
VERIO

FreeBSD MPS v3
Technical Overview

Fourth Edition
October 2008

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Introduction

This document provides a technical overview of FreeBSD MPS v3 accounts. Although this document does not provide detailed instructions, it does provide descriptive technical information regarding the features of your server. This technical overview also includes descriptions of how resources are managed on your server and they provide your account with distinct advantages over other solutions. All of this information is placed in the context of the caveats required of any technical document concerning any Internet or network technology. There are also notices which provide you with information which will familiarize you with document sources and how instructions will be presented in customer documentation for your FreeBSD MPS v3 server.

Overview of the FreeBSD MPS v3 Documentation Library

The FreeBSD MPS v3 documentation library is included, at no cost, as a feature of your account. The following print-ready, Web documents are available in multiple formats for your unrestricted use:

- *FreeBSD MPS v3 Firewall Supplement*
- *FreeBSD MPS v3 Getting Started Guide*
- *FreeBSD MPS v3 IPv6 Supplement*
- *FreeBSD MPS v3 Multiple IP Address Supplement*
- *FreeBSD MPS v3 Release Notes*
- *FreeBSD MPS v3 User's Guide*

There are also Website resources such as new feature supplements, frequently-asked questions (FAQ), and Web articles.

Purpose of this Document

This technical overview document is based on information provided by the performance testing, product management, product development, customer support, and training teams.

The purpose of this document is to provide descriptive, introductory information regarding FreeBSD MPS v3. It describes, rather than instructs, about the features of your server. Refer to customer documentation to find out how to use the core services it provides.

Navigating this Document

This document includes the following sections:

- “Overview of FreeBSD MPS v3” on page 2.
- “How FreeBSD MPS v3 Utilizes Server Virtualization” on page 10.
- “Resource Allocation” on page 11.
- “Usage Guidelines” on page 13.
- “Caveats” on page 16.

Overview of FreeBSD MPS v3

FreeBSD MPS v3 includes free-of-charge system administration services and technical support. In addition, you can configure and customize your server exactly as you wish. Your server provides resources for high Internet traffic levels and it is well-suited for applications which use extensive Random Access Memory (RAM). A traffic-intensive site would benefit from the dedicated database server capabilities it provides. One of the most useful advantages of your server is that it offers you the ability to control access while exercising complete control over all the Websites you host on your server. By following suggested guidelines, you can create as many accounts as you require, for both Post Office Protocol, version three (POP3) and File Transfer Protocol (FTP), without any additional costs. Also, you can immediately trouble-shoot and solve end-user concerns.

Acknowledgments

In addition to internally developed technologies, FreeBSD MPS v3 utilizes open-source technologies and applications which have grown out of development, testing, and revision conducted by open-source communities around the globe. Those communities include (but are not limited to) the following:

- The FreeBSD Project (<http://www.freebsd.org/>)
- FreeBSD Foundation (<http://www.freebsd.foundation.org/>)
- Apache Software Foundation (<http://www.apache.org/>)
- Free Software Foundation (<http://www.fsf.org/>)
- GNU Project (<http://www.gnu.org/>)

Managed Services

Some of the managed services provided by your server are available on demand whenever you request them. Other managed services are automatic and part of the best practices included with everyday FreeBSD MPS operations. Either way, all of the following managed services are included with your server:

- Administrative Tools
- Custom Installation Scripts (or *install utilities*)
- Free System Repair
- Initial Server Setup
- Managed Software Updates and Patches
- Managed sendmail Realtime Blackhole List (RBL)
- Multiple Accounts
- Recovery Services
- Round Robin
- Rsync Capability
- Security Patch Updates
- Server Monitoring
- Triple Data Backup and Monitoring
- Virtual Remote Reboot

Administrative Tools

The Web host designs specialized administrative tools you can use to administer your server. With these tools, you can configure email and user accounts. You can also add subhosts or monitor disk usage on your server. You can even configure administrative user permissions and delegate, in a controlled and secure manner, the administration of your server. Some examples of the tools designed to make your server easier for you to operate include CPX: Control Panel, sendmail certificate utility, and the System Quota Checker.

DNS Round Robin

Although this is not a service that is supported by the default configuration of your server, you can configure your server in a DNS round robin, load balancing, or server cluster.

