



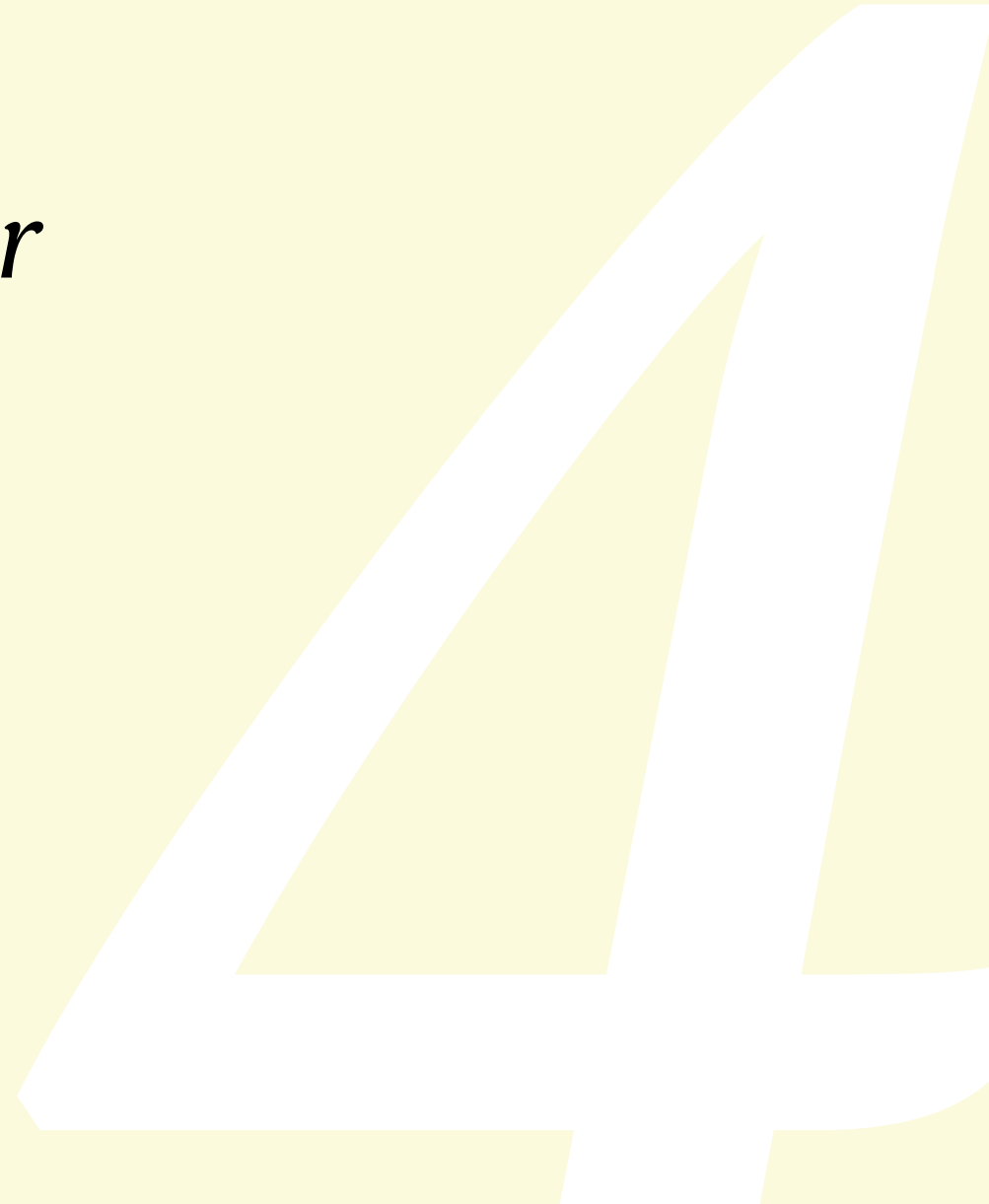
KARIME NASSER • ARUN NEELAKANDAN • SWETAL PATEL • NASIM SAJADI • YE (ERIC) WEI • KWO (DAVID) WONG

