IBM Payment Gateway Version 1.2.0

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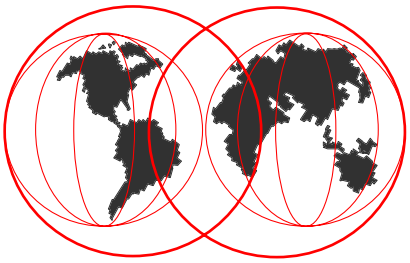
TSO Poughkeepsie



IBM Payment Gateway
Version 1 Release 2.0

Architecture Overview

Trademarks

- Trademarks of IBM
  - CommercePOINT
  - RS/6000
  - IBMLink
  - Business Partner
  - CommercePOINT Wallet
  - CommercePOINT eTill
  - Payment Gateway
  - IBM Registry
  - OS/390
  - S/390
  - OS/400
- Registered Trademarks of IBM
  - AIX
  - DB2/6000
  - OS/2
  - PROFS

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Trademarks continued

- Registered Trademarks of Microsoft Corporation
  - Microsoft
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- Trademarks of Microsoft Corporation
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- Trademarks of Sun Microsystems, Inc.
  - Java
- Registered Trademarks of Lotus Development Corporation
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  - Domino
  - Domino Merchant

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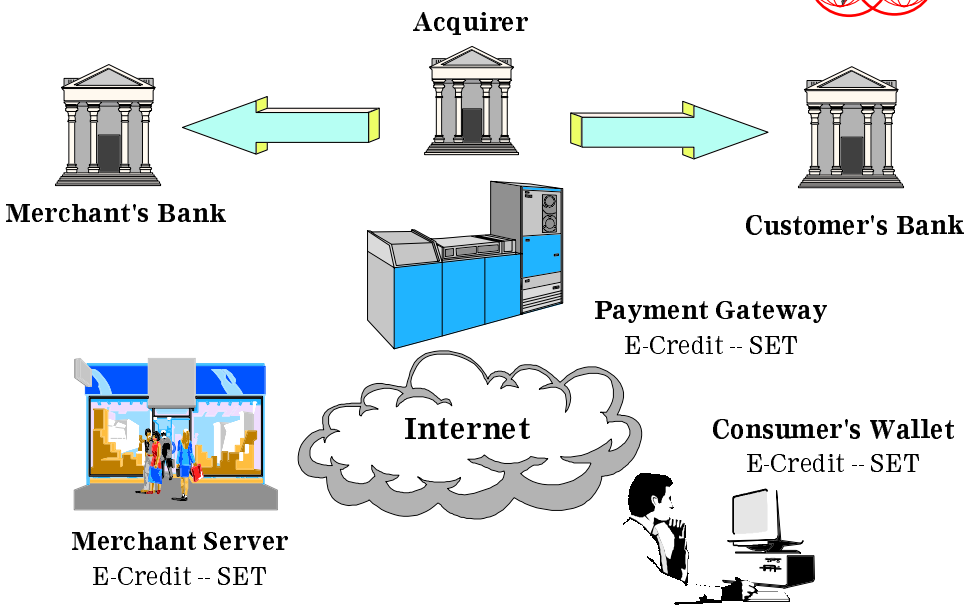
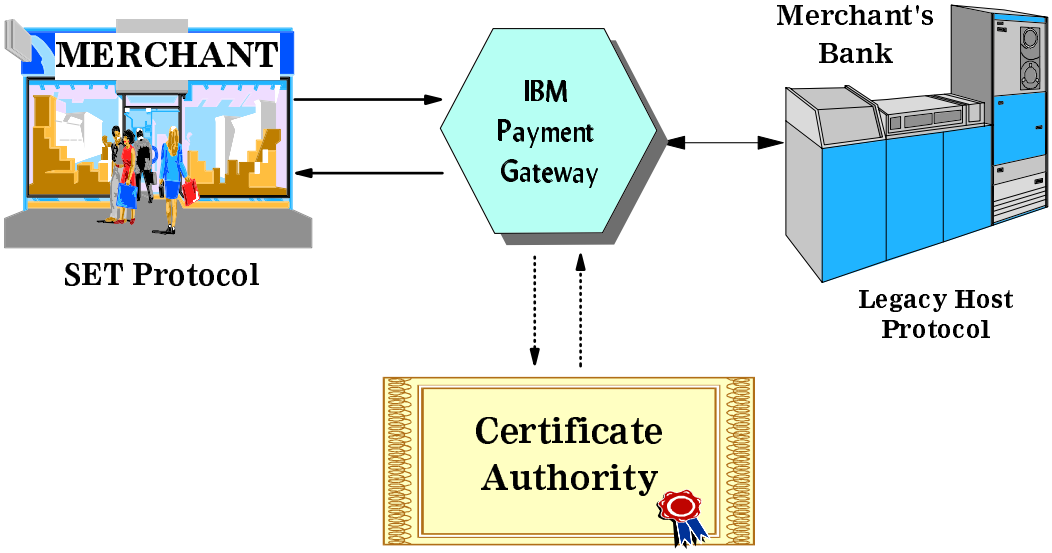
Credits

This presentation is a subset of different presentations given by Stephen Matulevich during the IBM PaymentSuite T3 class in Nov. 1998.

Electronic Payments



IBM Payment Gateway Overview



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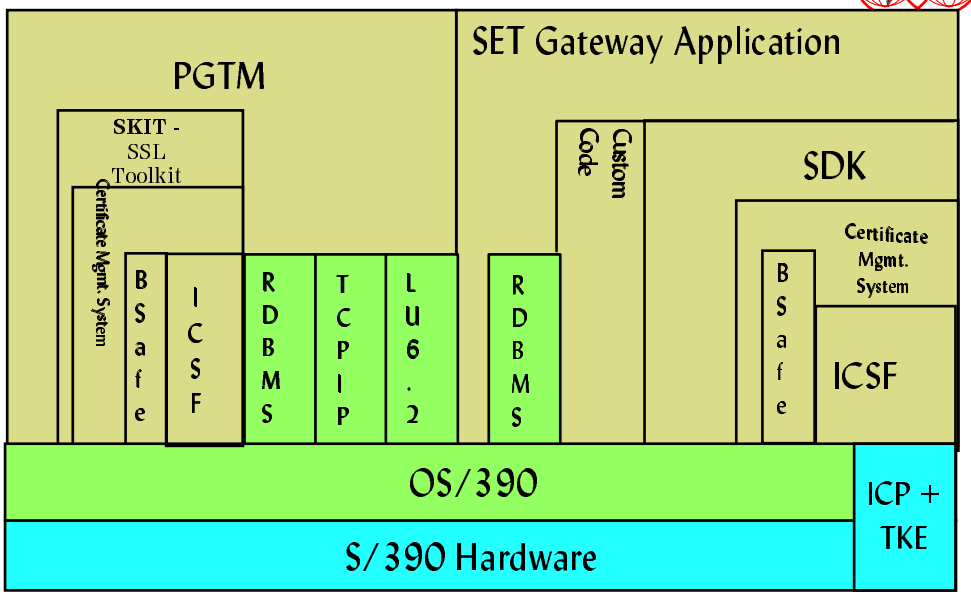
Payment Gateway 1.2 System Components



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Payment Gateway 1.2 System Hardware Components

Component	Required By
Any S/390 Processor capable of running OS/390 V1R3, V2R4 or higher	PGTM, Gateway Application
Integrated Cryptographic Processor - Optional*	Hardware crypto, TKE
Trusted Key Entry (TKE) - Optional*	Hardware Key Generation

* The OS/390 Payment Gateway does not require hardware crypto. Some Credit Card Brands may mandate the use of hardware cryptographic processors.

