



# PharmaNet

Professional and Software Compliance Standards

## Volume 3 – Technical Rules

### Hospital

Version 2.3

July 2009

<b>DOCUMENT MODIFICATION HISTORY</b>		
<b>VERSION</b>	<b>RELEASE DATE</b>	<b>DESCRIPTION</b>
1.0	December 2006	Initial release to vendors
1.1	February 2007	Revised format, clarified technical rules
2.0	December 2007	1) Provide for centralized registration within implementer organizations by allowing multiple facilities on a single Confidentiality Undertaking, 2) remove requirement for written consent of the patient to access PharmaNet records, 3) strengthen privacy policy for access audits by providing for proactive access discrepancy alerting, 4) add new optional functionality to support prescriber identification and medication reconciliation
2.1	December 2008	Extended use of the Medication Reconciliation Report to include admissions, discharge and transfer.
2.2	January 2009	Removed language describing when a medication reconciliation report can be used. Refer to Volume 2 – Business Rules for usage language.
2.3	July 2009	Revised Medication Reconciliation Report to include a better example for data set limitations and filters

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# 1 GENERAL INFORMATION

The Professional and Software Compliance Standards Document for PharmaNet has been revised into volumes, divided by PharmaNet participant functionality requirements.

The 'library' approach provides more logical formatting while reducing redundancy and repetition.

There are common volumes required by all software developers and both business and technical volumes for the different functions. This enables software developers to download only the necessary volumes. The documentation is available on the Data Access Services web site. <http://www.healthservices.gov.bc.ca/das>

## 1.1 The Volumes

The 6-volume documentation set contains:

### Volume 1 – Introduction

Volume 1 introduces the reader to common development components, such as:

- Document Conventions and Structures
- Related Standard
- Contacts
- Support Responsibilities
- Compliance Evaluation Process
- Mandatory policies and procedures to ensure compliance with all standards.

### Volume 2 – Business Rules

Volume 2 has been further divided into separate documents for the functionality requirements of Hospital, Emergency Department (ED), Medical Practice (MP), and Pharmacy access.

This volume contains the *implementation requirements* and the *business rules* related to the use of the available transactions and the local system requirements.

## **Volume 3 – Technical Rules**

Volume 3 has been further divided into separate documents for the functionality requirements of Hospital, Emergency Department (ED), Medical Practice (MP), and Pharmacy access.

This volume contains the *general processing* and the *technical rules* related to the use of the available transactions and the *local system requirements*.

## **Volume 4 – HL7 Message Catalog**

Volume 4 identifies transaction details and message responses, such as:

- Network Transmissions and Responses
- Health Level 7 (HL7) Standards
- Message Formats and Data Definitions
- Input and Output Message Segments and Fields

## **Volume 5 – Security**

Volume 5 provides security objectives, requirements and guidelines and a framework for developing policies and implementing local security controls.

## **Volume 6 – Glossary**

Volume 6 lists a glossary of terms persistent through out PharmaNet

## **1.2 The Audience**

The compliance standards documentation is intended for software developers, health care Providers, administrators and other health care professionals who share responsibility for implementing compliant software in their organization.

## **1.3 This Document**

This volume contains the technical rules for using the PharmaNet transaction messages within hospital and Designated Mental Health Facility (DMHF) settings that are not part of the Emergency Department or pharmacy. For information on the transaction set supported in the Emergency Department or pharmacy refer to Volume 2 – Business Rules and Volume 3 – Technical Rules for those settings.

The PharmaNet transaction message set implemented within hospital and DMHF settings that are not part of the Emergency Department or pharmacy is a limited set of transactions for viewing purposes only. Read this volume in conjunction with Volume 2 – Business Rules (Hospital).

## 1.4 PharmaNet Operator Information

Basic information regarding practitioners, prescribers and operators, must exist on PharmaNet before any message from a Provider will be accepted for processing. This information may be sent to PharmaNet in an electronic format by authorized individuals. Detailed specifications for this process are described in the document titled *PharmaNet Practitioner and Operator Data Interface Specifications*.

