ATMContent Manager

ATM Live Manager v5.0
Technical Whitepaper

PRODUCT OVERVIEW

ATMContent Manager ("ATMC") is a product of the ATM Live Manager Software Platform. ACM is a Web-based ATM SCREEN & RECEIPT CONTENT Development, Management, and Delivery System. To enable screen content changes, the system interfaces with the ATM directly via an Agent installed on the device. The Agent Component Interface enables remote distribution and deployment of graphics to state screen ATMs, data dictionary changes for NCR APTRA Edge™ ATMs and media rich content to all devices supporting HTML without requiring any software modifications to the native ATM Application.

KEY FEATURES

- MULTI -VENDOR ATM Application differences - 912, AANDC, and APTRA Edge (2x & 3x) are seamlessly managed via an Intuitive WEB-BASED INTERFACE for easy online access [Supports Single Sign On]

- MULTI -LEVEL ADMINISTRATION modules segregate system level IT functions from content development functions to allow application access by users ('ATM Advertisers') with limited ATM operations knowledge.

- Content is managed like an advertising campaign using a POWERFUL BUILT -IN RESERVATION SYSTEM for conflict resolution for campaigns with future start and defined end dates, and campaigns are monitored in real time.

- SUPPORT FOR NCR APTRA Edge™ and other web based ATM Applications with HTML support for ATM screens does not require interface with ATM Host Systems.

TECHNICAL OVERVIEW

ATM Live Manager System integrates within the existing ATM operations framework to automate the process of distributing and managing content on ATMs.

Changing Content on ATMs- A Primer

There are three (3) basic types of ATM Applications:
1) Legacy State-Screen based ATMs like NCR NDC, Diebold 912;
2) ISO8583 based proprietary ATMs, such as Triton and Tidel; and
3) Client-Server XFS based Web-ATMs such as NCR Aptra Edge & Diebold Agilis 2x & 3x.

ATM Host Systems are architected to handle all ATM devices for transaction processing, but changing screen content to support advertising messages is very limited, and only possible for state-screen and web-ATMs. A key limitation in supporting advertising messages is that ATM Host Systems do not have file distribution capabilities. Graphic files have to be loaded locally on the ATM via flexible media. For state-screen ATMs, the ATM Host Systems download ATM Configuration Files (also known as "Load Files") to establish the ATM screen content and manage the customer transaction flow Screen definitions in the Load File contain the text messages that will display on ATM Screens. Screen definitions may contain references to graphic images for display on the ATM screen. The graphic file, however, must be stored in the proper local directory of the ATM to avoid screen display errors.

ATM as a Marketing Channel- The Challenges

Employing ATMs as a marketing channel (a "Customer Touch point") has certain limitations. Some are "inherent" and natural given the core function of the device, while some are "perceived" due to the age-old bias that the device is nothing but a Cash Dispenser. Some limitations are "regulatory" in nature due to government regulations on ATM advertising. Lastly, some challenges are "legacy" due to the hardware, software, and OS limitations of the installed base of legacy ATMs, while others are "imposed" due to the lack of standards in content management for multi-vendor ATM applications, thereby making the task of centrally deploying and managing content cumbersome, and technically daunting. The challenges in ATM advertising include: 1) small screen Size for Ad display, 2) short window of opportunity to present Ad message (less than 20 seconds for entire customer experience, and less than 8 seconds during Wait transaction processing),
3) A numeric only key pad that limits the user inputs that can be solicited during interactive Ad messages, and 4) under-powered CPU, Video drivers, and Memory that limits the multi-media capabilities of the device.

Even if an advertiser is prepared to work with the limitations of ATM Advertising, the industry has been unable to provide a centralized ATM Content management system that unifies and "un complicates" the task of deploying content on an entire ATM portfolio that includes multi-vendor, multi-OS, legacy, and web-based ATMs. Consider this… a financial transaction can be seamlessly managed across ALL devices via a single platform, but NOT marketing content!
Traditionally the ATM Host Software vendors have been the "great unifiers" in the industry by providing a single platform solution that manages multi-vendor device differences at the Device Handlers ("DH") Level. Host software vendors continue to focus on financial transactions, ignoring the growing need for content management solutions. The task of providing server-side content management solution falls on ATM vendors who are neither motivated nor strategically positioned to develop a unified solution that works on ALL devices. Consequently, there is glut of ATM vendor specific solutions, but no unified platform!

ATM Content Management- A Solution

Accounting for the limitations, content and marketing messages that are suitable for MOST ATMs are:

1) Simple up-to-date Mass marketing messages on Welcome, Wait, Thank You, and Out of Service Screens ("Key Marketing Screens"),
2) Targeted marketing messages to provide ATM user with relevant and contextual information,
3) Interactive marketing messages to solicit input from ATM user,
4) Coupons based on ATM location to reward user behavior, and
5) ATM Personalization to collect user preferences for Fast Cash, Language, and Receipt, to personalize the ATM experience.

