

DB2 Information Integrator Classic Federation (DB2IICF) Overview

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L I G H T Y E A R



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Enterprise Environment

- The Typical Large IT Data Integration Environment
 - ▶ Decades of heterogeneous technology investment
 - ▶ 60% of data resides on mainframe and is growing 20% per year
 - ▶ High performance and scalability is mandatory
 - ▶ Legacy programming is becoming very costly

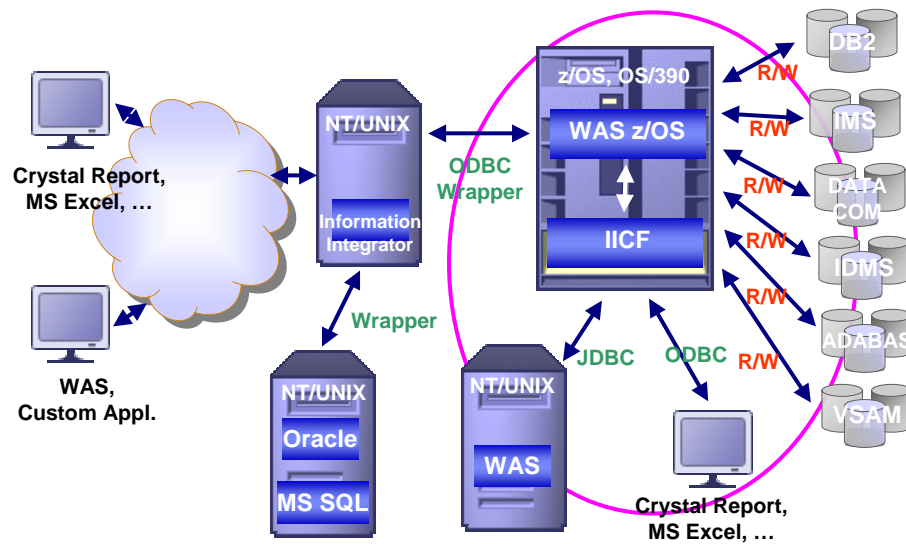
How do you leverage your mainframe data assets?

Options for modernizing legacy data

- Manual rewriting and migration
 - ▶ Disruptive, risky (high)
 - ▶ Requires extensive investment
- Automatic (semi-automatic) conversion and migration
 - ▶ Utilizing tools – DL/2, ManTech, ...
 - ▶ Risky (medium to low)
 - ▶ Requires fair amount of investment
- Wrapper technology
 - ▶ CICS Transaction Gateway, IMS Connector, Information Integrator,...
 - ▶ Non-disruptive, no risk
 - ▶ Not an expensive solution
 - ▶ Quick implementation, Quick return on investment

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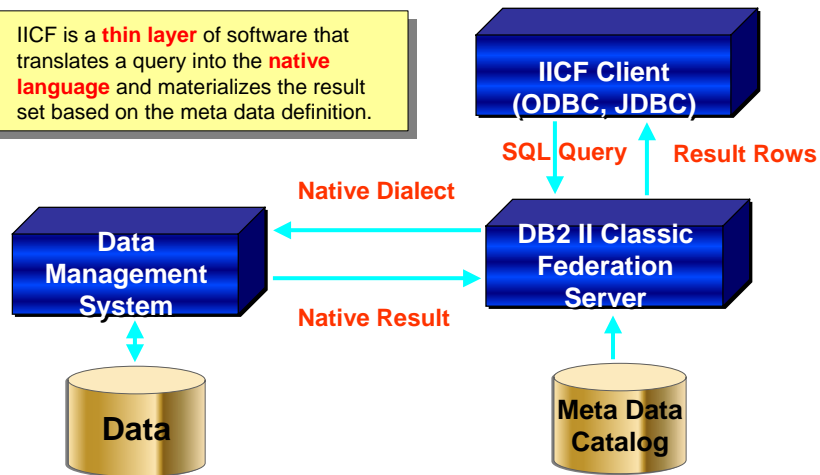
Positioning of Information Integrator Classic Federation



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Operational Processing Flow

IICF is a **thin layer** of software that translates a query into the **native language** and materializes the result set based on the meta data definition.



