

eCal Corporation M1 White Paper

A technical overview of eCal's open and highly scalable platform for managing time-dependent data and information.

March 2001 www.eCal.com

CONTENTS

CALENDARING AND SCHEDULING BACKGROUND 5 ECAL MI PLATFORM 6 SYSTEM ARCHITECTURE 6 STANDARDS SUPPORT 7 XML 7 DAP 7 SMS 7 WIL 7 WIL 7 POVIDED PROGRAMMING INTERFACE (XML API) 8 PCALTEMPLATE ENGINE 9 DEVELOPER TOOLS 9 POVIDED USER INTERFACES 9 SYSTEM CONFIGURATION 9 PARDWARE 9 DEVELOPER TOOLS 9 PERFORMANCE AND SCALABILITY 10 PERFORMANCE AND SCALABILITY 12 HORIZONTAL SCALABILITY 12 DECOUPLED DESIGN 12 DECOUPLED DESIGN 12 DECOUPLED DESIGN 12 DISTRIBUTED DESIGN 12 DISTRIBUTED DESIGN 12 DEVELOPTIONS 13 SYNCIRONIZATION 14 SYNCIRONIZATION 14 NOTIFICATIONS 15 OPENDAVE INTERMANTION 14 SYNCIRONIZATION	EXECUTIVE SUMMARY	3
ECAL MI PLATFORM6System Architecture6Standards Support7XML7LDAP7JDAP7WML7APPLICATION PROGRAMMING INTERFACE (XML API)8CAL TEMPLATE ENGINE9Developer Tools9Developer Tools9PROVIDED USER INTERFACES9System Configuration9Structure9PROVIDED USER INTERFACES9PROVIDED USER INTERFACES9PROVIDED USER INTERFACES9SECURITY9Deployment10PERFORMANCE AND SCALABILITY12PROROUTED DESIGN12DEVELOPLED DESIGN12INSTRUMENTATION12NORTHERATION12NSTRUMENTATION14SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS15SHORT MESSAGE SURVICE (SMS) AND VOICE NOTIFICATIONS15SHORT MESSAGE SURVICE (SMS) AND VOICE NOTIFICATIONS15SHORT MESSAGE SURVICE (SMS) AND VOICE NOTIFICATIONS15WIRELESS ACCESS16WIRELESS ACCESS16WAR MINDALZATION AND LOCALIZATION16		
System Architecture6Standards Support7XML7LDAP7SMS7WML7APPLICATION PROGRAMMING INTERFACE (XML API)8ECAL TEMPLATE ENGINE9Developer Tools9Provided User Interfaces9System Coverguration9Hardware9Scurity9Development10Performance and Scalability12Horizontal Scalability12Vertical Scalability12Decourled Design12Instrumentation12Instrumentation12Instrumentation12Network Synchronization12Network Synchronization14Microsoft Outlook Synchronization14Notifications14Notifications15Short Message Service (SMS) and Voice Notifications15Short Message Service (SMS) and Voice Notifications15Wireless Access16Ward And Mode Support16Voice Example Cessin16Nate Internation and Localization16	CALENDARING AND SCHEDULING BACKGROUND	5
System Architecture6Standards Support7XML7LDAP7SMS7WML7APPLICATION PROGRAMMING INTERFACE (XML API)8ECAL TEMPLATE ENGINE9Developer Tools9Provided User Interfaces9System Coverguration9Hardware9Scurity9Development10Performance and Scalability12Horizontal Scalability12Vertical Scalability12Decourled Design12Instrumentation12Instrumentation12Instrumentation12Network Synchronization12Network Synchronization14Microsoft Outlook Synchronization14Notifications14Notifications15Short Message Service (SMS) and Voice Notifications15Short Message Service (SMS) and Voice Notifications15Wireless Access16Ward And Mode Support16Voice Example Cessin16Nate Internation and Localization16		
STANDARDS SUPPORT7XML7LDAP7SMS7WML7APPLICATION PROGRAMMING INTERFACE (XML API)8ECAL TEMPLATE ENGINE9Developer Tools9Provided User Interfaces9System Configuration9KRDWARE9Security9Deployment10PERFORMANCE AND SCALABILITY12Ventical Scalability12Distributed Design12Distributed Design12Instrumentation12Instrumentation12Moncosoft Outlook Synchronization14Morifications14Morifications15Synchronization with Other Applications, Devices14Morifications15Openwave Internation15WireLess Access16WAP and IMODE Support16Voice Ensaled Access16Internationalization and Localization16Internationalization and Localization16	ECAL M1 PLATFORM	6
XML7LDAP7SMS7WML7APPLICATION PROGRAMMING INTERFACE (XML API)8ECAL TEMPLATE ENGINE9DEVELOPER TOOLS9PROVIDED USER INTERFACES9SYSTEM CONFIGURATION9HARDWARE9SCURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DISTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14NOTIFICATIONS14NOTIFICATIONS15OPENAVE INTERMAL INTEGRATION15OPENAVE INTERMAL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16	System Architecture	6
LDAP7SMS7WML7APPLICATION PROGRAMMING INTERFACE (XML API)8ECAL TEMPLATE ENGINE9Developer Tools9Provided User Interfaces9System Configuration9HARDWARE9Security9Developer Tools9Developer Tools9Strem Configuration9Security9Development10Performance and Scalability12Vertical Scalability12Vertical Scalability12Decoupled Design12Decoupled Design12Decoupled Design12Batch Processing12Throughput/Response Time13Synchronization14Notifications14Notifications15Openwave Internation15Openwave Internation15WireLess Access16WAP and IMODE Support16Voice Enabled Access16Internationalization and Localization16	STANDARDS SUPPORT	
SMS7WML7APPLICATION PROGRAMMING INTERFACE (XML API)8ECAL TEMPLATE ENGINE9DEVELOPER TOOLS9PROVIDED USER INTERFACES9SYSTEM CONFIGURATION9HARDWARE9SECURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12DECOUPLED DESIGN12DECOUPLED DESIGN12INSTRUMENTATION12BATCH PROCESSING12INSTRUMENTATION14MICROSOFT OUTLOOK SYNCHRONIZATION14NOTHFICATIONS14NOTHFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15VICE ENABLED ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATION AND LOCALIZATION16		
WML7APPLICATION PROGRAMMING INTERFACE (XML API)8eCal TEMPLATE ENGINE9Developer Tools9PROVIDED USER INTERFACES9SYSTEM CONFIGURATION9HARDWARE9Security9Deployment10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12Deroupled Design12Distributed Design12INSTRUMENTATION12Notification12INSTRUMENTATION12MOROSOFT OUTLOOK SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14NOTIFICATIONS14NOTIFICATIONS15Short MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15Short MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15VIRCE SACCESS16WARD AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATION AND LOCALIZATION16		