## 2 TRANSACTION DETAILS

### 2.1 General Processing Rules

#### 2.1.1 Interpreting Transaction Responses

There are several ways to determine whether a PharmaNet message was successful or not. They are:

1. The ZZZ Segment

Each transaction submitted will include at least one ZZZ segment. The response status field of this segment will contain a value of either 0 or 1 on every response. A value of 0 means the transaction itself was successfully transmitted across the network and a response was received.

Note, even though the transaction was successful, its intended function might not have been successful (e.g., a record may not have been added because the record already existed).

A value of 1 means the transaction itself was not successful and it did not perform its intended function.

In addition to the response status field, the transaction text field contains a message related to the transaction. If the response status is 0, the transaction text field will contain one of the following:

- a) All blanks (i.e., successful)
- b) '0 – Operation Successful'
- c) A warning message (i.e., '66 – Warning – Last Name and First Name do not match supplied names').

If the response status field is 1, the transaction request was not successful and the transaction text field will contain the application error message.

Examples of these messages are:

108 – No matches found for selection criteria chosen

101 – PRESCRIBER not found

121 – This is a Duplicate Prescription

### **2.1.2 Mandatory Display of Response Message Status**

Warning and error messages must be displayed and must comply with the minimum mandatory display standards for each transaction. These messages must be triggered by any of the following:

1. A response status field not equaling '0' for each ZZZ segment returned
2. A transaction text field not equaling 'blanks' or 0 – Operation Successful' for each ZZZ segment returned

### **2.1.3 Trace Numbers**

Trace numbers are used on PharmaNet for auditing purposes. They are also used to track what happened with a transaction when it was processed by PharmaNet. Trace numbers must be unique for the day, and must be in ascending order. A re-transmit must be sent with the same trace number as the original message (i.e., the local system must store the trace number for as long as there is a possibility of re-transmitting the message).

### **2.1.4 Multiple PHNs**

The local system must be capable of recognizing and clearly indicating to the Provider, a response (ZCC segment) which has a different Personal Health Number (PHN) from that submitted in the input message (ZCC Segment). In some cases, a PHN may be assigned to a patient when one already exists for that patient. The multiple PHNs are subsequently merged on Client Registry System (CRS) to a single PHN record. If a PHN has been merged with another PHN(s), CRS will return the consolidated PHN. If it appears the merge has been done incorrectly, or the Provider is aware of an incorrect PHN, the Provider must contact the PharmaNet Help Desk or the College of Pharmacists of BC (CPBC) to request a correction or unmerge.

If the Provider agrees that the PHN merge is appropriate, the local system must have its files updated to reflect the consolidated PHN by choosing one of the following options:

1. The local software can use an 'export log' of PHN merges available from the MoH to search for PHNs which must be merged on their local system. This option would usually only be considered for large PharmaNet participants due to the large number of PHNs on the export log.
2. The local software can recognize a new, merged PHN as part of the PharmaNet response and update local records.

### **2.1.5 PharmaNet Participant Messaging**

1. PharmaNet Participant Messages need to be delivered to all Hospital Access to PharmaNet users. This delivery can be accomplished using the most expedient method possible to alert users with an active session or upon login. This delivery method could include an electronic bulletin, electronic alerting system or the message can be printed and manually distributed.
2. PharmaNet Participant Messages only need to be displayed at one terminal when they are received.
3. Processing of the current transaction at the designated terminal(s) receiving the message may be completed before displaying the message. However, processing must be interrupted and the message displayed before the next transaction begins.
4. PharmaNet will not transmit unsolicited messages to the client system. Even the PharmaNet Participant Messaging facility relies on a request to deliver a response.

### **2.1.6 Truncating**

Users should be able to enter the maximum number of characters into every enterable field transmitted to PharmaNet.

