

**The  
Lightweight & Efficient Application Protocols (LEAP)  
Manifesto – Draft Articles**

WORK IN PROGRESS  
Using  
Free Protocols & Free Software  
to build the  
Mobile & Wireless Applications Industry

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# Chapter 1

## About The LEAP Manifesto – Draft Articles

The articles in this document are all under constant revision. They reflect as a working documents.

### 1.1 Document Organization

The LEAP Manifesto is organized as a series of largely independent articles. Each of these articles stands on its own, and can be read and understood independently of the others. Together, these articles provide a complete picture of the Mobile Messaging industry and the role of the LEAP protocols. Since each article is intended to be self-contained, some material is duplicated in more than one article.

The status of the draft articles of The LEAP Manifesto in this document are “In Progress”:

**Operation WhiteBerry.** A description of how all the capabilities of the closed RIM BlackBerry mobile messaging solution can be duplicated using existing open-source software implementations of LEAP, and existing off-the-shelf hardware components.

**Article status: In Progress**

**EMSD on Palm OS.** A technical paper describing the architecture and implementation of EMSD on Palm OS devices.

**Article status: In Progress**

**LEAP and Bluetooth.** A technical paper describing the architecture and implementation of LEAP and Bluetooth technology.

**Article status: In Progress**

As additional articles are completed and/or revised, they will be included in the Manifesto and made available on the LEAP Forum website at <http://www.LeanForum.org/leap/index.html>.

At the time of writing (July 2000), The LEAP Manifesto is undergoing active development, and new material is being added weekly. Interested persons are encouraged to check the above websites frequently to get the latest version of each article.



## Chapter 2

# EMSD on Palm OS

### Work in Progress...

Please note that this is a PRELIMINARY, PARTIAL DRAFT only.

This article includes sufficient useful information that we are making it available at this point; however, please bear in mind that the article may have missing pieces, organizational inconsistencies, or other rough edges.

The article is undergoing active development, and a complete, well-organized draft will be available shortly.

### 2.1 Summary

Interpersonal messaging is the most important and proven value proposition of the wireless medium. Existing Internet e-mail protocols have built-in assumptions, which makes them sub-optimal for use over wireless networks. The EMSD protocol fills this gap, allowing fully open, extensible (MIME) Internet e-mail connectivity over wireless networks.

Given that the fundamental components outlined above (Palm OS, CDPD, EMSD) are real products and technologies, integrating them to create an end-user product is within reach. If the integration is performed properly, the availability of wireless E-mail capability can become straight forward for the end users of this system. Any Palm Pilot user can purchase a "mobile e-mail kit", which includes a CDPD modem, CDPD account activation and the necessary software add-ons to add the EMSD capability to the palmtop. In fact, there are several channel models which can be used to deliver the wireless messaging capability to the end user, so forming a "mobile e-mail kit" is just one of them. This paper focuses on the technical issues of the integration effort at hand as opposed to marketing and channels issues. A WinCE based EMSD/CDPD wireless messaging solution, when coupled with the back-end EMSD Message Transfer Agent (MTA) offers a strong value proposition with minimal infrastructure. The EMSD MTA can be running at a central server at the CDPD Network Operator site (example mail address: john.doe@emsd.cdPdProvider.net) or as a Customer Premise Equipment (CPE) at the Internet ISP or IS Department of an Organization (example mail address: john.doe@emsd.boeing.com).

## 2.2 About This Document

This paper is available in many formats. You may wish to obtain a copy of this document in a more appropriate format before proceeding further.

This paper is one of a series of white papers that introduces the "world" of Efficient Mail Submission & Delivery (EMSD).

If you are not familiar with EMSD General, you may wish to read the "Introduction to EMSD - White Paper" [?].

## 2.3 Background

### 2.3.1 Components involved

#### Wireless Network

In the context of this paper, any wireless, IP based network. Several networks such as the pACT network under development by AT&T Wireless Services, as well as the widely deployed CDPD network fit this description. Also applicable are a number of other proprietary wireless networks which expose an IP interface, such as Ricochet wireless IP network from Metricom, Inc.

CDPD is a wireless, mobile two-way data network offering coverage footprint equivalent to cellular voice in many markets. CDPD exposes an IP interface and a fixed, "real" IP address to each subscriber node (End System) as assigned by the CDPD Network Service Provider at the time of end user provisioning. CDPD mobile nodes enjoy full mobile connectivity using the same IP address throughout the entire CDPD national coverage area due to inherent support of mobility built into CDPD.

#### EMSD

EMSD is an open, extensible and efficient message submission and delivery protocol designed specifically for the wireless network. It minimizes the network traffic required to send and receive messages, thus producing a messaging protocol that meets the needs of the mobile communicator. Fewer and smaller packets means extended battery life, efficient use of carrier bandwidth and support for marginal coverage areas. EMSD is an open specification that is an extension of the existing messaging world.

