

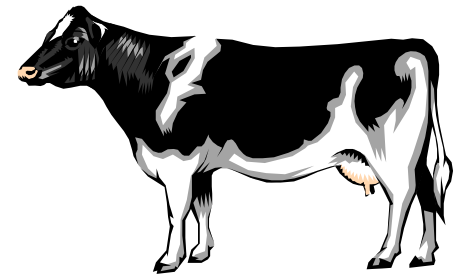


Communications Architecture Kraft Foods Case Study

Tim Marino
Kraft Foods

Kraft Foods Inc.

- Kraft is the North American Food business of Philip Morris Inc.
 - ◆ Headquartered in Northfield, IL
 - ◆ Traces its history to 3 successful food entrepreneurs:
J.L. Kraft, Oscar Mayer and C.W. Post
- Kraft Foods, North America
 - ◆ Largest U.S. based packaged foods company in the world
 - ◆ Largest packaged foods company in North America
- \$17.3 billion in annual North American revenue (1998)
- 99% of North Americans are Kraft Foods consumers
- One in every 10 cows in America supplies Kraft with raw materials for dairy products





Kraft Foods Inc.



- Kraft holds number one market share position in 17 of our top 20 income categories
- Four brands with more than \$1 billion in annual revenues
- More than 70 major brands
 - ◆ *Kraft* cheeses and dinners, *Oscar Mayer* meats, *Maxwell House* coffee, *Post* cereals, *Jell-O* desserts, *Kool-Aid* beverages, *Philadelphia* Cream Cheese, *Tombstone* Pizza, *Stove Top* stuffing mixes and *Miracle Whip* salad dressings



Kraft's Technical Environment

- Heterogeneous corporate systems environment
- Two mainframes split into multiple LPARs
- Numerous AS/400s supporting a number of business critical functions including order entry and invoicing
- Numerous HP Unix machines primarily supporting plant and distribution applications
- Intranet and LAN servers running Windows NT
- DB2 and Oracle databases
- Hardware resides in both NY and IL data centers
- Extensive WAN connecting Kraft data centers to plants, distribution centers, sales offices



Kraft Electronic Commerce Dept.

- Director of Electronic Commerce (1)
 - ◆ Works across internal business areas (Sales, Operations, IT)
 - ◆ Represents Kraft at the industry (grocery, retail) level
 - ◆ Represents Kraft nationally on standards committees
 - ◆ Sets EC direction for company
- EC Program Managers (3)
 - ◆ Assist Director in above efforts
 - ◆ Work closely with trading partners to build relationships and extend functionality
- Electronic Commerce Services (7)
 - ◆ Day-to-day EDI operations, development, support
 - ◆ New technology assessment and roll out
- Area EDI Coordinators (7)
 - ◆ Front line partner support and implementation



Industry Involvement

- User Groups both Technical and Business
 - ◆ UCC
 - ◆ GMA/FMI
 - ◆ DISA
 - ◆ Product Vendors
 - ◆ Others
 - ◆ Every effort is made to attend as participants

- Industry Activities Allow Partnering and Information Sharing
 - ◆ Help set industry direction and leadership
 - ◆ Work together to resolve problems
 - ◆ Advance the use of electronic interchange



Electronic Commerce Services

- Support X12, UCS, VICS and WINS standards (no EDIFACT yet)
- Support 24 transaction sets across 3 versions and multiple standards
- Approximately 250 partners
 - ◆ Reduced from 500 primarily due to grocery consolidation
 - ◆ Expected to double as Suppliers are rolled out
- Process EDI nearly 24 x 7
 - ◆ Weekdays no scheduled outages
 - ◆ Weekends downtime for maintenance, IPLs etc
- Approximately 2 million transactions a year



Electronic Commerce Services

- Provide electronic transaction services for Kraft
 - ◆ Application groups should not have to re-invent external communications
 - ◆ Adherence to industry accepted standards and practices
- Provide a standardized interface and contact point for external partners
- Current Offerings Include:
 - ◆ EDI using traditional dial connections
 - ◆ Outbound fax to non-EDI partners
 - ◆ EDI over the Internet alternative to dial-up
 - ◆ Monitoring and control of the environment



Electronic Commerce Services

- Almost every application area at Kraft has some sort of external data need handled by ECS
- Electronic Commerce Services provides all EDI functionality
- Standardized file formats required for internal data exchange
 - ◆ There is only one invoice file layout no matter which of several invoice applications creates the file
 - ◆ Too many internal interfaces to support custom application mapping
- Data must be delivered to/received from diverse platform architecture
 - ◆ Transfers primarily done with bulk transfer tools (XCOM, FTP)
 - ◆ Switch to MQ is in pilot with plans to roll out
 - ◆ Most of the process is automated, simplifying processing



Group Functions

- Systems Development
- Systems Support
- Maintain/Upgrade Vendor Software
- Technical R&D of new solutions
- Assist and Support Area EDI Coordinators (AECs)
- Currently a group of 5 plus 2 contractors
 - ◆ For the volume of data and number of transactions, Kraft EC is about half the size of comparable EDI groups
 - ◆ Centralized EDI function is key to this success
- Provide a key point of contact for business partners
 - ◆ Where expertise and in-depth knowledge are required
 - ◆ Day-to-day or routine activities performed by AECs

