



WHITE PAPER

Managing SSL Security in Multi-Server Environments

VeriSign's Easy-to-Use Web-Based Services
Speed SSL Certificate Management and Cuts
Total Cost of Security





WHITE PAPER



CONTENTS

- + A Smart Strategy for Managing SSL Security on Multiple Servers 3
- + One-by-One Certificate Management Is a Tedious Process 5
- + Simplifying SSL Management with VeriSign's Powerful Web-Based Solution 7
 - Web Interface Provides Centralized Control 7
- + Automated Reports Keep You in Control 9
- + Enterprise-Class Service with SSL Expertise at Your Fingertips 11
- + Test the Benefits of MPKI for SSL 12



Where it all comes together.™

A Smart Strategy for Managing SSL Security on Multiple Servers

Protecting the confidentiality and integrity of sensitive information transmitted over your organization's network is a crucial step to building customer confidence, securely interacting with business partners, and complying with new privacy regulations. Your company's requirements may include securing information exchange between Web servers and clients, server-to-server, and among other networking devices such as server load balancers or SSL accelerators. For a complete solution, cross-network security must protect servers facing both the Internet and private intranets.

Secure Sockets Layer (SSL¹) is the world's standard technology used to protect information transmitted over the Web with the ubiquitous HTTP protocol. SSL protects against site spoofing, data interception, and tampering. Support for SSL is built into all major operating systems, Web applications, and server hardware. Leveraging both the powerful encryption of SSL and the confidence instilled by VeriSign® authentication procedures, your company can immediately protect sensitive data transmitted between your servers and your customers, employees, and business partners.

Managed PKI for SSL (MPKI for SSL) is VeriSign's easy-to-use and flexible Web-based service for deploying and managing multiple SSL Certificates across the organization. Leveraging VeriSign's scalable and highly secure infrastructure, Managed PKI for SSL is an enterprise solution that enables you to dramatically reduce much of the cost associated with SSL Certificate deployment while maintaining full local control.

Managed PKI for Intranet SSL (MPKI for Intranet SSL) is VeriSign's companion Web-based service for deploying and managing SSL Certificates on hosts used only on private intranets. Managed PKI for Intranet SSL provides internal hosts with features and benefits identical to Managed PKI for SSL.

VeriSign MPKI for SSL

Simple: Web-based service for managing all your SSL Certificates—no up front hardware or software to install

Efficient: Enroll, approve, issue, reject, revoke, and renew with a few clicks of a mouse

Time saving: Issue SSL Certificates on demand

Secure: Certificate-secured administrator account access

Comprehensive: Covers hosts facing the Internet or on intranets (optional)

Value: Provides discounted, bulk purchases of SSL Certificates

¹ The Internet Engineering Task Force has renamed SSL to Transport Layer Security (TLS), and is working on wider adoption of the TLS protocol. SSL, however, remains the popular nomenclature.

+ SSL Certificates Provide Core Web Transaction Security

Transmitting sensitive data, such as credit card numbers and healthcare data, across the Web and intranets requires authentication to ensure the destination of the data is legitimate, encryption to protect the data against interception or tampering, and message integrity to ensure the information isn't tampered with during transmission. Digital certificates from VeriSign use Secure Sockets Layer (SSL) technology to address all three of these requirements. SSL has become a global standard for protecting sensitive information transmitted over the Web as well as intranets via HTTP.

As part of a Public Key Infrastructure (PKI) for Web security, digital certificates activate SSL security capability built into all Web servers, browsers, and other Web devices. VeriSign's SSL Certificates provide three key benefits:

Business Identity Authentication

VeriSign uses extensive procedures to verify the identity of businesses and authorization of the requestor before issuing a SSL Certificate. Leading Web browsers inherently trust SSL Certificates signed by VeriSign's root Certificate Authority (root CA) certificates, which helps provide assurance to Web site visitors that their information is being transmitted to a legitimate business, not an impostor.