APPLICATION PROGRAMMING INTERFACE (XML API)8ECAL TEMPLATE ENGINE9DEVELOPER TOOLS9PROVIDED USER INTERFACES9SYSTEM CONFIGURATION9HARDWARE9SECURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12VERTICAL SCALABILITY12VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DECOUPLED DESIGN12DECOUPLED DESIGN12DATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION, DEVICES14NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENAVE INTERMALL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
ECAL TEMPLATE ENGINE9DEVELOPER TOOLS9PROVIDED USER INTERFACES9SYSTEM CONFIGURATION9HARDWARE9SECURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12DECOUPLED DESIGN12INSTRUMENTATION12NSTRUMENTATION12NSTRUMENTATION12NSTRUMENTATION12NSTRUMENTATION12NOTHFICATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTHFICATIONS14MOTHFICATION S15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATION AND LOCALIZATION16		
Developer Tools9Provided User Interfaces9System Configuration9Hardware9Security9Deployment10Performance and Scalability12Horizontal Scalability12Vertical Scalability12Vertical Scalability12Vertical Scalability12Decoupled Design12Distributed Design12Distributed Design12Batch Processing12Throughput/Response Time13Synchronization14Microsoft Outlook Synchronization14Nottfications14Motifications15Short Message Service (SMS) and Voice Notifications15Openware Intermant Integration15Wireless Access16Wale Less Access16Internationalization and Localization16		
PROVIDED USER INTERFACES9SYSTEM CONFIGURATION9HARDWARE9SECURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12UERTICAL SCALABILITY12DISTRIBUTED DESIGN12DECOUPLED DESIGN12INSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15WIRELESS ACCESS16WIRELESS ACCESS16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
SYSTEM CONFIGURATION9HARDWARE9SECURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DISTRIBUTED DESIGN12DECOUPLED DESIGN12NSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14SYNCHRONIZATION VITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
HARDWARE9SECURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DECOUPLED DESIGN12DECOUPLED DESIGN12NSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14NOTIFICATIONS14NOTIFICATIONS14NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION16WIRELESS ACCESS16WAP AND IMODE SUPPORT16VICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
SECURITY9DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DECOUPLED DESIGN12INSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14NOTIFICATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION OCCASIONS14MOTIFICATION OCCASIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
DEPLOYMENT10PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12VERTICAL SCALABILITY12Distributed DESIGN12DECOUPLED DESIGN12INSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION OCCASIONS14SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
PERFORMANCE AND SCALABILITY12HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DECOUPLED DESIGN12DECOUPLED DESIGN12INSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION S15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
HORIZONTAL SCALABILITY12VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DECOUPLED DESIGN12INSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
VERTICAL SCALABILITY12DISTRIBUTED DESIGN12DECOUPLED DESIGN12INSTRUMENTATION12NATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
Decoupled Design12INSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION16WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
INSTRUMENTATION12BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14NOTIFICATIONS14NOTIFICATION OCCASIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16	DISTRIBUTED DESIGN	12
BATCH PROCESSING12THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16	DECOUPLED DESIGN	12
THROUGHPUT/RESPONSE TIME13SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16	INSTRUMENTATION	12
SYNCHRONIZATION14MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16	BATCH PROCESSING	12
MICROSOFT OUTLOOK SYNCHRONIZATION14SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATION14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATION AND LOCALIZATION16	THROUGHPUT/RESPONSE TIME	13
SYNCHRONIZATION WITH OTHER APPLICATIONS, DEVICES14NOTIFICATIONS14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATION AND LOCALIZATION16		
NOTIFICATIONS14NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATION AND LOCALIZATION16		
NOTIFICATION OCCASIONS14EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15 OPENWAVE INTERMAIL INTEGRATION 15 WIRELESS ACCESS 16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16 INTERNATION AND LOCALIZATION 16		
EMAIL NOTIFICATIONS15SHORT MESSAGE SERVICE (SMS) AND VOICE NOTIFICATIONS15 OPENWAVE INTERMAIL INTEGRATION 15 WIRELESS ACCESS 16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16 INTERNATIONALIZATION AND LOCALIZATION 16		
Short Message Service (SMS) and Voice Notifications15 Openwave Intermail Integration 15 Wireless Access 16WAP and iMode Support16Voice Enabled Access16 Internationalization and Localization 16		
OPENWAVE INTERMAIL INTEGRATION15WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
WIRELESS ACCESS16WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
WAP AND IMODE SUPPORT16VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
VOICE ENABLED ACCESS16INTERNATIONALIZATION AND LOCALIZATION16		
INTERNATIONALIZATION AND LOCALIZATION 16		