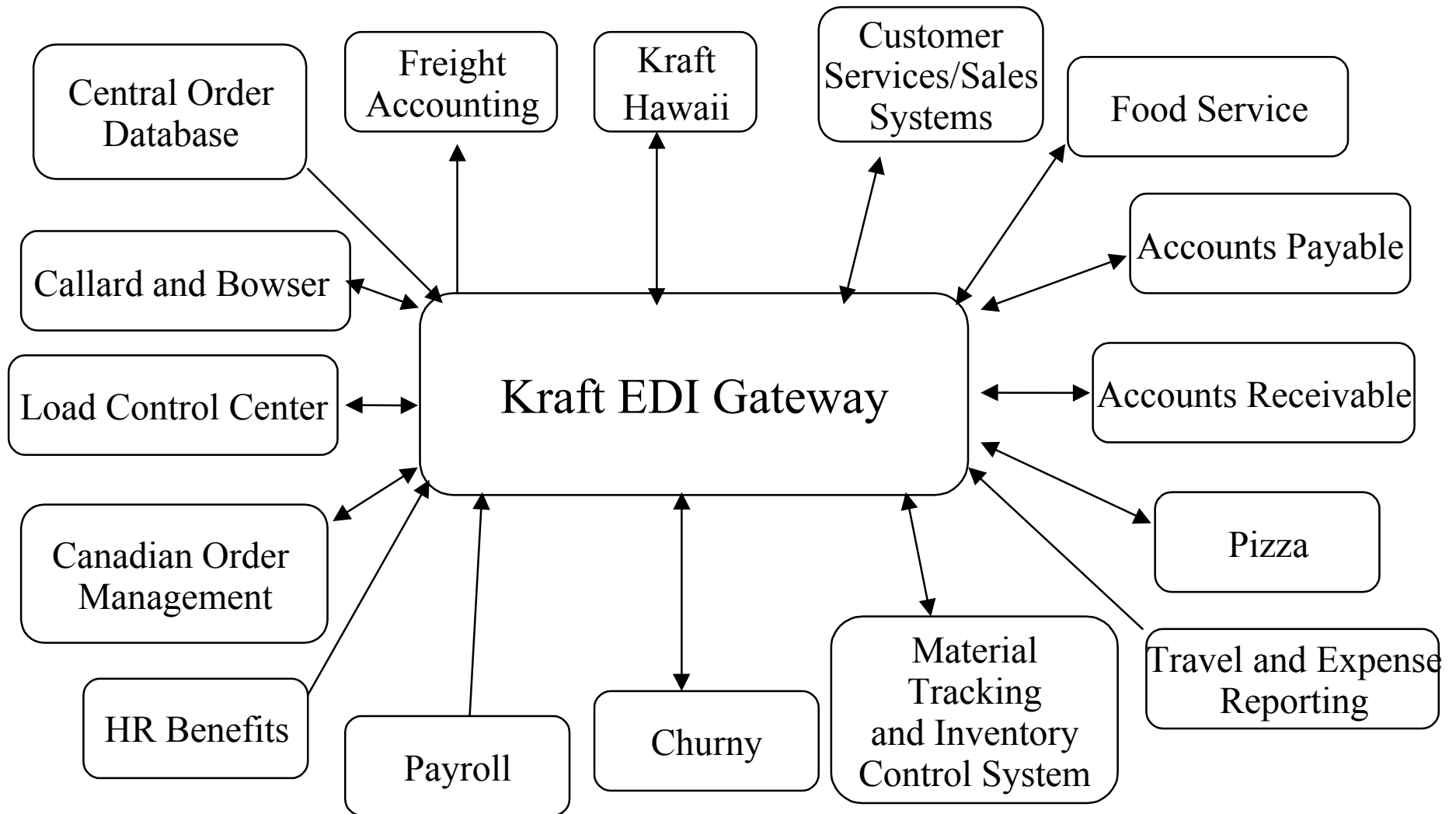


Business Functions Supported

- Primary functions supported across multiple Kraft businesses
 - ◆ Purchase Orders and Invoices
 - ◆ EFT banking transactions for A/P and A/R
 - ◆ Product, Price and Promotion Data
 - ◆ Advanced Ship Notice (ASN) Inbound and Outbound
 - ◆ Transportation Documents (billing, load tenders)
 - ◆ Human Resources Interfaces
- 45 Internal Application Document Interfaces



Application Interfaces



Core Components

- DataInterchange 3.1 MVS and CICS
- Sterling Connect:Mailbox (communications) MVS
 - ◆ 22 production bi-sync lines
- Sterling Connect:Mailbox (communications) UNIX
 - ◆ 16 production bi-sync lines
 - ◆ 12 production async lines
 - ◆ FTP
- Cyclone Software Interchange (Internet EDI)
- Three environments are maintained: Test, QA, Production



Checks and Controls

■ Monitoring/Help Desk Responsibilities

- ◆ Transaction control reporting
- ◆ QCD measures
- ◆ Analyze and resolve rejected transactions
- ◆ Functional and application acknowledgments verification
- ◆ Verify Job return codes and monitor system processing
- ◆ Interfaces closely with Kraft business applications, trading partners, EDI Coordinators, and EC development/support