ATMContent Manager standardizes support for mass marketing messages via a unified interface where vendor and OS differences are managed behind the scenes. These base capabilities can be extended to support real-time and interactive marketing messages through product upgrade modules available from TEKchand, such as PwrCRM and PwrHTML.

How the ATMContent Manager System Works- A Primer

To automate the process of content management, ATM Live Manager Platform communicates with ATMs

1) Indirectly through the ATM Host Systems to relay specific screen content changes; and
2) Directly via the ATM Agent on ATM to download graphic files.

Installation of ATM Agents is not mandatory if the ATM Live Manager system does not manage graphic content. Likewise, if the ATM Live Manager system will ONLY manage graphic content for ATM Screens, then an interface with ATM Host is NOT required.

The "Point" within the ATM consumer flow where an "Ad" is inserted for display to the ATM user is known as an "Ad Point." Welcome, Wait, and Thank You Screens are examples of Ad Points. A collection of Ad Points defined in the system to interface with an ATM Load File, are referred to as a Work Order ("WO"). ATMContent Manager System's impact on an ATM Load File

is restricted by the WO. The Ad content developed for an Ad Point is known as a "Campaign." The process of developing and managing content for an Ad Point by an ATMContent Builder is known as "Campaign Management"

To separate the function of WO development from that of content development (i.e. "ATM Advertising"), ACM provides three (3) key user modules:

- Controller Module,
- Admin Module,
- Builder Module,

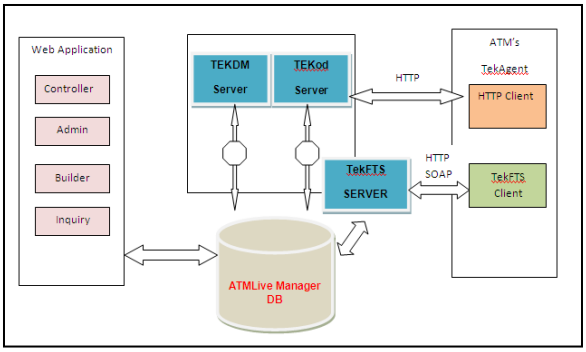
ATMContent Controller ("ATM Operations") establishes the ATM Database and manages the onetime task of building Work Orders. As part of WO development, the Controller sets restrictions to guide the process of content development by the ATMContent Builder. Along with such parameters as: a) Screen Resolution, b) Supported Graphic Image types (jpg, gif, etc), and c) Supported BINs & Languages.

ATMContent Admin module is used to allow the financial institution (or the "ATM Advertiser") to segregate the Maker/Checker/Approval roles and functions for ATM Campaign/Advertising management.

ATMContent Builder module is used by the 'Advertiser' to manage the recurring task of defining the ACTUAL Ad Content for the Ad Points defined in the WO by the Controller user. The user interface allows a host of campaign management functions such as creation, scheduling, approval of content and reporting.

ATM Live Manager Platform System Components

The platform has three (3) major components:



Web-Centric- to provide an intuitive web interface for all content development, delivery, and management functions

✓ Application servers to provide web interface for database setup and support ("Controller"), user and content administration ("Admin") and development and management of Content for multi-vendor ATMs ("Builder")

Switch-Centric- to interface with the ATM Switch (or "ATM Host" Systems).

There are two ways to implement this functionality 1) Using the TEKchand Gateway (TG) module – this module only serves Card Holder preferences and 2) via the TEKchand Process Interface (TEKPI) – via a Soap/XML based interface.

However, the switch centric interface does not support content management but caters to other products such as managing card holder preferences and targeted marketing.

ATM-Centric- to interface directly with ATM to distribute graphic & multi-media content and to manage content and ATM management related functions for Web-based ATMs.

ATM-Centric Component Overview- Working with the ATM Agent

When an ATMContent Builder ('the Advertiser') defines a marketing message ('Ad Campaign') that includes graphic content, the ATM Live Manager system distributes the graphics/multi-media content to the targeted ATMs. The process of downloading graphic images is fully automated, and managed via the TEKchand Agent ("TekEx Agent") that is installed on the ATM. The Agent is a set of thin 'Client' programs that use the TCP/IP layer to communicate with

the ATMLive Manager 'Server'. The Client-Server communication is done via HTTP/HTTPS using XML for information exchange (the Command Layer or "HCP"). TekFTS 2.0 Service (Webservice Axis 1.6) is used for file transport (the Transport Layer). The ATM Agent, using HTTP/HTTPS, contacts the server at a regular frequency to see if there are any jobs to perform. In the case of a download request, the Agent invokes the Web service layer to spool the file(s) onto the ATM, then uses the HTTP/XML layer to perform the necessary ATM vendor-specific commands to 'activate' the graphic image for use by the ATM application (912, AANDC, Edge, etc).