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DB2 II CF Product Suite

- CF Data Server
 - ▶ Common server infrastructure that supports all CF multi-threaded, multi-user, services.
- CF RDBMS Services
 - ▶ Federated RDBMS whose data stores are non-relational database systems
- CF Transaction Services
 - ▶ IMS and CICS Business Rules Reuse

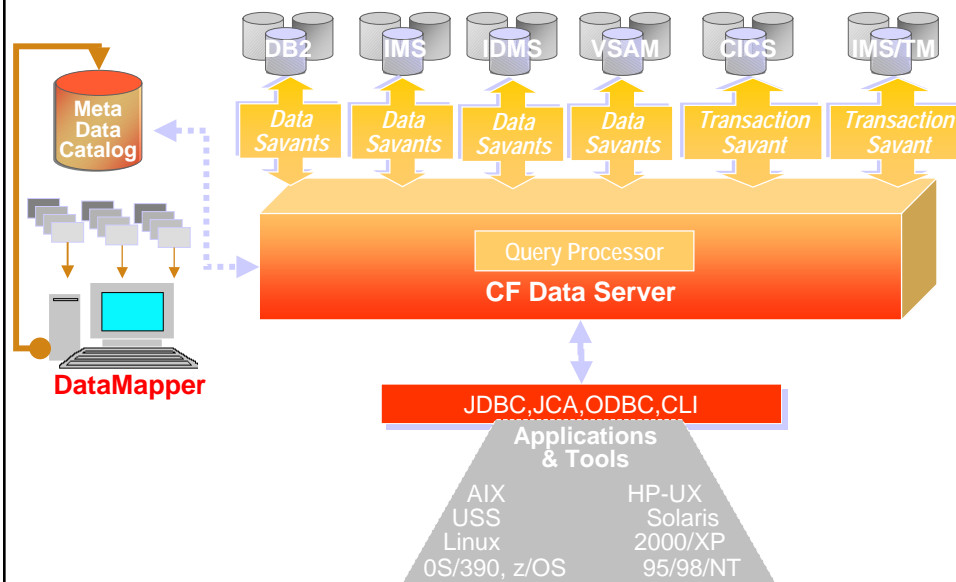
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CF Data Server

- Application hosting using named service architecture
- Memory Management
 - ▶ Master Pool and Sub-Pools
 - ▶ Dynamic Growth
- Task Management
 - ▶ Pre-started, Dynamically started
 - ▶ Managed termination and notification
- Communications Management
 - ▶ Common API
 - ▶ TCP/IP, APPC, Cross Memory, MQ-Series, Local Queues, etc.
- File Management
 - ▶ Flat, btree, avl tree, etc.
- Platform specific
 - ▶ Hiperspace, DataSpace, etc.
- Common Miscellaneous support routines

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Architecture



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CF RDBMS Services (XDi)

- SQL 92 / DB2 Dialect
- Level-ized "savants" access legacy data sources
- Advanced Query Processor engine aggregates multiple data sources
- Read and Write support including 1PC and 2PC
- Standards-based clients, ODBC, JDBC, and CLI
- Metadata driven

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SQL Support, Views & Joins

- SQL 92 support
 - ▶ SELECT/INSERT/UPDATE/DELETE all supported
 - ▶ Complex tables can span segments, records, etc.
- JOIN support for heterogeneous multi-table access
 - ▶ Embedded JOIN optimization
 - ▶ Multi-threaded Data Savants for maximum throughput
- Complexity in the Meta data simplifies development
 - ▶ Legacy data types automatically translated
 - ▶ Meta data defined "where" filtering through Views
 - ▶ Multiple automated ways to normalize recurring data
 - ▶ Full support for catalog queries
 - ▶ Optional DB2-like security

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Reporting, Auditing, Errors

- Standard SQL error handling
 - ▶ SQL error and response codes returned as part of result
- Embedded SAF exit support
 - ▶ SAF exit for charge-back and other accounting purposes
 - ▶ Leverages existing mainframe accounting practices
- Embedded SMF accounting
 - ▶ Type 99 records
- Tracing and Logging by level
 - ▶ Remote and local monitoring
 - ▶ Triggered tracing
 - ▶ Post-Mortem tracing

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Power

- Consistent SQL interface ... Instant integration
 - ▶ Connects mainframe data with any eBusiness platform
 - ▶ Insulates application from proprietary back-end data
 - ▶ Non-intrusive – NO impact on mainframe transactions
- Powerful data access ... non-relational & RDBMS
 - ▶ Direct SELECT-INSERT-UPDATE-DELETE
 - ▶ Distributed join, data normalization, view-driven filtering
- Ease-of-Use
 - ▶ No mainframe programming
 - ▶ Automated meta data configuration
- Integrates with your mainframe environment
 - ▶ RACF - ACF2 - TopSecret
 - ▶ Manage and monitor with existing mainframe utilities
 - ▶ Security and accounting exits for site customization