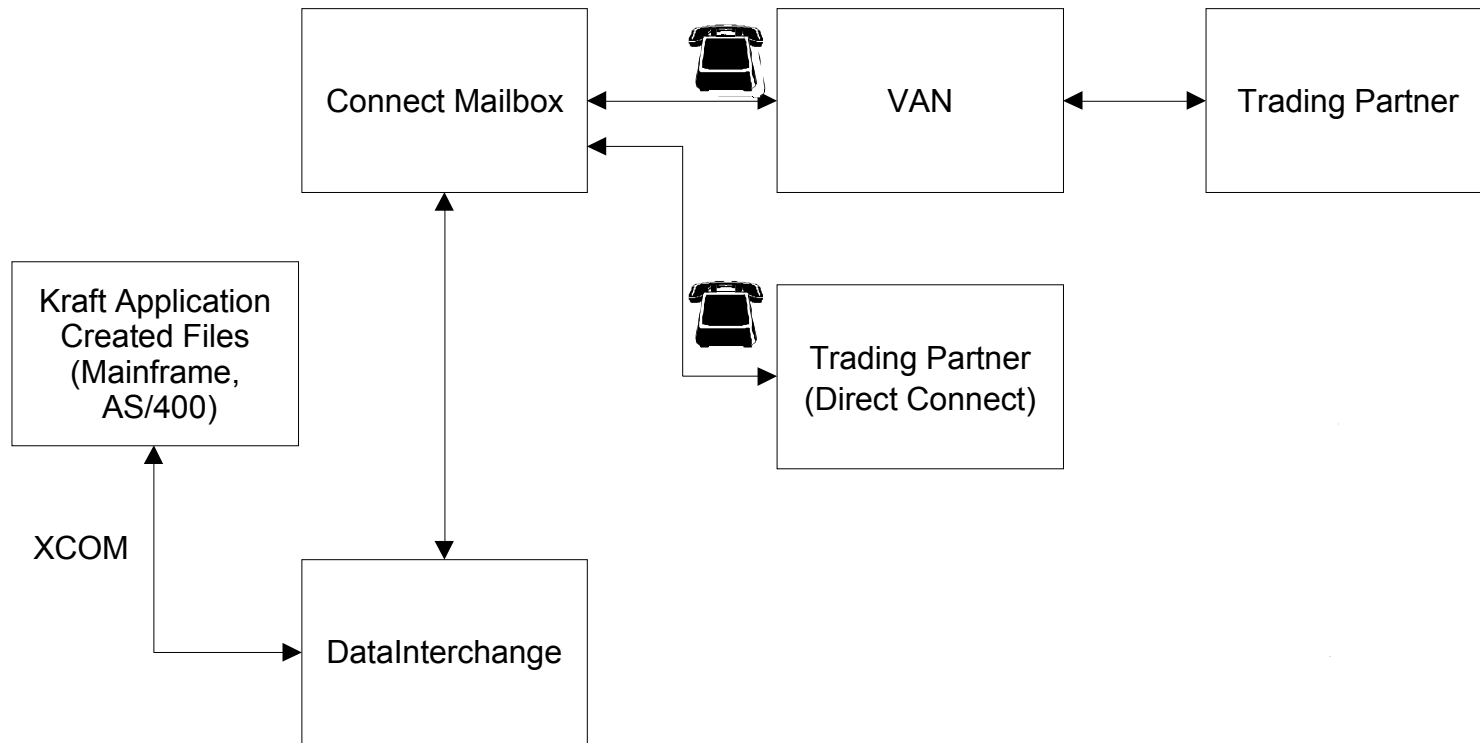


EC Intranet Website

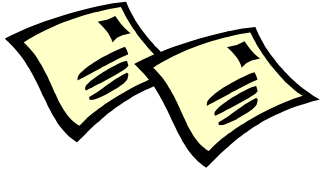
The screenshot shows a web browser window titled "EC99 - Kraft Electronic Commerce - Kraft Internet Explorer". The address bar displays "Kraft Intranet Cafe" | [Operations](#) | [Electronic Commerce](#). The main content area features a large graphic of a network switch with glowing green fiber optic cables. The text "Electronic Commerce" is prominently displayed in the center. To the left, there is a navigation menu with links: [Home](#), [About EDI](#), [E-Business Strategy](#), [Contacts](#), [Year 2000](#), [Y2K Contingency](#), [Online Library](#), [Project Status](#), [Reports](#), [Links](#), and [Maintenance](#). A search box is also present. On the right, a "What's New?" section lists updates: "Cisco Materials: From E-Business Strategy Session", "EC Mission & Charter Statment: Outlines the Mission & Charter of Electronic Commerce.", and "EC Overview: This link will take you to an overview of Electronic Commerce in Power Point." At the bottom, contact information for Dinker R. Gandhi is provided: "Comments and questions regarding these pages should be directed to Dinker R. Gandhi at 847.646.8444 or <mailto:DGandhi@KRAFT.COM>". The footer includes the copyright notice: "© 1999 Kraft Foods, Inc. All rights reserved. [Legal Information](#)."



High Level Dial Architecture



Application to Application Communication

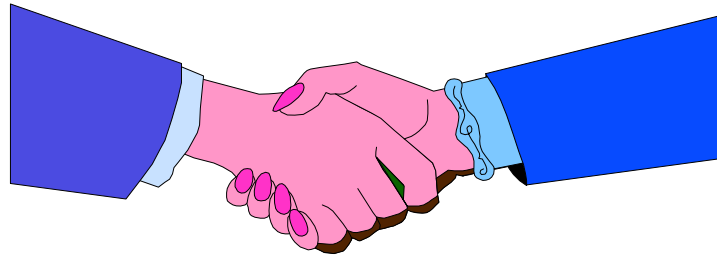


- Primary method of exchanging data is XCOM
 - ◆ Vendor file transfer package with significant control & reliability
 - ◆ Works across platforms MVS, AS/400, Unix
- Limited use FTP due to minimal controls and restart ability
 - ◆ Used when XCOM is not available
 - ◆ Not as much flexibility