USER FEATURES AND FUNCTIONS	17
CALENDARING	17
MULTIPLE CALENDARS	17
GROUP CALENDARS	17
PUBLIC CALENDARS	17
SCHEDULING	18
CONFLICT RESOLUTION	18
TIME ZONE CONVERSIONS	18
SHARED EVENTS	18
EVENT INVITATIONS	18
FILE ATTACHMENTS	19
TASK MANAGEMENT	19
Personal Task Lists	19
TASK ASSIGNMENT	19
ADDRESS BOOK	19
LIST SUPPORT	19
QUICK SELECTION	20
PREFERENCES	20
ADMINISTRATION	21
System Administration	21
DOMAIN ADMINISTRATION	21
USER LEVEL ADMINISTRATION	21
SUMMARY	22

Executive Summary

eCal understands the needs of today's businesses and has designed eCal M1 Server to deliver massively scalable, high-performance, business class calendaring and scheduling to extended enterprises, service providers, and infrastructure providers. Features include:

- Wireless Access Get real-time access to your appointments, tasks, and contacts, anytime, anywhere.
- Scheduled Reminders Receive reminders through email, SMS, application prompt, etc.
- Synchronization Synchronize appointments, tasks, and contacts with Microsoft® Outlook®.
- Shared Schedules View multiple users' calendars at once.
- Group Calendars Allow group members to share a team schedule.
- Public and Corporate Calendars Publish public events to an entire domain or organization.
- Meeting Planner Create and share appointments, repeating events, etc.
- Electronic Invitations Send invitations and monitor user responses.
- **Time Zone Calculation** Automatically adjust times for each member's time zone.
- **Conflict Resolution** View other users' free and busy times to resolve date conflicts.
- Integrated Address Book Easily create a meeting or an email through personal mailing lists.
- Task Management Assign and monitor tasks.

eCal M1 Server provides the most cost-effective and highly scalable event-driven collaborative infrastructure. eCal M1 Server delivers an internationalized, standards-based, robust architecture, with the capacity for unparalleled integration and accessibility. Benefits include:

- **Unparalleled Performance** Built for performance, from design to delivery.
- **Massive Scalability** Provides cost-effective capacity for millions of users.
- **Open Standard Support** Integrates with other standards-based applications.
- XML API Creates custom or modified scheduling applications.
- Full-Featured Administration Governs one or many domains on a single server.

- **Internationalization** Fully internationalized and can be efficiently localized into European and Asian languages.
- **Email/LDAP Integration** Integrates with Openwave[™] Systems Intermail® and Directory.
- **Template Engine** Creates new or customized interfaces quickly and easily.
- **Sun® Solaris™/Oracle** Developed to run on industry accepted hardware and software.

