

ARGOS

ARGOS Computer Systems, Inc.

Voice Response System

AUDIO/1 - Voice Response System

Prepared BY:

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EXECUTIVE SUMMARY

ARGOS Computer Systems is pleased to submit this statement of its qualifications to provide audio response services for your company and your family of funds.

The heart of the ARGOS Mutual Fund Voice Response System is our AUDIO/1 product, which is designed to use any touch tone telephone as a computer terminal to gain access to a wide range of application programs. Presently, in the mutual fund industry, AUDIO/1 handles upwards of 300 thousand calls each day, servicing over 30 million shareholder accounts. The ARGOS Voice Response System is the most functionally advanced of any system in the mutual fund industry, as was published recently in a *DALBAR Automated Voice Response Analysis* document. In another *DALBAR study, evaluating 401(K) and Defined Benefit Systems*, our product was ranked first in that industry as well.

ARGOS is also uniquely qualified to provide audio response services to your company since we have several host interface options already in place, (*FDR, DST, AFS*, etc). As such, the host links and communications between the ARGOS Mutual Fund Voice Response System and the Host account information are in place. In addition, our systems can operate stand-alone, where the data is loaded and stored on the system. This will reduce the time required to implement the system as well as provide for a smooth installation and cut over.

ARGOS proposes to take *total responsibility* for installation of the system, including hardware and software at your facilities or provide the service to you, including all facilities and staff required to run the system as well as a staff liaison and indoctrination. As we have many times in the past, our staff will work closely with your staff in order to develop an optimum system to meet your requirements.



BACKGROUND INFORMATION

*ARGOS Computer Systems, Inc.
110 West 32nd Street
New York, NY 10001*

ARGOS COMPUTER SYSTEMS, INC. is the recognized leader in the field of data communications. ARGOS dedicates itself to producing "Leading Edge" communication products for the securities and financial industry markets.

Founded in 1980 by a team of experienced data processing and finance professionals, ARGOS product offerings include: Voice Response Systems, Front-End Concentrators, Data Communications Systems, Network Management and special application systems.

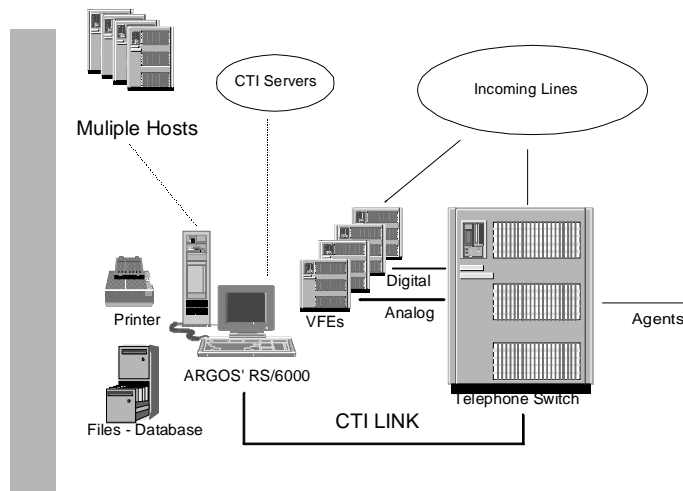
ARGOS product, FEC/1, is a front end processor and core-buffered concentrator, that is widely used in both government and private sector organizations. FEC/1 is known primarily as the only product of its kind that provides a vehicle allowing both "technical" and "business" migration to be a smooth and uninterrupted process. In brief, FEC/1 permits a multitude of terminal equipment from different manufacturers to transfer files and protocol information between any vendor host computer.

The heart of the ARGOS Mutual Fund *Information Distribution System* is our AUDIO/1 product, which is designed to use any touch tone telephone as a computer terminal to gain access to a wide range of application programs. Presently, in the mutual fund industry, AUDIO/1 handles upwards of 300 thousand calls each day, servicing over 30 million shareholder accounts. **Our installed systems base are the most functionally advanced in the mutual fund industry.** The system is used as front end to host applications or as stand alone, containing the shareholder data base as well as the applications.

AUDIO*Forms, another ARGOS product, blends the functionality of voice response, questions and answer - voice Messaging and call director technology into a single system which callers will find as easy to work with as your friendliest telephone representative. AUDIO*Forms can provide callers with a "multiple-option" menu of services and features which allows you to manage bursts and after hours calls efficiently.