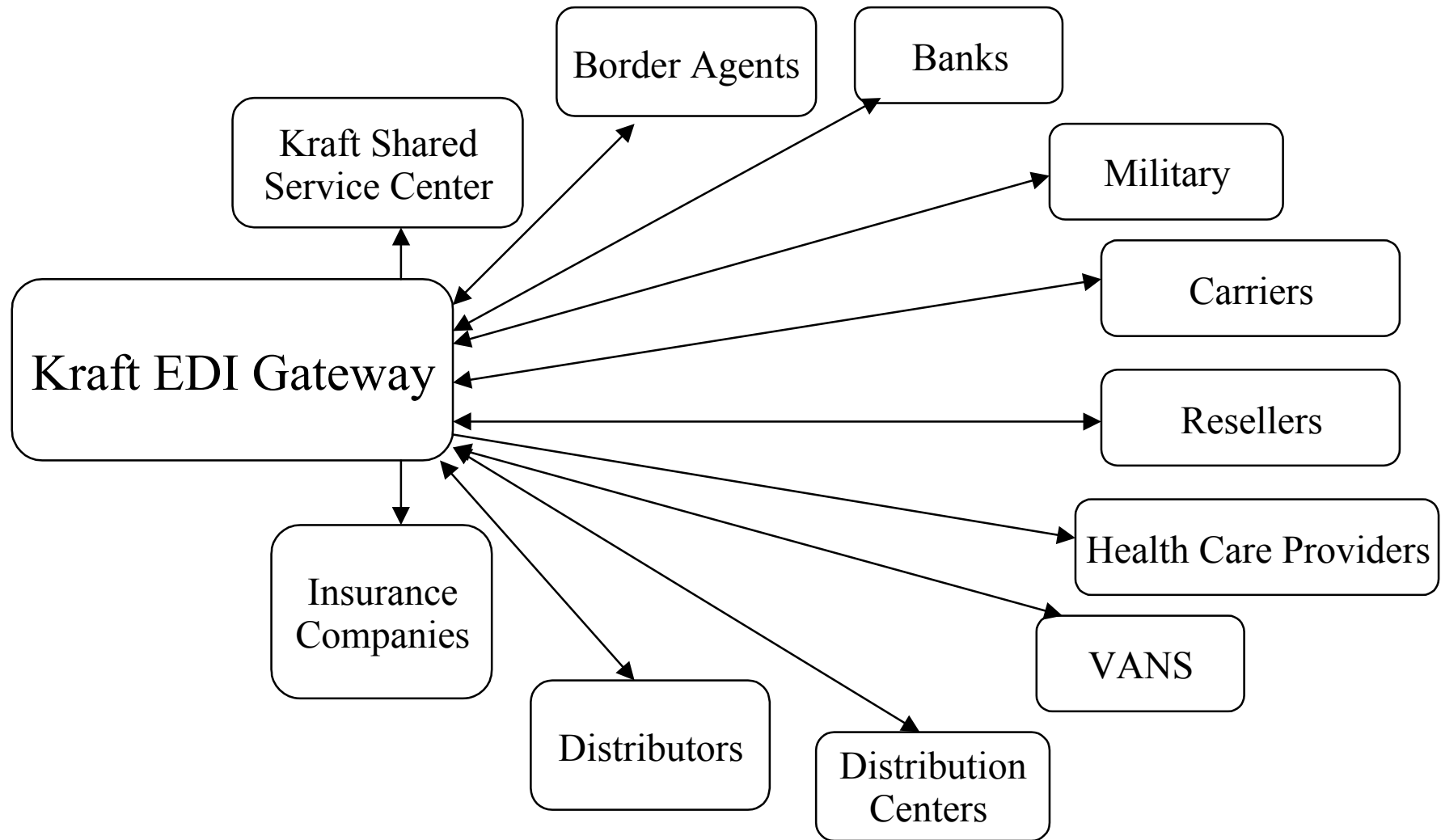


Application to Application

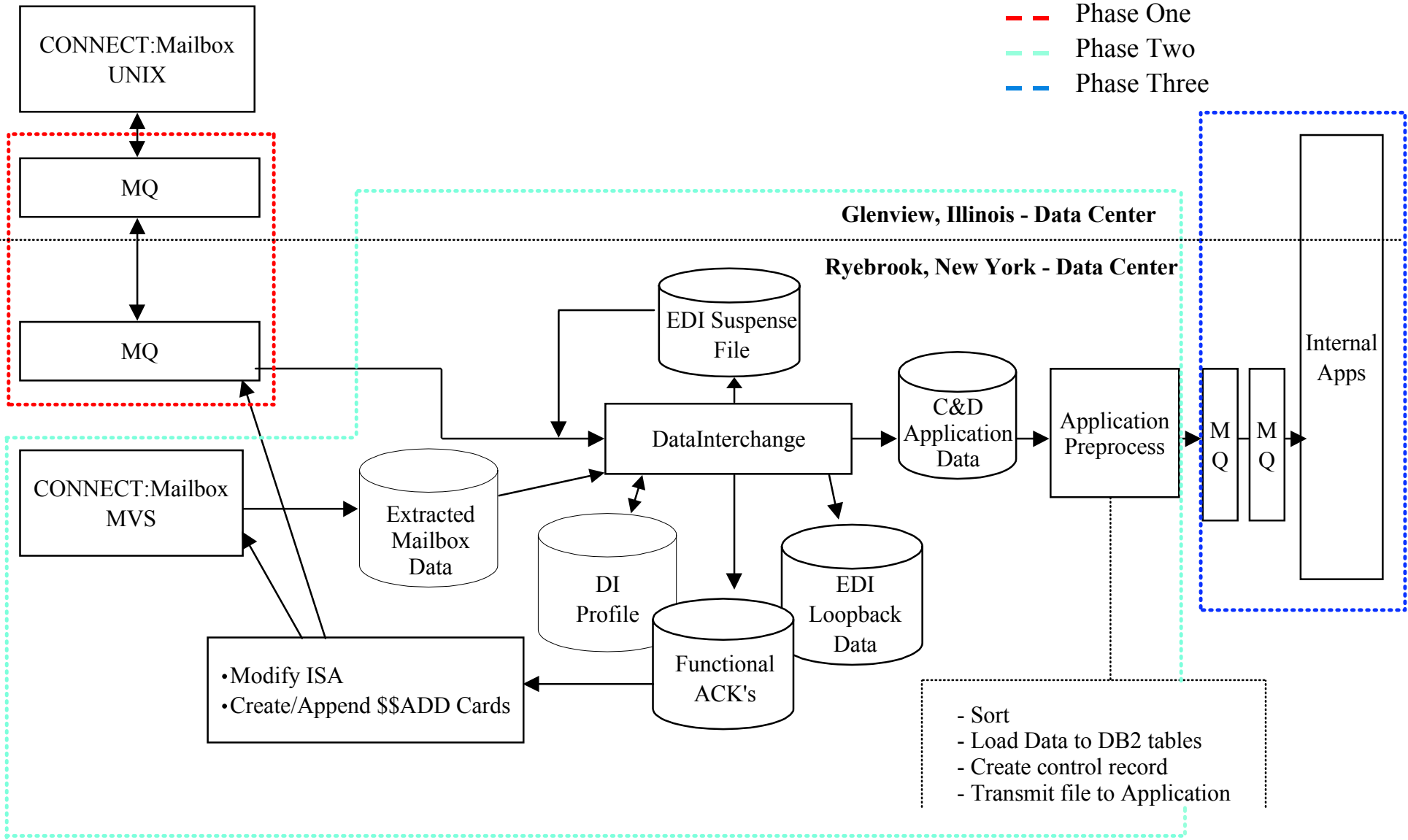
- Every application is required to handle application acknowledgments
 - ◆ When receiving data for DI, we will return an acknowledgment to the sending application
 - ◆ When sending data from DI to an application, we require an acknowledgment of receipt
- Mandated by company audit
- Missing acknowledgments are tracked and followed up on



