

# **IDPMS 3.16**

# PA-DSS implementation guide Document version D01\_IDPMS.4.1

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# Note

This PA-DSS Implementation Guide must be reviewed on a yearly basis, whenever the underlying application changes or whenever the PA-DSS requirements change. Updates should be tracked and reasonable accommodations should be made to distribute or make the updated guide available to users. iTesso will distribute the IG to new customers together with the proposal.

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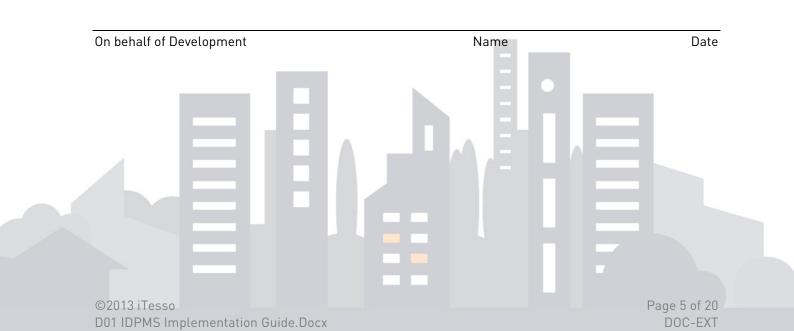
# 1. Change log and approval

1.1. Change log

1.1. Oldinge tog					
Version	Date	Ву	Details		
1.0	18 SEP 2007	EW			
1.01	04 OCT 2007	EW	Recompiled with additions in most areas		
1.2	09 OCT 2007	BB	Reviewed and updated to resolve Coalfire findings		
1.21	12 NOV 2007	EW	Changed to create a more customer centric document.  Added PCI functionality manual.		
1.3	14 NOV 2007	BB	Reviewed		
2.0	24 FEB 2011	JK	Update the document to the latest requirements		
3.0	12 NOV 2013	JK	Updated to iTesso standard and added latest requirements		
3.1	2 DEC 2013	JK	Added explanatory texts to several paragraphs		
4.0	11 MAR 2014	JK	Added more detail to 7.1		
4.1	29 MAR 2014	JK	Added missing details after review by TUV SUD		

# 1.2. Approval and signatures

On behalf of Management	Name	Date
On behalf of Sales	Name	Date





#### 2. About this document

This document describes the steps that must be followed in order for your IDPMS installations to comply with Payment Application – Data Security Standards (PA-DSS). The information in this document is based on PCI Security Standards Council Payment Application Data Security Standards program (version 1.2 dated October, 2008).

iTesso instructs and advises its customers to deploy iTesso applications in a manner that adheres to the PCI Data Security Standard (v1.2). Subsequent to this, best practices and hardening methods, such as those referenced by the Center for Internet Security (CIS) and their various "Benchmarks", should be followed in order to enhance system logging, reduce the chance of intrusion and increase the ability to detect intrusion, as well as other general recommendations to secure networking environments. Such methods include, but are not limited to, enabling operating system auditing subsystems, system logging of individual servers to a centralized logging server, the disabling of infrequently-used or frequently vulnerable networking protocols and the implementation of certificate-based protocols for access to servers by users and vendors.

If you do not follow the steps outlined here, your IDPMS installations will not be PA-DSS compliant.

#### 3. Executive summary

IDPMS V3.16.xxx has been PA-DSS (Payment Application Data Security Standard) certified, with PA-DSS Version 2.0. For the PA-DSS assessment, we worked with the following PCI SSC approved Payment Application Qualified Security Assessor (PAQSA):

#### TÜV SÜD Management Service GmbH Büchensstr. 20, 70174 Stuttgart

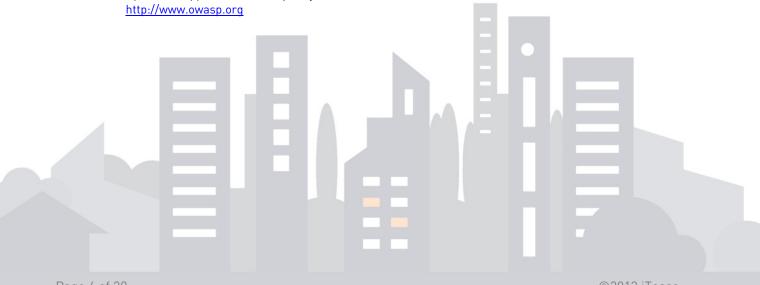
This document also explains the Payment Card Industry (PCI) initiative and the Payment Application Data Security Standard (PA-DSS) guidelines. The document then provides specific installation, configuration, and ongoing management best practices for using Payment Application as a PA-DSS validated Application operating in a PCI Compliant environment..