The local software should be capable of displaying full field lengths for all fields. Only trailing blanks should be truncated.

### **2.1.7 Backup**

The local system must provide the ability to backup and recover all relevant data files and audit logs. The backup process will use a secure, removable media. Simple backup to hard disk is not acceptable.

An approved recovery process of appropriate files must be used.

A set of complete backup media should be stored at a different physical location at all times.

The SSO training package must include the steps necessary to backup and recover data files and audit logs.

### **2.1.8 Wireless Access**

PharmaNet Professional and Software Compliance Standards Volume 2 – Business Rules (Hospital) defines requirements for wireless access to PharmaNet in addition to the following technical specifications.

The use of wireless technology such as a wireless router or local area network must meet or exceed industry accepted best practices that ensure personal health information is kept secure and private. These best practices include, but are not limited to, the following controls:

1. Strong link layer encryption, such as Wireless Protected Access 2 (WPA-2), and AES 256 level encryption;
2. User and device network access controlled by authentication services that use or are moving toward strong authentication practices, such as IPSec and mutually authenticated secure communication;
3. The use of strong (i.e., not easily guessed), frequently changed, automatically expiring encryption keys and passwords;
4. Segregation of wireless networks from wired networks, as outlined by the Security Threat Risk Assessment, by the use of filters, firewalls or proxies;
5. Use of intrusion detection and prevention technologies;
6. Use of port-based access control 802.1x/EAP technology.
7. Only known, authorized devices can access the wireless network;
8. Only use fixed IP addresses (i.e., no DHCP);
9. Confidentiality and integrity of communications between access points and authenticated servers are sufficiently and securely protected;
10. Restrict wireless signals within physical facility boundaries;

11. Disable insecure and unused wireless services, such as WEP, TKIP, and ad hoc mode;
12. Configure devices to the least privilege; and
13. Only communicate via access points.

## **2.2 Transaction Permissions by Provider**

The PharmaNet Client Registry transactions **TID – Patient Identification**, may be replaced with its corresponding Health Registry transactions, **R03 – Get Person demographics**.

Use of the Health Registry transactions is mandatory in software installed at new agency sites where the use of HNSecure was permitted six months prior to the new installation.

Health Registry transactions are documented in the current version of the *Application Services Professional and Software Compliance Standards, Health Registry Standard*.

## **2.3 Specific Transaction Details**

### **2.3.1 Data Retention**

Local systems must be capable of recording and retaining all appropriate information and audit logs as required by PharmaNet or superseded by a regulatory body.

### **2.3.2 Detection of Browsing – PharmaNet Access Log**

1. All accesses to PharmaNet must be logged automatically by the local software. The access log is used to meet the 'Detection of Profile Browsing' and audit trail requirements of PharmaNet. The Access Log must contain the following:
  - a) Network facility ID (identifies the business area) as assigned by the MoH;
  - b) User ID or operator ID of the user conducting the access;
  - c) College ID of the Provider responsible for the patient in the hospital/DMHF. Note that PharmaNet uses the Physician ID number as assigned by the College of Physicians and Surgeons (CPSBC). Local systems must not use the MSP billing number for

- any PharmaNet interaction nor use it to look up physicians on the local system;
  - d) Date and time;
  - e) Patient PHN and patient demographic information including name, date of birth and gender; and
  - f) Transaction type ID and reason for access.
2. SSOs are encouraged to use 'access card' technology to restrict access to authorized staff only.
  3. Where technologically possible, terminals must have password protected screen savers in use.

### **2.3.3 PharmaNet Access Discrepancy Reporting**

Refer to relevant sections in Volume 2 – Business Rules (Hospital).

## **3 PROCESSING RULES & MANDATORY SCREEN DISPLAYS**

### **3.1 Patient Identification – TID**

This transaction will return a patient record using the patient's PHN.