Free System Repair

There is no charge to you for any of the system repairs, day-to-day or otherwise, which your server should ever require. In fact, any of the maintenance and repair required by the state-of-the-art data center where your server operates is, of course, not a worry of yours. The Web host will immediately repair or replace any faulty components. For example, if a hard drive configuration were to fail, the Web host would replace the failed drive and repair any corruption detected in the file system. Further, if the hardware-based, Redundant Array of Independent Disks (RAID) fails because of a bad card, the Web host replaces the card and rebuilds the array.

Hosting Tools

Note: For more about custom installation scripts you can use to install software applications to your server, see “Vinstall Utilities Library” on page 6.

The following hosting tools have been developed specifically for your server:

- Add a host (`vaddhost`)
- Add a user (`vadduser`)
- Install a software application (`vinstall`)
- Remove a software application (`vuninstall`)
- Restore files and directories to `/skel` (`relink`)
- List User Accounts (`vlistuser`)
- Clear Web log (`vnukelog`, `vn1`)

Multiple Accounts

That your server offers you virtual root access and the ability to define access means you can provide access to specific functions, including administrative and virtual root, to individual users. For example, you might simply define roles for users who utilize your server. Or you might set up a discrete account for an individual or group of users who, based on the Websites you have configured, will experience the kind of control they might otherwise experience on an individual Virtual Private Server (VPS) or shared account. Whether you are an independent software vendor, a creative agency, or an Information Technology provider, you can use your server to set up multiple accounts and remain confident in the transparency and security you can offer.

Optimized Initial Server Setup

From the moment you place the order for your server, core services are already configured for you. That means the operating system, the file system, the software update system, the Web server, the FTP service, the POP3 service, the Internet Message Access Protocol (IMAP) service, the Secure Shell (SSH) service, and the FreeBSD Ports Collection are in place. You can always customize the configuration of your server. But the initial configuration, based on best practices developed over years of assisting FreeBSD MPS v3 customers.

Recovery Services

Although no hardware recovery, even in the case of the enterprise-class hardware utilized by your server, can promise 100% of the data if there are disks that fail, Web hosting and data center best-practices can assure that the impact to you, should an aspect of your server's physical hardware fail, will be minimal. The risk is reduced by design and implementation. For example, your server utilizes Dual-Core or Quad-Core processors as well as a hardware-based RAID configuration and an off-server backup. Further, the servers are housed in data centers which offer stability of conditions such as temperature which are difficult and expensive for any organization to replicate. All of these factors should minimize potential concerns.

Redundant Data Backup

Note: While tripled data backup for your server protects your data from accidental deletion and/or system failure, keep an off-site copy of your Website (or other content) on another, off-server system. A service charge may apply to data restoration services. There is not a monetary guarantee for the backups.

Your server enjoys several layers of data backup:

- RAID hardware configuration.
- Daily backup to a drive located in the same server.
- Off-server backup

The RAID hardware configuration your server utilizes is a qualified and tested one. It is based on years of experience as well as the most current demands of Internet and Web processes. This means that restoring your data, although possible if needed, is unlikely to be a service that you will require.

Rsync Capability

Although this is not a service that is supported by the default configuration of your server, your server is capable of performing the services of a full backup server for other systems. In particular, this is possible by means of the rsync utility.

Security Patch Updates

As organizations release information about security concerns, the default server configuration is checked for vulnerabilities. Developers, system administrators, and quality assurance engineers evaluate any potential threat. If needed, they update (or *patch*) the server software your server utilizes.

sendmail RBL

A sendmail RBL is one of the most powerful tools you can use to stop unsolicited commercial email (UCE, or spam). Spam and viruses represent a large problem for email users and administrators. Using sendmail RBL along with spam filters such as SpamAssassin and virus filters such as ClamAV comprises a comprehensive solution to filter unwanted emails.

sendmail RBL configures your email server to check the IP address of incoming email connections against lists of known spammers' IP addresses. The email server then immediately rejects offending connections before harmful email is accepted or delivered. The sendmail RBL vinstall utility offers the ability to easily configure your server's sendmail email server to subscribe to several of these lists.