Whether your desire is to provide advanced calendaring and scheduling with wireless access, or to provide personal and group scheduling for millions of users, eCal M1 Server delivers what other systems, built out of legacy LAN-based topologies, cannot—high performance, cost-effective, event-driven collaborative infrastructure.

Calendaring and Scheduling Background

Collaborative applications, like email, content management, and real-time conferencing, have changed the pace and practices of today's businesses. Providing enterprises with the ability to communicate and manage time and resources, these applications enable a more effective means of communication within extended enterprises. The success of a company or an individual is determined by his ability to exceed the pace of his competitors. Calendaring and scheduling has become a fundamental component of the collaborative application market. The IDC estimates that there will be over 400 million calendaring and scheduling application users by the year 2004ⁱ.

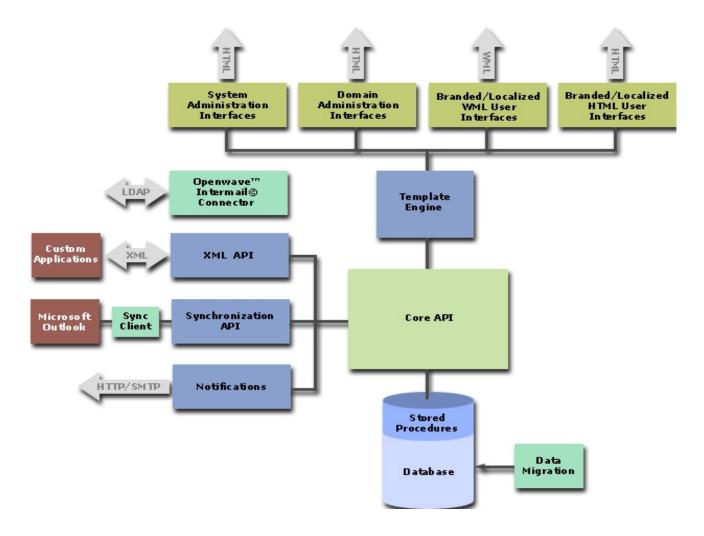
Calendaring and scheduling is a contemporary expression that is used to describe a very old intention—increase productivity by effectively managing and coordinating an individual's or workgroup's time. The problem today is that effective calendaring and scheduling extends beyond the workgroup and beyond the organization, to parent companies, multi-national branches, clients, suppliers, mobilized workforces, etc.

Attempts by legacy scheduling applications, even if intended to satisfy the needs of today's companies, fall short due to the fundamental LAN or workgroup topology for which they were designed. Enterprises, and certainly infrastructure providers and service providers, are painfully aware of the cost and effort required to deploy, scale, and manage such systems. In addition to their inability to scale to large number of users, their outdated design lacks the integration and accessibility elements required to easily merge applications and provide true anytime, anywhere access.

Because of the cost and effort required to install and maintain complex collaborative applications, many enterprises are turning to infrastructure and service providers, relying on their expertise and capacity to deliver the scale and dependability needed to maintain a competitive pace. IDC estimates that by 2004, more than 50% of all calendaring and scheduling users will be employing hosted applicationsⁱⁱ. Therefore, eCal M1 Server includes the configuration, customization, integration, and administration capabilities for service providers and infrastructure providers to extend unmatched business class calendaring and scheduling to these organizations.

eCal M1 Platform

System Architecture



Standards Support

Supporting standards is the key to providing extensive integration and customization. eCal M1 Server's standards support goes beyond using common protocols and interfaces. It encompasses established development practices, recognized architecture, and is designed to run on universally accepted hardware. eCal's senior engineering staff is actively involved in the Internet Engineering Task Force (IETF) helping to define calendaring and scheduling standards.

In addition to standard Internet protocols and mark-up, including HTTP, SMTP, and HTML, the eCal M1 Server also supports the following standards:

XML

The eCal M1 Server Application Programming Interface (API) utilizes XML to provide unencumbered integration and customization. The XML API will allow for:

- Integration of third-party and customer applications and services.
- Creation of new custom applications that work with eCal M1 Server.
- Display of calendar data in any device that supports HTTP delivery of text-based, formatted markup.

LDAP

eCal M1 Server provides an LDAP-based integration with OpenWave Systems Intermail Mx Directory for user provisioning and management. This allows server administrators to govern users across systems without duplicating information.

SMS

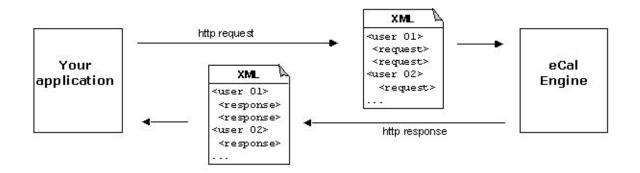
Short Message Service is a phone notification method that is prevalent in Europe and Asia and is gaining acceptance in the United States. eCal M1 Server utilizes SMS to deliver reminder notifications of pending events.