#### 3.1. PCI Security Standards Council Reference Documents

The following documents provide additional detail surrounding the PCI SSC and related security programs (PA-DSS, PCI DSS, etc):

- Payment Applications Data Security Standard (PA-DSS)
   <a href="https://www.pcisecuritystandards.org/security-standards/pa-dss.shtml">https://www.pcisecuritystandards.org/security-standards/pa-dss.shtml</a>
- Payment Card Industry Data Security Standard (PCI DSS)
   <a href="https://www.pcisecuritystandards.org/security-standards/pci-dss.shtml">https://www.pcisecuritystandards.org/security-standards/pci-dss.shtml</a>

Open Web Application Security Project (OWASP)
 http://www.owasp.org





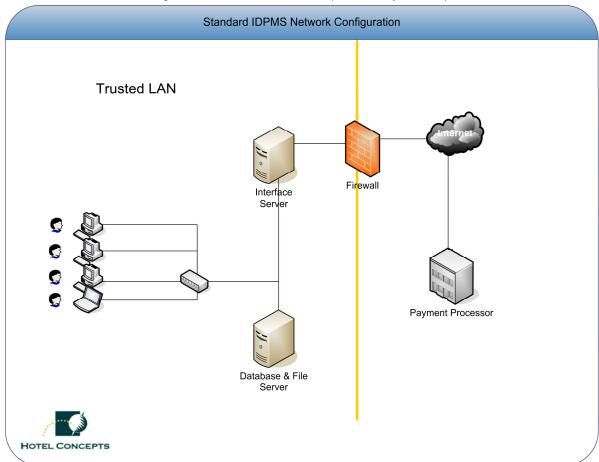
3.2. Application summary

3.2. Application summary						
Payment Application Name:	IDPMS					
Payment Application Version:	3.16.xxx					
Application Description:	IDPMS, Integrated Distribution Property Management System, will help increase the yield and lower the cost for a hotel. It is a powerful set of software tools for efficient and effective management of hospitality operations, with special functionality for controlling distribution channels. The IDPMS Product Suite has a modular design so it caters to all types of properties					
Application Target Clientele:	Hospitality					
Components of Application Suite (i.e. POS, Back Office, etc.)	IDPMS consists of a single application that does all the tasks					
Required Third Party Payment Application Software:	IDPMS uses ProtoBase for Credit Card transactions					
Database Software Supported:	IDPMS uses Microsoft SQL Server					
Other Required Third Party Software:	IDPMS uses Crystal Reports for reporting purposes					
Operating System(s) Supported:	IDPMS runs on Microsoft Windows, including, but not limited to Windows 7 and Server 2008R2.					
Application Functionality Supported	Reservations, front office, back office, reporting, etc.					
Payment Processing Connections:	Credit cards are processed through the ProtoBase gateway, using a TCP/IP connection.					
Description of Versioning Methodology:	IDPMS versioning has three levels: Major, Minor and Build: 3.15.xxx  Major: changes include significant changes to the application and would have an impact on PA-DSS requirements.  Minor: changes include small changes such as minor enhancements and may or may not have an impact on PA-DSS requirements.  Build: changes include bug fixes and would have no negative impact on PA-DSS requirements.					



#### 4. Typical network implementation

The PCI DSS requires that firewall services be used (with NAT or PAT) to segment network segments into logical security domains based on the environmental needs for internet access. Traditionally, this corresponds to the creation of at least a DMZ and a trusted network segment where only authorized, business-justified traffic from the DMZ is allowed to connect to the trusted segment. No direct incoming internet traffic to the trusted application environment can be allowed. Additionally, outbound internet access from the trusted segment must be limited to required and justified ports and services.