Server Monitoring

The server monitoring provided as a managed service for your server includes a watch of the following important processes:

- Bandwidth
- Central Processing Unit (CPU) idle time
- Cron daemon
- Disk input/output (I/O)
- Disk space
- Excessive inode (*index node*) growth rate
- Load average
- Named boot-up message
- Network traffic
- Runaway processes
- Virtual Memory
- TarBackup

There are also important aspects of data center operations, performance and security that are assured as follows:

- Biometric hand scan entry system
- Constant temperature and humidity
- Emergency plans and procedures
- Fire protection (early warning system, gas-based fire suppression system, double pre-action dry pipe sprinkler system)
- *Mantrap* controlled entrance and exit
- Continuous, uninterruptible power supply to the center with multiple standby generators
- Security guards
- Video surveillance

When adverse information is reported, data center engineers are notified immediately. Diagnosis and problem solving tasks begin right way with the data that has been continuously collected.

Software Firewall

A software firewall with three pre-configured settings is included as a feature of your server. You can configure the firewall using up to 2,000 (two thousand) rules you define on your own.

Software Updates and Patches

Most of the software included as core applications of the default configuration are updated automatically and without your intervention.

Technical Support

For performance concerns you have regarding your server, technical support is available 24-hours a day, seven days a week. This includes support at the system administration level, not just front-line customer support.

Vinstall Utilities Library

FreeBSD MPS v3 servers include a library of vinstall utilities. They greatly simplify the installation of applications by performing, in most cases, almost the entire configuration for you. Determining dependencies, default locations, and sometimes even upgrading and downgrading are executed for you by the vinstall utility. On October 16, 2008, all FreeBSD MPS v3 plans include a library of vinstall utilities which include installations or configuration for the following:

Core Applications

Compilers and Interpreters

Note: Version 3.4.6 of Gcc and version 1.8.6 of Ruby are also supported. There are not vinstall utilities for them and so they are not included in the following list.

- Perl (`perl5.8`, `perl5`): Version 5.8.7 of Perl is supported. For more, refer to *The Perl Directory at Perl.org* (<http://www.perl.org/>).
- Python (`python-2.3`, `python-2.4`, `python-2.5`, `python`): Version 2.5.2, as well a pair of legacy versions, of Python is supported. For more, refer to (<http://www.python.org/>)
- Tcl (`tcl`): Version 8.4.19 of the Tool Command Language (TCL) is supported. For more, refer to the *Tcl Developer Xchange Website* (<http://www.tcl.tk/>).

Major System Services

Note: POP3 (`ipop3d`), ProFTPD, and OpenSSH are also supported. There are not vinstall utilities for them and so they are not included in the following list.

- Apache (`apache13`, `apache2`): Version 2.2.8 of the Apache Web server is supported. As an alternative, a vinstall is also provided for version 1.3.41. For more, refer to *The Apache HTTP Server Directory* (<http://httpd.apache.org/>).
- Dovecot (`dovecot`): Version 1.1.1 of the Dovecot IMAP server is supported. For more, refer to *Dovecot Secure IMAP Server* (<http://www.dovecot.org/>).
- sendmail (`sendmail`): Version 8.13.6 of the sendmail Simple Mail Transfer Protocol (SMTP) server is supported. For more, refer to *sendmail.org* (<http://www.sendmail.org/>).

Critical Add-On Applications

Fee-Based

The supported fee-based applications (Accrisoft Freedom and ShopSite) do not include install utilities. However, they often depend on other, free add-ons such as PHP, Perl, or Java which do.

Free

- ClamAV (`clamav`): Version 0.93.3 of the ClamAV antivirus software is supported. For more, refer to *ClamAV* (<http://www.clamav.net/>).
- CPX: Control Panel (`cpx`): Version 1.45 of the CPX: Control Panel is supported. For more, refer to the CPX: Control Panel documentation (http://www.verio.com/support/documents/view_article.cfm?doc_id=5528).
- iManager (`imanager2`): Version 2.12.5 of the iManager server administration utility is supported. For more, refer to the iManager documentation (http://www.verio.com/support/documents/view_article.cfm?doc_id=748).
- Java (`java_jdk`, `java_jre`): Version 2.0.4 of the Apache Web server-embedded Perl interpreter is supported. For more, refer to *mod_perl* (<http://perl.apache.org/>).
- `mod_perl` (`mod_perl`): Version 1.4.1 of the Java Developer Kit and Java Runtime Environment (JRE). For more, refer to *The Source for Java Developers* (<http://java.sun.com/>).
- MySQL (`mysql`, `mysql4.1`, `mysql5.0`)
- PHP (`php4`, `php5`)
- PostgreSQL (`postgresql`, `postgresql8`)
- Procmail (`procmail`)
- SpamAssassin (`spamassassin`)
- Tomcat (`tomcat`)
- Urchin (`urchin`, `urchin5`)