WML

eCal M1 Server's template engine renders both HTML and WML allowing the creation of custom wireless applications. In addition, eCal M1 Server provides a standard wireless interface that can be customized or branded to meet an organization's needs.

Application Programming Interface (XML API)

The XML API follows a request/response model for exchanging information. Each request is sent to the eCal engine via HTTP in an XML document. The engine responds with an XML document containing the requested information. The data can then be extracted and displayed, processed or stored in a customer database. Unlike other platform dependent APIs, the eCal M1 Server XML API offers limitless integration and application development capabilities.



The eCal XML API exposes 100% of the end user calendaring and scheduling functionality, as well as the administration and provisioning functionality, except where security might be compromised. The API can handle multiple requests in a single XML document, resulting in improved performance and decreased load.

eCal Template Engine

The eCal Template Engine is a high-performance, specialized module of the Apache Web Server, which enables the creation and customization of the calendaring and scheduling applications. The Template Engine utilizes XML/HTML style tags to create custom HTML and WML documents. The Template Engine accepts HTTP posts and gets, locates the file in the web server file tree, parses the file, and replaces custom tags with HTML or WML output, determined by custom-tailored tag handlers.

Developer Tools

The eCal Template Engine provides developers with the provisions needed to create specialized documents, including setting and retrieving browser cookies, dynamic redirects after form submission, inclusion of static and dynamic code, temporary variables, dynamic values, and nested tags. The simplicity and refinement of the eCal Template Engine enables rapid development of custom user interfaces.

Provided User Interfaces

In addition to the ability to create custom user interfaces, eCal includes standard user interfaces for both Internet and wireless access. The standard interfaces are the result of years of refinement and offer the complete breadth of eCal calendaring and scheduling functionality. The provided standard interfaces can be customized or rapidly deployed without the need for additional programming.

System Configuration

Hardware

eCal M1 Server is intended for deployment in a UNIX Solaris environment.

Any system running Solaris will be able to support and run M1 Server. The quantity and type of hardware components will depend upon the usage patterns and number of users that need to be supported. If desired, the entire suite can be run on a single server. However, in most cases the workload will be distributed across a small number of servers, each performing specialized functions.

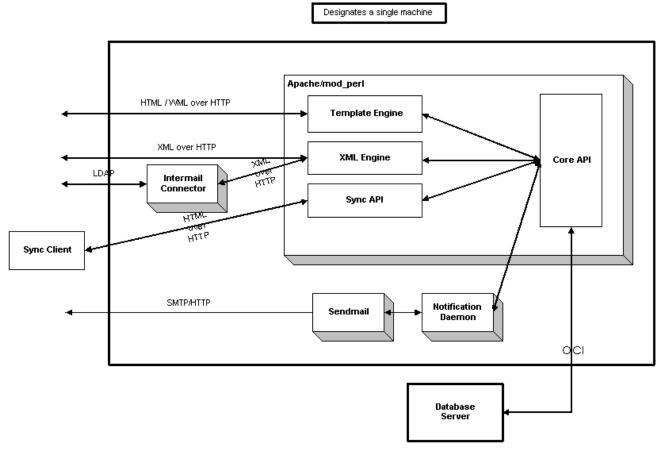
Security

Because eCal M1 Server allows for customized configuration and hardware selection, desired security levels can be attained by the implementation of firewalls, virtual private networks, etc. The eCal M1 Server reinforces corporate security measures by supporting Secure Sockets Layer (SSL) cryptography. Additionally, user credentials are encrypted using one-way MD5 encryption for storage and transportation.

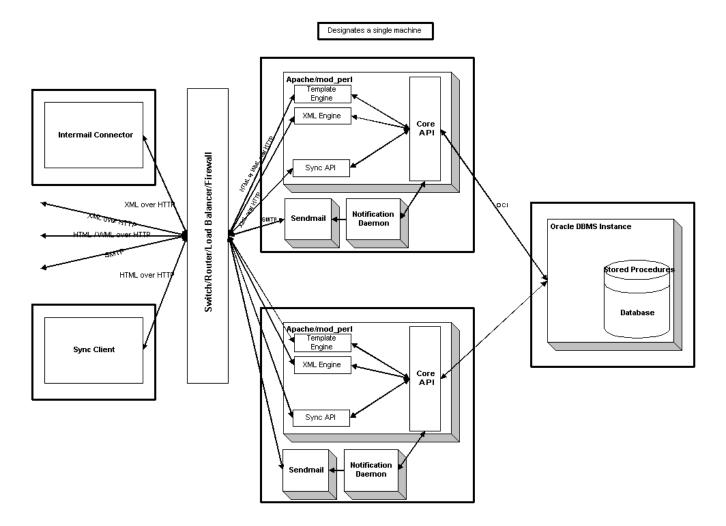
Deployment

The eCal M1 Server can run on a single server or a configuration of multiple servers and is designed to allow for physical configuration evolution. Additional servers can be added to meet and maintain growing capacity.