Payment Gateway 1.2 System Software Components

Component	Required By
OS/390 V1R3 or above	**PGTM, Hardware Crypto**
DB2 5.1 with PTF PQ09901 for ODBC Multithreaded support	Configuration, Auditing, Store and Forward, SET Certificates
DB2 APAR OW30206	**DB2 Certificate and Idempotency support**
ICSF/MVS V2.1 or above with APARS: O229794 and OW27398.	**Hardware Crypto**
ICSF/MVS APARs OW33234, OW34933, and OW34751	**DB2 Certificate database support**
OS/390 C/C++ Optional feature	**Needed for customization exit development**
OS/390 V2R5 or above	**SYSPLEX support, DB2 Certificate and Idempotency support**

***** All PTFs/APARs listed are required *****

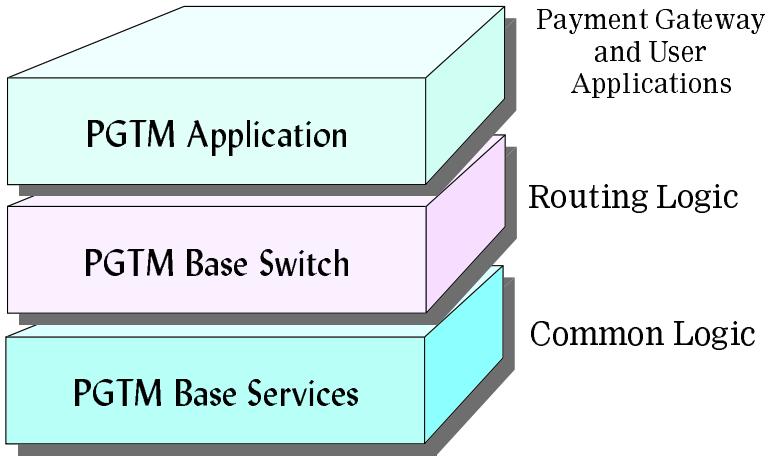
IBM Payment Gateway Architecture

- Comprised of 2 major components
  - **Payment Gateway Transaction Manager (PGTM)**
    - Provides underlying base infrastructure
    - Application-level routing switch
    - Performs protocol-level conversion
    - Base services - monitoring, trace services, audit log services, translation services, store and forward services
  - **Payment Gateway Application**
    - Provides framework for implementing fully customizable SET payment gateway
    - Contains fully integrated IBM SET Toolkit

Important Concept - Application vs Interface

- An Application is a routing destination.
  - Could be located on the same machine (such as the Payment Gateway Application)
  - Could be located across a network (such as the legacy host application)
- An Interface is the instructions to get to the routing destination (Application)
  - Communications protocol to use
  - Time-out values
- There may be multiple Interfaces to one Application

IBM Payment Gateway Architecture



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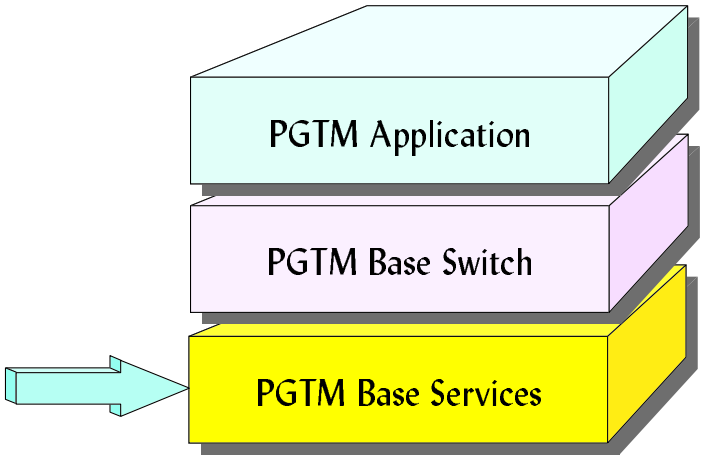
IBM Payment Gateway Architecture



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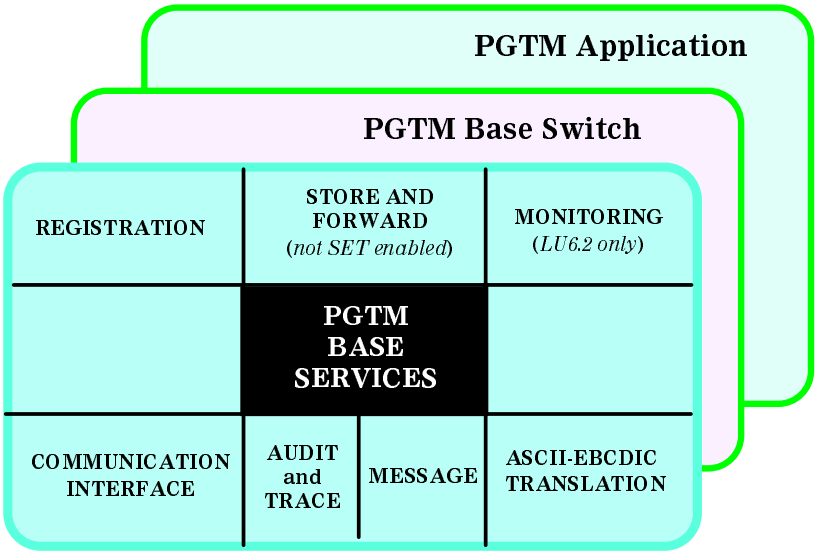
PGTM Transaction Manager Base Services



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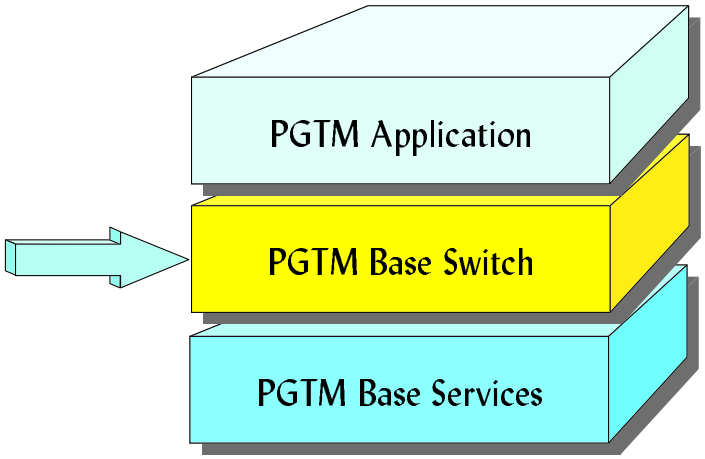
IBM Payment Gateway Architecture



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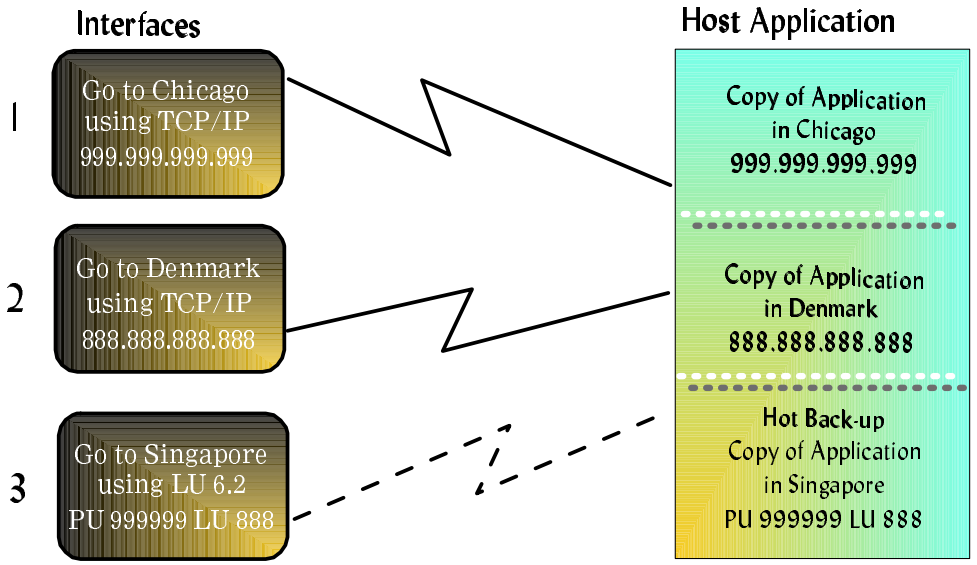
Important Concept Multiple Interfaces and Routing Priorites