Other Add-On Applications

- ant (`ant`)
- Dada Mail (`dada`)
- eRuby (`eruby`)
- Expect (`expect`)
- gpg FormMail (`gpgformail`)
- Mailman (`mailman`)
- Majorcool (`majorcool`)
- Majordomo (`majordomo`)
- Metamail (`metamail`)
- Miva Empresa virtual and non-virtual machine (`miva-empresa`)
- Mod_python (`mod_python`)
- Mod_ruby (`mod_ruby`)
- MySQL Check (`mysqlcheck`)

- Open WebMail (`openwebmail`)
- PGP FormMail (`pgp5formmail`, `pgpformmail`)
- PhpMyAdmin (`phpmyadmin`)
- PhpPgAdmin (`phppgadmin`)
- Procmail LDA (`procmail-lda`)
- PukiWiki (`pukiwiki`)
- Ruby-on-Rails (`rails`)
- System Quota Checker (`quotachecker`)
- Samba (`samba`, `samba2`, `samba3`)
- sendmail (`sendmailcert`, `sendmail-rbls`)
- SquirrelMail (`squirrelmail`)
- Swish-e (`swish-e`)
- Timezone (`timezone`)
- TWIG (`twig`)
- Webmin (`webmin`)
- WordPress (`wordpress`)
- Wpoison (`wpoison`)
- Zend Optimizer (`zendoptimizer`)
- Zope (`zope`)

Virtual Remote Reboot

A virtual remote reboot feature stops (or *kills*) all existing processes on your server and immediately restarts processes. This feature is designed so that the effect of the virtual reboot is the same as you would see if you physically rebooted any FreeBSD Web server.

FreeBSD is a UNIX Operating System

FreeBSD UNIX is derived from the Berkeley Software Distribution (BSD) of UNIX. The operating system is distributed under the terms of the FreeBSD Foundation. FreeBSD MPS v3 utilizes FreeBSD UNIX, a widely implemented corporate UNIX standard. Your server utilizes FreeBSD version 6.x and the UNIX File System 2 (UFS2).

FreeBSD UNIX and FreeBSD MPS v3

FreeBSD UNIX is based on open standards and is derived from the community-supported, open source FreeBSD Project. To locate more information about BSD, FreeBSD, and the FreeBSD Project, refer to the project Website (<http://www.freebsd.org/>). The operating system provides support for numerous open-source communication, database, and software applications.

As you perform configuration, administration and trouble-shooting tasks, you will be able to apply your previous knowledge of open-source software applications to FreeBSD MPS v3. By utilizing virtual root access you can grant access to any port. The server supports multiple users and user based applications. With access to all of your server's logs, administration per service is easy to do. Data backups, server security and software updates are updated through server software updates which often require no intervention on your part. Your server can be remotely rebooted and runs with server monitoring software applications. Configure your

server to support multiple users with shell, Web, FTP and/or email privileges. The FreeBSD operating system provides a compatible base for operating system level server virtualization, and a template based UFS2 file system (or *skel*) package.

The FreeBSD Command Reference

For information about the full command set provided on your server, consult the online manual pages (or *man pages*). Man pages also provide information about system calls, library calls, special files, as well as file formats and conventions.

How FreeBSD MPS v3 Utilizes Server Virtualization

Server virtualization comes in a variety of forms, each with their own purposes and benefits. For example, hardware emulation (also referred to as *virtual machine technology*) has the advantage of enabling you to run an operating system, such as FreeBSD UNIX, without extensive modification. However, the technology requires a significant performance overhead. Management tasks can be slow to take effect and complex to apply. All of these factors lead to a lower level performance than you might require.

FreeBSD MPS v3 uses operating system-level virtualization which offers back up, management, and monitoring advantages over hardware-level server virtualization. These processes are isolated from being visible to users. The software architecture of operating system-level virtualization is different from other virtual machine architectures. This is because it always runs the same operating system (OS) kernel as the host system.

Your server provides a stand-alone managed and dedicated server. It includes standard startup scripts and software from multiple vendors which operate on the server without modification. You can change any configuration file and install additional software.

By default, your new FreeBSD MPS v3 is pre-configured as a Web and email server with the following core services:

- Web – Hypertext Transfer Protocol (HTTP) and HTTP over an encrypted Secure Sockets Layer (SSL) or Transport Layer Security (TLS) transport mechanism (or *HTTPS*).
- Email –SMTP, POP3, and IMAP.
- FTP.
- Shell access tools –SSH and cron. SSH is controlled by an Internet/Network Daemon (or *inetd*).