VeriSign sets the standard for business identity authentication with the industry's most thorough three-part vetting process:

- The business named in the certificate has the right to use the domain name listed in the certificate
- The business named in the certificate is a legitimate business
- The individual who requested the SSL Certificate on behalf of the business was authorized to do so

Encryption

All data transmitted between Web browsers (clients) and servers over SSL is encrypted using sophisticated cryptographic techniques making it virtually impossible for the data to be intercepted and viewed. Each secure connection between client and server gets a unique "SSL session key"; the key length indicates the "strength" of the encryption.

The encryption strength used for a particular SSL session depends on the browser version and the type of SSL Certificate installed on the Web server. The strongest SSL encryption available in today's browsers is 128-bit (the SSL session key is 128-bits in length). However, browser versions exported outside the U.S. before January 2000 typically support only 40-bit SSL sessions, unless the SSL Certificate on the Web server supports Server Gated Cryptography (SGC)—also called "step-up" technology.

Message Integrity

Contents of all communications between client and server are protected from alteration on route. All parties to the transaction can know that the information they have received is exactly what originated from the other side of the SSL connection.

SSL CASE STUDY: Finance

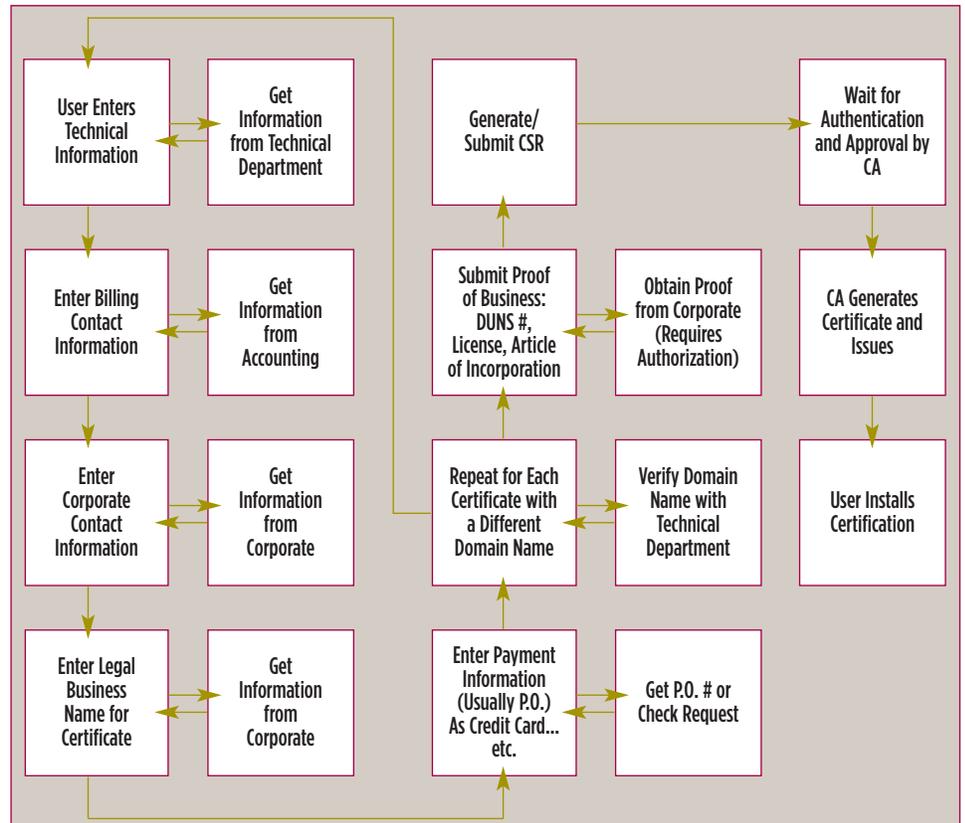
A large financial institution used more than 700 certificates—500 units purchased with VeriSign MPKI for SSL and 200+ individually purchased units. After consolidating all certificates under MPKI for SSL, the company cut annual recurring renewal and management costs for retail certificates by more than \$70,000—and now controls subscriber-applicants with tight authorization and authentication.