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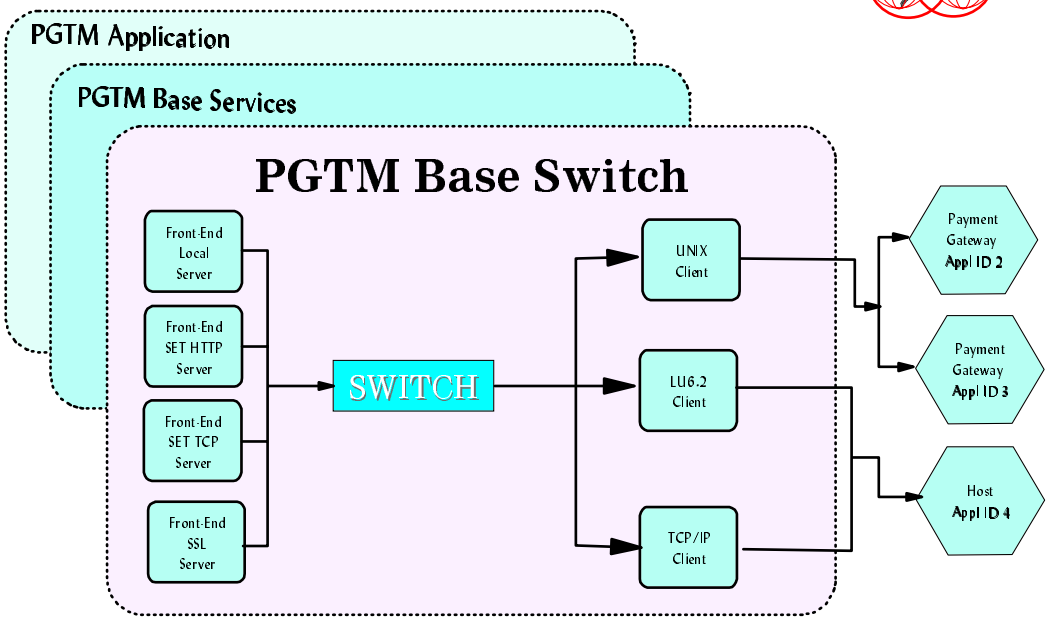
PGTM Transaction Manager Base Services



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SSL Protocol Information

- SSL is a secure communications protocol
  - SSL V3
    - Requires Merchant and Gateway Certificates for authentication
- Message format and content defined by the Merchant and the Acquirer
  - IBM defined SSL routing header
    - Contains Application ID for routing
    - Contains length of transaction
- Unique port for SSL communications

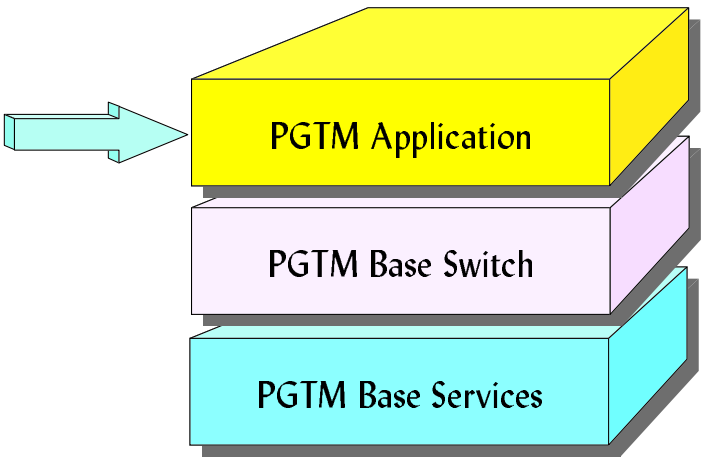
SSL Certificate Management

- Obtaining Certificates
  - CA defines the means for requesting a certificate
  - Usually via e-mail
- gskkyman Utility
  - Used to manage keys and certificates
  - Uses a password protected database file
  - Creates Certificate Request files
    - Supports the common CAs requirements
  - Receives and stores from certificate files
  - Creates self-signed certificates for testing only

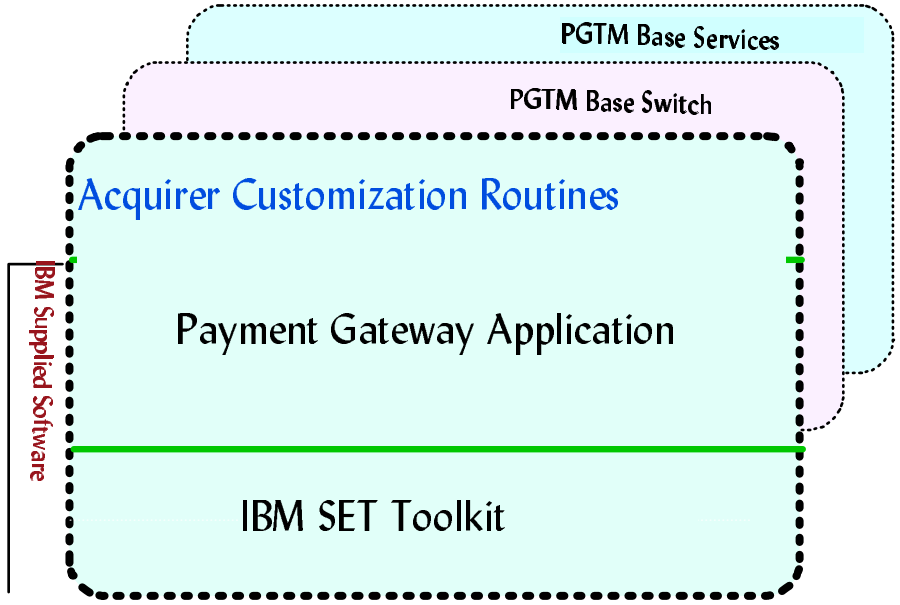
SSL Considerations

- Gateway ships own version of SSL DLLs
  - System SSL will ship with OS/390 V2R7
  - On OS/390 V2R7 or above, users should not install FMIDs: HCML120, JCML121, and JCML122.
- SYSPLEX considerations:
  - Keys must be common among SYSPLEX members
  - Port numbers must also be common