**FOUR THINGS**



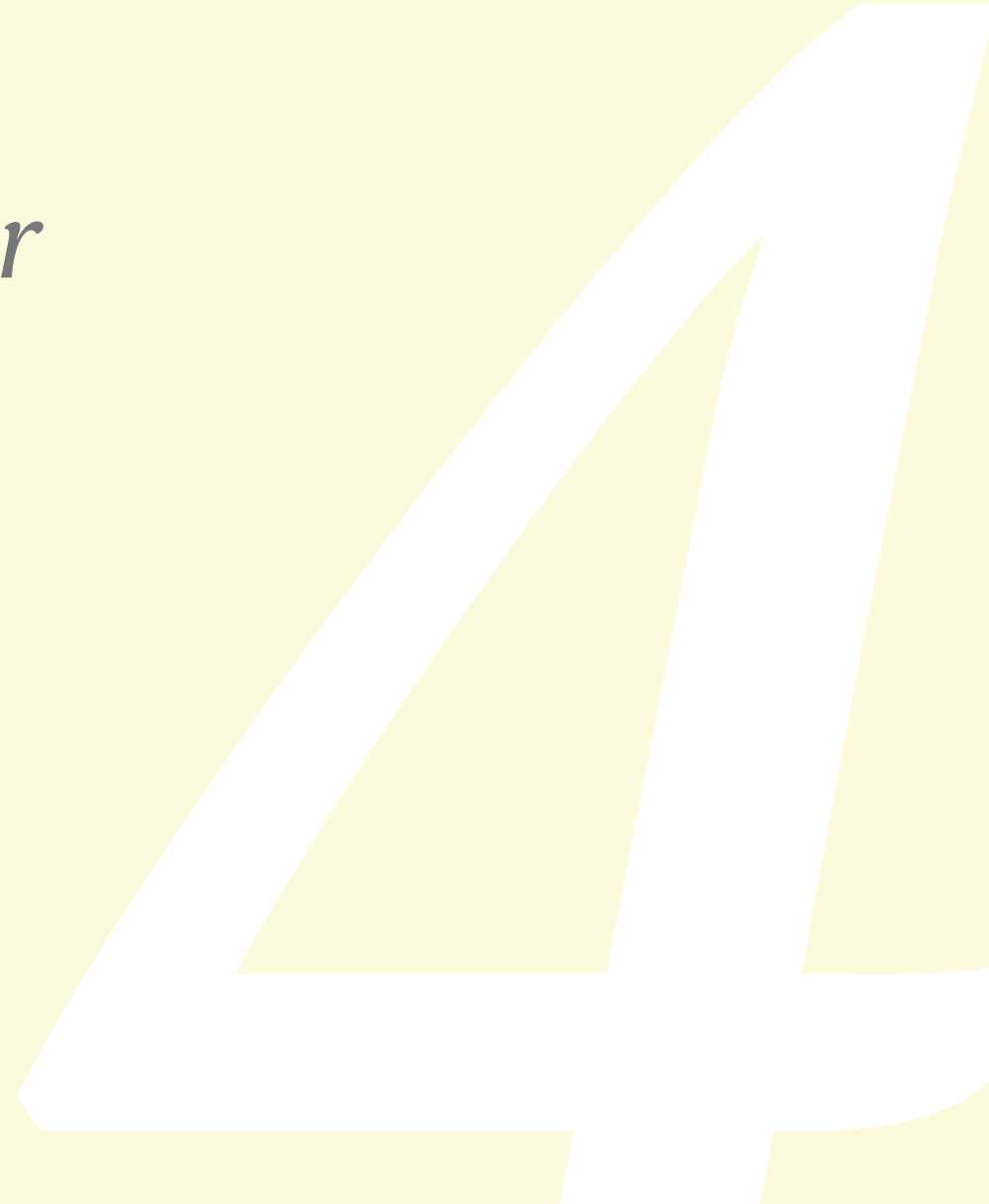
# FOUR THINGS

## *1. The Client Adaptor*



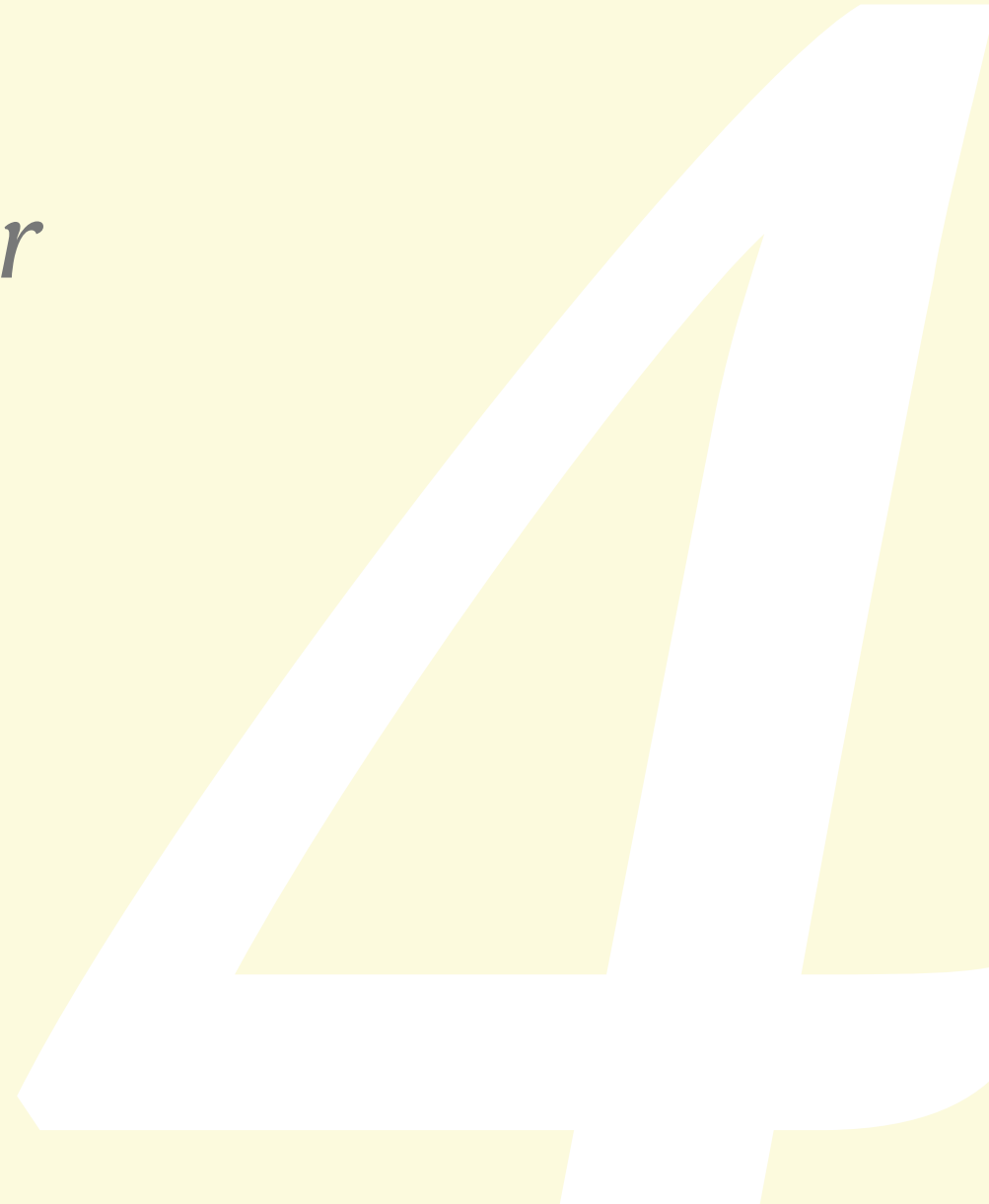
# FOUR THINGS

1. *The Client Adaptor*
2. *The Logic Pack*



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- 1. The Client Adaptor*
- 2. The Logic Pack*
- 3. System Security*




# FOUR THINGS

1. *The Client Adaptor*
2. *The Logic Pack*
3. *System Security*
4. *Reliability & Fault Tolerance*

# THE CLIENT ADAPTOR



# THE CLIENT ADAPTOR

*An API to the PBS Online system,  
providing a secure Internet-based  
link to the PBS Online Claims  
system hub* 