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Manage & Monitor

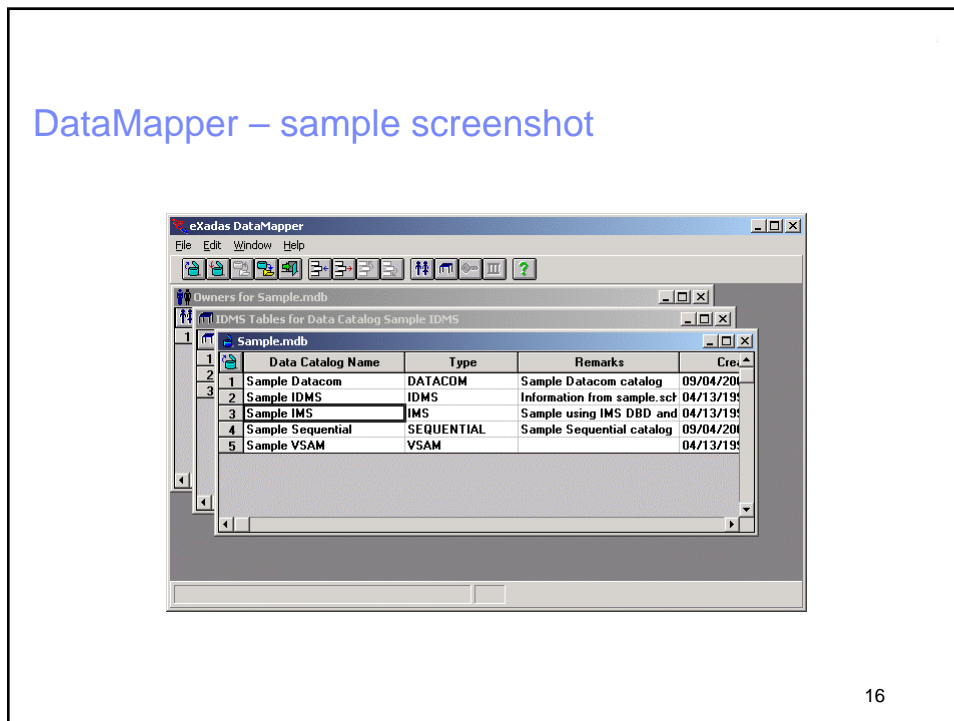
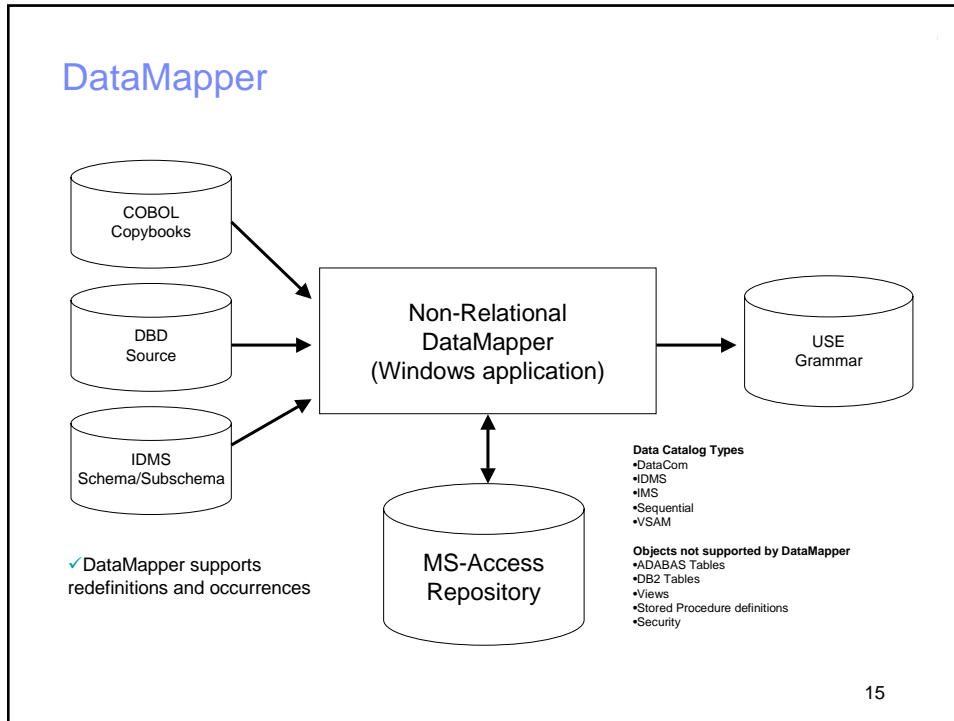
- **Governors**
 - ▶ Limit resource utilization
 - ▶ Set at Installation, Server and/or User levels
- **Security**
 - ▶ Interface for RACF, ACF and TopSecret
 - ▶ Optional embedded DB2-like security
- **Operator Console**
 - ▶ Monitor usage
 - ▶ Manage users