ARGOS offers complete turnkey solutions, as well as designing and implementing customized software.

The System ...



ARCHITECTURE

ARGOS' solutions employ *open-ended architecture* platforms which offer the flexibility to incorporate multiple technologies to optimize your information acquisition and distribution facilities.

Architecture: The strength of our systems lies in the flexible open architecture of the products. The major elements:

- Communication to multiple hosts
- Independent **Local databases**
- Interfaces and support of transaction entry devices Voice/Speech, DTMF I/O - (VRU), Terminals and other peripherals.
- Application - development facilities

This architecture allows us to select and utilize independent hardware components, as well as different technologies, which best address the requirements of the customer. Once the access to the database has been established, either by down-load to our processor or by communications to a Host, the facilities that use this data are transparent to the host applications.



Some of the facilities may include:

- AUDIO/1** - Voice Response
- Speaker Independent, Continuous Voice Recognition
- PC*Link** - PC Dial Up / Terminals, Internet Gateway
- WEB Support APIs and Applications
- AUDIO*Forms** - Data/Voice Acquisition and Transcription System.
- FAX*Comm** - Outbound Fax Distribution System.
- INFO*Touch** - Touch Screens

VOICE View/Voice Response Interfaces

Alternate Recovery Facilities



AUDIO/1 - Voice Response System - Mutual Funds Application

Voice Response is an excellent tool for streamlining operations, cutting telecommunication costs and services, while operating in the most cost effective manner possible. Our AUDIO/1 system could give you a vehicle for automatically handling questions which come in from customers about their Accounts.

For the mutual fund industry, below are examples of some of the functions currently available:



Fund Information

- Price and yield by group (i.e. money market, bond, stock) or by individual fund
- Closing price and change from prior day
- Dividend and standardized (SEC) yield
- Maturity
- Total return
- Fund investment objective
- Fund news, investment outlook, investment strategy
- Portfolio Managers hotline

Account Information

- Account balance
- Collected balance
- Amount available for check writing
- Last non-dividend transaction
- Last dividend transaction, including reinvestment and withholding information if appropriate
- Dividends year-to-date and prior year
- Capital gains year-to-date and prior year
- Linked accounts portfolio valuation
- Allowing participants of a 401-K or self-directed mutual IRA type plans to monitor their accounts.

Transaction Processing

Financial transactions:

- Purchase
- Redemption
- Exchange

Other transactions:

- Duplicate statements
- Duplicate 1099's
- Fund literature requests
- Checks reorder
- Deposit Slips reorder
- Enrollment and PIN selections
- Creation and maintenance of Watch Lists



AUDIO/1 - Voice Response System - Defined Benefits Applications

AUDIO/1 functions running 401K and Defined Benefits Applications include

Plan Information

- Plan Description
- General plan features
- Specific Plan "Company Messages"

Account Information

- Account Balances, Summary of all investments
- Last Contribution
- Last Transactions, by type
- Vested Schedule
- Loan Balances
- Amounts available for hardship withdrawals

General Applications

- Loan Modeling, by type of loan
- Projections
- Investment Selection by Objectives
- Plan Enrollment

Transactions

- Exchanges between investment options
- Loan Processing
- Transaction Processing

Other Functions

- PIN Creation and Management
- Literature Requests
- Forms and Duplicate Statements



PC*Link - PC Dial Up / Terminals

This facility will allow PCS to dial your system and select any number of applications that you may offer. The connections could be via X.25 network, Direct 800 number or other value added networks. The options can include:

Literature Requests - Based on a published 800 number from your advertisements, your prospective clients may dial to your system and review product offerings as well as be prompted for name, address...etc. The transactions could be printed locally or reformatted and sent to other computers for processing.