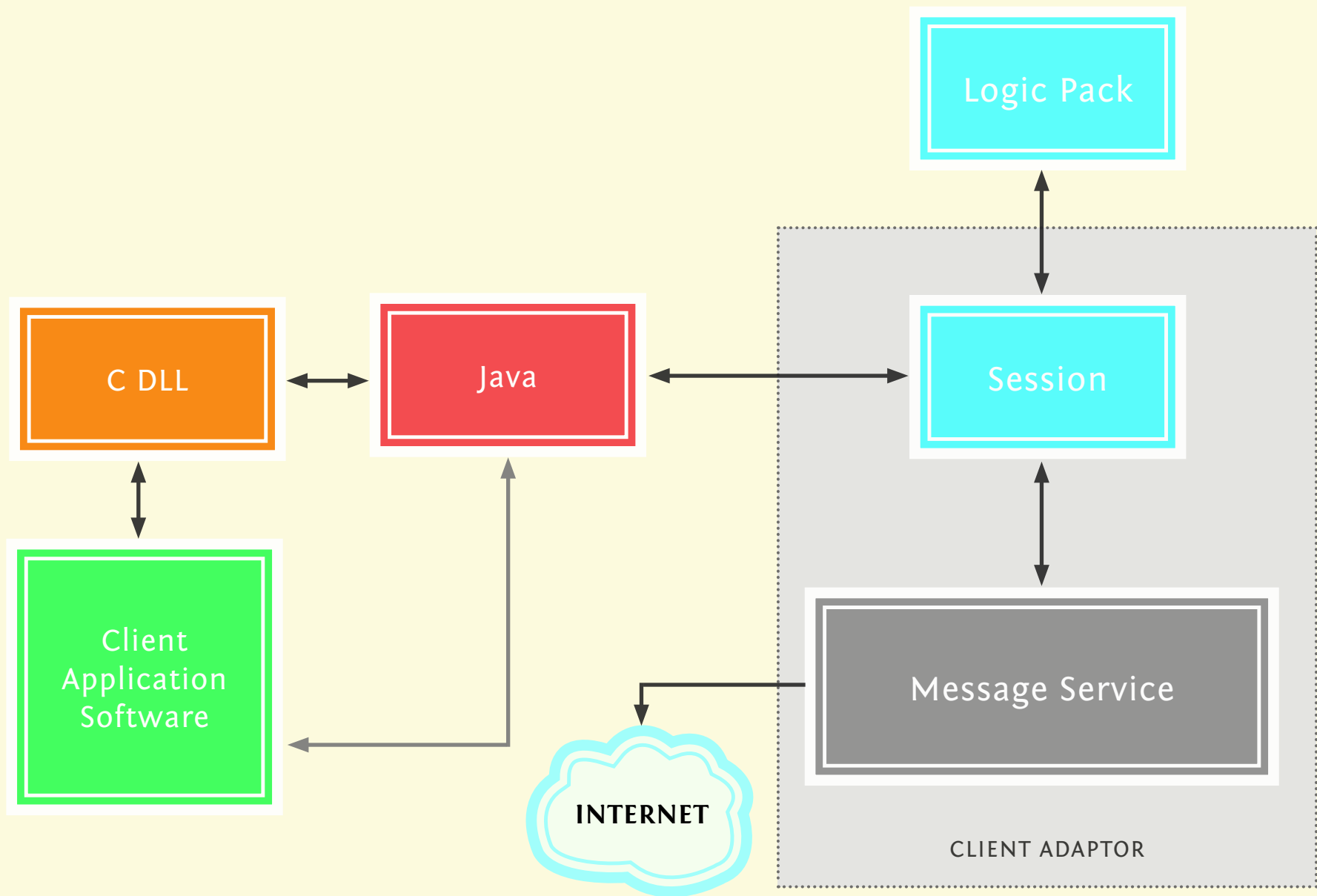


# WHAT IS THE CLIENT ADAPTOR?

- *Used to interface between client systems (e.g. pharmacy dispensing software) and Medicare*
- *Main role is to control and manage the transmission framework for Internet messaging*
- *Signing and encryption is performed by the client adaptor (?)*

# HOW DOES IT WORK?

- *Client Application software interface with the Client Adaptor either by (a) directly invoking the Java methods or (b) using the provided C DLL (which in turn calls Java methods)*
- *These Java objects are then passed to the Message Service which • converts the objects to XML • encrypts the object content and the object itself • then transmits the XML message to Medicare Australia via the Internet*




# THE LOGIC PACK



2

# THE LOGIC PACK

*A JAR file allowing Medicare Australia to deliver business processes and functionality specific to PBS* 



# WHAT IS THE LOGIC PACK?

- *A set of Java classes that collectively describe a set of business processes that can be invoked using the Client Adaptor*
- *Controls the business data sent in messages (to Medicare)*
- *Each logic pack is packaged as a self-contained JAR file, with discovery functionality (i.e. identifying which logic pack is contained within the JAR file)*