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Components

- **Connectors**
 - ▶ JDBC, JCA , ODBC and CLI (call level interface)
- **Server**
 - ▶ Core mainframe-based SQL engine
- **Data Savants**
 - ▶ Database specific read/write access engines
- **DataMapper**
 - ▶ Configuration and administration

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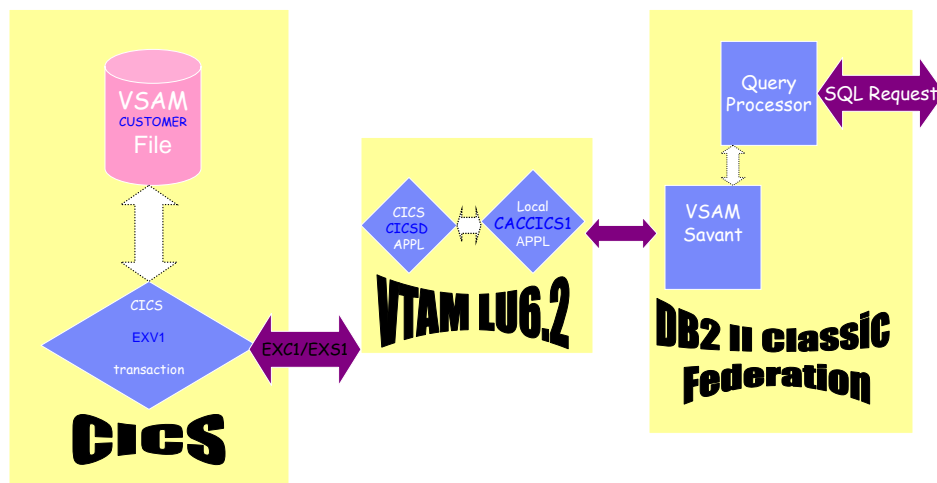


VSAM access overview

- ✗ Direct (a.k.a batch) access
 - limited function, slow, not scalable.
 - no configuration required - systems side folks usually not involved.
- ✓ CICS/VSAM
 - full-function, fast, scalable, recommended
 - configuration required - MVS, CICS & VTAM systems programmers needed.
- Import Copybook and generate the use of grammar syntax

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CICS/VSAM access



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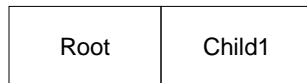
IMS access overview

- II CF supports three methods to access/update IMS data:
 - ▶ DBB/BMP Interface
 - ▶ DRA Interface: Recommended
 - ▶ ODBA Interface: Supports 2PC (RRS)
- Data access will be converted into the native DL/I call
- Supports all IMS database types except GSAM, PHDAM, PHIDAM, PSINDEX, MSDB
- Supports mapping of physical, logical and SIX
- IMS mapping
 - ▶ Import DBD and copybook into the DataMapper and generate the use of grammar syntax
 - ▶ Starting from the root segment in the physical, logical or secondary data structure hierarchy. This root segment is referred to as the Index Root Segment
 - ▶ Ending at a specified child segment which is referred to as the Leaf Segment
 - ▶ IMS Logical Table can only map a single path in the physical, logical or SIX data structure hierarchy. For example, at least two IMS Logical Tables must be defined for database E4. One IMS Logical Table to map the Root->Child1 path and another to map the Root->Child2 path (See next chart for a diagram)

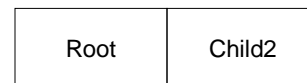
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IMS mapping concepts

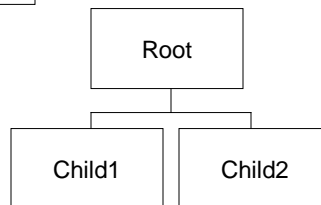
IMS Logical Table1
Index Root=Root
Leaf Segment-Child1



IMS Logical Table2
Index Root=Root
Leaf Segment-Child2



E4 Example



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DB2 access

- Extract the table layout information by using sample utility
- Uses CAF interface to access DB2

ADABAS access

- If Predict is available
 - ▶ Extract layout information by using sample utility
 - ▶ Then generate the meta data grammar (USE grammar) from the extracted layout
- If Predict is not available
 - ▶ Manual creation of the meta data grammar is required
- During the installation, it is needed to link a module with the Adabas module for the Adabas access