Support for core services is provided without additional charge. They are included as part of the standard fees. Your server begins as a fully tested FreeBSD UNIX installation. However, you can configure your server to provide additional services according to your specific needs. Product documentation provides you with basic instructions for configuring and using the core services as well as for maintaining the system functionality.

FreeBSD MPS v3 is a dedicated server that utilizes virtualization technology for the following elements:

- Virtual kernel
- Virtual file system
- Available Disk Space
- Network
- RAM

The swap partition is created on the hard disk used as the virtual memory extension of your server's RAM. Providing virtual memory enables your server's operating system to behave as though it has more RAM than it actually does. The server can *swap out* the least recently used memory pages in RAM to the server's hard disk when they are needed and new memory pages can be *swapped into* RAM. Your server's virtual memory space is constrained by the amount of RAM and swap space configured for the server type.

Resource Allocations

Note: The resource allocations described here are available for new accounts (as of August 6, 2008) located in the San Jose, California and Sterling, Virginia data centers only.

There are several FreeBSD MPS v3 plans, as in the following list:

- Basic
- Pro
- Pro Plus

The plans utilize operating system-level virtualization to allocate server resources. There are important aspects of the resource allocation described in this document, as follows:

- **Monthly Cumulative Bandwidth** – The amount of data, measured in terabytes (TB), passed through the server network connection during a month. There are fees assessed for bandwidth usage overages.
- **Stream Rate** – The amount of data, measured in megabits per second (*Mbit/sec*), passed through the server network connection.
- **Disk Space** – Determines the maximum number of gigabytes (GB) of data you can store on your server.
- **Hard Drive Configuration** – Two 10,000 RPM drives protected by enterprise-class hardware RAID plus an on-board backup drive located on your server.
- **Processors** – The Xeon Dual-Core or Quad-Core 5000 series processors (also *central processing units* or *CPU*) offer the intelligence, as opposed to storage, your server utilizes.
- **Available RAM** – The additional physical memory, expressed in GB, that your Basic or Pro Plus server can accommodate as a fee-based option.
- **Default RAM** – The physical memory, expressed in GB, that your server utilizes when you have not ordered any upgrades.
- **Total RAM** – The total physical memory, expressed in GB, that your server can accommodate as a fee-based option.
- **Virtual Memory** – The virtual memory extension of your server's RAM. Your server's virtual memory is constrained by the amount of RAM and swap space configured for the server type.
- **Total Open Files** – Determines a maximum number of files which your server can open at a time.
- **Total Processes** – Determines the maximum number of tasks (both active and inactive) on your FreeBSD MPS v3 account.

Resource Allocations by Plan

The following table describes the resource for each FreeBSD MPS v3 plan:

Table 1: FreeBSD MPS v3 Resource Allocations

Resource Allocations	Basic	Pro	Pro Plus
Disk Space	100 GB	200 GB	300 GB
Hard Drive Configuration	Two hardware RAID-protected SAS 10,000 RPM drives with backup drive	Two hardware RAID-protected SAS 10,000 RPM drives with backup drive	Two hardware RAID-protected SAS 10,000 RPM drives with backup drive
Processor(s)	Xeon Dual-Core 5000 Series	Xeon Quad-Core 5000 Series	Two Xeon Quad-Core 5000 Series
Total Processes	100,000	100,000	100,000
Total Open Files	500,000	500,000	500,000
Default RAM	1 GB	2 GB	4 GB
Virtual Memory	2 GB	4 GB	8 GB

RAM Upgrades

You can upgrade RAM for Basic and Pro plans. These upgrades are available in 1 GB increments. There is a fee associated with these optional upgrades. FreeBSD MPS v3 can accommodate up to a total of 4 GB.

The Pro Plus plan includes that maximum as a default and it is unnecessary to upgrade that plan.