One-by-One Certificate Management Is a Tedious Process

Your organization's choice to deploy numerous SSL Certificates includes a practical management decision: Shall you do it manually or use a scalable Web-based service like VeriSign MPKI for SSL or VeriSign MPKI for Intranet SSL that automates many certificate management processes? Managing SSL Certificates on an ad hoc basis is appropriate for small organizations where one person is responsible for deploying and managing only a couple SSL Certificates. However, deploying numerous SSL Certificates across multiple departments and in multiple geographies is a much more complex challenge.

On the surface, the ad hoc deployment strategy seems simple enough. Some decentralized organizations consider the volume discounts offered by other SSL Certificate vendors to be sufficient—but they fail to see the “hidden costs” of managing SSL Certificates across the organization. The price of the SSL Certificate itself is not the only cost to consider, especially in organizations with multiple server types, multiple locations, and multiple server administrators.

Consider the flow-chart diagram below, which shows each step of a typical SSL Certificate enrollment process.



SSL Certificate Management Service for Internal Hosts

Managed PKI for Intranet SSL secures communications across your intranet or private network.

- Same features and benefits as Managed PKI for SSL
- Simple, efficient, timesaving, secure, and provides value
- Useful for securing internal business operations, company portals, testing, and development environments

The SSL Certificate enrollment process shown above includes extensive collection and verification of information required by the Certificate Authority (CA), which is an organization that authorizes and issues SSL Certificates. Some of the required enrollment information is difficult to find—especially when an IT manager starts knocking on executives' doors looking for proof of right documentation, articles of incorporation, and other business documents. Also, separate purchase authorization is typically required for each SSL Certificate, so delay can thwart urgent deadlines as the CA conducts its essential authentication and verification procedures on each SSL Certificate application. As a result, the total cost of an SSL Certificate purchased ad hoc is much higher than the initial purchase price.

Effort and costs spent on deployment are just part of managing an SSL Certificate over the life of its validity period, also called the “certificate lifecycle.” There are six activities that can be performed on an SSL Certificate during its lifecycle:

+ SSL Certificate Lifecycle Elements

- **Enroll**—Complete application to purchase an SSL Certificate, including submission of organization eligibility and administrative data.
- **Approve**—Interface with an independent CA, which verifies organization's eligibility and approves granting of the certificate; only available with VeriSign MPKI for SSL and VeriSign MPKI for Intranet SSL.
- **Issue**—CA issues the certificate; purchaser installs the certificate on a designated server or device to enable SSL services.
- **Reject**—Immediate administrative rejection of an unauthorized certificate enrollment request; only available with VeriSign MPKI for SSL.
- **Revoke**—Immediate administrative revocation of a certificate; only available with VeriSign MPKI for SSL and VeriSign MPKI for Intranet SSL.
- **Renew**—Ensure that each certificate is properly renewed with the CA in a timely manner.

Using an ad hoc manual process is adequate to manage lifecycles of a handful of certificates. Managing a multitude of certificates is tedious, time-consuming, expensive, and often an overwhelming process—especially in large, distributed organizations. Automating the process with **VeriSign MPKI for SSL** and **VeriSign MPKI for Intranet SSL** is the logical step to efficient SSL security management.