Finally, if the download process is successful, and the images are already referenced in the existing ATM Load File, the new Ad message will immediately display on the ATM Screen.

In the case of a failure, the Agent will continue to retry until a maximum number of attempts is reached, after which, the graphic image and the campaign will be marked 'undeliverable.'

Bypassing the ATM Host for Load File Changes

ATMContent Manager can be set-up to support content changes without requiring the ATM Host to download the Load file changes to the ATM. In this case, the system employs the Local Screen Customization ("LSC") feature to induce Load File change on State-Screen based ATMs to enable the display of content on the ATM screen or receipt. The LSC feature is available on most ATMs and works as follows:

1) ATM Live Manager creates the appropriate LSC object for NDC or 912 "Load File" message for an ATM Screen ,
2) The system downloads the object to the appropriate ATM directory as specified by the ATM vendor to enable LSC and,
3) The Agent now either re-starts the ATM or triggers a re-Load of the ATM. Upon re-load, the ATM Application reads the LSC file and "overlay" (i.e. override) the ATM screen definition loaded by Host with those in the LSC folder of the local ATM drive. Now, when the ATM goes In-Service, the new Ad message downloaded by the system will display.

ATM Advertising Support via Agent Only

Types of marketing messages supported by the ATM Agent depends on whether the ATM is State-Screen based or Web-based. For state-screen ATMs, the platform is best suited for graphic file distribution, along with HTML support where the State-Screen based ATM Application supports HTML based screen definitions. Targeted messages, interactive messages, ATM Personalization, and other CRM content is not supported without the Host Interface.

For the newer web-based ATM Applications, most content, including text, receipt header/ trailer messages, ATM Personalization, and most CRM messages are supported without the need for Host based communication, via Web Services and other "Web Exit and Extension" provisions built into the native ATM Application. Support, additional licensing, and/or documentation from the ATM vendor may be required to expose these features on the device.

The following table summarizes the current ATM Agent based content support provided by the ATM Live Manager Platform:

Vendor	OS	Application	Supported Content via ATM Agent
NCR	OS/2	NDC 5.xx	Not Supported
	Win	NDC 5.xx AANDC	Graphic Images on key ATM Screens, Receipt Header & Trailer Messages, and Text & Load File changes via Local Screen Overlay
NCR	Win	Edge 2.xx Edge 3.xx	Marketing Content for all key screens, Promote Objects, Wallpaper & Buttons, and ATM Personalization
Diebold		911/912	Graphic Images on key ATM screens
	WIN	911/912	

		TCS Agilis 3.x	(requires a one-time change of ATM Load File to reference the graphic icons)
Wincor	WIN	912	Same as Diebold

Note, There are NO requirements for ATM Live Manager System to interface with EFT Switch if customer will ONLY change and manage multi-media (graphic images) content on ATMs.

SYSTEM REQUIREMENTS

ATM

Prerequisites: ATMs with TCP/IP ATM agent must be installed. The Agent stack needs MS .NET SP2 or higher.

Supported ATM:

- Diebold 911/912/Agilis Emulation (Windows).
- NCR NDC /AANDC Emulation (Windows Only)
- NCR APTRA Edge (2x & 3x)
- Wincor (912 Emulation)

ATM Live Manager Content Server Hardware:
Server:

Virtual Servers Hosted on ESX or compatible Host is preferred. Minimum configuration for a 3 VM setup is as below:

- CPU – 2 GHz Dedicated
- RAM – 4 GB
- Disk Size – 50 GB. (SAS/SAN/SATA)

Server Software

OS:

- Red Hat Enterprise Linux 6.3 64 Bits or
- SUSE Linux

Java:

- Java / JRE 1.6 or above for Linux

Webserver:

- Apache 1.3.20 / Apache Tomcat 6x /Apache Axis 1.6

Application Server:

- Jboss EAP 5.1./ WebSphere 5.1/6.x

Monitoring:

- Big Brother or other

File Transfer Server:

- Web Services hosted on Apache Axis 1.6

Other Software:

- ImageMagick-6.5.4
- NFS 4
- openssh-5.1p1-41.31.36

DataBase;

- Oracle 11g / PostgreSQL 9x

EFT Switch (Host Systems) Interface:

TEKchand has worked with Base 24, Connex Advantage, IST, ITM & EPOC, and many other proprietary Host Systems for Host Interface for targeted marketing messages and ATM Personalization.

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For More Information or Product Demo:
Website: www.tekchand.com
Email: sales@tekchand.com
Phone: 888-512-0462