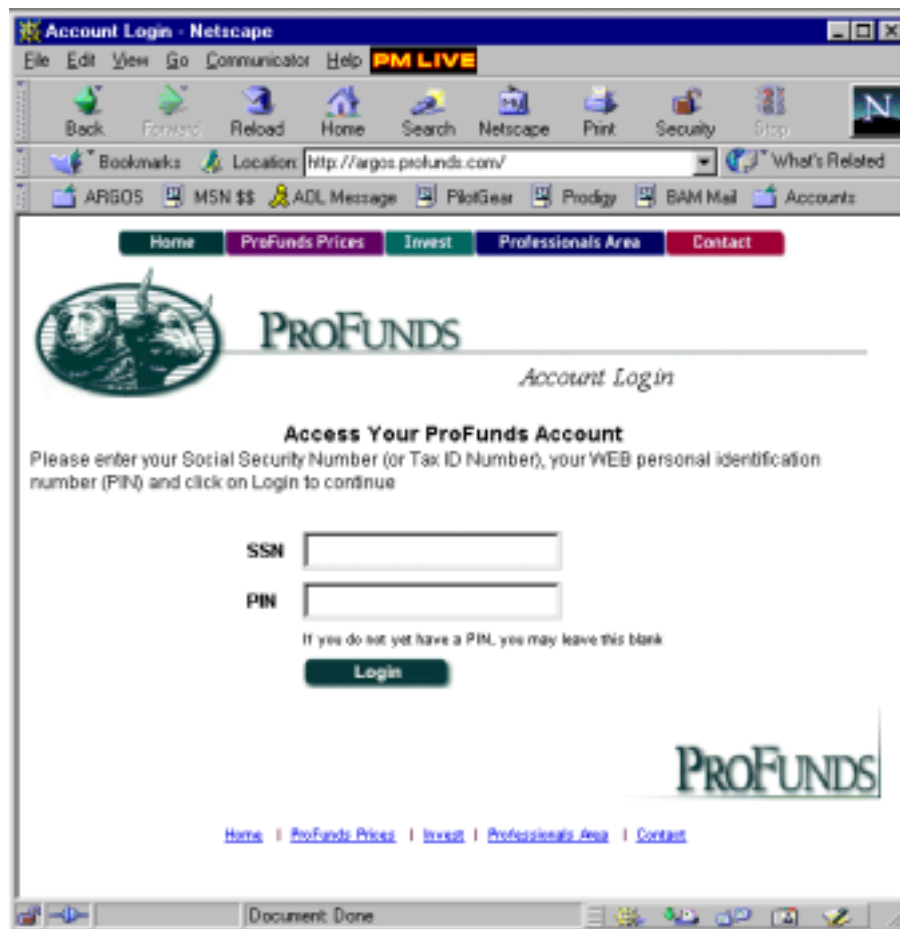
Information Access - Current users may access information that is available on either the ARU system files, or on other Host systems. In the case of interfacing to other Host systems directly, the system will reformat the output screens to the user based on specific user requirements.

Remote Printing - An application will generate download print files to the Application Processor for delivery to PCS. These files will contain enough information to determine which PC will receive the file, and what telephone number to call to reach that PC. The Application Processor will call the PC and deliver all outstanding messages to the PC. Messages will be compressed to minimize transmission time.

The program in the PC will accept these files and store them for viewing and printing. The PC user will be able to selectively print these files.

Optionally, these files may contain information such as commissions pay out schedules, what if scenarios and sales ideas. These files could also be formatted as input to other applications.

All of these function and more could also be provided using WEB based applications.



FEC/1 - Interface and Protocol Support

FEC/1, is a front end processor and core-buffered concentrator, that is widely used in both government and private sector organizations. In brief, FEC/1 permits a multitude of terminal equipment from different manufacturers to transfer files and protocol information between any vendor host computer. In your environment the FEC/1 could allow you to interface directly to a specific terminal, located on a Broker/Dealer's desk and provide any function to this terminal as if it were your terminal on your private network. You could provide access to Host based account information (after reformatting and making the screen presentable to your user's requirements), or any application that you may choose to develop. The benefit of using this kind of facility is that you do not have to install or manage a network. This service is provided by the network vendors or the client. In addition, the users are familiar with the terminal and it's functions. Most importantly the Broker does not have to leave their desk to access your **Information Distribution Facility**.



AUDIO*Forms - Data/Voice Acquisition and Transcription System.

AUDIO*Forms is an interactive voice Messaging application which prompts the caller for specific information. Transcription of the recorded information is made easier because it conforms to specific prompt and responses by the caller. Numeric data may be entered using the touch-tone key pad. During the transcription phase, AUDIO*Forms plays back the specific fields based on cursor position on the data entry forms. Function keys are used for fast forward and playback. Each entry is sequenced to insure complete transcription of the data. AUDIO*Forms could be installed on individual Customer Service PC stations, or could be centrally located. Once the caller has entered the information, or at any time while in AUDIO*Forms, the caller may transfer out of AUDIO*Forms to any designated gate or phone extension.