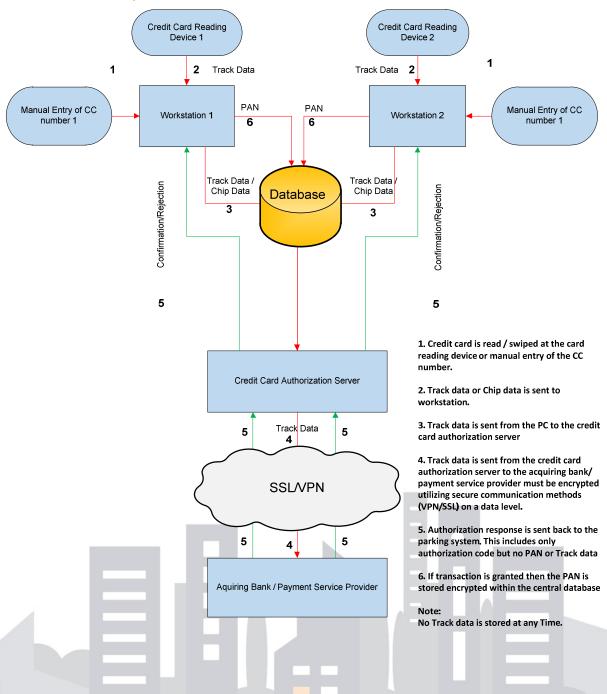




#### 5. Dataflow diagram

# **IDPMS** Data Flow Diagram

- Colored lines represent the type of data in transit as follows:
   Red represents encrypted or unencrypted Sensitive Authentication data or Cardholder data in Transit
- Green represents data that is not considered Cardholder or Sensitive Authentication Data.





#### 6. Difference between PCI compliance and PA-DSS Validation

As a software vendor, our responsibility is to be "PA-DSS Validated".

We have performed an assessment and certification compliance review with our independent assessment firm, to ensure that our platform does conform to industry best practices when handling, managing and storing payment related information.

PA-DSS is the standard against which Payment Application has been tested, assessed, and validated.

PCI Compliance is then later obtained by the merchant, and is an assessment of your actual server (or hosting) environment.

Obtaining "PCI Compliance" is the responsibility of the merchant and your hosting provider, working together, using PCI compliant server architecture with proper hardware & software configurations and access control procedures.

The PA-DSS Validation is intended to ensure that the Payment Application will help you achieve and maintain PCI Compliance with respect to how Payment Application handles user accounts, passwords, encryption, and other payment data related information.

The Payment Card Industry (PCI) has developed security standards for handling cardholder information in a published standard called the PCI Data Security Standard (DSS). The security requirements defined in the DSS apply to all members, merchants, and service providers that store, process or transmit cardholder data.

The PCI DSS requirements apply to all system components within the payment application environment which is defined as any network device, host, or application included in, or connected to, a network segment where cardholder data is stored, processed or transmitted.

#### 6.1. The twelve requirements for PCI DSS

These are the twelve requirements of the PCI-DSS

#### Build and Maintain a Secure Network

- 1. Install and maintain a firewall configuration to protect data
- 2. Do not use vendor-supplied defaults for system passwords and other security parameters

#### Protect Cardholder Data

- 3. Protect Stored Data
- 4. Encrypt transmission of cardholder data and sensitive information across public networks

## Maintain a Vulnerability Management Program

- 5. Use and regularly update anti-virus software
- 6. Develop and maintain secure systems and applications

#### Implement Strong Access Control Measures

- 7. Restrict access to data by business need-to-know
- 8. Assign a unique ID to each person with computer access
- 9. Restrict physical access to cardholder data

#### Regularly Monitor and Test Networks

- 10. Track and monitor all access to network resources and cardholder data
- 11. Regularly test security systems and processes

#### Maintain an Information Security Policy

12. Maintain a policy that addresses information security





#### 7. Considerations for the Implementation of Payment Application in a PCI-Compliant Environment

The following areas must be considered for proper implementation in a PCI-Compliant environment.

- Sensitive Authentication Data requires special handling
- Remove Historical Cardholder Data
- Set up Good Access Controls
- Properly Train and Monitor Admin Personnel
- Key Management Roles & Responsibilities
- PCI-Compliant Remote Access
- Use SSH, VPN, or SSL/TLS for encryption of administrative access
- Log settings must be compliant
- PCI-Compliant Wireless settings
- Data Transport Encryption
- PCI-Compliant Use of Email
- Network Segmentation
- Never store cardholder data on internet-accessible systems
- Use SSL for Secure Data Transmission
- Delivery of Updates in a PCI Compliant Fashion

#### 7.1. Remove Historical Sensitive Authentication Data (PA-DSS 1.1.4.a)

Versions before 3.12.4xx stored sensitive authentication data.