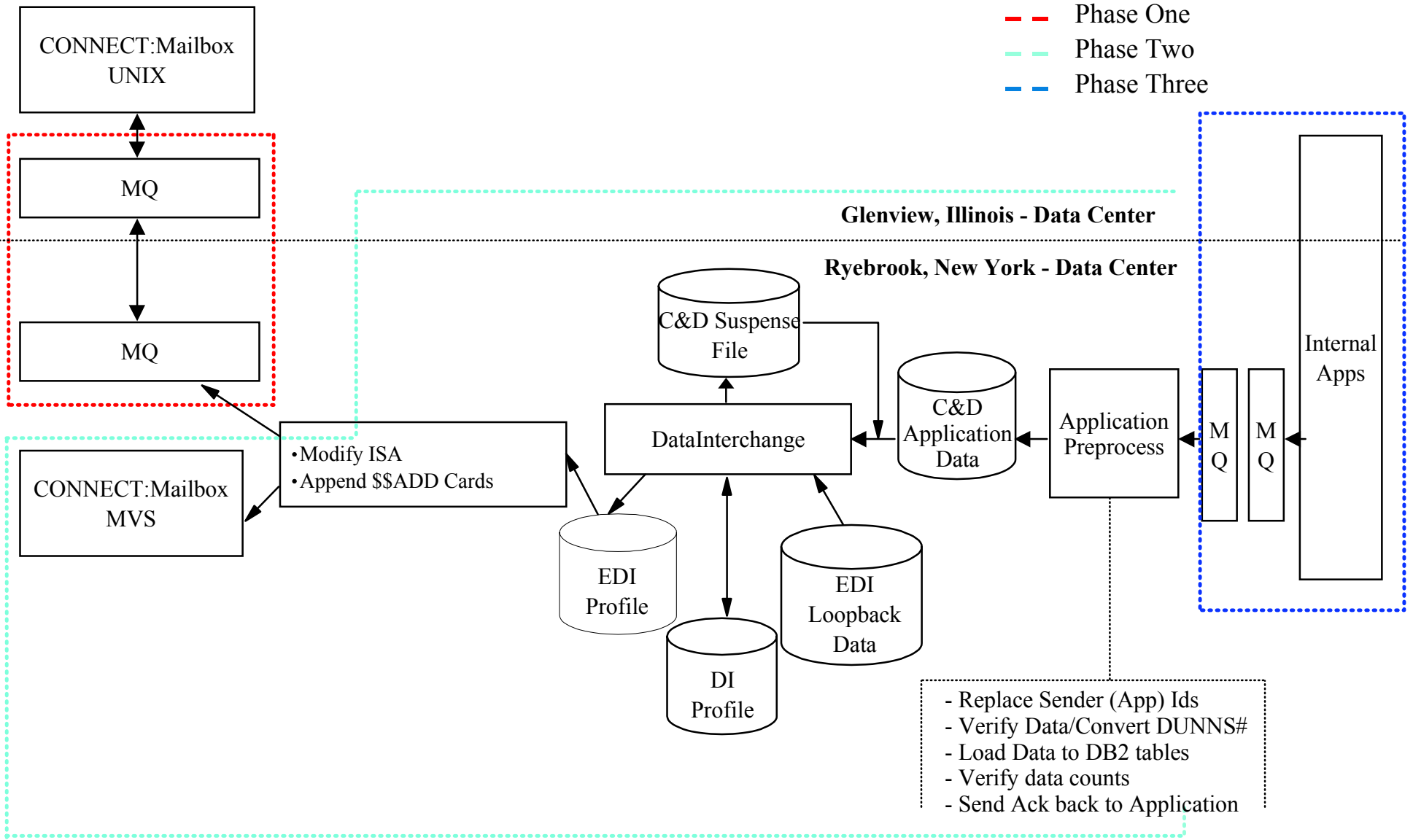
External Interfaces



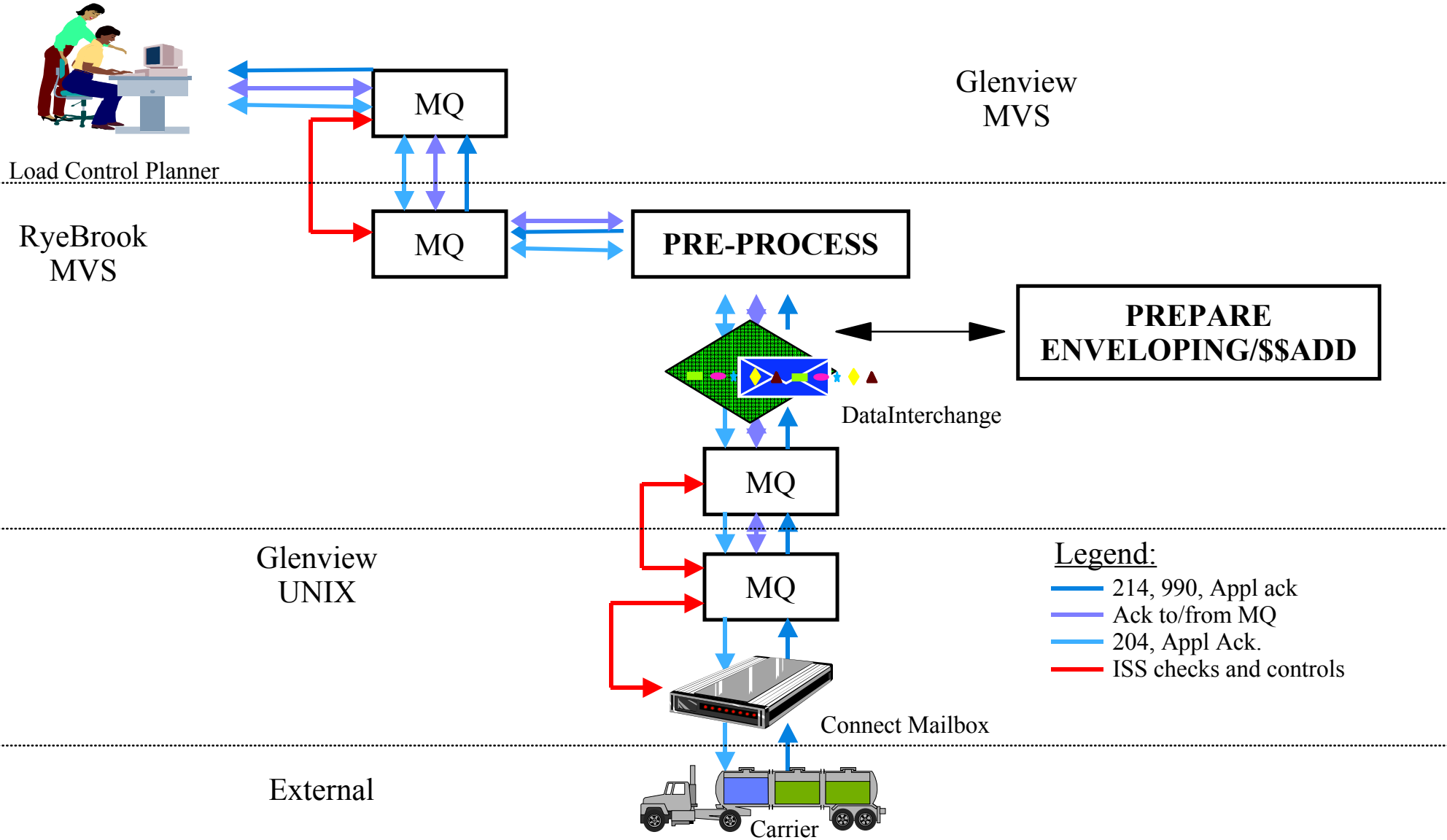
Inbound Processing