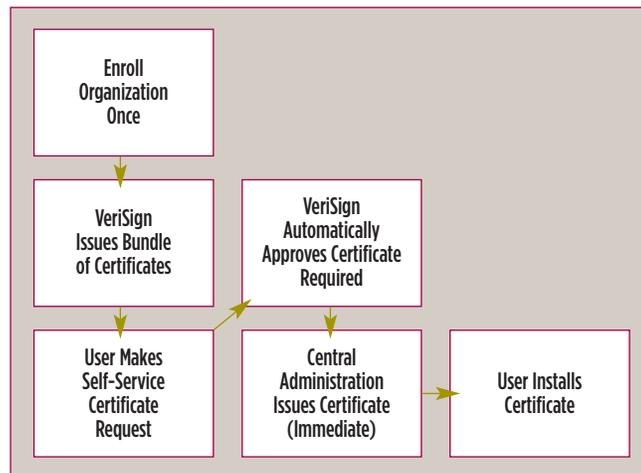
SSL CASE STUDY: Insurance

A large insurance company used retail SSL Certificates to implement security for Web-based transaction systems. Project development was on weekends and after hours, so the company needed capability to instantly issue certificates to test and implement security on new production servers. Retail certificate issuance took up to four days so the company switched to VeriSign MPKI for SSL. Now, the insurance company can meet its efficiency goals and has cut the costs of certificate acquisition and management.

Simplifying SSL Management with VeriSign’s Powerful Web-Based Solution

Companies implementing five or more SSL Certificates can significantly ease certificate management processes with the automated benefits of **VeriSign MPKI for SSL** and **VeriSign MPKI for Intranet SSL**. With Web-based SSL Certificate management, your organization gets full visibility into the certificate inventory, centralized operational and financial control, and the assurance of full SSL protection for server transactions.

The flowchart below shows how **VeriSign MPKI for SSL** and **VeriSign MPKI for Intranet SSL** simplify the complex certificate enrollment process for immediate, on-demand issuance of SSL Certificates.

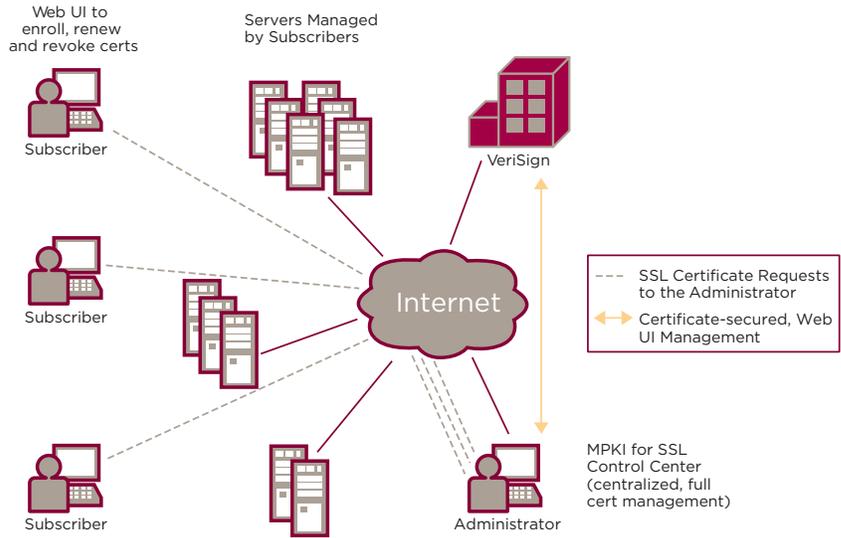


Web Interface Provides Centralized Local Control

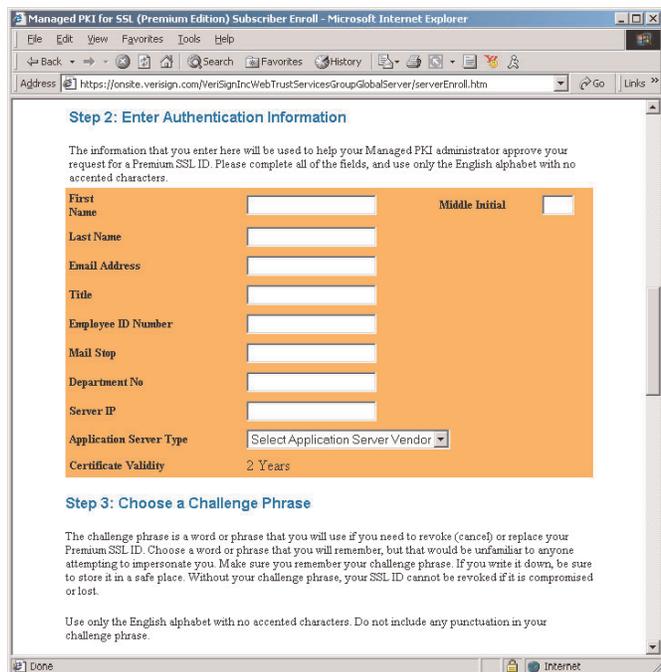
The key to VeriSign MPKI for SSL and VeriSign MPKI for Intranet SSL process automation is a hosted Web-based infrastructure. Your organization’s local administrator centrally manages all aspects of the SSL Certificate lifecycle with a Web-based “Management Tools” interface called Control Center. Authenticated administrators use Control Center to manage and control certificate enrollment, approval, issuance, rejection, revocation, and renewal. Control Center provides:

- Full PKI management
- Centralized administration and control
- Access to specialized reports to track certificate details
- Audit log of all certificates issued and all administrator actions
- Email alerts
- Download CRL
- Interactive online help

Management tools also include a “Subscriber Tools” element, permitting role-based task delegation for distributed administration. Certificate subscribers interact with the system via customizable screens. All data are automatically processed in the VeriSign hosted, carrier-class data center, which acts as a behind-the-scenes relay hub between the administrator and users—the diagram below shows workflow between these entities:



The customizable Web interface screens enable users to request certificates and do other tasks without requiring human intervention. For example, the illustration below shows a typical VeriSign MPKI for SSL or VeriSign MPKI for Intranet SSL browser screen used for entering certificate request information.



Automated Reports Keep You in Control

VeriSign MPKI for SSL Customers Say:

- 94 percent centrally control certificate management and costs
- 59 percent use one administrator; 27 percent use two
- 53 percent estimate internal costs are less than 5 percent more as a percentage of certificate price; 41 percent estimate 5-25 percent more
- 64 percent use some certificates for internal, behind-the-firewall applications (From 2003 Survey; 76 percent have 1000+ employees.)

Control Center provides a complete history of all certificate activity. Comprehensive Web-based reports automatically generated by VeriSign MPKI for SSL and VeriSign MPKI for Intranet SSL give you a precise, real-time view of certificate status throughout the enterprise. Reports also act as a third-party security audit trail for certificate activity.

Reports include certificates requested, approved, issued, rejected, and revoked. The illustration below shows a typical report view of valid certificates.

With Control Center, your administrator also can filter reports by date range and view all data, or search for specific granular details. Administrators view search results on demand by downloading a comma-delimited report file generated by VeriSign for import into any popular spreadsheet application.

The screenshot shows the VeriSign Managed PKI Control Center interface. The main content area is titled "View Valid Certificates" and contains a table with the following data:

Start Date	Subject Name	Status	Action
23-APR-03	BLOKINGI (server) (Digital ID Class 3 - VeriSign Server OnSite) lchen@verisign.com	(issued)	View Details View Audit Trail Set Challenge Phrase
22-APR-03	TRUAN20-SUN.SSL.WIN.COM (server) (Digital ID Class 3 - VeriSign Server OnSite) truan@verisign.com	(issued)	View Details View Audit Trail Set Challenge Phrase
18-APR-03	TRUAN-PC.SSL.WIN.COM (server) (Digital ID Class 3 - VeriSign Server OnSite) truan@verisign.com	(issued)	View Details View Audit Trail Set Challenge Phrase

Below the table are buttons for "BACK" and "HELP". At the bottom, there is a copyright notice: "Copyright © 1998-2002, VeriSign, Inc. All rights reserved."



VeriSign Managed PKI for SSL Certificate Solutions

VeriSign offers Managed PKI for SSL and Managed PKI for Intranet SSL solutions to meet all of your SSL security needs—inside and outside the firewall:

Premium Edition—128-bit SSL security for protecting the most sensitive data on your network. VeriSign's Managed PKI for SSL Premium Edition Certificates use Server Gated Cryptography (SGC) technology to enable 128-bit SSL encryption on almost all computers in use today, including older browsers and all Windows 2000 systems.