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CA-DATACOM/DB access

- Get the COBOL copybook information by punching out the layout of the data
- Download the copybook into the Data Mapper and create the use of grammar syntax
- Upload onto the mainframe and generate the system catalog
- Database connection will be made through the MUF (multi user facility)

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CA-IDMS access

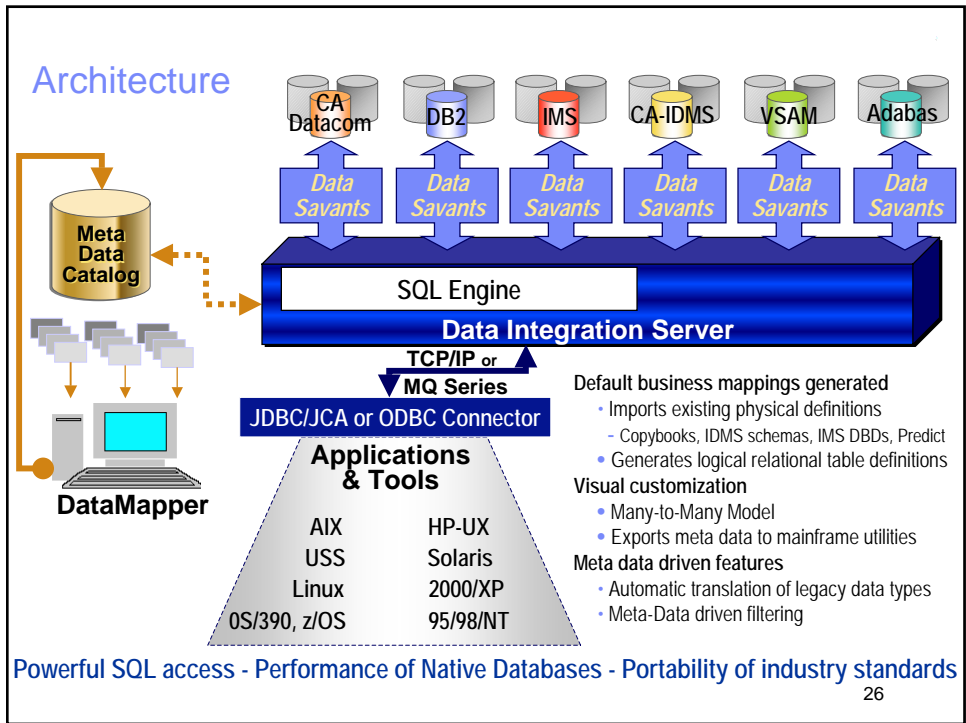
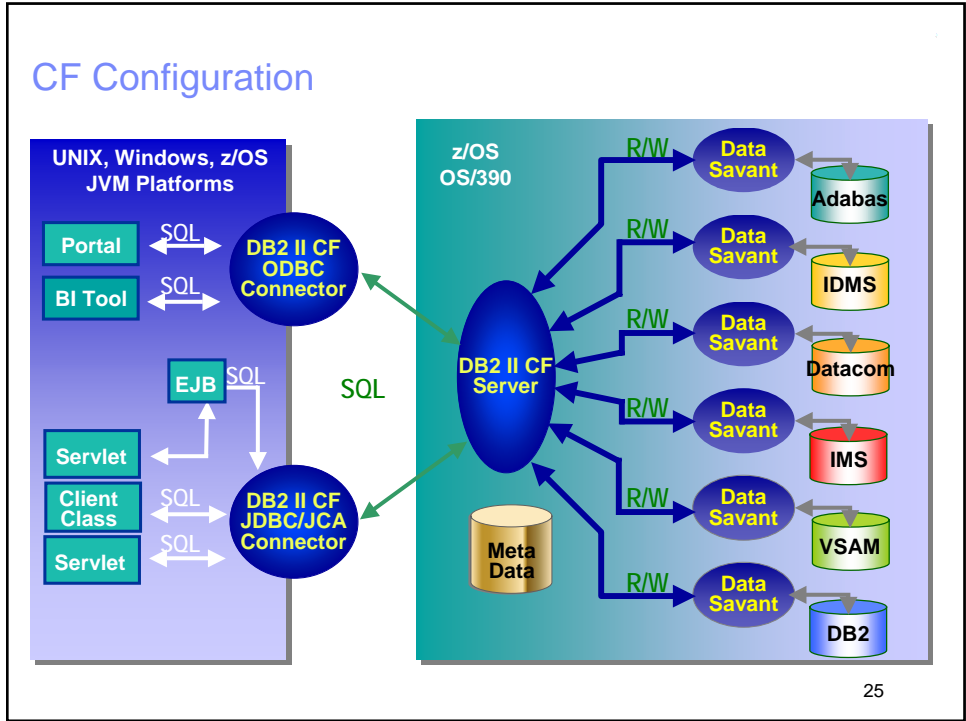
- Punch and get the Schema and Subschema
- Mapping the Schema and Subschema using Data Mapper
- Import the copybook into the Data Mapper
- IICF supplies batch access module (default – central version mode)
- Data access will be converted into the native DML calls