Single Server Configuration



Multiple Server Configuration



Performance and Scalability

eCal M1 Server has been designed from the ground up with performance and scalability in mind. From the beginning, our goal has been to reduce hardware costs by a factor of 10 versus the competition. Our recipe for success has been to make performance awareness a top priority throughout the development process.

Horizontal Scalability

eCal M1 Server presents the ability to add additional servers at each system tier. eCal M1 Server's horizontal scalability allows for a simple, straightforward addition of new servers, while remaining transparent to system users.

Vertical Scalability

eCal M1 Server allows CPU, RAM, and DISK expansion at each system tier, which enables system administrators to inexpensively scale existing systems without adding new servers.

Distributed Design

Components can be distributed upon the same or various tiers of the eCal M1 Server, in single or distributed locations. A distributed architecture enables organizations to deploy eCal M1 Server infrastructure across cities, states, countries, or continents.

Decoupled Design

The components of the eCal M1 Server are decoupled by design, allowing independent scalability of individual components depending upon usage. For example, it is possible to separate the web server component from the API component, allowing an organization to focus additional hardware for the API component, or even a specific subset of the API, if necessary.

Instrumentation

All M1 system components contain instrumentation at the source code level. Instrumentation can be activated/deactivated at runtime to provide an execution path through components, providing system usage statistics for future capacity planning.

Batch Processing

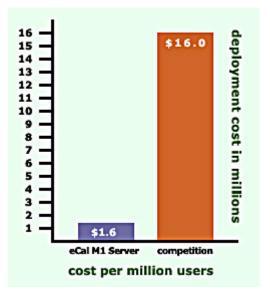
eCal M1 Server's batch processing allows API requests to be queued for future processing. This allows the system to distinguish between real-time interactive user requests that must be serviced immediately, and requests which do not require an immediate response. Queued requests are stored persistently and are recoverable in case of system failure.

Throughput/Response Time

eCal M1 Server is specifically designed for high volume usage. Based upon this criteria, eCal M1 Server, integrated with Openwave's Intermail MX server, can provide email, calendaring, and scheduling for over one million users on 16 dual processor web/application servers and two 16 processor database servers. In contrast, other systems can require approximately 4000 servers to reach the same scale. eCal M1 Server's superior performance enables:

- Accelerated deployment and time to value
- Drastically reduced cost to implement and scale
- Less system maintenance
- Less required space
- Lower energy consumption
- Exceptional response times

Approximate Cost of Installation Comparison



Synchronization

Microsoft Outlook Synchronization

eCal M1 Server supports synchronization of individual and recurring appointments, reminders, tasks, and contacts with Microsoft Outlook 97/98/2000, using a client application compatible with Windows NT4/98 or later and based on the Intellisync synchronization engine from PUMATECH. Synchronization with Outlook can either be performed manually, allowing users to continue to work using Outlook while offline, or configured to provide more frequent automated synchronization, allowing users to continue to use a familiar desktop interface.

eCal M1 Server synchronization offers users control over the frequency of interaction, choices about which application sections or data types to synchronize, and how to handle conflicts when they arise. The installation of the synchronization client requires little interaction and the application is unobtrusive, appearing only as a tray icon and synchronizing in the background automatically or on command.

Synchronization with Other Applications, Devices

Due to eCal M1 Server's inherent extensibility, synchronization between most PIMs, PDAs, or third-party synchronization engines can be achieved through the eCal M1 Server API. eCal M1 Server can also synchronize with various other devices by employing Microsoft Outlook as an intermediary synchronization application.

Notifications

Notification Occasions

Notifications are the general term for the delivery of messages from the eCal M1 Server. Such messages can be system notifications, notifications triggered by another user, or scheduled personal reminders. The messages that are delivered are derived from customizable notification templates.

The occasions on which eCal M1 Server sends notifications are:

- Activation of a new user (except with Openwave integration) New users are immediately sent notifications of new accounts.
- **Event Announcement** Users can trigger the eCal M1 Server to notify the participants of a meeting upon the creation of events. The announcements can act as invitations prompting the participants to confirm or decline participation.
- **Event Reminders** Users can schedule notifications as reminders to events in their schedules.
- **Task Assignment** Notifications can also be sent upon the creation and assignment of new tasks.

Email Notifications

Notifications using eCal M1 Server's SMTP message delivery allow notifications and reminders to be sent to the user's existing email account. Custom email notification can include the ability to respond directly from the email notification.