Outbound Processing

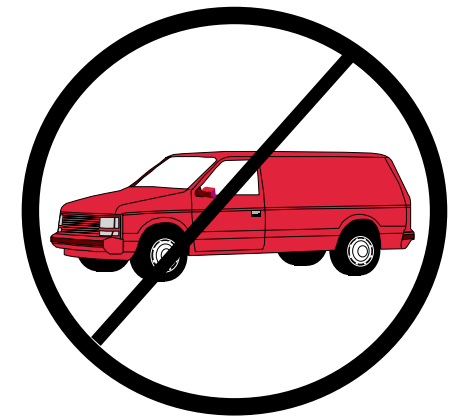


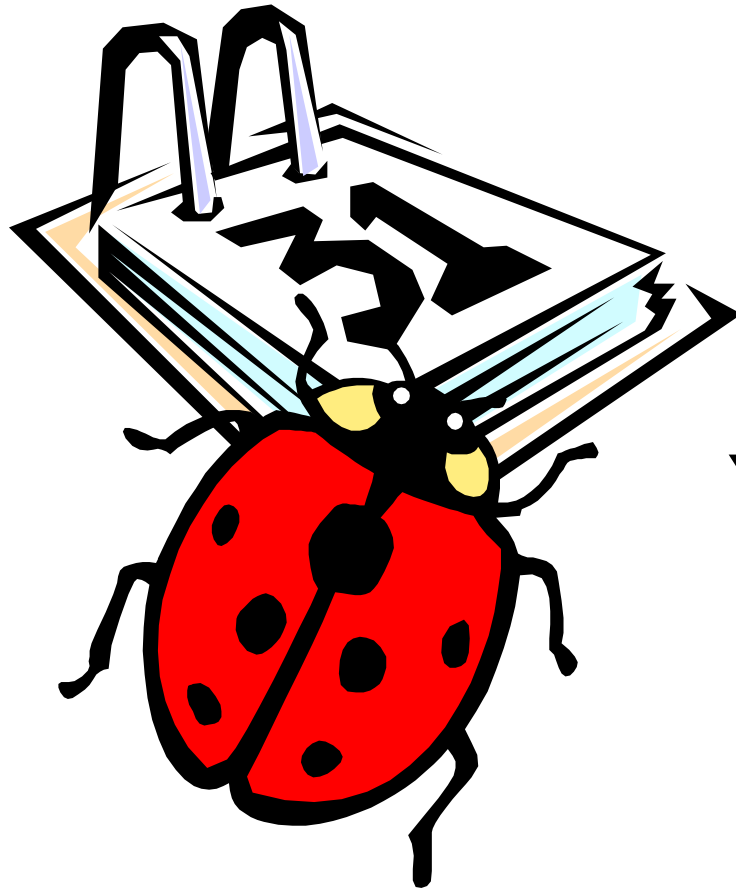
MQ Pilot



Why No VAN?