In summary, AUDIO*Forms blends the functionality of voice response, voice Messaging and call director technology into a single system which your callers will find as easy to work with as your friendliest telephone representative. AUDIO*Forms will:

- Compliment existing Voice Response Systems**
- Provide 24 Hours, 7 Days per week availability**
- Reduce the burden on telephone agents - handles overflow**
- Provides full service to customers after hours**
- Eliminates rewinding and searching, replaces unreliable mechanical devices**
- Q/A prompts and review - Specific Information**
- Bulletin board service - Announcements**
- Transcription / Data remapping to existing applications**
- Interfaces to existing PBX/ACD - Phone services**
- System utilization & performance monitoring**

FAX*Comm - Out bound Fax Distribution System.

FAX*Comm is an interactive or passive system comprised of multiple fax lines, an interface to our AUDIO/1 or FEC/1 systems, and optional connectivity to multiple Hosts. The system can deliver fax messages at a specific time or based on user selections and data available on the AUDIO/1 system:

- Broadcast rates, quotes, or price and yield to broker dealers**
- Broadcast sales ideas**
- New product announcements**
- Hard copy of:**
 - Account balances**
 - Statements**
 - Duplicate 1099**
 - Confirmations of transactions**

Similar to a Remote Printing function, print files could be downloaded to the Application Processor, which will extract account numbers from the files. The Application Processor, will have a file which will map account numbers to telephone numbers. (This file will be downloaded from the host as a



punch job.) The Application Processor will then dial the appropriate number, and deliver the printout to a facsimile machine.

FAX*Comm could also make FAX terminals appear as standard "host printers". This facility may be used for broadcast of other information and announcements originating from your host applications.

INFO*Touch - Touch Screens

INFO*Touch, an ARGOS Computer Systems product, uses touch screen technology to bring the features of ARGOS' AUDIO/1 voice response system into a public environment. Touch screen technology offers users a method of making structured inquiries through the "natural", intuitive mechanism of "pointing" at what they want. INFO*Touch is well suited for an environment such as a "lobby", or corporate office. Typical applications would be attracting new shareholders in a mutual fund environment.

The INFO*Touch system can operate in a stand alone mode, or be connected to an ARGOS Application Processor and its database. The connection can be through a leased or dial up line.

A complete dialogue can be reconstructed through a series of touch sensitive panels which can provide data such as:

- Fund price and yield inquiry**
- Account information**
- Dividend and distribution information**
- Year end tax information**
- Fund or plan performance**
- Plan enrollments and benefits selections**
- Annuity and loan calculations**

INFO*Touch can also be used to collect information for a variety of uses such as:

- Literature requests**
- Duplicate statement or 1099 ordering**
- Allowing participants of a 401-K or self-directed mutual IRA type plan to monitor their accounts.**
- Data/Transactions Acquisition**

Alternate Recovery Facilities.

The requirement for this service was requested by our customers. Since our customers share common hardware, we configured several AUDIO/1 systems in New York. In the event of a major problem at the client location (PBX, lines, telephone exchange, hardware...), incoming calls could be routed to these systems.



This facility has the current script for each user, as well as the line interfaces for the acquisition and file updates from any host record keeper. Once the operation has shifted to New York, operations would continue as normal. When the funds are priced, the price and yield information would be transmitted to New York either verbally or from a PC or by facsimile.

The Price and Yield and account file updates would take place in New York. Transmissions from the host record keeper would be picked up in New York and processed. Monthly tapes would be shipped to New York instead of your facility. It would be preferable if dividends could be picked up via RJE rather than shipped on tape, but either could be accommodated.

General Functions

- Call transfer to an agent, with *Whisper* functions
- Complete **CTI Functionality**, call transfers with Data Screens
- **GeoTel** and **Genesys** Interfaces and support
- PIN and privilege security, account linkages
- Enrollment functions (Portfolio list creation)
- Complete Management reporting and statistical system
- On-line Monitoring of system utilization and performance

Management Reports

The ARGOS Mutual Fund Voice Response System offers a wide range of management reports, providing data on the shareholders' use of the system. These reports are available on a daily basis via access by terminal or PC communications. A sample of system reports will be furnished upon request.