Short Message Service (SMS) and Voice Notifications

eCal M1 Server delivers messages in both SMTP and HTTP and includes customizable messages formatted for both protocols. By using the shorter format, over HTTP, reminders can be delivered via SMS. The same method can be used to deliver text-to-speech voice notifications for use with customer's existing voice enabling software or third-party voice enabling service.

Openwave Intermail Integration

eCal M1 Server demonstrates its capability to integrate with other applications by providing a complete integration with Openwave System's Intermail Mx mail and Directory server. Openwave is the leading provider of carrier scale mail and directory services. Intermail Mx, together with eCal M1 Server, offers a comprehensive and inexpensive business class communications, calendaring, and scheduling platform.

eCal M1 Server achieves unified user services by utilizing Openwave System's LDAP directory provided with Intermail Mx. The LDAP integration enables the creation or modification of a user record, for both Intermail and eCal M1 Server, by means of a single transaction. At the user interface level, the seamless coupling of eCal M1 Server and Intermail Mx is achieved by integrating the user interface provided by eCal M1 Server's Template Engine and Openwave's WebEdge user interface to the Intermail email application.

The integration performs as a single application, providing a sole point of entry and allowing users to seamlessly transition between their calendar and email. The integration also offers users a distinct address book for both email and scheduling. The integration permits the use of eCal M1 Server's address book or the address book provided by WebEdge.

Wireless Access

WAP and iMode Support

eCal M1 Server offers access from Internet-enabled devices, including handheld computers and mobile phones. The eCal Template Engine delivers a complete Wireless Markup Language (WML) User Interface (UI) for use with Wireless Application Protocol (**WAP**)enabled devices as the capability to deliver CHTML for the **iMode** User Interface (currently very popular in Japan and being adopted across USA and Europe).

The WML application has been designed to be "WAP Gateway Independant" so that it can be used through existing WAP Gateways and with a generic WML UI. Both interfaces offer access to the address book, personal schedule, shared calendars and the task list as well as offering internationalization support.

Voice Enabled Access

eCal M1 Server has been designed to allow for the extension of content delivery. Other interfaces into the eCal M1 Server, such as voice enabling, can be established by utilizing the power of the eCal XML API. Calendaring and scheduling access using the eCal M1 Server XML API are virtually limitless.

Internationalization and Localization

eCal M1 Server is a fully-internationalized application. The eCal Platform utilizes industry standard Unicode character set for the storage and processing of character data. Character processing and message formatting is handled in a manner that is locale-sensitive. The user interface can be quickly and efficiently localized into European and Asian languages.

Migration

eCal M1 Server provides easy migration for eCal Service customers wishing to upgrade to the M1 Server. In addition, the migration utility has been designed to feasibly allow migration from other calendaring and scheduling applications.

User Features and Functions

Calendaring

Multiple Calendars

Each user of the eCal M1 Server can create and maintain multiple calendars. The organization of events is dependent upon the user's preferences. A user may choose to keep personal, private, and confidential calendars, or may choose to keep business, personal, and business team calendars. Any or none of the user's calendars may be shared with other users. Shared calendars allow other users to locate, view and copy events onto their own calendar.

Group Calendars

Users can create group calendars, which are extensions of shared personal calendars. A user who has the necessity to publish a calendar to a specific group may create an additional calendar and select a group of individuals from the personal address book. The group calendar will then be available to all members of the group. As with shared personal calendars, the group calendar allows members of the group to copy events from the shared calendars onto their own calendars.

Public Calendars

To take shared calendars a step further, users (admin enabled) can publish calendars to an entire domain. Typically, these calendars can be used to publish time sensitive content to a company or organization. Some examples of public calendars are vacation schedules, scheduled financial announcements, conference schedules, and company equipment schedules. As with all shared calendars, users may copy events from public calendars onto their own calendars.

Scheduling

Conflict Resolution

eCal M1 Server assists in conflict resolution by providing availability lookup of other users' calendars. When creating a meeting with several people, it is sometimes difficult to coordinate everyone's time. Availability lookup allows the meeting creator to see a matrix of each invitee's available time. If invitees are busy, the creator may search for a time when all members are available.

Time Zone Conversions

eCal M1 Server includes advanced, patented, time zone calculation capabilities. Users who travel will find this feature useful. By changing the current time zone, the date and time of all events in the users calendar will be adjusted to reflect the new time zone, removing the necessity to do manual calculations and risk missing conference calls, or travel reservations in another time zone.

In addition to personal time zone calculation, the time zone feature of eCal M1 Server will determine the appropriate time for each invitee of a meeting. Users who schedule meetings across time zones will not need to create separate meetings for each invitee. eCal M1 Server will locate each of the participants, calculate the meeting time for the respective time zones, and add the event to the users' schedules for the appropriate time.