EMSD is up to 5 times more efficient than SMTP both in terms of the number of packets transmitted and in terms of number of bytes transmitted (see Efficiency Study of EMSD vs. SMTP/POP3/IMAP (PDF <61 KB> (Postscript <165 KB>)

EMSD protocols are openly available through online RFC Library (<ftp://ftp.isi.edu/in-notes/rfc2524.txt>)

As with other open standards like SMTP, POP, etc., multiple implementations of EMSD are available and various development tools and products are emerging. Being the premier developer of the EMSD Protocols and Implementations, Neda Communications, Inc. offers several products for the mobile device manufacturers, network operators and corporate IS organizations.

#### Messaging protocols

Various Internet Messaging Protocols are mentioned throughout this paper. Although all are used for messaging purposes, functions supported by these protocols do not necessarily match but in many cases

Functions Protocols	SMTP	IMAP	POP	EMSD
Submission	XXX			XXX
Delivery	XXX			XXX
Relay	XXX			
Retrieval		XXX	XXX	XX
Mailbox Access		XXX	X	
Mailbox Sync.		XXX		

Table 2.1: Messaging Protocols vs. Supported Functions

complement each other. Given that these protocols came about in an evolutionary fashion over time, this makes sense. The following table illustrates this point.

In Table 2.1, the number of "X"es in each box denote to what extent a particular function is supported by a particular protocol.

It is important to note that the scope of EMSD protocols was deliberately limited to the primary requirement for mobile messaging which is: "submission and delivery of time critical important messages". EMSD is designed to complement existing mailbox access protocols such as IMAP.

Although there are proprietary implementations of messaging protocols offered by various vendor over various wireless networks, EMSD is the only open efficient messaging protocol available. The openness of EMSD is a key attribute to help expand the wireless messaging, just as SMTP and POP helped to establish and expand the (now large) Internet E-mail industry years ago.

## 2.4 Conclusions

Integrating true Internet e-mail connectivity to the Palm OS platform using EMSD over CDPD is very feasible and is a natural fit to the WinCE's "Companion" model.



## Chapter 3

# Operation WhiteBerry

### 3.1 What is BlackBerry?

#### 3.1.1 BlackBerry: RIM's Mobile Messaging solution

Begin with about a 1 page description of BlackBerry as a product.

Describe closed system; describe networks, devices, etc. that BlackBerry is limited to.

Point out that BlackBerry has verified that Mobile Messaging is the right application

Point out that BlackBerry is very valuable to user; it has been very successful in terms of its widespread usage

Describe limitations of BlackBerry (Mohsen to provide input)

### 3.2 Opportunity to Replicate BlackBerry as an Open System

#### 3.2.1 Overview

(Base overview on Slide 4)

Wireless networks as just pipes

PDA

Modem

Message Centers

Protocols

Subscriber Services

### **3.2.2 Benefits of an Open BlackBerry**

## **3.3 End-To-End How it Works**

### **3.3.1 User Perspective**

Base User Perspective on Slide 6

## **3.4 Execution Strategy**

## **3.5 Business Model**

Describe co-opetition etc.

Base Business Model on Slides 2, 10, 11, 12

## **3.6 The Concept**

- Do everything that RIM's Blackberry does.
- Do it based on an OPEN model through a series of related products and services.
- Do it on ALL reasonable platforms: Windows CE, Palm Pilot, Handspring, EPOC, ...
- Do it over ALL reasonable wireless networks: CDPD, Metricom, Packet CDMA, GSM, ...
- Do it every which way: Enterprises, ISP, Desktop, Agents & Forwarders, ...
- Make it all PROTOCOL centric: LEAP Inside.

## **3.7 Modem Integration**

## **3.8 Services Integration**

## **3.9 Devices Integration**

## **3.10 Other Desired Partners**

- BSquare
- Tegic
- Microsoft (Windows CE)
- Handspring (Visor)