Statistics are gathered during the operation of the system which track line utilization and function utilization. The reports have been designed for both network planning and internal departmental billing purposes.

There are several types of statistical reports available with AUDIO/1. However, additional reports can be implemented as required:

An hourly report, giving for a single day, a breakdown for each hour and for each telephone line, the number of calls, average duration, and number of inquiries by function.

A daily report, giving for a single day, (or range of days), a breakdown for each function performed, the number of inquiries by function, total inquiries, including the percent of total inquiries for the function of the total for all.

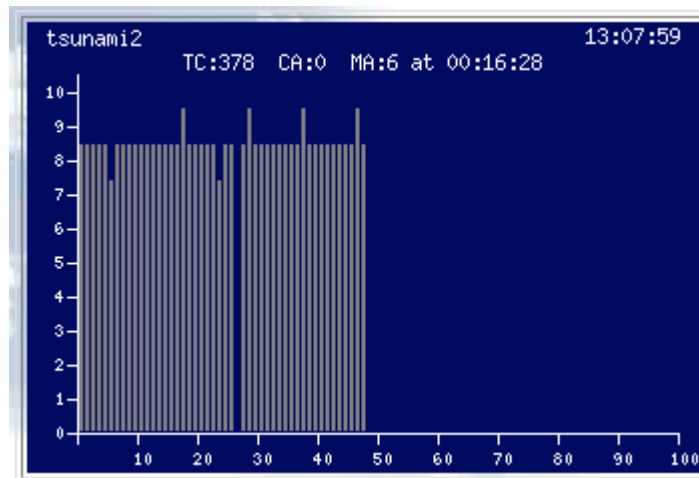
A daily report, giving for a single day, (or range of days), a breakdown by shift, and hour within the shift, of the call volumes, average duration, transfers to customer service, and hang-ups.

Custom reports and Spreadsheets, Any of the system statistical events could be exported to files and ported to any spread sheet applications.

Automated Test and Alarm Facility

ARGOS Computer Systems Automated Test and Alarm Facility (**ATAF**) that can be used in conjunction with ARGOS Voice Response systems. The purpose of ATAF is to ensure that:

- The VRU is operational
- All lines servicing that VRU are operational
- Selected database serviced by the VRU are online and valid
- Issue warnings upon failure
- Provide information on network and VRU performance



HTML Presentation of System Activity

ATAF is a script running ARGOS Voice Response System, built on the standard ARGOS voice response platform, that operates in conjunction with the customer's IVR application, to allow for automated testing of the IVR and network. ATAF consists of four parts:

A special script and databases that contain information that ATAF can use to "poll" selected telephone numbers at specified times.

Modifications to the VRU script that recognize the ATAF call and respond with touch tone rather than voice.

An alarm script and associated databases, running in ATAF. The alarm script is activated under predetermined conditions.

A special set of reports to collate and report on information gathered during the "polling" process.



Theory of Operation

The key to operation of ATAF is that the VRU script is modified to recognize a call, and then respond with touch tones rather than voice. This allows ATAF to actually perform inquiries and validate responses, rather than simply tally "completed calls".

For example, a typical VRU starts with a menu offering four to five options. An additional option would be added, *but not spoken*. While the *normal* options are usually single digits, this new, *hidden* option, would be several digits long. After being directed to this "special" leg, the VRU script would be designed to respond to ATAF inquiries in a prearranged manner. The fact that the script reaches the point of responding at all, provides quite a bit of information by itself, but the intent of ATAF is to provide more information than a simple "successful" connect.

Most network vendors provide connect information, but can't tell you *what* you have connected to. ACDs can tell you when calls arrived, and how quickly they were serviced, but don't tell you anything about VRU response time or accuracy of VRU data files. The VRU tells you what it got, but after the fact. Finally, since each vendor only services *part* of the picture, information on VRU performance is in many different places and frequently hard to organize coherently. ATAF is designed to provide an *end to end test* of the VRU system.

