the At-Next Activation Approach Addresses

Slow Provisioning	Business Continuity	Guaranteed Conversions
Biggest disadvantage is data conversion is slow and there is a need to maintain both legacy and new system at the same time. So, if any of the rules changes in old or new system, both must be updated and made sure data is compatible all the time.	No interruption to business and applications continue to work without any downtime and all the services are available to customers seamlessly but there can be instances, lack of availability of a given transaction in both systems as it might be in locked state in both places. This scenario necessitates building a robust handshake system between legacy and new systems.	Works as a feedback loop for any potential data fixes and provides enough advance opportunities to fix the potential data issues upfront. Thereby eliminating later data fixes in the new system. However, this can take few months to a year depending on the amount of data to be converted.

The Big Bang Approach – One Time Lift and Shift

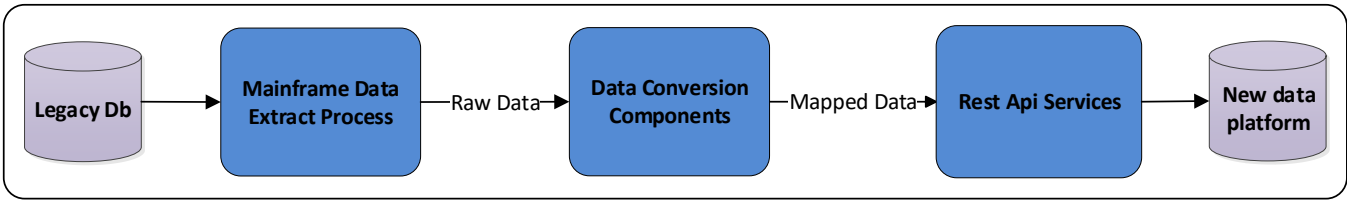
About this Approach

In this approach, legacy data is converted in a single attempt. The entire legacy data is converted into the new system in a short time window. Big bang conversion is a very attractive proposition which involves converting all the existing transactions in a small timeframe. This allows businesses to retire source legacy system quickly.

During the conversion process source system will be completely down. However, after the successful conversion into the new platform, new system becomes the system of record and the entire legacy system will be turned into a read-only state. All historic and associated data will also be converted. Any applicable dependent data is sent to downstream systems.

How is it Done?

On a predetermined day, legacy system is made unavailable for the business for any operations. All transaction data is retrieved from the legacy system. Extract process locks the legacy record and makes it read only. The conversion process maps, translates from legacy raw data format to new data format. Corresponding data validation and mapping rules are applied during the mapping process and mapped data is posted to the new system. On successful response from the new system, conversion process notifies the dependent applications indicating the given transaction conversion is completed. On error, exception details are logged, and the failed transaction records are fixed and reconverted



Pros of the Big Bang Approach

- Data conversion is a short process, it's not a long-drawn process. All the required business data and dependent system data is all converted in one shot
- A single system of record active immediately after the conversion. The legacy system will be retired, and the new system becomes system of record in a short amount of time
- No need to maintain and service customers in both legacy source system and the new systems as all the conversion is done in one shot
- No need to build additional processes to make sure to identify the conversion status indicating if a given record is in the old system or in the new system

Cons of the Big Bang Approach

- Business critical system will be down during the entire length of the conversion, possibly a weekend or during a public holiday weekend
- High risk and there will be an intense pressure until the data conversion completion, the data verification and sign-off being on the critical path
- There is no room to adapt and apply data mapping rules, especially if the new system is also coming online in the same timeframe
- Need for contingency date and a dry run before the actual conversion. For instance, if business data is critical and time sensitive and if conversion cannot be done in the given timeframe
- If there are too many data conversion failures, it takes longer to fix the legacy data on the spot and possibility of missing on mapping and converting some data pieces
- Must have a mitigation plan in place, in the event of data conversion failure

Common Challenges the Big Bang Approach Addresses

Quick Turnaround	Business Continuity	Guaranteed Conversions
Biggest advantage is data conversion is fast but it's also a challenge as time window to fix large data conversion failures is very small.	There will be an interruption to business and applications will not work and related services will be down until all the conversion is completed.	Heavily relies on clean legacy data, if there are too many discrepancies in the source system, it becomes time consuming and pushes the downtime further.

SUGGESTED CONTENT

Legacy Data Considerations When Purchasing COTS Products

AIS explains dealing with data when retiring a legacy system and using lessons learned for future data migration projects.

[Read the Blog](#)