- Premium Edition SSL Certificates guarantee a 128-bit SSL session in all current browsers. Other Certificate Authorities promote their SSL Certificates as “128-bit,” but these do not use SGC and therefore will actually experience reduced encryption levels on older, export version browsers and on many Windows 2000 computers, regardless of the version of Internet Explorer installed on these systems.
- VeriSign is the only Certificate Authority authorized by the U.S. Department of Commerce to distribute 128-bit SGC SSL Certificates outside the U.S.

Standard Edition—for protecting sensitive data on intranets and public Web sites. Standard Edition SSL Certificates from VeriSign enable:

- 128-bit SSL encryption when communicating with newer Microsoft and Netscape browser versions
- 40-bit SSL encryption when communicating with older, export-version, Microsoft and Netscape browsers and many Windows 2000 systems

Extensive Server Platform Support. VeriSign's Managed PKI for SSL Standard and Premium Edition certificates are compatible with a comprehensive list of server platforms. (See details at <http://www.verisign.com/products-services/security-services/ssl/ssl-certificates/index.html>.)

Strongest Authentication Process. VeriSign protects businesses with the strongest, three-step certificate authorization process. We verify and insure the veracity of the organization and Internet domain—double-checking facts with research and personal calls by VeriSign staffers.

Strongest Warranty Protection. Each Managed PKI for SSL Certificate is backed by VeriSign's NetSure® Warranty Protection Program, which protects VeriSign SSL Certificate customers against economic loss resulting from the theft, corruption, impersonation, or loss of use of a certificate. Warranty limits are \$250,000 of protection for MPKI for SSL Premium certificates and \$100,000 for Standard certificates.

VeriSign MPKI for SSL Hosted Solution Provides Built-In Infrastructure:

- PKI expertise
- Trained IT staff
- Trained security staff
- Redundant servers
- Redundant networking
- Disaster recovery/backup
- Hardened data center
- Hardened network operations control center
- Redundant power, HVAC
- Physical and digital access controls
- Digital authentication
- Root key management
- Third-party security audits
- Liability insurance

Enterprise-Class Service with SSL Expertise at Your Fingertips

A major benefit of VeriSign's hosted MPKI for SSL and MPKI for Intranet SSL solutions is continuous access to the company's rich store of security expertise. VeriSign has issued more than 430,000 SSL Certificates, which makes it the leading provider worldwide. As part of the solution, customers get a broad range of enterprise support services, including:

- World-class 24/7 data center
- 24/7 support organization
- Complete Web-based resources
 - Technical Web seminars
 - "Knowledge Base"
 - Troubleshooting tips
 - Tutorials
 - FAQs
- Tiered support plan options: Standard, Gold, Platinum
- Response times: Service Level Agreements for each support plan and severity level
- Highest CA physical security
 - Tier 7 security facility
 - No single point of failure and Hot-site disaster
 - Recovery facility
 - Maintain performance levels and scale capacity

Along with the support options available, your organization's administrator gets a designated point of contact at VeriSign. No other CA is as experienced or provides services as comprehensive as VeriSign.

Test the Benefits of MPKI for SSL

The VeriSign MPKI for SSL and MPKI for Intranet SSL solutions will help simplify management of your organization's SSL Certificates, requiring no up front hardware or software to install or operate. With a few clicks of a mouse, you can efficiently enroll, approve, issue, reject, revoke, and renew SSL Certificates across the enterprise from one central administration point. VeriSign's solution saves you time because all actions occur on demand. All management activity is secured by authentication and encryption. The solution includes discounts for bulk purchases of SSL Certificates.

+ Trial Offer

VeriSign invites your organization to test the benefits of using a hosted, automated Web-based service for managing SSL Certificates. To request a free demonstration of VeriSign MPKI for SSL or to learn more about VeriSign MPKI for Intranet SSL please call one of our SSL Security Specialists at (650) 426-5115, option 2.

Visit us at www.Verisign.com for more information.