 Historical data must be securely deleted (magnetic stripe data, card validation codes, PINs, or PIN blocks stored by previous versions of the software) – removal is absolutely necessary for PCI compliance

# Notice that it is absolutely necessary for PCI DSS to securely delete any historical sensitive authentication data from the system.

The following steps describe how sensitive data is permanently erased from the system:

- Remove all copies and backups of IDPMS/IDCRS and IDPMS\_STORED\_DOCS on the SQL data server and/or backup server of the customer. Scan the network for .bak and .trn files and delete them all using Eraser software 6.0.10.2620 (for the Eraser manual, see http://www.heidi.ie/eraser/quickstart.php)
- 2. Remove all logs (\*.log) from credit-card interfaces such as 3c, Shift4 and others. For removal use Eraser software 5.84

(for the Eraser manual, see http://www.heidi.ie/eraser/quickstart.php)

Version 3.12.4xx is a PA-DSS v1.2 validated application and for this version no extra sweep actions are needed.

# 7.2. Sensitive Authentication Data requires special handling (PA-DSS 1.1.5.c)

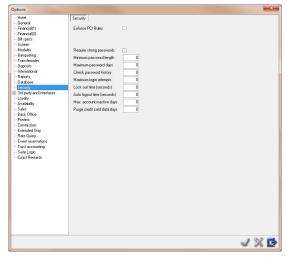
IDPMS does not store Sensitive Authentication, not even for trouble shooting purposes. IDPMS does also not ask for any sensitive authentication data at all.

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#### 7.3. Cardholder Data (PA-DSS 2.1.)

The cardholder data is stored in the IDPMS SQL database. Fields in the Folio Table as well as in the Guest Profiles Table contain the cards in encrypted format. The number of days for purging is set in the IDPMS settings under "Number of days for purge." See screenshot.



# 7.4. Removal of Cryptographic material (PA-DSS 2.7.a)

All deletions of cryptographic materials are wiped with the eraser tool. No historical data is encrypted again with a new key. Historical data is saved during a limited time frame, see previous paragraph.

# 7.5. Set up Good Access Controls (3.1.c and 3.2)

The PCI DSS requires that access to all systems in the payment processing environment be protected through use of unique users and complex passwords. Unique user accounts indicate that every account used is associated with an individual user and/or process with no use of generic group accounts used by more than one user or process. The following should be followed:

- Do not use administrative accounts for application logins (e.g., don't use the "sa" account for application access to the database).
- Assign strong passwords to these default accounts (even if they won't be used), and then disable or do
  not use the accounts.
- Assign strong application and system passwords whenever possible.
- Create PCI DSS-compliant complex passwords to access the payment application, per PCI Data Security Standard 8.5.8 through 8.5.15
- Changing the "out of the box" settings for unique user IDs and secure authentication will result in noncompliance with the PCI DSS

The PCI standard requires the following password complexity for compliance (often referred to as using "strong passwords"):

- Do not use group, shared, or generic user accounts (8.5.8)
- Passwords must be changed at least every 90 days (8.5.9)
- Passwords must be at least 7 characters (8.5.10)
- Passwords must include both numeric and alphabetic characters (8.5.11)
- New passwords cannot be the same as the last 4 passwords (8.5.12)

PCI user account requirements beyond uniqueness and password complexity are listed below:

- If an incorrect password is provided 6 times the account should be locked out (8.5.13)
- Account lock out duration should be at least 30 min. (or until an administrator resets it) (8.5.14)



 Sessions idle for more than 15 minutes should require re-entry of username and password to reactivate the session (8.5.15)

These same account and password criteria must also be applied to any applications or databases included in payment processing to be PCI compliant. IDPMS, as tested to in our PA-DSS audit, meets, or exceeds these requirements.

IDPMS must require unique usernames and complex passwords for all administrative access and for all access to cardholder data.