#### **3.1.1 Processing Rules**

1. When the PHN returned is different from the PHN that was submitted, the local software must clearly indicate to the Provider that a consolidated PHN has been returned.
2. The requested MoH patient address record on PharmaNet must cause a comparison between the latest mailing address on the local software and the MoH patient address record. This comparison can be done automatically by the software or manually by the Provider.

#### **3.1.2 Mandatory Screen Display Standards**

The following table defines the minimum mandatory display standards for a successful TID transaction, as well as those fields that must be displayed on the first screen of information presented. CPBC

INFORMATION RETURNED BY PharmaNet	OUTPUT	MANDATORY DISPLAY	DISPLAY ON FIRST SCREEN PRESENTED
PHN	ZCC	Y	Y
Patient First Name	ZPA	Y	Y
Patient Initials	ZPA	Y	Y
Patient Last Name	ZPA	Y	Y
Patient Date of Birth	ZCC	Y	Y
Patient Gender	ZCC	Y	Y
Patient Address (line 1)	ZPA	Y	Y
Patient Address (line 2)	ZPA	Y	Y
City	ZPA	Y	Y
Postal Code	ZPA	Y	N
Province Code	ZPA	Y	N
Participant Message	ZPI	Y	N
Mandatory Display of Response Message Status.	ZZZ	Y	Y

### 3.2 Patient Profile Request – TRP / TRR

These functions are used to retrieve a patient’s profile.

#### 3.2.1 Processing Rules

1. There is no requirement to fully display the patient record. If displayed, all mandatory display requirements must be satisfied except, the Provider may escape or exit from the information at any time.
2. Within each of the clinical conditions, adverse reactions and medication history information, the minimum information that must be presented to the Provider is included as ‘Display on first screen presented’ in the Mandatory Screen Display Standards for TRP, TRR. Other mandatory display information must be available for access by the Provider.
3. The sequence of display must be ZPB1, then ZPB2, then ZPB3, etc.
4. The Provider must be able to scroll up and down within the displayed information if the information is presented on more than one page. CPBC
5. No prescription information will be returned when a prescription has been reversed with an intervention code of ‘RE’ – Data Entry Error. This applies to TRP and TRR.
6. The TRP and TRR transactions use the drug generic name and manufacturer. This is true in all cases, except for those ‘user-defined’ drugs entered by PharmaNet. For these exceptions, the first 30 characters of the brand name are returned with the manufacturer.

7. The TRP transaction will return prescriptions dispensed during the previous fourteen (14) months.
8. When the PHN returned is different from the PHN that was submitted, the local software must clearly indicate to the Provider that a consolidated PHN has been returned. The message displayed should advise the Provider to perform a patient identification (TID) transaction prior to updating the local system with the new PHN in order to confirm the PHN has been correctly consolidated.
9. The medication history portion of the medication profile may be summarized for the Provider by the DIN. If the record is summarized, the most recent dispensing date of the DIN as well as all other mandatory first screen requirements must be displayed. All of the other mandatory display requirements must be accessible to the Provider. CPBC
10. The total number of prescriptions should be presented with the first page of detail or first page of summary.
11. The functionality to obtain both full patient profiles (TRP) and most recent patient profiles (TRR) must be available in the local software for review.
12. There is no requirement to fully display the patient record prior to printing.
13. For integrated systems, inquiry access to the medication profile is permitted only if the PHN has been recorded on the local software as part of patient registration at the hospital/DMHF at which inquiry is being made, demonstrating a care team / patient relationship.
14. Retention of an electronic 'picture' of the medication profile. Refer to Volume 2 – Business Rules (Hospital) for business rules regarding the retention of an electronic 'picture' of the medication profile.
15. Printing of the medication profile should be available. Refer to Volume 2 – Business Rules (Hospital) for business rules regarding printing the medication profile. The medication profile report must show:
  - a) Type of profile requested (i.e., TRP, TRR);
  - b) Date/time of the print out;
  - c) User ID or operator ID of the person submitting the request;
  - d) Network Facility ID and name of the hospital;
  - e) The College ID and name of the Provider requesting the profile;
  - f) All patient demographics; and
  - g) All data fields labeled as 'Mandatory Display'.
16. The optional hospital Medication Reconciliation Report must contain all data fields labeled as 'Y - Mandatory for Medication Reconciliation' in the

tables in section 3.2.4 Mandatory Medication Reconciliation Print Standards.