- Kraft believes it can provide lowest cost solution without a VAN
- We offer partners opportunity to dial directly to us and bypass their VAN if this is in their interest
- Kraft does not pick up data
 - ◆ EDI Architecture guide states the sender sends, the receiver receives
- Kraft outbound calls are not expensive
 - ◆ We are a “big hammer” with our long distance carrier
- Use of a VAN is a customer business decision
 - ◆ Internet EDI can reduce partner cost to zero
 - ◆ Kraft pays no VAN charges on behalf of a customer





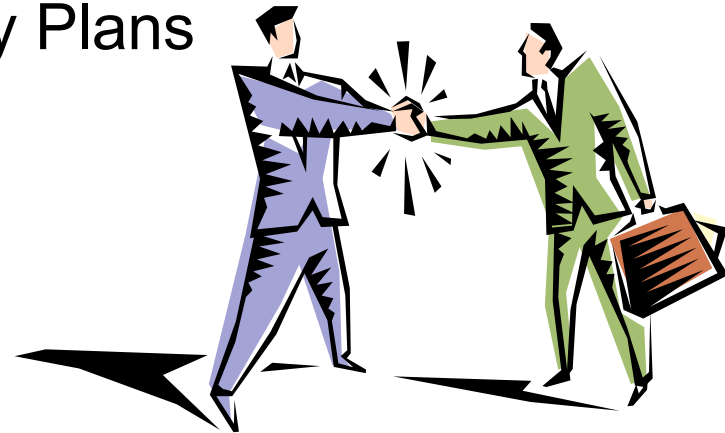
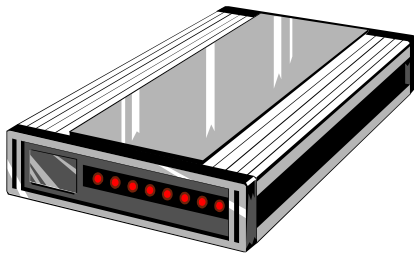
Year 2000



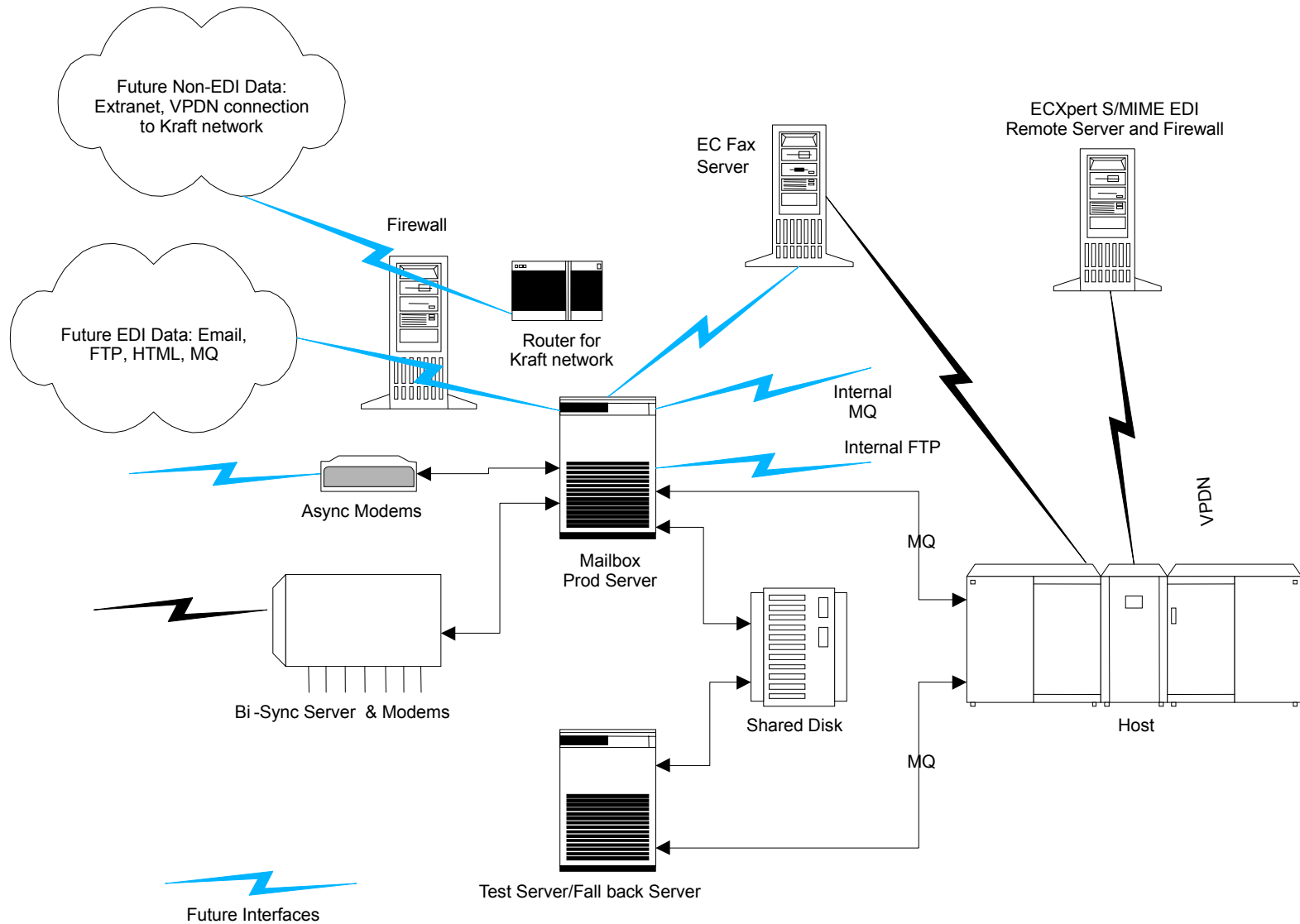
Y2K Initiatives



- 8-Digit Date Processing
- Handle Non-Compliant Dates
- Application Interface File Conversions
- Upgrade Communications
- Trading Partner Standards Upgrades
- Upgrade Authentication Software
- Disaster Recovery Test
- Contingency Plans



Current EC Architecture



Internet for Business to Business Commerce

The Internet provides an alternative to traditional communication techniques for businesses.