Shared Events

Users may create appointments or events to appear in their calendars. Each event may be a personal appointment or can be shared with others. The event will appear on the calendar of the users' or groups', in which the event was shared. This is not the same as an event copied from a shared calendar. Although the event is on another user's calendar, it belongs to the creator. Any of the users that receive a shared event may delete the event, but may not change the details of the event. The owner of the event may cancel the event at any time, and the event will be marked as cancelled in each of the user's calendars in which the event was shared.

Event Invitations

When sharing an event, a user may elect to send the event as an invitation. An invitation differs from a shared event in that it prompts each user for a response. This is another method the eCal M1 Server offers for conflict resolution. After each user has responded to the invitation, the creator can see who plans to attend. The invitees can also see who is attending, which helps users to maximize time and avoid ineffective meetings.

File Attachments

Files can be attached when creating meetings. Documents, agendas, and presentations can be sent without the need for a separate email. Each invitee of a shared event will receive the attached files in an email notification, and the event will be placed on their calendar.

Task Management

Personal Task Lists

Every user can keep a prioritized list of personal tasks, which may or may not have due dates. Tasks that do not have due dates will not be complete until they are marked as such, and will continue to be displayed on the user's Task List. Tasks that have a due dates will appear on that date in the user's calendar as well as in the Task List. The due date serves as a reminder or warning to the user. In addition to the task appearing in the user's calendar, a user can set a scheduled email notification for any number of minutes, hours, or days prior to the task's due date as a reminder of the pending task.

Task Assignment

In addition to personal tasks, tasks may be shared. Shared tasks are similar to shared events in the respect that they appear in each of the userss task lists in which the task is shared. Shared tasks allows each user with whom the task has been shared to see if the task is complete or incomplete, maximizing users time by making sure users are not duplicating tasks. In addition, the creator of the task can see when the task is complete, assisting with delegation and task management.

Address Book

The eCal M1 Server offers a full-featured personal address book with extensive contact information and capacity for appending personal notes.

List Support

The eCal M1 Server Address Book supports the creation and maintenance of personal mailing lists (groups). Users can create and organize their contacts into logical mailing lists to assist in quick meeting and email creation. All contacts in a users address book reside on a master list and can be on multiple mailing lists.

Quick Selection

The address book offers the ability to select users or groups when creating meetings, sharing calendars, or assigning tasks. The quick selection removes the need for retyping long lists of names. The application will retrieve the email addresses for each user selected and distribute invitations automatically.

When the Openwave Intermail integration is implemented, the same address book and quick selection page is used for calendaring and scheduling operations as well as email, so there is no need to have multiple address books.

Preferences

The eCal M1 Server allows users to customize their applications for their needs. Preferences include the ability to customize calendar views to display only working hours, start the week on a day other than Sunday, set the time increments the calendar should display (e.g. by the hour, or 15 minute increments), and specify which division of the application to use as a default. By allowing users to set up their own working environments, eCal M1 Server can help maximize their time.

Administration

eCal M1 Server offers full-featured administration capabilities.

System Administration

- The system administrators have the responsibility of system deployment, application integration, and customization.
- The system administrator can establish one or many domains on each system.
- All users belong to a domain, and each domain has its own administrators.

Domain Administration

- An eCal domain is analogous to an email domain.
- There may be multiple administrators for each domain.
- The domain administrator's responsibilities include the provisioning, maintenance and deletion of system users.

User Level Administration

- Although users are not officially referred to as administrators, they may possess capabilities, which allow them management capabilities of other users calendars, tasks and address book.
- Proxy capability can be given to other users or administrative assistants.
- Proxy access will allow a user to have full administrative capabilities of another user's account.

Summary

eCal M1 Server has been designed to both meet the scheduling and time management needs of individuals and organizations, as well as the scalability, performance, extensibility, and accessibility requirements of superior service providers, infrastructure providers, and extended enterprises. eCal M1 Server is an internationalized application providing tools that will maximize the performance of your organization or the organizations you supply, regardless of country or locale.

eCal M1 Server has been carefully engineered using industry standards, supplying superior customization, integration, and extensibility. Whether your organization wishes to integrate with other collaborative applications or create custom applications to meet specific requirements, the eCal API provides the capacity to meet any demand.

eCal M1 server was engineered from the start to be a carrier scale network calendaring and scheduling application, and therefore is not limited by antiquated LAN philosophy. Whether creating a local network or a worldwide labyrinth, eCal M1 Server's unmatched performance allows massive scalability for thousands to millions of users.

ⁱ IDC is the world's leading provider of technology intelligence, industry analysis, market data, and strategic and tactical guidance to builders, providers and users of information technology. Data derived from results of contracted IDC forecast

ⁱⁱ IDC Data derived from results of contracted IDC forecast