# DETAILS OF THE LOGIC PACK

- *For each business process, it describes the structure of the various messages that are passed around within the online claiming architecture*
- *Enforces “simple” business rules associated with each message (e.g. field syntax, presence of mandatory fields)*
- *Bi-directionally translates each message between its Java “internal” representation and non-Java “external” representation (e.g. XML)*

# DETAILS OF THE LOGIC PACK

- *Provide default values for target URL and PKI recipient (i.e. who to encrypt messages for)*
- *Support dynamic discovery of the contents of the logic pack (to ensure that the latest available version of a given logic pack is used)*




# SYSTEM SECURITY

3



# SYSTEM SECURITY

*Online Claiming for PBS is enabled using Public Key Infrastructure (PKI), ensuring information transmitted over the Internet is encrypted and secured* 

# SYSTEM SECURITY

- *Patient and provider details are protected during transmission through the use of Public Key Infrastructure (PKI)*
- *Valid digital certificates are required by customers who communicate electronically with PBS Online when using PKI*
- *Replacement of expired certificates is a normal operational procedure as certificates are only valid for a limited time period*

# SECURE FLOW OF MESSAGES

INTERNET

Signed and  
encrypted



PHARMACY

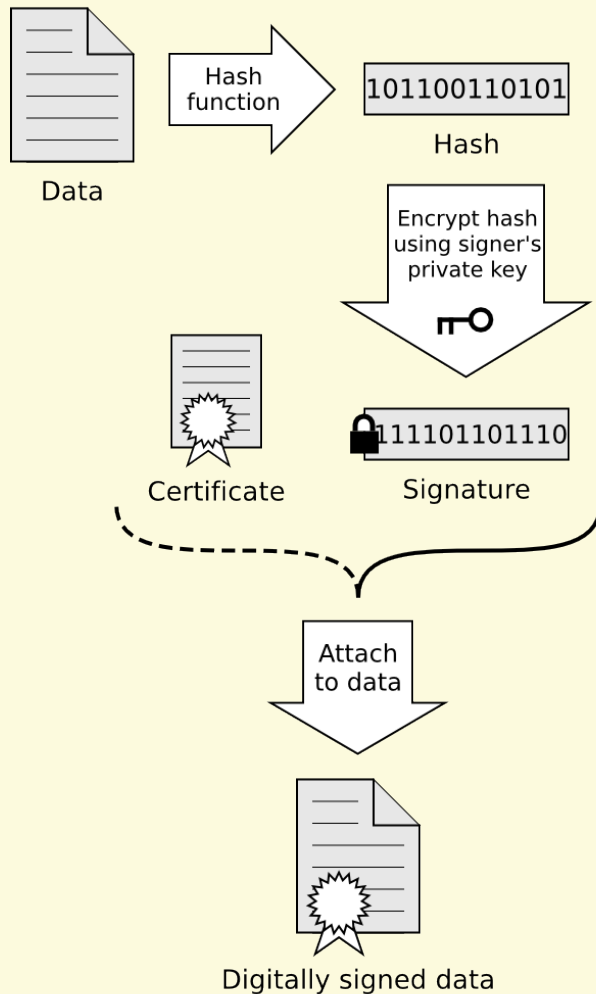
Signed and  
encrypted



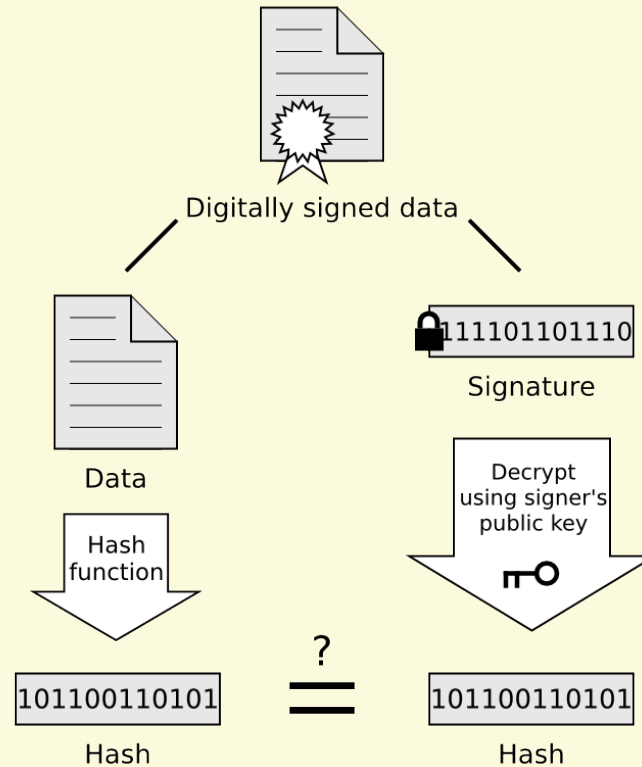
MEDICARE AUSTRALIA/  
PBS ONLINE SYSTEMS

# DIGITAL SIGNATURES

## Signing



## Verification



If the hashes are equal, the signature is valid.