- Traditionally businesses have used phone line communications.
 - ◆ Relatively secure since it is point to point
 - ◆ Highly reliable
- Internet provides new opportunities
 - ◆ Communication of existing EDI
 - ◆ Web form based activity
 - ◆ Object oriented solutions



Internet Communications

- Internet communications are handled on a separate server
- Internet server resides remote from Kraft data center
- Server runs specialized software to allow exchange of data in internet formats: SMTP, HTTP and FTP
- SMTP or E-mail attachments is preferred solution in our industry
 - ◆ Guaranteed interoperable since it uses e-mail
 - ◆ EDI files are sent as attachments
- Specialized software opens the email, removes the attachment and de-crypts it
 - ◆ File is then sent to mainframe for processing by DI
 - ◆ Reverse process for outbound documents
- FTP and HTTP file transfers generally require use of same software on both sides to ensure compatibility
- This is an alternative to dial-up

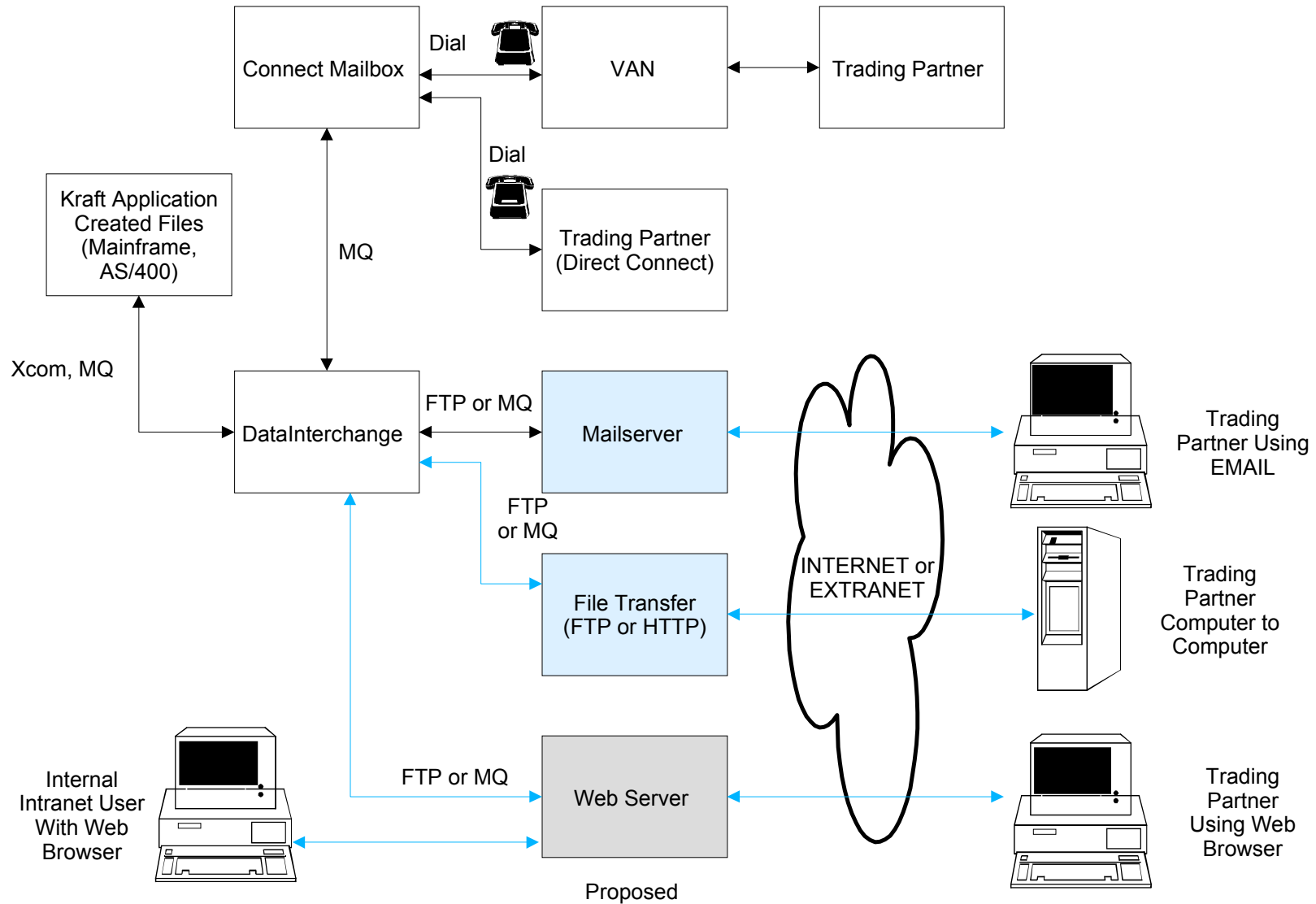


Internet Communications

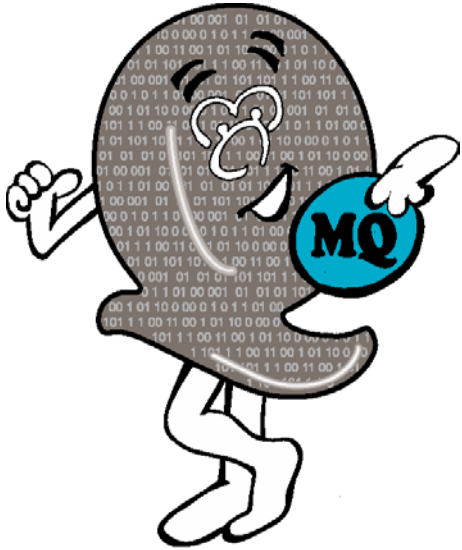
- Previous solution does not address smaller, non-EDI capable partners
- For these partners, we are investigating solutions for browser based access
- Have not determined a solution yet
 - ◆ Demand is not overwhelming
 - ◆ Do not want a point solution
 - ◆ One solution for Purchase Orders, Invoices, etc.
- Must not require use of any specific service or browser
 - ◆ Access from any ISP with any browser
- Dial, Internet transfers, and Web forms provide a full suite of communications methods for our partners



Future Communications



MQ Architecture



■ MQ is in pilot

- ◆ Immediate plans are for time critical interfaces
- ◆ Later plans to convert all interfaces
- ◆ Allows reach to all platforms at Kraft
- ◆ High reliability and control
- ◆ Tight DI integration will simplify application interfaces
- ◆ MQ acknowledgments are reverted to the sender