The recommended ATAF implementation is one in which it can perform inquiries on predictable data. This data could be entered in the ATAF files each day, but a better technique is to look for predictable data. For example, for a mutual fund:

A test fund could be created with a fixed value

Audit accounts could be created with a known, unchanging, share balance

The ATAF and VRU scripts could be designed so that ATAF goes to the "special" menu leg, generates an inquiry against the audit account, and checks the result. It can verify the accuracy of the result *as well as the response time*.

This can be turned into a *true* end to end test of a VRU system.

ATAF Alarms

Knowing that there is a problem is half the battle. Getting the word out is the other half. Once ATAF encounters a condition defined as an "alarm", e.g. incorrect data in an audit account, it stops polling and goes into alarm mode.

In alarm mode, ATAF accesses a list of telephone numbers and tries to obtain help. Each telephone number has an associated action, or "type". These actions are:

The telephone number is a beeper. Enter a call back number.



The telephone number is a beeper. Enter a pin and then a call back number.

The telephone number is a person. When the call is answered, speak a message.

Once ATAF "delivers" its message. It waits for a call back. (The person making the call back must have a touch tone telephone.) The call back will serve as confirmation of delivery as well as tell ATAF whether to shut down or resume operations.

ATAF Operating Environment

Since ATAF is written on the ARGOS voice response platform, it can be operated in various modes. It can be part of the customer VRU, it can be part of the backup VRU, or it can operate in a VFE in a standalone environment. ARGOS strongly recommends the standalone VFE environment. There are several reasons for this:

Having code within the VRU to test the VRU is not a very good test. At the very least, it invalidates all of the performance statistics, at the worst, it is susceptible to the very failures it is supposed to detect.

Running the test program in the test VRU is better, but still a problem. Depending on what you are trying to detect (e.g. power outages), this is still susceptible to error. In addition, test environments are notoriously "fickle" and constantly changing. The ATAF should be considered "production".

The equipment that serves the VRU best is not always the equipment that will serve the ATAF best. For example, the most important requirement for the VRU is voice quality and a good recording. The most important requirement for the ATAF is to be able to recognize that a call has connected. These can be conflicting conditions.

Our VFE is portable. The most reliable test environment would be to have the VFE in a *different state* than the VRU. This is a much better network test and it avoids the embarrassing problem of having a power or telephone outage take down the VRU *and* the ATAF.

Since the VFE is portable, it can be moved from time to time to compare network performance from different parts of the country.

Reports

ATAF is meant to be an alarm, but during the process of testing the VRU it can also gather considerable information on network and system performance. The following stats are gathered during each "test" call:

- Date and time of call
- ATAF line number
- VRU telephone number
- Time from start of dial to VRU connect



- Time from initial inquiry to response
- Number of Rings before answer - Alarm parameter

If the call *failed* to connect, the reason for the failure will be stored. The hardware and software version for the VFE and of ATAF can distinguish between:

- Busy
- No Answer
- No ringing
- Operator intercept

The actual data reported will vary from application to application, but the "generic" ATAF report provides all of the above information by number dialed and by time as well as on a whole network basis.

The following items are presented as additional features that could be added.

- Confirm script versions and vocabulary that each VFE is running
- Verify that Updates and file down load have taken place
- Current Date and Time Check
- Host link - **Heart Beat Transaction** to host and applications
- Network Connectivity - RS/6000 Report Status and VFE links
- Line Status validation. - CTI Validations
- **Netview** Alerts - Postings
- FAILSAFE notification from a battery backed unit to send alarms



VFE Functions and Features

HARDWARE

The VFE is based on newer technology
The VFE can take advantage of newer disk, memory, tape and connectivity technologies as they occur.

CONNECTIVITY

The VFE supports:

- Serial on a dedicated circuit
- Ethernet TCP/IP
- Token ring TCP/IP

TELEPHONE

The VFE can support analog, ADSI, T1 and several custom interfaces. There are also *many* ways to acquire DNIS and ANI data using Application Bridges and **CTI** to PBXs.

SOFTWARE

The VFE is an *NT based* product. Features which are supported by the VFE:

- Multiple delimiters
- Local support for skip/repeat
- Vocabulary download without system down time
- Remote interrogation of VFE status

OPERATIONS

- VFEs are maintained remotely
- Speech recording, digitizing and download without operator intervention
- Remote diagnostics
- Unlimited speech capacity
- System utilization and line status monitoring
- Faster Vocabulary (eliminates the need to ship disk packs)



Facilities for Host Communications

The ARGOS IVR can provide data to callers from two (generic) sources, an interactive mainframe transaction or, a local database on the Application Processor.