17. SSOs should provide an easy method to electronically send by secure means to the CPBC when a correction to the profile is required. CPBC

### 3.2.2 General Processing Rules – TRR

1. If the Provider chooses to see more profile data than is provided by the TRR transaction, then the SSO's software must acquire the complete patient profile, via a TRP transaction, and be capable of displaying it to the Provider.
2. If the maximum amount of prescriptions are returned (currently 15), then the SSO's software must indicate to the Provider that there may be more profile data available.
3. When a TRR transaction returns successfully, the following message is returned in the transaction text field of the ZZZ segment 'Operation Successful: most recent <N1> Rx's'. (N1 represents the system variable, currently set to 15).

### 3.2.3 Mandatory Screen Display Standards

This table defines the minimum mandatory display requirements for TRP/TRR.  
 CPBC

INFORMATION RETURNED BY PharmaNet	OUTPUT	MANDATORY DISPLAY	DISPLAY ON FIRST SCREEN PRESENTED
PHN	ZCC	N	N
Clinical Condition Information:	ZPB1		
Patient Condition	ZPB1	Y	Y
Chronic Indicator	ZPB1	Y	Y
Reported By	ZPB1	Y	N
Date Reported	ZPB1	Y	N
Comment Text	ZPB1	Y	N
Practitioner Id Reference	ZPB1	Y	N
Practitioner Id	ZPB1	Y	N
Date entered	ZPB1	Y	N
Adverse Reaction Information:	ZPB2		
DIN/GP#/PIN	ZPB2	Y	Y
Generic Name/Manuf <sup>1</sup>	ZPB2	Y	Y
Reported By	ZPB2	Y	N
Date Reported	ZPB2	Y	N
Comment Text	ZPB2	Y	N

<sup>1</sup> Generic name/manufacturer can not be truncated; and is mandatory for display (can not substitute brand name).

INFORMATION RETURNED BY PharmaNet	OUTPUT	MANDATORY DISPLAY	DISPLAY ON FIRST SCREEN PRESENTED
Practitioner Id Reference	ZPB2	Y	N
Practitioner Id	ZPB2	Y	N
Date Entered	ZPB2	Y	N
Medhist Information:	ZPB3		
DIN/GP#/PIN	ZPB3	Y	N
Generic Name/Manuf <sup>1</sup>	ZPB3	Y	Y
Same Store Indicator	ZPB3	Y	N
Quantity	ZPB3	Y	Y
Maximum Daily Dose	ZPB3	Y	N
Prescription Status	ZPB3	Y	Y
Local Prescription Number	ZPB3	N	N
Date Dispensed	ZPB3	Y	Y
Intervention Codes	ZPB3	Y	N
Practitioner Id Reference	ZPB3	Y	N
Practitioner Id	ZPB3	Y	N
Practitioner Family Name	ZPB3	Y	Y
Drug Discontinue Date	ZPB3	Y	N
Drug Discontinue Source	ZPB3	Y	N
Directions	ZPB3	Y	Y
Comment Text	ZPB3	Y	N
Practitioner Id Reference	ZPB3	Y	N
Practitioner Id	ZPB3	Y	N
Date Entered	ZPB3	Y	N
Mandatory Display of Response Message Status.	ZZZ	Y	Y

### 3.2.4 Mandatory Medication Reconciliation Print Standards

These tables define the minimum mandatory print standards for the optional Hospital Medication Reconciliation Report.