[Note: These password controls are not intended to apply to employees who only have access to one card number at a time to facilitate a single transaction. These controls are applicable for access by employees with administrative capabilities, for access to servers with cardholder data, and for access controlled by the application.]

• Control access, via unique username and PCI DSS-compliant complex passwords, to any PCs or servers with payment applications and to databases storing cardholder data.

# 7.6. Properly Train and Monitor Admin Personnel

It is your responsibility to institute proper personnel management techniques for allowing admin user access to cardholder data, site data, etc. You can control whether each individual admin user can see credit card PAN (or only last 4).

In most systems, a security breach is the result of unethical personnel. So pay special attention to whom you trust into your admin site and who you allow to view full decrypted and unmasked payment information.

#### 7.7. Key Management Roles & Responsibilities (PA-DSS 2.5c)

IDPMS uses the Advanced Encryption Standard (AES), sometimes referred to as Rijndael Encryption. IDPMS uses the 256 bits key variant, which is the maximum under the current AES standard.

IDPMS uses a unique dynamic key approach where the encryption key is different for each transaction. On top of that the IDPMS customer is able to renew the key at any desired moment. The key renewal process can only be started from within IDPMS by a user that has been assigned the right to do so. During the training the iTesso consultant clearly explains the customer this part and adds that this right should be granted to a very limited number of users.

There is no access to any key material by the customer.

A new key is generated when the user choose to do so and the user is given the opportunity to store the binary file, where the key is generated from, on a memory stick and store that in their vault. When a new key is generated, all encrypted data in IDPMS is decrypted against the old key and then encrypted against the new generated key. This process is done per credit card entry, first a decryption with the old key and then an encryption with the new key. Once all records are encrypted with the new key, the old key is destroyed.

#### 7.8. Logs (PA-DSS 4.x)

The PCI logs are stored in a SQL server table, see the below for the events that are logged. This logging is also send to Microsoft Event Logging and the format of the Event Logging is *not* configurable in IDPMS.



The Microsoft Event Log can be configured to send event log information to a centralized server, the Windows Event Collector. The Windows Event Collector functions support subscribing to events by using the WS-Management protocol.

Event collection allows administrators to get events from remote computers and store them in a local event log on the collector computer. The destination log path for the events is a property of the subscription. All data in the forwarded event is saved in the collector computer event log (none of the information is lost). Additional information related to the event forwarding is also added to the event.

How to fully configure the Microsoft Event Collector is beyond the scope of this document, please see the Microsoft website under "Windows Event Collector" (<a href="http://msdn.microsoft.com/en-us/library/windows/desktop/bb427443(v=vs.85).aspx">http://msdn.microsoft.com/en-us/library/windows/desktop/bb427443(v=vs.85).aspx</a>).

Brilliant PMPRO has logging that cannot be turned off as per PCI DSS 10.2 and 10.3 as follows:

Implement automated assessment trails for all system components to reconstruct the following events:

10.2.1 All individual user accesses to cardholder data

10.2.2 All actions taken by any individual with root or administrative privileges

10.2.3 Access to all assessment trails

10.2.4 Invalid logical access attempts

10.2 5 Use of identification and authentication mechanisms

10.2.6 Initialization of the assessment logs

10.2.7 Creation and deletion of system-level objects.

Record at least the following assessment trail entries for all system components for each event from 10.2.x:

10.3.1 User identification

10.3.2 Type of event

10.3.3 Date and time

10.3.4 Success or failure indication

10.3.5 Origination of event

10.3.6 Identity or name of affected data, system component, or resource.

Disabling or subverting the logging function of IDPMS in any way will result in non-compliance with PCI DSS.



## 7.9. PCI-Compliant Wireless settings (PA-DSS 6.1.b and 6.2.b)

IDPMS <u>does not</u> support wireless technologies. However, should the merchant implement wireless access within the cardholder data environment, the following guidelines for secure wireless settings must be followed per PCI Data Security Standard 1.2.3, 2.1.1 and 4.1.1.

1.2.3: Perimeter firewalls must be installed between any wireless networks and systems that store cardholder data, and these firewalls must deny or control (if such traffic is necessary for business purposes) any traffic from the wireless environment into the cardholder data environment.