The satisfaction of a caller into an IVR system, depends on the quality and timeliness of the data that is available and on the speedy response to an IVR inquiry. You may not want your callers to hear "Please wait while we access your account information ..."

In the world of IVRs, data may have to be obtained from many sources. The ARGOS IVR architecture is designed to be "open" with regard to data sources, whether they be batch or interactive, TCP/IP or SNA, or any number of custom protocols that don't fit these molds.

The IVR can interact with any hardware or communications support provided by the underlying operating system.

In the UNIX/AIX configuration, the underlying operating system can support virtually all industry standard removable media devices including 6250BPI 9 track magnetic tape, high density cartridges, ½ inch, 8mm and 4mm cartridges, floppy disks (in DOS format) and even ZIP drives.

The IVR can also support almost any industry standard form of physical connectivity. Most common are 4/16mb token ring, slow and fast Ethernet, FDDI, direct channel attach and both synchronous and asynchronous serial interfaces.

The protocol suites are also extensive. For TCP/IP, the IVR supports:

- Sun compatible Network File System (NFS)
- ftp file transfers
- telnet 3270 emulation
- custom socket level TCP/IP connections (e.g. Geotel, Genesys)
- Connect direct Network Data Mover (NDM)

For CTI Links, the IVR can interface via vendor supplied custom libraries (e.g. Meridian and Lucent CTI interfaces).

Despite the upsurge in Internet types of connectivity, there are still numerous systems using the more classical IBM SNA interface. The IVR can emulate a variety of PU type 2 devices, the most common being printers (LU type 1 and 3) and CRTs (LU type 2). The printer emulation in particular can be an effective way to bring up an application quickly.

Similarly, the IVR has a flexible CRT interface which organizes mainframe resources by function, not by line. Because of this organization mainframe interface resources to be dynamically allocated according to load. IVR scripts can access multiple mainframe resources easily and complex mainframe menu systems can be navigated without code changes.



Our IVR/CRT configurations have been as varied as a single CRT emulation for 96 lines to several CRT emulation, going to different regions, per line.

The Connect Direct Network Data Mover (NDM) is also supported under SNA using a PU type 2 LU type 6.2 interface.



Summary and System Functional Features

- Access an account by Account number
- Access an account by SSN
- Access help with the system
- User action - specific help function
- Exit the system to speak to a representative
- Transfer to individuals, extensions and Remote Transfer Connect
- Leave a message - On the system or transfers to Voice Mail
- Return to prior menus
- Skip ahead bypassing prompts
- Update/Change their own PINS
- Customize Watch List
- Customize their VRU selections - Custom Track
- Obtain current fund price/yields
- Obtain historical fund price/yields
- Obtain customer account balances
- Obtain customer portfolio balances
- Obtain year-end account balances
- Obtain year-end tax information
- Obtain recent transaction history
- Obtain recent fund Dividend/Capital gains
- Obtain total return information
- Obtain stocks/bonds index updates
- Obtain Mutual Fund firm's mailing address and instructions
- Hear recent information bulletins
- Hear fund investment objectives/descriptions
- Hear the Mutual Fund's market outlook (by fund, sector, general)
- Last dividend transaction
- Last dividend transaction inquiry
- Dividend option change (rollover, check)
- Exchange transaction / exchange from one fund to another
- Wiring instructions
- Redeem by wire to bank account (same day)
- Redeem via check to home address and instruction
- Redemption transaction
- Redeem shares via ACH
- Purchase transaction
- Purchase shares via ACH
- Order duplicate tax forms
- Order duplicate account statements
- Order/Reorder checkbook or check writing redemption book



- Order literature or application
- request materials to be faxed
- Request responses by Voice, E-mail, Fax, and Letter
- Portfolio review
- Marketing and Services messages, using Push Technology

System Features

- Voice recognition capabilities
- Other language capabilities
- Monitoring and security features
- FAX On Demand
- Customization for each client Private Label Funds
- Internet connectivity
- Call management reporting
- Real-time information retrieval
- Client can update their systems
- 24 hrs/7 days operations

Services Offered

- Vocabulary design consultation
- Dedicated service and system contact
- Emergency backup to re-route calls to Recover Center