POS REPORT INFORMATION	MANDATORY FOR MEDICATION RECONCILIATION
<b>Heading:</b>	
Type of Profile Requested (i.e. TRP: last 14 months or TRR: most recent 15 prescriptions)	N
Date / time of print out	Y
User ID of the operator submitting request	Y
Network facility ID and name of the facility	Y
The College ID and name of the responsible Provider	Y
Acknowledgement of PharmaNet as source of data for the report	Y

POS REPORT INFORMATION	MANDATORY FOR MEDICATION RECONCILIATION
<p>Data set limitations/filters -</p> <p>A description of the limitations/filters on the set of medications that have been included on the Medication Reconciliation printout, including any limitations/filters resulting from the transaction used (TRP or TRR), and, from any data elements/values used to further filter the data returned. This could include for example: date dispensed within last x months or prescriptions with status of filled, etc. The following paragraph provides an example of how the filters could be expressed.</p> <p>e.g. "The following is a PharmaNet extract as of &lt;Date&gt; &lt;Time&gt; of the most recent filled or discontinued prescriptions for the above patient in the province of British Columbia over the last x months (up to a maximum of 14)."</p>	Y
<p><b>Disclaimer:</b></p> <p>**** Do not assume the patient is currently taking these medications or in these doses ***</p> <p>Please note that changes MAY have been made to the patient's provincial medication records since this report was printed. In addition, it MAY contain discontinued medications and does NOT contain updated instructions the patient may have received from their physician or such items as non-prescription drugs, samples, investigational or clinical trial drugs, complementary and alternative therapies, selected prescriptions obtained through provincial programs (e.g. antiretrovirals), or prescriptions obtained from outside the province or over the Internet."</p>	Y
<b>Patient Demographics:</b>	
Patient Name	Y
Gender	Y
Date of Birth	Y

INFORMATION RETURNED BY PHARMANET	OUTPUT	MANDATORY FOR MEDICATION RECONCILIATION
<b>PHN</b>	ZCC	Y
<b>Clinical Condition Information:</b>		
Patient Condition	ZPB1	Y
Chronic Indicator	ZPB1	N
Reported By	ZPB1	N
Date Reported	ZPB1	N
Comment Text	ZPB1	N
Practitioner Id Reference	ZPB1	N
Practitioner Id	ZPB1	N
Date entered	ZPB1	N
<b>Adverse Reaction Information:</b>		
DIN/GP#/PIN	ZPB2	N
Generic Name/Manuf <sup>1</sup>	ZPB2	Y
Reported By	ZPB2	N
Date Reported	ZPB2	N
Comment Text	ZPB2	N
Practitioner Id Reference	ZPB2	N
Practitioner Id	ZPB2	N
Date Entered	ZPB2	N

<sup>1</sup> Generic name/manufacturer can not be truncated; and is mandatory for display (can not substitute brand name).

INFORMATION RETURNED BY PHARMANET	OUTPUT	MANDATORY FOR MEDICATION RECONCILIATION
<b>Medhist Information:</b>		
DIN/GP#/PIN	ZPB3	N
Generic Name/Manuf <sup>1</sup>	ZPB3	Y
Same Store Indicator	ZPB3	N
Quantity	ZPB3	Y
Maximum Daily Dose	ZPB3	Y
Prescription Status	ZPB3	Y
Local Prescription Number	ZPB3	N
Date Dispensed	ZPB3	Y
Intervention Codes	ZPB3	N
Practitioner Id Reference	ZPB3	N
Practitioner Id	ZPB3	N
Practitioner Family Name	ZPB3	N
Drug Discontinue Date	ZPB3	N
Drug Discontinue Source	ZPB3	N
Directions	ZPB3	Y
Comment Text	ZPB3	N
Practitioner Id Reference	ZPB3	N
Practitioner Id	ZPB3	N
Date Entered	ZPB3	N
Mandatory Display of Response Message Status.	ZZZ	N

### 3.3 Prescriber Identification – TIP (Optional)

This optional function may be used to obtain information on a Provider (e.g., physician, pharmacist, podiatrist, dentist, veterinarian, etc.) by either searching by name or by the unique identification number assigned by the appropriate regulatory body.