IBM Payment Gateway Architecture



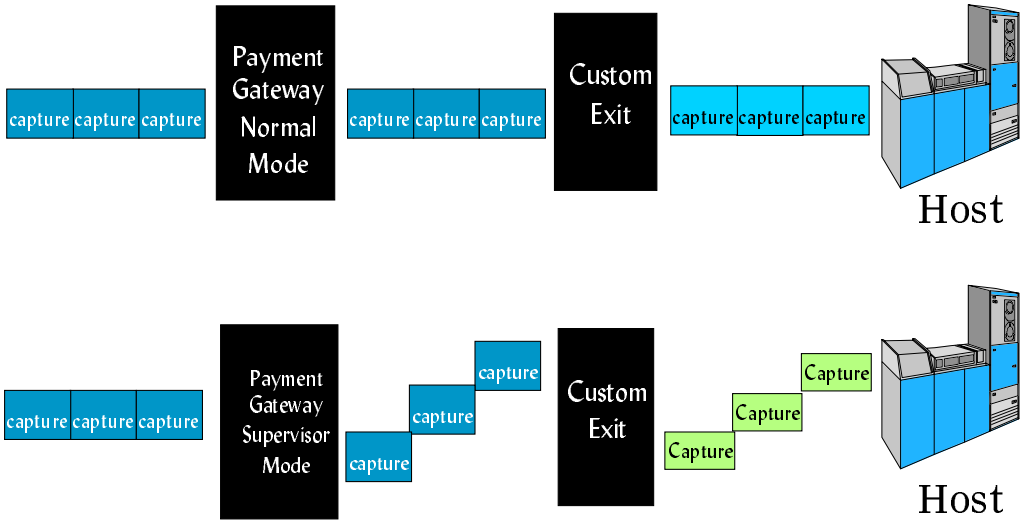
PGTM Gateway Application



Important Concept - Idempotency

- **Idempotency is a check for cryptographically identical transactions.**
  - **Idempotency checking is done by the SDK**
  - **The SET specifications define the fields to use for the idempotency check**
- **If a SET request is an idempotent match:**
  - **If a SET response exists for the request, it will be returned to the merchant. The custom exit is not invoked.**
  - **If there is no SET response, the custom exit is invoked with a flag indicating this request is a possible duplicate**

Important Concept - Supervisor Mode



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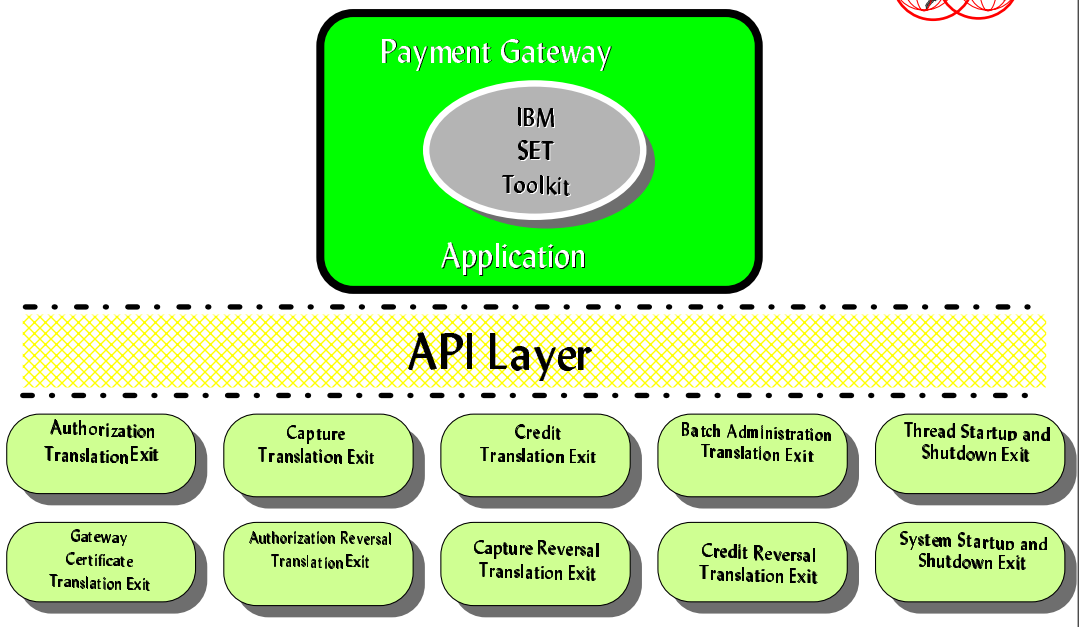
Payment Gateway Application



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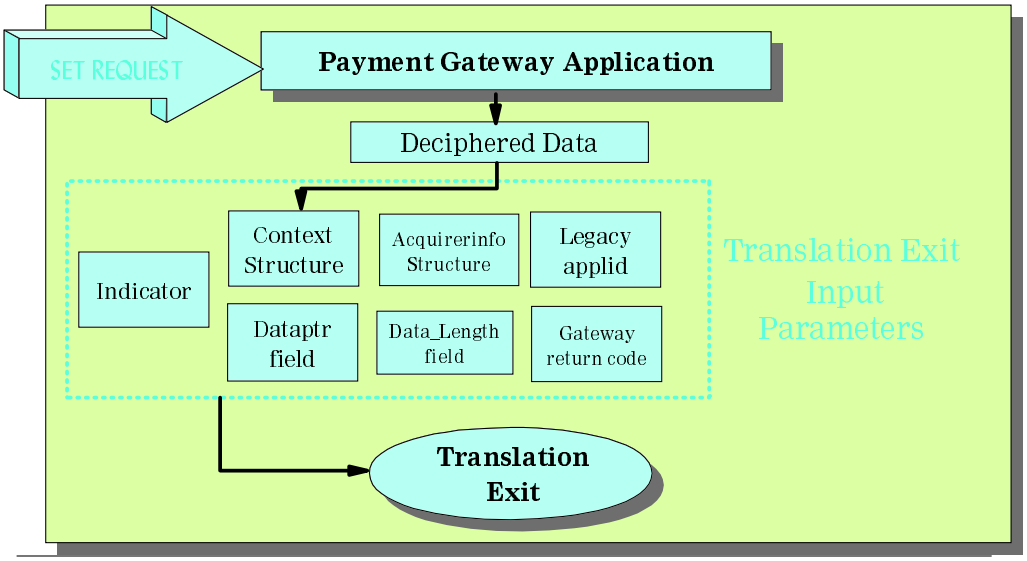
Translation Exit Programming Concepts (Input Parameters)



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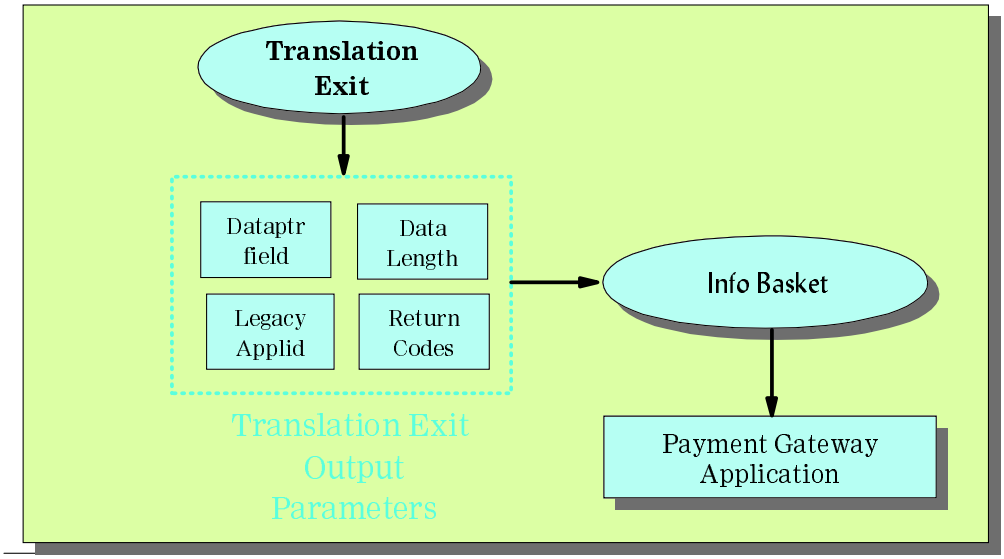
Translation Exit Programming Concepts (Input Parameters)