#### 2.1.1:

- All wireless networks implement strong encryption (e.g. AES)
- Encryption keys were changed from default at installation, and are changed anytime anyone with knowledge of the keys leaves the company or changes positions
- Default SNMP community strings on wireless devices were changed
- Default passwords/passphrases on access points were changed
- Firmware on wireless devices is updated to support strong encryption for authentication and transmission over wireless networks (for example, WPA/WPA2)
- Other security-related wireless vendor defaults, if applicable

#### 4.1.1:

- Industry best practices are used to implement strong encryption for the following over the wireless network in the cardholder data environment (4.1.1):
  - Transmission of cardholder data
  - o Transmission of authentication data
- Payment applications using wireless technology must facilitate the following regarding use of WEP:
- For new wireless implementations, it is prohibited to implement WEP as of March 31, 2009.
- For current wireless implementations, it is prohibited to use WEP after June 30, 2010.

# 7.10. Use of necessary and secure services and protocols (PA-DSS 5.4)

PA-DSS states that the payment application must only use necessary and secure services, protocols, components, and dependant software and hardware, including those provided by third parties. iTesso does not transport any information over the internet, so no recommendation for protocols in this area are necessary.

In case a separate Database Sever is in use, iTesso recommends using ISEC between the Application and the Database servers to secure communications.

Communications to a so-called Gateway of the Credit Card Merchant (like SIX Cards) is over the LAN using a direct TCP/IP socket.

## 7.11. Never store cardholder data on internet-accessible systems (PA-DSS 9.1.b)

Never store cardholder data on Internet-accessible systems (e.g., web server and database server must not be on same server.)

#### 7.12. PCI-Compliant Delivery of Updates (PA-DSS 10.1)

The development process for updates and patches is described in the "Product Lifecycle Manual".

As a development company, we keep abreast of the relevant security concerns and vulnerabilities in our area of development and expertise.

Once we identify a relevant vulnerability, we work to develop & test a patch that helps protect IDPMS against the specific, new vulnerability. We attempt to publish a patch within days of the identification of the vulnerability. Typically, merchants are expected to respond quickly to and install available patches within 30 days.

We deliver software and/or updates via remote access to customer networks, using RDP.

In accordance with the PCI "chain of trust" the installer of the update must check the SHA of IDPMS with the published SHA on the iTesso Intranet. A mismatch between the published and the calculated SHA is a clear sign to stop the update. The SHA can be checked by using the HashCalc utility.



For receiving updates via remote access, merchants must adhere to the following guidelines:

Secure remote access technology use, per PCI Data Security Standard 12.3.9:

12.3.9 Activation of remote access technologies for vendors only when needed by vendors, with immediate deactivation after use

#### 7.13. PCI-Compliant Remote Access (11.2 and 11.3.b)

The PCI standard requires that if employees, administrators, or vendors are granted remote access to the payment processing environment; access should be authenticated using a two-factor authentication mechanism (username/ password and an additional authentication item such as a token or certificate).

In the case of vendor remote access accounts, in addition to the standard access controls, vendor accounts should only be active while access is required to provide service. Access rights should include only the access rights required for the service rendered, and should be robustly audited.

If users and hosts within the payment application environment may need to use third-party remote access software such as RDP, Terminal Server, etc. to access other hosts within the payment processing environment, special care must be taken.

In order to be compliant, every such session must be encrypted with at least 128-bit encryption (in addition to satisfying the requirement for two-factor authentication required for users connecting from outside the payment processing environment). For RDP/Terminal Services this means using the high encryption setting on the server, and for FastViewer it means using symmetric or public key options for encryption. Additionally, the PCI user account and password requirements will apply to these access methods as well.

When requesting support from a vendor, reseller, or integrator, customers are advised to take the following precautions:

- Change default settings (such as usernames and passwords) on remote access software (e.g. VNC)
- Allow connections only from specific IP and/or MAC addresses
- Use strong authentication and complex passwords for logins according to PCI DSS 8.1, 8.3, and 8.5.8 8.5.15
- Enable encrypted data transmission according to PCI DSS 4.1
- Enable account lockouts after a certain number of failed login attempts according to PCI DSS 8.5.13
- Require that remote access take place over a VPN via a firewall as opposed to allowing connections directly from the internet
- Enable logging for auditing purposes
- Restrict access to customer passwords to authorized reseller/integrator personnel.
- Establish customer passwords according to PCI DSS Requirements 8.1, 8.2, 8.4, and 8.5.