Please note that MSP billing numbers are not used to identify prescribers anywhere on PharmaNet.

#### 3.3.1 Processing Rules

1. Practitioner demographics and practice information is retrieved by either a combination of Practitioner ID number and Reference ID or by using Family Name and optionally, any or all characters of the First Name.
2. If more than 100 matches are found, none will be returned. The transaction Segment Count will be 100, and the following message will be returned '106 Selection criteria chosen resulted in too many matches'. If less than or equal to 100 matches are found, the number of matches will be returned in the Transaction Segment Count of the ZZZ.

3. If a unique match is found, the response will be the prescriber record. If a unique match is not found, a list (maximum of 100) in alphabetical order by first name of practitioners matching the search criteria will be returned. Where there is more than one record matching on the first name, these records will be displayed in ascending practitioner ID order.

### 3.3.2 Mandatory Screen Display Standards

The following table defines the minimum mandatory display standards for a successful TIP transaction, as well as those fields which must be displayed on the first screen of information presented. CPBC

INFORMATION RETURNED BY PharmaNet	OUTPUT	MANDATORY DISPLAY	DISPLAY ON FIRST SCREEN PRESENTED
Practitioner Id	ZPH	Y	Y
Practitioner Id Ref	ZPH	Y	Y
Practitioner First Name	ZPH	Y	Y
Practitioner Initials	ZPH	Y	N
Practitioner Last Name	ZPH	Y	Y
Type of Address	ZPH	N	N
Address (line 1)	ZPH	Y	N
Address (line 2)	ZPH	Y	N
City	ZPH	Y	Y
Province Code	ZPH	Y	N
Postal Code	ZPH	Y	N
Country	ZPH	N	N
Effective Date	ZPH	N	N
Area Code	ZPH	Y	N
Phone Number	ZPH	Y	N
PharmaNet Participant Message	ZPI	Y	N
Mandatory Display of Response Message Status.	ZZZ	Y	Y

## 4 PHN Check Digit Number Routine

The following PHN Check Digit Number Routine should be implemented on the local software. The PHN used by PharmaNet is sent as a 13 digit number. There is a common Mod 11 check that can be applied to the last 10 digits of the PHN.

Input to this routine is the last ten digits of the PHN with no leading zeroes. The number is broken down into single digits and each digit is weighted. The weights are as follows:

Digit (by position)	1	2	3	4	5	6	7	8	9	10
Weight		2	4	8	5	10	9	7	3	

The check digit process should ignore the first digit that is always a 9 and any leading zeroes. Each digit (2-9) is multiplied by its weight and divided by 11. The remainder is loaded into an array. The array values are added to obtain a total. Divide the total by 11, and subtract the remainder from 11 to yield a check digit value. Compare this value to the 10<sup>th</sup> digit and if equal then the PHN is valid, otherwise the PHN is invalid.

Example:

The PHN in the example is '0009123947241':

PHN	9	1	2	3	9	4	7	2	4	1
Weights		2	4	8	5	10	9	7	3	
Multiply		1x2	2x4	3x8	9x5	4x10	7x9	2x7	4x3	
Product		2	8	24	45	40	63	14	12	
Divide by 11		2 ÷ 11	8 ÷ 11	24 ÷ 11	45 ÷ 11	40 ÷ 11	63 ÷ 11	14 ÷ 11	12 ÷ 11	
Remainder		2	8	2	1	7	8	3	1	

Sum of remainder values is 32.

Divide 32 by 11. The result is a remainder of 10.

Take the remainder (10) from 11. This should match the check digit (tenth place digit) (11-10=1).

If equal then the PHN is valid, otherwise the PHN is invalid.

If the result is 10 or 11, the PHN is not valid, considering the tenth digit is a single number.