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Other objects

- VIEWS - Define manually and use the Meta Data Utility to load the definitions into the System Catalog.
- Stored Procedure definitions - Define manually and use the Meta Data Utility to load the definitions into the System Catalog.
- SQL Security - Define manually and use the Meta Data Utility to perform the grants/revokes against the System Catalog.

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Benefits

- Simplifies Operational Environment
 - ▶ Eliminates redundant copies of mainframe data
 - ▶ Reduces stress on batch processing windows
- Simplifies Development Environment
 - ▶ Single-platform development
 - ▶ Empowers development using ubiquitous SQL skills
 - ▶ Leverages scarce mainframe database skills
- Better Solution for the Business
 - ▶ Eliminates data latency issues
 - ▶ Reduces errors created by multiple copies of data
 - ▶ Empowers rapid delivery of information rich solutions
- Saves Money
 - ▶ Deliver more with fewer and less costly resources
 - ▶ Reduces hardware and software for duplicate data

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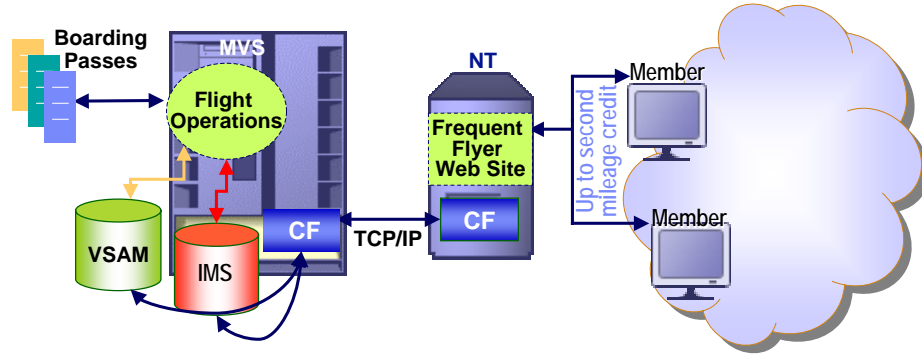
Speed, Scale & Footprint

- Architectural Features
 - ▶ Hyperspace-enabled
 - ▶ Multi-threaded at all levels
 - ▶ Reentrant and reusable
- Data Access Features
 - ▶ Leverages native access tools: indexes, keys (e.g. Calc Key)
 - ▶ Embedded query optimizer
 - ▶ Native IDMS support (online or batch) for functionality and speed
- Sample customer benchmark results
 - ▶ Keyed queries from Java60 Milliseconds
 - ▶ Two table Join80 Milliseconds
 - ▶ Access through USS40 Milliseconds
 - ▶ Transaction throughput500-1,000+ per second

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Integration in Action – Major US Airline

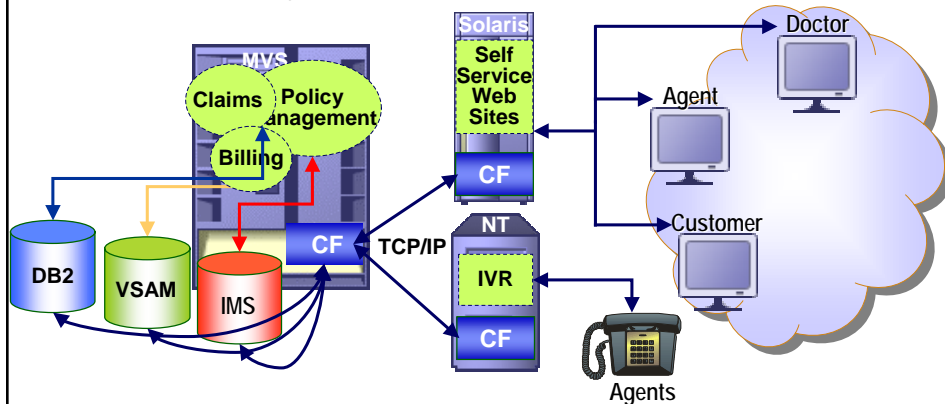
- Provide frequent flyers with up-to-the-minute information
 - ▶ Dynamically connect Web site to IMS & VSAM flight data
 - ▶ Eliminate copies of flight data reducing cost, data latency and errors