#### 7.14. Data Transport Encryption (PA-DSS 12.1.b)

The PCI DSS requires the use of strong cryptography and encryption techniques with at least a 128 bit encryption strength (either at the transport layer with SSL or IPSEC; or at the data layer with algorithms such as RSA or Triple-DES) to safeguard cardholder data during transmission over public networks (this includes the Internet and Internet accessible DMZ network segments).



PCI DSS requirement 4.1: Use strong cryptography and security protocols such as secure sockets layer (SSL) / transport layer security (TLS) and Internet protocol security (IPSEC) to safeguard sensitive cardholder data during transmission over open, public networks.

 Refer to the Dataflow diagram for an understanding of the flow of encrypted data associated with IDPMS.



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IDPMS does not require nor permit the use of any insecure service or protocol. Here are those that IDPMS does use:

- SSL
- HTTPS

#### 7.15. PCI-Compliant Use of End User Messaging Technologies (PA-DSS 12.2.b)

IDPMS does not allow or facilitate the sending of PANs via any end user messaging technology (for example, e-mail, instant messaging, and chat).

#### 7.16. Non-console administration (PA-DSS 13.1)

Although IDPMS does not support non-console administration and we do not recommend using non-console administration, should you ever choose to do this, must use SSH, VPN, or SSL/TLS for encryption of this non-console administrative access.

#### 7.17. Network Segmentation

The PCI DSS requires that firewall services be used (with NAT or PAT) to segment network segments into logical security domains based on the environmental needs for internet access. Traditionally, this corresponds to the creation of at least a DMZ and a trusted network segment where only authorized, business-justified traffic from the DMZ is allowed to connect to the trusted segment. No direct incoming internet traffic to the trusted application environment can be allowed. Additionally, outbound internet access from the trusted segment must be limited to required and justified ports and services.

Refer to the standardized Network diagram for an understanding of the flow of encrypted data associated with IDPMS.

#### 7.18. Maintain an Information Security Program

In addition to the preceding security recommendations, a comprehensive approach to assessing and maintaining the security compliance of the payment application environment is necessary to protect the organization and sensitive cardholder data.

The following is a very basic plan every merchant/service provider should adopt in developing and implementing a security policy and program:

- Read the PCI DSS in full and perform a security gap analysis. Identify any gaps between existing
  practices in your organization and those outlined by the PCI requirements.
- Once the gaps are identified, determine the steps to close the gaps and protect cardholder data.
   Changes could mean adding new technologies to shore up firewall and perimeter controls, or increasing the logging and archiving procedures associated with transaction data.
- Create an action plan for on-going compliance and assessment.
- Implement, monitor and maintain the plan. Compliance is not a one-time event. Regardless of merchant or service provider level, all entities should complete annual self-assessments using the PCI Self Assessment Questionnaire.
- Call in outside experts as needed.

# 7.19. Application System Configuration

Below are the operating systems and dependent application patch levels and configurations supported and tested for continued PCI DSS compliance.



- Microsoft Windows XP Professional with Service Pack 2, Windows 7 (with or without SP1) and Windows 2003/2008 Server
  - All latest updates and hot-fixes should be tested and applied
- 256 MB of RAM minimum, 2GB or higher recommended for Payment Application
- TCP/IP network connectivity
- SQL Server 2005/2008R2
   All latest updates and hot-fixes should be tested and applied

#### 7.20. Payment Application Initial Setup & Configuration

The initial setup as it is performed by the IDPMS consultant.

#### 7.20.1. New Installation

The following configuration will be performed by iTessos representatives, oftentimes in close conjunction with the customers' System Administrator and is listed here for your reference.

- Install SQL Native Client and all necessary dll files on every workstation by running the most recent version (greater than 3.1) of IDPMS\_CLIENT\_INSTALL.exe
- In SQL Management Studio, create 2 new users
   User ID: IDPMS, password: to be assigned by the property, password policy on, password expiry off

## 7.20.2. Defining the Payment Gateway

The payment gateway is installed by payment processor, this is not within the scope of an IDPMS install.

#### 7.20.3. Tests

Once the install is completed several tests are performed, also tests together with the payment processor.