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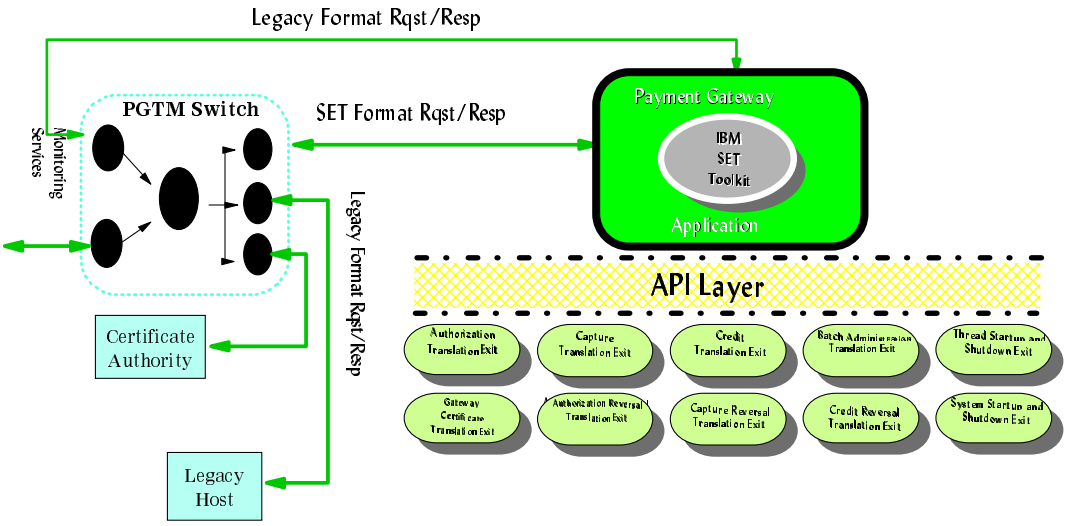
Message Flow Through the Gateway



What's New In This Release?

- New User Interface Applications
  - COGPGTMC/pgtmConfig
    - Replaces tsm_subsystems file
  - COGTRANC/tranConfig
    - Replaces trans_table_config file
  - COGPGCNF
    - ISPF version of pgconfig
  - COGSTATS
    - ISPF version of tsmStats
- Operator (system console) command supported to change Gateway while running as a started task

What's New In This Release?

- Integrated Certificate Management
  - CMS DB2 database support for Certificates
    - Should be used by customers that want continuous operations
    - Flat file databases are still supported
  - SET DB2 Idempotency support
    - Implemented primarily for SYSPLEX
    - Not recommended for non-SYSPLEX users
  - Cron jobs for Certificate Revocation Lists
    - Should only be used if running with DB2 Certificate databases
  - Monitoring of certificate expiration dates

What's New In This Release?

- SSL Protocol Support
  - SSL Key Management
  - Two levels of cryptographic export, US 128 Bit and base 40 bit
- Multiple SET Ports to a Single SET Instance
  - SET HTTP and TCP/IP servers directed to a single SET Payment Gateway Application instance
- APIs and SET Extensions
  - Access to certificate information
  - MOSET and e-Comm extension support

What's New in This Release

- SYSPLEX
  - Will be available January 29, 1999
  - Will be used by largest customers, and customers wanting high availability operations
  - SSL, HTTP, and TCP/IP Servers all register with WLM
  - Requires storage of CMS Key data and Idempotency data in DB2
  - DB2 must be operating in Data Sharing Mode
  - Requires OS/390 R5 or above and RRSAF
  - All SYSPLEX members must run with same gateway configuration

Installation

IBM Payment Gateway
Version 1 Release 2.0

Installation & Customization

IBM Payment Gateway OS/390 System Resources

The following table lists the PGTM applications requirements

PGTM APPLICATION REQUIREMENTS	REQUIRED FOR
OS/390 Version 1 Release 3 or higher OS/390 Version 2 Release 5 or higher is required for Gateways running in a sysplex environment.	PGTM
OS/390 C/C++ optional feature (5647-A01)	Payment Gateway User Exit
DB2 Version 5.1 with APAR PW09901 for Open Database Connectivity (ODBC) multi-thread support	PGTM PGTM Auditing PGTM Store and Forward

IBM Payment Gateway OS/390 System Resources

The following table lists the PGTM file systems

FILE SYSTEM	DESCRIPTION
/usr/lpp/PaymentGateway	This is the main file system for all the PGTM files and other PGTM local applications.
/usr/lpp/PaymentGateway/pgtm/audit	This is a special file system for storing audit records used by the PGTM. If auditing is going to be used, this file system should be configured based on the hourly volume expected through the PGTM for all the registered applications.
/tmp	This file system is used for storing transaction trace information

Payment Gateway 1.2 Where are the important files?

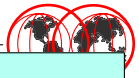
Type of File	Directory	File
PGTM Executables	/usr/lpp/PaymentGateway/pgtm/bin/base	andRegister
PGTM Scripts/Utilities	/usr/lpp/PaymentGateway/pgtm/utils	init_tsm
Gateway Executables	/usr/lpp/PaymentGateway/pgtm/bin	pgconfig, spg
Gateway Utilities	/usr/lpp/PaymentGateway/spg/tools	eecertreq, bcireq, bcilst, certexp, pgdbprune
SSL Certificates	/usr/lpp/PaymentGateway/spg/ssl/database	sslcert.arm, sslcert.kdb, sslcert.sth
Idempotency Logs	/usr/lpp/PaymentGateway/spg/trxdb	paytrx.db, archive.db
Gateway Certificates	/usr/lpp/PaymentGateway/spg/database	key.db, keypair.db, crl.db, bci.db

IBM Payment Gateway OS/390 System Resources

The following table lists the PGTM user ID.

PGTM USER ID	HOME DIRECTORY
PGTM	/usr/lpp/PaymentGateway/pgtm

IBM Payment Gateway OS/390 System Resources

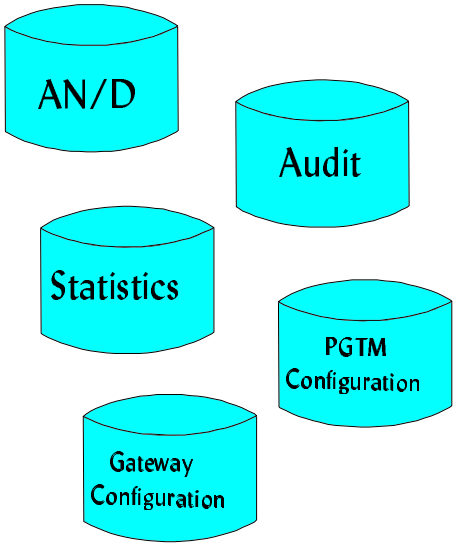


Resource	Size/Amount	Description
Shared Memory	varies	Shared memory used for inter-process communication and access to application information. The amount of shared memory you will need will depend on the values in the transaction table configuration database and the maximum number of applications specified in the global config file.
Semaphores	varies	Semaphores used for inter-process communication. The number of semaphores you will need is determined by the values in the transaction table configuration databse and the maximum number of applications specified in the global config file.

IBM Payment Gateway OS/390 System Resources

Resource	Size/Amount	Description
Message Queues	24 minimum	Message queues used for inter-process communication. The number of message queues you will need is determined by the maximum number of Gateway instances configured in the PGTM. The system is configured for one Gateway using the minimum number. For each additional Gateway instance, add seven message queues.
Processes per user ID	100	Maximum number of processes for a user ID. This is the value required by DB2 and also for the PGTM administrator ID.