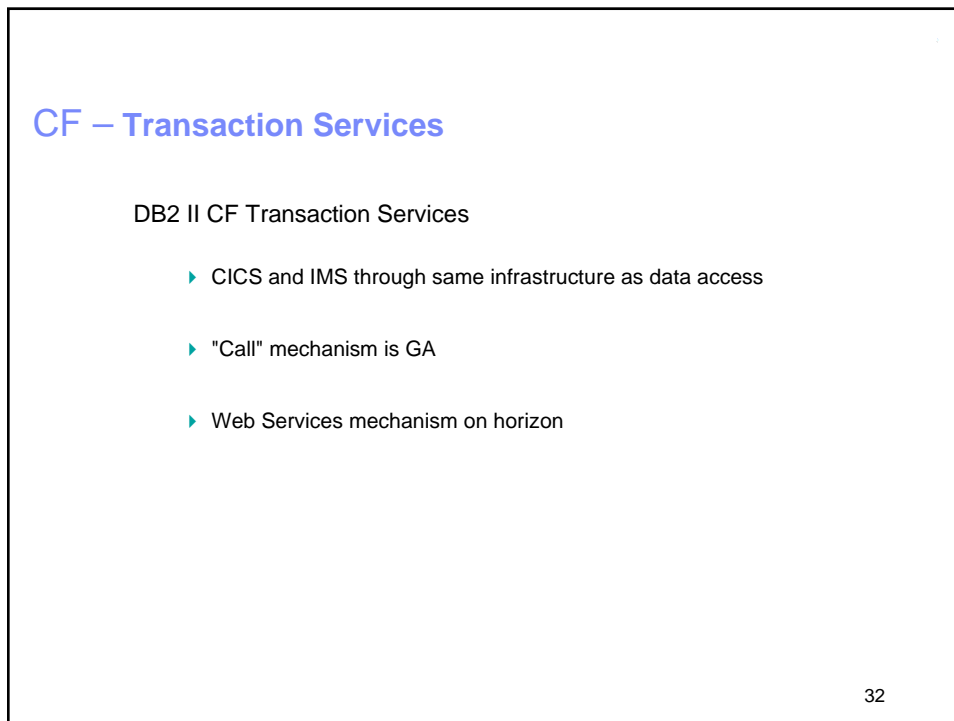
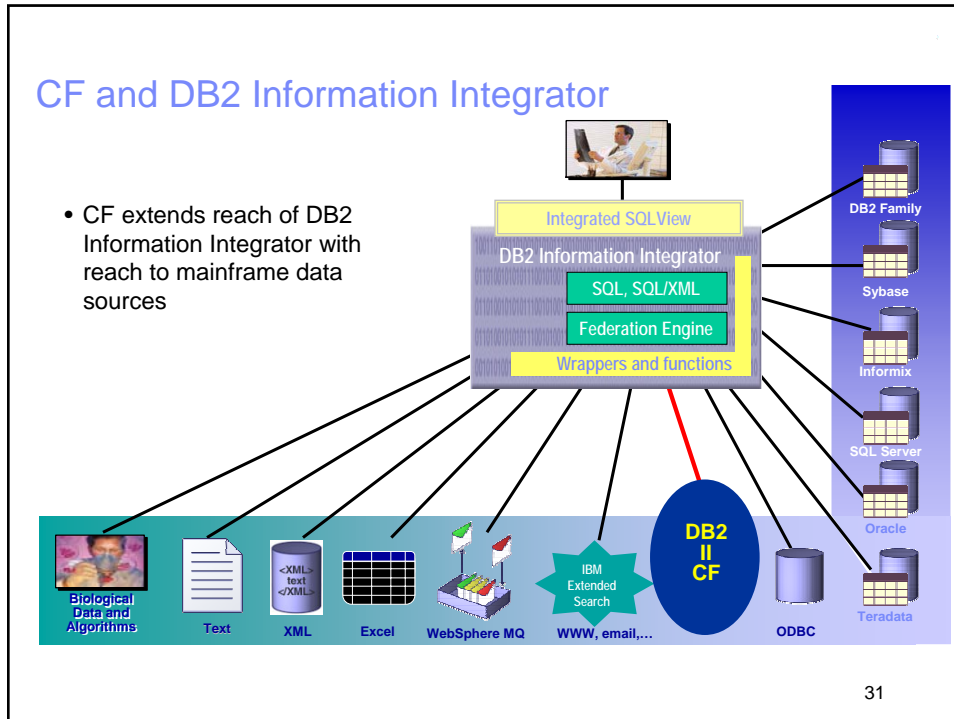
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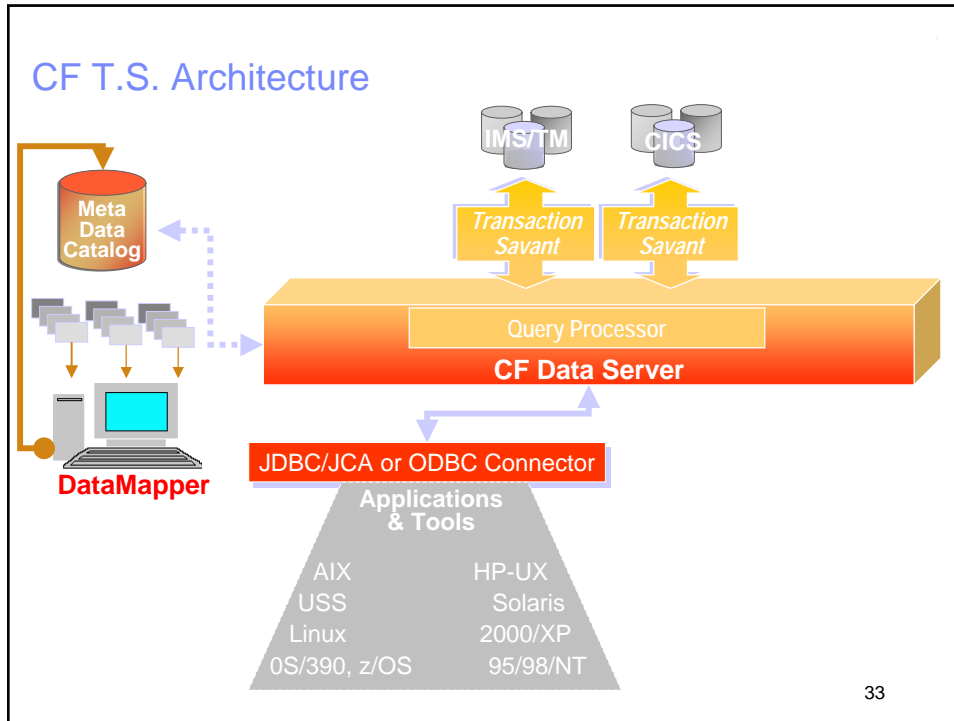
Integration in Action – Major US Insurance Carrier