The following table describes the RAM upgrades available for each FreeBSD MPS v3 plan:

Table 2: FreeBSD MPS v3 RAM Upgrades

Plan	Default RAM	Available RAM	Total RAM
Basic	1 GB	3 GB	4 GB
Pro	2 GB	2 GB	4 GB
Pro Plus	4 GB	None	4 GB

Usage Guidelines

There are several best uses to consider, as follows:

- **Number of Websites** – The number of Websites (also referred to as *sub-hosts* and/or *virtual hosts*) supported by your server account.
- **Number of Website hits** (per day) – The number of instances when your Website content is viewed by visitors. Typically, *hits* are not the same as downloads, dynamic, or other types of requests which require processing.
- **Number of Users** (including Email Accounts) – The number of User Accounts supported by your account.
- **Total Emails Sent and Received** (per day) – The number of emails processed (sent and received) by your server account during a day.
- **Mailing List Size** – The total, cumulative size (or *volume*) of mailing list recipients your server processes each day.

Table 3: Usage Guidelines for FreeBSD MPS v3 Plans

Usage Guidelines	Basic	Pro	Pro Plus
Monthly Cumulative Bandwidth	1 TB	2 TB	3 TB
Stream Rate (per second)	100 Mbit/sec	100 Mbit/sec	100 Mbit/sec
Number of Websites	75	125	300
Number of Website hits (per day)	300,000	600,000	900,000
Number of Users (including Email Accounts)	100	200	300
Total Emails Sent and Received (per day)	100,000	200,000	300,000
Mailing List Size	100,000	200,000	300,000

Assure that the requirements for your server account are less, by a reasonable margin, than the ones specified in the usage guidelines in this document. For example, if you believe that you, your administrators, and your customers will send and receive more than 100,000 emails per month, you must be certain to use a FreeBSD MPS v3 Pro Plus.

Uses for FreeBSD MPS v3 plans vary widely from customer to customer, of course. Some of the basic functions, such as posting Web pages and communicating by email, are installed in the default configuration of your server. There are add-on features, such as e-commerce, which are offered for an additional fee. And there are applications and suites which you can install by means of vinstall utilities designed by our engineers to anticipate the scripts, packages, modules, and other resources the application or suite will require. Beyond that, you can install, run, and develop many other applications and suites by means of the FreeBSD Ports Collection. No matter what your plans are, it is important that you refer to these suggested usage guidelines in order to plan ahead for the needs of your organization.

Following are some of the anticipated uses for FreeBSD MPS v3 plans:

- **Websites** – Websites are collections of text, images, videos and/or other content that your server hosts for the purpose of publicizing your organization. Alternatively, Websites can facilitate tasks and communication within your organization. The default, installed configuration of your server includes the Web server software you need to get you started.
- **Email** – Emails are electronically delivered messages which your server processes so that individuals in your organization can communicate with others, either within in your

organization, or to anyone with a valid email address. Images, videos and/or other content may be embedded in the messages or sent as attachments to the emails. The default, installed configuration of your server includes the email services you need to get started.

- **Email with SSL** – Your server can reliably develop, test, and operate applications which process, store, and manage email communications by means of Secure Socket Layer (SSL) for privacy, encryption, and general security.
- **Web-based sales (or e-commerce)** – Your server can facilitate Web-based sales transactions (or e-commerce) with the speed, efficiency, and reliability your customers have come to expect. E-Commerce enables your customers to respond to the compelling information. E-commerce is available as an add-on, fee-based option for your server.
- **Databases** – You can organize, retrieve, and report information stored in the databases operated by your server. You can add a database application packages to your server by using available vinstall utilities.
- **Dynamic Applications** – Your server is able to process, deliver, and utilize dynamic applications (also referred to as modules and/r packages). Typically, this means that you can give life to the content your customers see and, possibly, anticipate their needs. You can install many dynamic applications by means of vinstall utilities supported by your server.
- **Multimedia development suites** – Your server can provide a robust, scalable development environment for creating (not just processing) multimedia applications. You can install many of the open-source components by means of vinstall utilities supported by your server.
- **Java Development Kit (JDK) and Java applications** – Your server can provide a robust, scalable development and, more importantly, a processing environment for JDK and Java applications. You can install many of the open-source components by means of vinstall install utilities supported by your server.
- **Apache** – Your server’s resources enable you to optimize the configuration to develop, test, and process the types Web content which depend on the Web services, components, directories, packages, modules, and software offered by the Apache Software Foundation and the community of Apache-oriented developers.
- **PHP** – Your server’s resources enable you to focus the configuration to develop, test, and process the types Web content which depend on the embedded scripts the PHP: PHP Hypertext Processor language offers.
- **Enterprise development suites** – The Pro Plus plan can provide a robust, scalable development environment for customizing applications specific to your enterprise. You can install many of the open-source components means of vinstall utilities supported by your server.
- **Server Clustering** – The Pro Plus plan resources enable you to configure your server with scalable Web server clustering. This type of configuration enables you to serve dynamic, exciting content to large numbers of customers who have become accustomed to speedy as well as data-rich Web experiences.