IBM Payment Gateway System Resources -- Database



Application Name Database (AN/D)
Application and Interface Registration Information

Statistical Information

Audit Information

PGTM Configuration Information

Gateway Configuration Information

Installation Cofiguration and Tailoring

- Install program via SMP/E
- OS/390 Unix System Services - **ensure that cron is operational** and that the PGTM user is allow to submit jobs to cron. See Unix Systems Services manual SC28-1892 for details.
  - create /usr/lib/cron/cron.allow with entry PGTM
  - create /usr/lib/cron/at.allow with entry PGTM
- Add COK.SCOKLINK and COG.SCOGLINK to linklist and activate.
- Create user **PGTM** user with home directory of **/usr/lpp/PaymentGateway/pgtm**
- Change the owner ship of the files to the PGTM user and group
  - chown -R pgtm /usr/lpp/PaymentGateway/*
  - chgrp -R pgtmgrp /usr/lpp/PaymentGateway/*

Payment Gateway Configuration and Tailoring

- Update /usr/lpp/PaymentGateway/pgtm/.profile
  - The .profile file contains environmental information that defines the PGTM prompt as well as additional LIBPATH and PATH variables that must be set when the user logs on.
- Update the following exports in the /usr/lpp/PaymentGateway/pgtm/.dbrc directory
  - The .dbrc file contains environmental information that describes your selected database to the Gateway.
    - *DBLOC = LOC1* -- set to DB2 location identifier for the system.
    - *DBOWNER* -- owner of the database. If you follow standard install use PGTM as the owner.
    - *DBNAME = TSMDB* -- name of the database
    - *DSNAOINI = $TSMUSER.CLIINI* -- DB2 Call Level Interface environmental variables

Payment Gateway Configuration and Tailoring

- NLS Considerations
  - The Payment Gateway contains many shell scripts. These scripts are shipped in code page IBM-1047. Users should either run under code page IBM-1047, or convert the scripts to their native code page using the iconvlst utility.
  - To convert language sensitive files to a non IBM-1047 code page
    - Ensure that the LANG environment variable in file */usr/lpp/PaymentGateway/pgtm/.profile* is set to the appropriate value.
    - Go to the */usr/lpp/PaymentGateway* directory and run:

      iconvlst gateway.iconvlst

Setting up the Gateway to Run as a Started Task

- Edit the JCL file hlq.COGJCL(COGPGWAY) - Follow the directions included in the file
- Copy the JCL to SYS.PROCLIB
- Using RACF or an other tool define the user under which the started task will run:
  - rdefine started cogpgway.**stdata(user(xxxxxxx))
  - setropts raclist (started) refresh

Updating the COGPGWAY.envvars file

- This file contains the environmental definitions necessary to start the IBM Payment Gateway. It replaces the .profile, .tsmrc, .dbrc, and .spgrc files that are executed when the PGTM user logs on to UNIX System Services.
- Tasks must be done by the PGTM user.
  - Update the */usr/lpp/PaymentGateway/pgtm/cogpgway.envvars* file. This file contains environmental definitions necessary to start the IBM Payment Gateway.
    - Update TSMBASE = /usr/lpp/PaymentGateway
    - Update TSM_HOME = $TSMBASE/pgtm
    - Update USER = xxxx - where xxxx is the PGTM user ID
  - Update the DB2 parameters further on down the file
    - DSNAOINI = $TSMUSER.CLIINI
    - DBLOC = LOC1
    - DBOWNER = $TSMUSER
    - DBNAME = TSMDB

Database Initialization Tasks

- The IBM Payment Gateway uses the CLI/ODBC driver to create and access DB2 databases. The following tasks must be done so that the IBM Payment Gateway has access to the database:
  - Grant table creation to the PGTM user. Use the following SQL command:
    - GRANT CREATEDBA TO *PGTM*;
  - Bind plan DSNACLI. Use sample JCL in hlq.SDSNSAMP.
  - Grant execute permission to user PGTM on plan DSNACLI. Use the following SQL command:
    - GRANT EXECUTE ON PLAN DSNACLI TO *PGTM*;
  - Payment Gateway makes use of a 32k bufferpool. Grant user PGTM to the bufferpool using SQL command:
    - GRANT USE OF BUFFERPOOL BP32K TO *PGTM*;

Database Initialization Tasks continued

- Edit the database initialization dataset (hlq.CUSTOM). Make sure the dataset is allocated as: RECFM FB, BLKSIZE = 800, RCL 80 PRIMARY 2 SECONDARY 2. Sample CUSTOM files are located in dataset SCOGSSAMP. The following fields may need to be changed:
  - MVSDEFAULT=DSN5
  - PLANNAME=DSNACLI
  - [LOC1]
- Execute the SPUFI script *hlq.SCOGSAMP(COGCRE)*. This will create the TSMDB database and the 3 required tablespaces.
  - The AUDITTSP tablespace must be created in a buffer pool that has a 32K page size. The script allocates this tablespace in a bufferpool name BP32K.
- Logged on as the PGTM user, start an OMVS session and issue the command:
  - create_tsm_tables

IBM Payment Gateway
Version 1 Release 2.0

Administration

- Initialization and configuration file setup
- PGTM Gateway Application / Interface registration
- Acquirer and host Application / Interface registration
- Adding Gateway Initialization and Termination Commands
- Configuring the IBM Payment Gateway
- Compile your exit code
- Certificate Management tools
- Monitoring and testing the Gateway

PGTM Application and interface definition

Things to Consider

- How do I talk to my Host Processor?
  - What is the communications protocol?
  - What messages are supported?
  - What is the data format of the messages?
  - Can my host accept batched messages or only single messages?
- How do I talk to the Merchant?
  - What SET communications protocol?
  - Will the merchant be sending batched captures, credits?
- Do I need to capture any data for any reason?
  - Do I need to store data for acquirer validation?
  - Do I need to do reporting?

Customization and Monitoring Programs

OS/390 SHELL	ISPF	Purpose
andRegister	Call 'hlq.SCOGLINK(COGANDRG)'	To perform registration, modification, or deletion of applications and their interfaces.
comsetup	Call 'hlq.SCOGLINK(COGCOMUP)'	Enables you to configure the client and server protocols which the PGTM supports - TCP/IP, LU6.2, and SSL
pgconfig	Call 'hlq.SCOGLINK(COGPGCNF)'	Allows you to add a SET Payment Gateway Application, review the configuration of a SET Payment Gateway application, change the configuration of a Payment Gateway, or delete a SET Payment Gateway application.

Customization and Monitoring Programs continued

OS/390 SHELL	ISPF	Purpose
tsmstats	Call 'hlq.SCOGLINK(COGSTATS)'	Is responsible for displaying PGTM application statistics. It displays statistics for the PGTM applications on an hourly basis.
pgtmConfig	Call 'hlq.SCOGLINK(COGPGTMC)'	Enables you to update the PGTM_SUBSYSTEMS database. Contains the 'start' and 'stop' commands for the SET Payment Gateway.
tranConfig	Call 'hlq.SCOGLINK(COGTRANC)'	Enables you to update the transaction table configuration database. Database contains the layouts of the shared memory tables used by the PGTM processes.

Initialization and configuration file setup

- local_config_file
- global_config_file (maximum number of applications)
- .spgdbrc
  - Idempotency log pruning (TRXDB_PRUNE_TIME)
  - Database ownership (DB_OWNER)
- .spgirc
  - Acquirer Host timeout (SPG_TIMEOUT)
  - Processing weights (SPG_PROCESS_WEIGHT, SPG_CRYPTO_WEIGHT)
- tran_table_config

Transaction Tables

Group 0 50 Rows, 1024 Bytes	Used by administration
Group 1 50 Rows, 4000 Bytes	Used by Store and Forward Processing
Group 2 200 Rows, 4000 Bytes	Used by UNIX 'local server', TCP/IP Client, LU6.2 Client, X.25 Client
Group 3 200 Rows, 16000 Bytes 50 Rows, 65000 Bytes	Used by UNIX 'local client', SET TCP Server, SET HTTP Server, SSL Server, Router

Transaction Table COGTRANC or tranConfig command

```
COGPTTMM------------ PGTM Transaction Table Configuration ---------------

COMMAND  ==>

------------------------------------------------------------------------

Select a Group option to Change/Show ===> 1_

        1. Transaction Group 0
        2. Transaction Group 1
        3. Transaction Group 2
        4. Transaction Group 3



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```

Transaction Tables COGTRANC or tranConfig command

```
COGTTGUP---------- PGTM Transaction Table Group Update ------------------

COMMAND ===> ____________________________________________________________

Group: 0



Select Option ===> 2_



        1. Add A Row
        2. Change/Show a Row
        3. Delete A Row



Enter END COMMAND to return to previous menu or  HELP COMMAND for explanation.
```


Transaction Tables COGTRANC or tranConfig command

```
COGTCHTB ------ Change/Show An Existing Transaction Table Entr Row 1 to 1 of 1

COMMAND ===> _____________________________________________  SCROLL
===> PAGE

Enter END COMMAND to return to previous menu.