# SECURITY AT DIFFERENT LEVELS

- *Transport-level security*  
(e.g. SSL/TLS)  
→ *akin to securing the 'tunnel'*
- *Message-level security*  
(e.g. WS-Security with XML-Sig and XML-Enc)  
→ *akin to securing the message in the 'tunnel'*

MESSAGE LEVEL SECURITY



VS

TRANSPORT LEVEL SECURITY







MESSAGE LEVEL SECURITY

vs



TRANSPORT LEVEL SECURITY



# THE PKI CERTIFICATE MANAGER

- *All PBS Online customers are required to install the PKI Certificate Manager to ensure that installing the new HIC certificates will be straightforward*
- *The PKI Certificate Manager is a fully functional, easy-to-use Windows control panel application that provides a simple and uniform solution for PKI management*

# RELIABILITY & FAULT TOLERANCE



# RELIABILITY & FAULT TOLERANCE

*Fault tolerance enables a system to continue operating in spite of one or more failures, leading to higher availability 🐘*

# UNFORSEEN SYSTEM OUTAGES

*Two stages of unscheduled system outages:*

- **EARLY WARNING:** *“More than 25 per cent of all online transactions are timing out, and this has been experienced for one continuous hour, or it will take over one hour to resolve the problem”*
- **CRITICAL INCIDENT:** *“More than 25 per cent of all online transactions are timing out, and this has been experienced for two and a half continuous hours”*

# STAGE ONE: EARLY WARNING

*A message will be sent out to key stakeholders in this stage. They will be advised in the following ways:*

- Email sent to the Pharmacy Guild of Australia*
- Message left with the receptionist of the Pharmacy Guild of Australia*
- Email sent to all pharmacy software vendors*
- Message placed on the 132 290—option 3 telephone line and updated hourly*

# STAGE TWO: CRITICAL INCIDENT

*Medicare will confirm a critical incident with a message sent to all online pharmacies (who fall back in to 'offline' mode) and other key stakeholders:*

- *Fax message sent to all online pharmacies*
- *Email sent to the Pharmacy Guild of Australia*
- *Message left with the receptionist of the Pharmacy Guild of Australia*
- *Email sent to all pharmacy software vendors and Department of Health and Ageing*
- *Message placed on the 132 290—option 3 telephone line and updated hourly*

# PHARMACY CONNECTIVITY INCENTIVE (PCI)

- *The PCI program provides financial incentives to pharmacies to maintain business grade broadband internet connections*
- *Seeks to improve reliability, performance, and promote the use of Online Claiming for PBS*
- *Ran from 1 January 2008 until 30 June 2010*

# CLAIM REJECTION

*If the connection is severed when a claim is being sent by Pharmacy Dispensing Software (PDS), then:*

- *Claim information will be stored/queued by the PDS*
- *The dispenser/pharmacy will be able to continue dispensing*
- *When communications come back up, the software will automatically send the stored transactions to Medicare Australia*
- *The queued messages will be marked to show that communications were down at the time of dispense*



# CLAIM REJECTION

*However, if a claim is successfully sent, but its rejection/confirmation is lost, then the request times out and:*

- The dispenser retries (until desired or reasonable e.g. until patience runs out or the purchaser requires medicine urgently)*
- The pharmacist dispenses medicine at a subsidised rate (claims are buffered as per previous slide)*
- If the purchaser was not eligible for concession at the time of purchase (e.g. in case if PBS Online was unavailable at the time of purchase), Medicare still pays the dispenser/pharmacy but has to chase up with the purchaser about the unpaid amount (?)*

# IMAGE CREDITS

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# ICON CREDITS

- **WPZOOM Developer Icon Set (Plug, Puzzle and Lock)**  
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- **IconSweets 2 ('Fail Whale')**  
<http://www.iconsweets2.com/>
- **Vista Style GIS/GPS/MAP Icon Set (Pharmacy and PBS Building)**  
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QUESTIONS? COMMENTS?