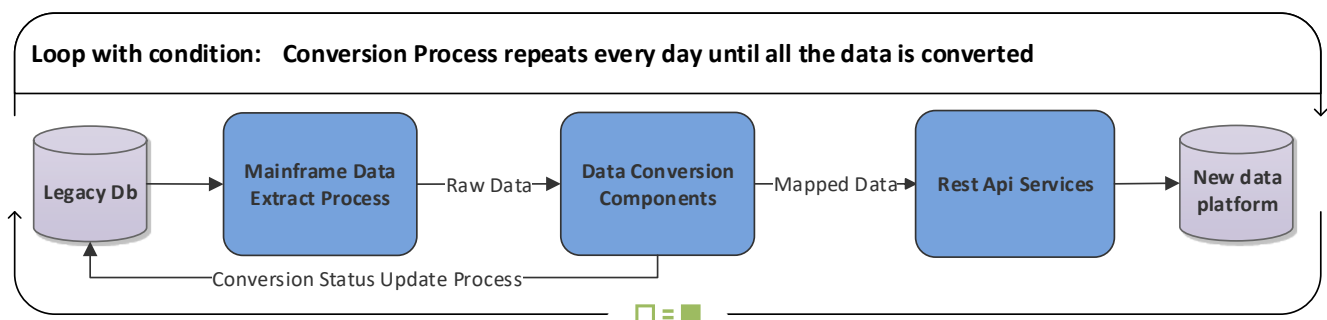
Phased Approach

About this Approach

Measured data conversion approach is a mix of big bang and at-next activation approach. A subset of the entire Legacy system is converted at a time. For example, data conversion is executed in chunks filtered by state/region and/or some other measure. This approach starts with less risky/lowest risk conversion transactions. As we go through the initial conversion, errors and issues are resolved and will have a matured process, when the large conversion takes place. This approach achieves conversion through an incremental effort to cover the entire legacy data. Like the above described at-next activation process, a new process needs to be built to identify the conversion status of a given transaction to direct to calls into the appropriate system.

How is it Done?

This is a combination of at-next activation and big bang processes, a selection criterion trigger event in the legacy system starts the extract process and it locks the legacy record and makes it read only. The conversion process maps and translates from legacy raw data format to new data format. Corresponding data validation and mapping rules are applied during the mapping process and mapped data is posted to the new system. On successful response from the new system, conversion process notifies the dependent applications indicating the given transaction conversion is completed. On error, exception details are logged, and the failed transaction record is unlocked and made active again in the legacy system.



Pros of the Phased Approach

- Zero downtime during conversion
- Data conversion is slow and methodical, resulting in high quality and reliable data in the new system. Direct benefit is seamless migration of existing customers to the new system and improved opportunities to cross sell
- On data conversion failure, if any, legacy system is activated to service the original data as if nothing happened and it will be tried again to convert after all the exceptions are resolved
- Ability to adapt and apply data mapping rules as we learn the new destination system data rules, especially if the new system is also coming online in the same timeframe
- Ensures highest data quality as conversion happens in smaller data chunks. Easier to assess and validate the data integrity in the new system
- Controlled migration, easier to implement with appropriate throttling mechanisms

Cons of the Phased Approach

- Both legacy source system and the new systems are active at the same time, until all the conversion is done
- A fail proof process needs to be in place to prevent duplicate data being converted to the new system, updates must happen in both the new and old systems until all conversion is done
- Additional processes need to be built to make sure all the required business data is converted that are not covered as part of the at-next activation process. For instance, a new process needs to be built to identify the conversion status indicating if a given record is in the old system or in the new system
- Data conversion is a long process depending on the amount of data to be converted
- A new process needs to be built to identify the conversion status of the converted transactions to direct calls into an appropriate downstream system

Common Challenges the Phased Approach Addresses

Quick Turnaround	Business Continuity	Guaranteed Conversions
Biggest advantage is data conversion is fast compared to at-next activation approach, but it's slower compared to the big bang approach.	There will not be any interruption to business and applications and related services will continue to work seamlessly but both legacy and new system must be maintained as both will be partial system of records until all the conversion is completed.	Heavily relies on clean legacy data, if there are too many discrepancies in the source system, it becomes time consuming and pushes the downtime further. This allows for on time conversions.

Are There Other Options?

Other than the custom approaches that are defined above, there are many on the shelf packaged software available for conversion. And there is a good chance the new system provider might have tools to import the legacy data. These will work if there is no customization is done to the existing data. Often legacy data built over the long period of time 10, 20 or more years, data conversion using the off the shelf tools often becomes very challenging.

Summing Up

If you're looking for long term benefits and ROI and are willing to put in time and effort upfront to get it right, you're going to want something like **Phased Approach** - Conversion based on regions/divisions and predetermined time intervals. This hybrid approach provides the control on how much data is converted, when is converted and what area of the business will be cut over to the new system and such. It eliminates the dependency on certain business interval to trigger conversion. All in all, this hybrid approach provides the best of both at-next activation and big bang data conversion approaches. It's important to understand that apps are often not limited to a single approach. Each situation is different based on long- and short-term goals, budget, timeline, and at the end of the day may require a hybrid or staged approach. For ultimate success, know your options and find a partner you can trust who can run through an application assessment exercise or a proof of concept to test the viability and outcomes of each approach with you and provide support along the way.

AIS Legacy Conversion Expertise

AIS is built on a foundation of application development and software consulting capabilities. We are uniquely qualified to take our clients through all phases of legacy data migration to cloud adoption. We have built robust, highly performant, scalable custom data conversion components, and have successfully migrated large amounts of legacy data into a new cloud platform.

AIS Cloud Credentials

AIS has been cutting our teeth with public cloud infrastructure since 2008 through our partnerships with Microsoft and AWS. Given our matchless Azure technical expertise; often Microsoft turns to us to build Azure reference architectures and blueprints for migrating complex application environments into Azure. And we've created a proven Cloud Adoption Framework that provides step-by-step guidance and best practices in moving to the cloud. We have helped scores of complex commercial enterprises and government organizations migrate to Azure, AWS, Office 365, and Dynamics 365. We will spend the time to understand your business needs and workload requirements and then outline a meticulous cloud plan that meets your scalability, governance, security, and budget needs.

NEXT STEPS

Get Started with AIS Today

Contact AIS to begin your data conversion journey. With the right people, expertise, and best practices in place, you can be sure you're on the right track to modernizing your apps.

[Contact Us](#)