Group: 0
Select one of the listed row entries to change: _____


            Entry       Row Number        Row Size
            -----       ----------        --------
              1             50               1024
 ********************************* Bottom of data
*********************************
```

Communications Setup comsetup or COGCOMUP

```
COGSSLCS ------------- PGTM Communications Setup ----------------------
COMMAND ===>
_____________________________________________________________________

        Client Protocol              Status
        ---------------              ------
         TCP/IP                      (ON/OFF)        ON
         LU6.2                       (ON/OFF)        OFF

        Server Protocol              Status
        ---------------              ------
         SSL                         (ON/OFF)        OFF

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*********************************************************************
Enter END COMMAND to terminate program or Hit ENTER to accept.
```


PGTM Application Registration/Interface - COGANDRG or andRegister

- Register an Application
  - **Application Name**
  - **Timeout value**
  - Would you like to register a **default response exit?**
  - Would you like to register a **translation exit?**
  - Expected Transaction format (**ASCII** or **EBCDIC**)?
  - Do you want to use **Store and Forward?**
  - Resend interval
  - Max retries
  - Does your appl require the **Network ID** of the client?
  - Do you want **audit records** captured?
  - **Initial Status (Active or Inactive)?**
- Your application id is : **N**

Registration Panel

```
COGREGAP ---------- Payment Gateway Application Registration ----------
COMMAND ===> ____________________________________________________________

Application Name ===> PaymentGateway_____________________________________
Timeout value  (0 - 32767) ===> 90
Default Response exit path  (optional) ===> ____________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________
Translation exit path       (optional) ===> ____________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________
Enter Transaction Format              (A)SCII or (E)BCDIC ===>  E
Use PGTM Store and Forward Facility?          (Y)es or (N)o ===>  N
  Store and Forward resend Interval       (1 - 2000000000) ===>  _________
  Store and Forward Maximum Retries          (1 - 32767) ===>  ____
Does Application require network id of client?  (Y)es or (N)o ===>  Y
Capture Audit Records?                        (Y)es or (N)o ===>  N
Initial Application Status          (I)nactive or (A)ctive ===>  A
Application ID       (You can use this one or enter another) ===>  2
Enter END COMMAND to return to main menu or Hit ENTER to accept.
```


PGTM Application Registration/Interface - COGANDRG or andRegister

- Register an Interface
  - Select the protocol
    - TCP/IP
    - Local Application (Unix Sockets)
    - LU6.2
  - Select the Application ID
    - Displays list of registered applications
  - Protocol specific information
    - Does the application receive the PGTM header?
  - Protocol generic information
    - Initial Interface Status (active or inactive)
    - Priority of Interface
    - Would you like to register a Translation Exit?
    - Outbound Format (ASCII or EBCDIC)

Interface Registration - Panel 1

```
COGINT ---------- Interface Protocol Selection ----------

COMMAND ===>
_____________________________________________________________

SELECT OPTION ===> 2


          1. TCP
          2. Local Application (Unix Sockets)
          3. LU6.2


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Enter END COMMAND to terminate.
```


ITSO

Interface Registration - Panel 2

```
COGLSTAP ---------- Application List ---------- Row 1 to 2 of

COMMAND ===> _____________________________________________

Select Application ID ===> __2__

Enter END COMMAND to return to previous menu.


 Application ID        Application Name
 --------------        ----------------

    2                  Payment Gateway
    3                  Host Application
********************************* Bottom of data
*********************************
```


ITSO

Interface Registration - Panel 3

```
COGLSTAP ------------------ Application List ------------- Row 1 to 2 of 2

COMMAND ===> ____________________________________________

Select Application ID ===> __2__

Enter END COMMAND to return to previous menu.

 Application ID        Application Name
 --------------        ----------------

    2                  paygate
    3                  localhost
******************************** Bottom of data
********************************
```


Interface Registration - Panel 4

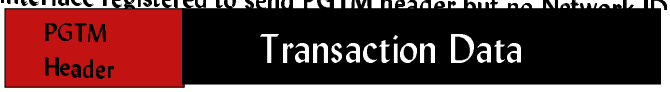
```
COGRINTF ---------------- Interface Registration ------------------------

COMMAND ===> ____________________________________________

Enter Interface Status      (A)ctive, (I)nactive ===> A
Enter Interface Priority    (0- 3   ,0=highest) ===> 0
Enter Translation Exit Path          (optional) ===> ____________________
_____________________________________________________________________
_____________________________________________________________
__________________________________________________________________

Enter Transaction Format     (A)SCII or (E)BCDIC ===> E

Enter END COMMAND to return to main menu.
```

PGTM Configuration Sample Transaction

Payment Gateway applications:

Application registered to send data only and a Network ID:

Interface registered to send PGTM header but no Network ID:



Acquirer Host Application Registration/Interface - *COGANDRG* or *andRegister*

- Register an Application
  - Application Name
  - Timeout value
  - Would you like to register a default response exit?
  - Would you like to register a translation exit?
  - Expected Transaction format (ASCII or EBCDIC)?
  - Do you want to use Store and Forward?
  - Resend interval
  - Max retries
  - Does your appl require the Network ID of the client?
  - Do you want audit records captured?
  - Initial Status (Active or Inactive)?
- Your application id is : N

Acquirer Host Application Registration/Interface - COGANDRG or andRegister

- Register an Interface
  - Select the protocol
    - TCP/IP
    - Local Application (Unix Sockets)
    - LU6.2
  - Select the Application ID
    - Displays list of registered applications
  - Protocol specific information
    - Does the application receive the PGTM header?
  - Protocol generic information
    - Initial Interface Status (active or inactive)
    - Priority of Interface
    - Would you like to register a Translation Exit?
    - Outbound Format (ASCII or EBCDIC)

Gateway Initialization Termination Commands COGPGTMC or pgtmConfig

- This ensures that the gateway instance is automatically started and stopped when the PGTM is started and stopped.

```
COGCHGTB ---------- Change/Show An Existing Subsystem

COMMAND ===> _____________________________________ SCROLL
===> PAGE

Enter END COMMAND to return to previous menu.

Select a Subsystem entry number to change: _

Entry   Status    Start Command          Stop Command
-----   ------    -------------          ------------
  1     Active    pgmaster spg 2         stopspg spg
```

Payment Gateway Configuration

pgconfig or COGPGCNF

- Add or Change a Payment Gateway Application
  - Select the **Application ID** of the Payment Gateway Application (registered through cogandrg or andRegister)
  - **Basic or Advanced** configuration
  - **Transport Customization**
    - **Port Number**
    - **Protocol (HTTP or TCP/IP)**
  - **Message Customization (for each SET transaction type)**
    - **Application ID of the Host application** (registered through andRegister)
    - **Mode (Normal or Supervisor)**

Payment Gateway Configuration Panel 1

```
COGPGCMM------------ Payment Gateway Configuration --------------------

COMMAND ===>
_____________________________________________________________________

Select Option ===> 2

                1. Add a new Payment Gateway
                2. Change/Show existing Payment Gateway
                3. Delete an existing Payment Gateway




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```

Payment Gateway Configuration Panel 2

COGPGTAB ---------- Registered Payment Gateway List ---------

COMMAND ===> _____

Enter END COMMAND to return to previous menu.