- Provide up-to-the-minute policy, claims and accounting information
 - ▶ Dynamically connect interactive voice response system to IMS, VSAM & DB2
 - ▶ Connect agent, provider and insured self-service Web sites with live operational data



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Ordering information

- OTC (One time charge) product under the category of DB2 Tools
- Price based upon Value Unit (VU)
- Base product covers IBM data sources only
 - ▶ DB2, IMS, VSAM
- Three optional features for the other data sources
 - ▶ DB2 Information Integrator Connector for Software AG Adabas
 - ▶ DB2 Information integrator Connector for CA-Datacom
 - ▶ DB2 Information Integrator Connector for CA-IDMS
- Minimum release level requirements

Component	Min. Rel. level	Component	Min. Rel. level
Base System	OS/390 V2R6	Adabas	Adabas level 5.3
IMS	IMS V3	Datacom	Datacom V9
DB2	DB2 V4	IDMS	IDMS V14

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Summary

- Quick return on investment
 - ▶ Easy to implement – rapidly deliver information-rich business solutions
 - ▶ Based on the wrapper technology – utilizes existing infrastructure
 - ▶ Minimizing dependence on legacy data skills
- Cost efficient solution
- Small footprint
- Can utilize mainframe spare MIPS
- Provide SQL interface to legacy data

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Legacy data modernization services



- Product
 - ▶ Information Integrator & Information Integrator Classic Federation
 - ▶ CTG, IMS Connector, DB2 Connector
 - ▶ DL/2, VS/2
 - ▶ ManTech
- Services – Classic
 - ▶ Installation
 - ▶ Database migration, Data replication
 - ▶ Tuning services
- Services – Modern
 - ▶ Java development
 - ▶ Wireless connectivity to legacy system
 - ▶ Rewrite legacy application



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