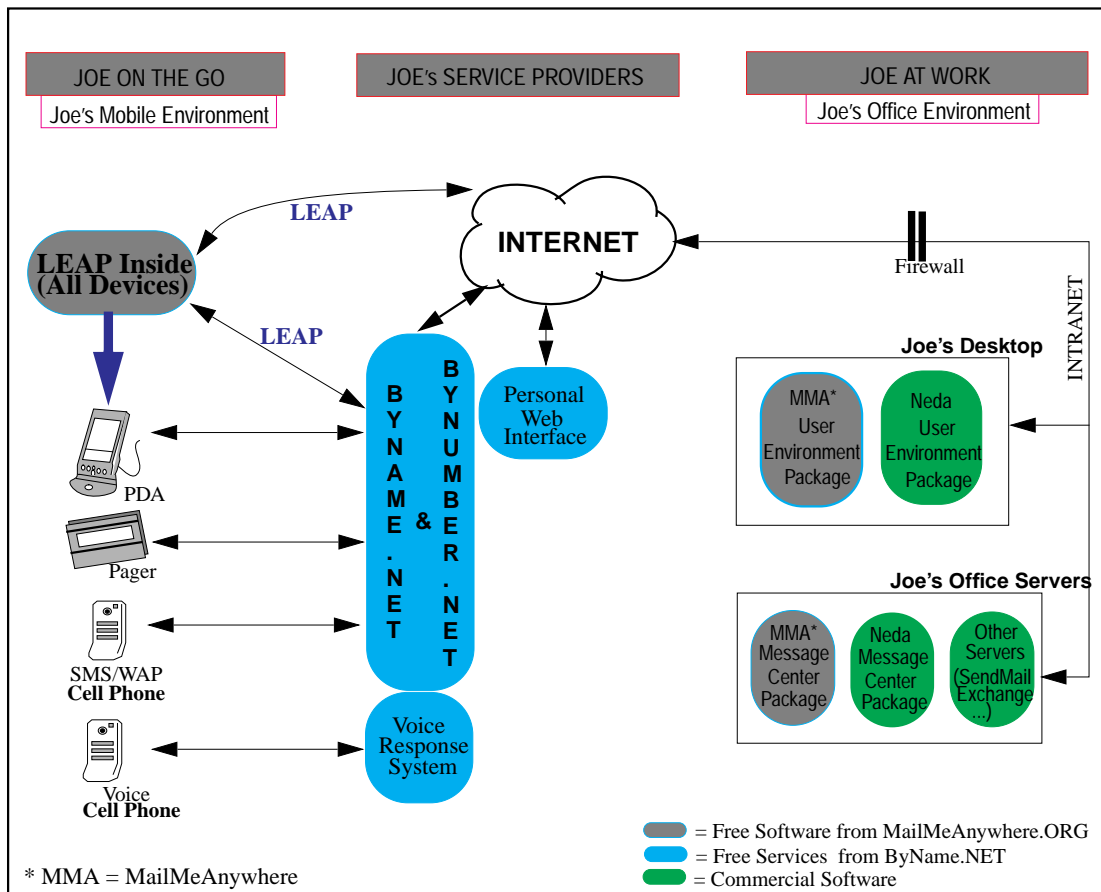


Figure 3.1: MailMeAnywhere Architecture

- EPOC
- 3Com (Palm Pilot)



# Chapter 4

## LEAP and Bluetooth

### 4.1 Introduction

Figure 4.1 shows the implementation architecture of LEAP and Bluetooth.

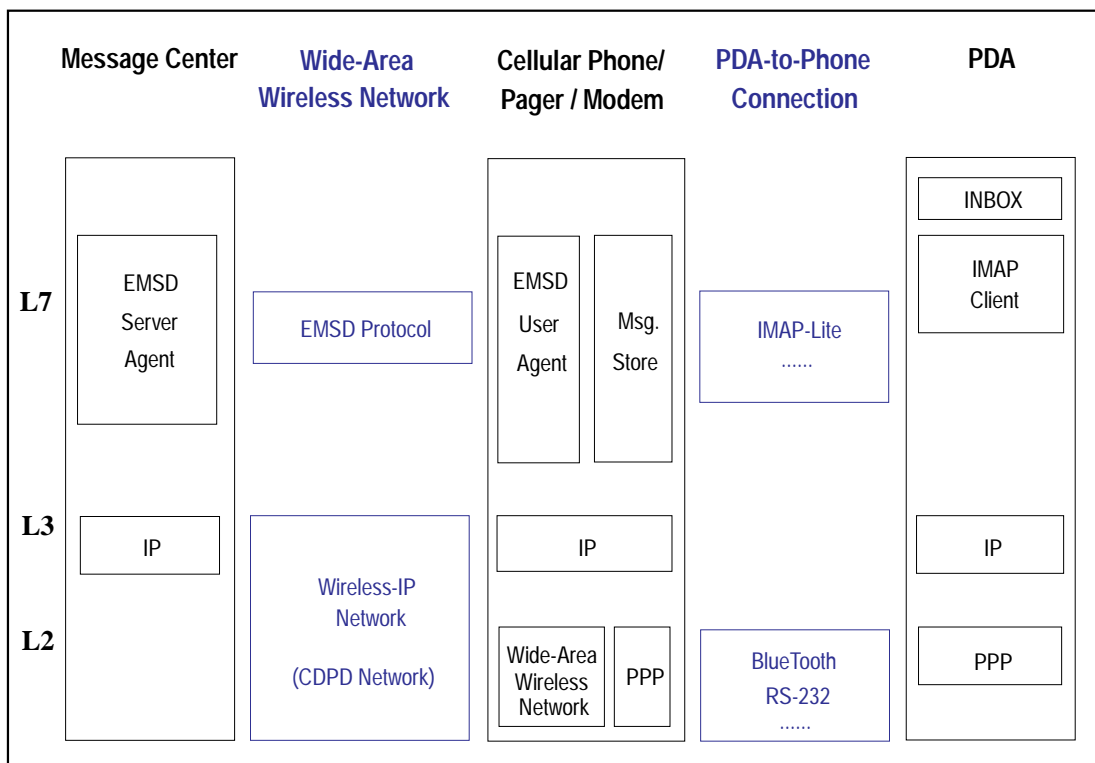


Figure 4.1: Implementation Architecture