Select the Payment Gateway ID: ===> _____

Payment Gateway Application ID	Application Name
2	paygate

********** Bottom of data **********

Payment Gateway Configuration Panel 3

COGADVAN---------- Advanced Configuration ----------

* * * Change/Show an Existing Payment Gateway * * *

COMMAND ===>

_____

Payment Gateway: 2 - paygate

Select Option ===> __

1. Change the Transport Customization
2. Change Authorization Customization
3. Change Capture Customization
4. Change Credit Customization
5. Change Batch Administration Customization
6. Change Authorization Reversal Customization
7. Change Capture Reversal Customization
8. Change Credit Reversal Customization
9. Change Gateway Certificate Customization
10. Change Extension Customization
11. Review the Configuartion

Enter END COMMAND to return to previous menu or HELP COMMAND for help..

Compile Your Exit Code

- The gateway is shipped with a default exit library that can be used to verify that the Gateway code is functional.
- In an OMVS session:
  - cd usr/lpp/PaymentGateway/spg/exit/source/sample
  - make -f libpaygateSampleMake

Certificate Management Tools

- **eecertrq Tool**
  - Request new certificates
  - Add certificates to existing database
  - View the key.db file
  - Erase certificates
- **bcireq Tool**
  - Request bci and crl lists
- Online tools, offline process
  - If using a flat-file database, you must bring down the gateway .

Starting and Stopping the Payment Gateway

- Starting the System - Start the PGTM
  - Start as PGTM user
    - init_tsm
    - s cogpgway
- Stopping the System - stop the PGTM
  - Stop as PGTM user
    - terminate_tsm
    - p cogpgway

Starting and Stopping the Payment Gateway continued

.....

PGTM Initialization

.....

You are about to restart the PGTM system.
If the PGTM is running, it will first be terminated and then restarted.

1. Start the PGTM Initialization
2. Cancel the PGTM Initialization

Enter your selection:

Starting and Stopping the Payment Gateway continued

```
The base resources are being initialized.
Base resource initialization is complete.
The process tables are being created.
The process table is created successfully
The protocols are being established.
The LAD is being initialized.
The routing processes are being initialized.
... /usr/lpp/PaymentGateway/pgtm/bin/base/init_router | 532498
... /usr/lpp/PaymentGateway/pgtm/utils/init_admin | 532485
... /usr/lpp/PaymentGateway/pgtm/bin/base/saf_daemon | 532486
... /usr/lpp/PaymentGateway/pgtm/bin/base/unix_connect_server | 532496
... /usr/lpp/PaymentGateway/pgtm/bin/base/tcp_client | 532497
... /usr/lpp/PaymentGateway/pgtm/bin/base/local_client | 532491
The subsystems are being initialized.
... pgmaster spg 2

 Check file: /usr/lpp/PaymentGateway/pgtm/log/net.log for the PGTM initialization
results.
$
```


Monitoring and testing the Gateway

- How can I tell if the system is active and functioning?
  - **mercsim** for HTTP SET Transport
  - **mercsimtcp** for TCP/IP SET Transport
  - **localhost** - "host simulator"
  - **sample data** (called **PDUs**) are shipped with the product
    - authreq.set - sample authorization
  - sample keys are shipped with the product
    - **key.db, keypair.db, crl.db, bci.db**
- Note: sample PDU's will only work with the sample keys.

Monitoring and testing the Gateway Continued ...

- What is tsmStats
  - Ability to look at real-time statistics
  - Application level
  - Interface level
  - Ability to look at historical statistics from the database

Monitoring Statistics (tsmStats) Panel 1

```
COGINTRO ------------Payment Gateway Transaction Manager ----------------

COMMAND ===> _____________________________________________________________


                    Statistics Monitoring


 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
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 *                                                                   *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

Enter END COMMAND to exit or hit ENTER to continue.
```

Monitoring Statistics (tsmStats) Panel 2

```
COGTSIMG ------------------- Image List ----------------- Row 1 to 1 of 1

COMMAND ===> _____________________________________________ SCROLL
===> PAGE

Enter END COMMAND to Exit or Hit ENTER to refresh statistics.

                PGTM Monitoring ( Status:  Active   )
Date:  11/ 5/1998                          Time:  12:42:18

View (C)urrent or specify (H)istorical statistics :  1_

Select an ID to display Image specific statistics:  _____

  ID     Image Name                      Success   Timout     Error
  --     ----------                      -------   ------     -----
   1     cgimvs.washington.ibm.com       0         0          0
 ********************************* Bottom of data
*********************************
```


Monitoring Statistics (tsmStats) Panel 3

```
COGIMDAT ------------------- Image Detail -----------------------
COMMAND===>_____________________________________________________
Date:  11/ 5/1998   PGTM Monitoring ( Status:  Active   )  Time:  12:44: 4

Image name:  cgimvs.washington.ibm.com
Display Application Level Details (Y)es or (N)o : N
View (C)urrent or specify (H)istorical statistics : _

Response Time Details:                      Error Details:
----------------------------------------    ----------------------
0- 2 secs  ==> 0     Average: 0.00  secs     Total:          0
2- 4 secs  ==> 0                              Application Level:
4- 6 secs  ==> 0     TimeOuts   ==> 0          Unavailable:    0
6- 8 secs  ==> 0                              Failed:         0
8-10 secs  ==> 0     No Resp.   ==> 0        Interface Level:
10  secs   ==> 0     SAF        ==> 0          Failed:         0
  Total    ==> 0      Pending    ==> 0          Communication:  0
                                              Internal:       0

Enter END COMMAND to return to previous menu.  Hit ENTER to refresh statistics
```

Monitoring and testing the Gateway

- PGTM Logs
  - /usr/lpp/PaymentGateway/pgtm/log/net.log
  - /usr/lpp/PaymentGateway/pgtm/log/tsm_sys_log
  - /tmp/tsm_trace.log (if tracing has been turned on)
- Payment Gateway Application logs
  - /usr/lpp/PaymentGatway/pgtm/log/net.log
  - /usr/lpp/PaymentGateway/pgtm/log/tsm_sys_log

Sample of /usr/lpp/PaymentGateway/pgtm/log/net.log

```
COPT30011 110598 14:18:12.777 ÝP1157627946/T149939888¨
  Started router
COPT30031 110598 14:18:14.175 ÝP1979711516/T149963088¨
  Started administrative daemon
COPT30051 110598 14:18:15.479 ÝP318767148/T149970048¨
  Started store and forward daemon
COPT30091 110598 14:18:16.263 ÝP1929379865/T149983968¨
  Started local PGTM Server
COPT30151 110598 14:18:16.984 ÝP1124073496/T149990928¨
  Started TCP Client
COPT30131 110598 14:18:17.780 ÝP486539312/T150035008¨
  Started local PGTM Client
COPP00011 110598 14:18:23.515 ÝP1409286190/T149654528¨
  The HTTP SET Protocol Server for Payment Gateway 2 has started on port: 10010
COPP00311 110598 14:18:36.126 ÝP1811939354/T149652208¨
  Payment Gateway application 2 has started.
********************************* Bottom of Data
*********************************
```

IBM Payment Gateway Documentation

- IBM Payment Gateway for OS/390 General Information
  - GC24-5871-01
- IBM Payment Gateway for OS/390 System Administration
  - SC24-5873-01
- IBM Payment Gateway for OS/390 Application Exit Developer's Guide
  - SC24-5872-01
- Program directory for IBM Payment Gateway for OS/390 (shipped with product tape)
  - GI10-4659-02