Table 4 summarizes the suggested uses for FreeBSD MPS v3 plans:

Table 4: Suggested Uses for FreeBSD MPS v3 Plans

Uses	Basic	Pro	Pro Plus
Websites	✓	✓	✓
Email	✓	✓	✓
Email with SSL	✓	✓	✓
E-Commerce	✓	✓	✓
Databases	✓ (Small-to-medium sized only)	✓ (Medium-sized only)	✓
Dynamic Applications	✓	✓	✓
Multimedia Development Suites	✓	✓	✓
Apache	✓	✓	✓
PHP	✓	✓	✓
Enterprise Development Suites			✓
Server Clustering			✓

Caveats

Note: The specifications, guidelines, and other data in this document are provided for informational purposes only. They do not provide a performance guarantee.

All of the information in this document is based on the years of experience our product developers and system administrators can offer. Following are some of the caveats they want you to know as you interpret the best-utilization information included in this document.

Java Applications

Note: Java applications consume significant processor and memory resources. Java applications should be monitored. You must conduct sufficient performance testing of your Java application on your server before relying on it for critical business needs. You must build contingency plans in case your Java application does not perform as expected; possible solutions may include:

- Extensive optimization of the Java application
- Moving the Java application to a higher-level of server plan such as Pro Plus
- Implementing an alternative solution to using Java such as moving from Java to an optimized C program.

There are a wide range of Java-based applications. Some are designed to handle multiple services and others focus on a smaller range of services. As an example, Zimbra (<http://www.zimbra.com/>) is open-source server and client software used to process email, group calendaring, and contacts. In addition, the software supports Web document management and authoring. The software offers a wide range of services, some of which duplicate applications included with the default configuration of the Pro Plus plan. The software offers these services by drawing on Java and its own, duplicate installation of Tomcat. These factors make the software better suited to a more powerful, dedicated server offering such as MPS.

Alternatively, JSP Wiki (<http://www.jspwiki.org/>) uses standard Java 2 Platform, Enterprise Edition (J2EE) components such as Java, servlets, and JSP. The software enables collaborative authoring for Websites (also called a *wiki*). The software enables visitors to collectively comment upon, add to, or remove from Web page content. The open-source software focuses on providing a singular, unique service. It does this by utilizing the Java components which are available for installation on the Pro Plus plan. JSP Wiki does not duplicate services which are also supported by FreeBSD MPS v3, such as email.

JSP Wiki is an example of a Java-based application which is well-suited to the Pro Plus plan when put under low to moderate workloads. Results will vary by application, but a JSP Wiki installation running on the Pro Plus plan could potentially handle up to tens of thousands of wiki page views per day. Should hundreds of thousands of wiki page views per day be required, upgrading to a dedicated server such as a Managed Private Server (MPS) is recommended.

Interdependence

Some aspects of your server's performance are interdependent. Resources are not dedicated to specific applications or tasks; you have a finite number of resources (as described in Table 1) for all of your tasks. The usage guidelines described in this document should be applied with this in mind. For example, if you have a busy Website, your ability to process high volumes of email will be impaired. Or, as another example, there are not additional resources specifically allocated for processing emails sent and received, performance depends on the total mailing list size (or *volume*). If, on an average day, mailing list activity is high, and you also expect a high volume emails sent and received, then you must take measures to schedule those activities or you might consider upgrading to a plan with sufficient resources for processing all of the emails sent and received, as well as for mailing list usage.

For Informational Purposes Only

This information is provided for informational purposes only and must be recognized as providing information about best-utilization (as opposed to performance guarantees or service-level agreements). Operating system-level virtualization technology combined with sound server administration practices enable resources to adjust as required in order to preserve an optimal operating environment for all of your servers and those of others.

Fluctuations and Adjustments

Actual resource availability may fluctuate both above and below the values in this document. Ultimately, the demand on available resources will determine the performance of each plan. While this information may be helpful in gauging appropriate usage, it should not be the sole determinate in capacity planning. The Web host reserves the right to adjust resources as required. These adjustments preserve optimal operating environment for all servers.

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Document Source

This document was written by:
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