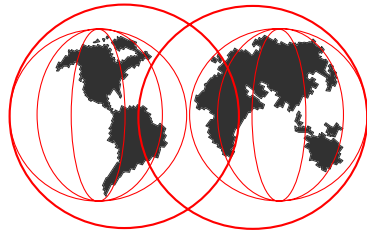


# Net.Commerce V 3.1. for OS/390

Erich Amrehn  
ITSO Poughkeepsie



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**This presentation is a subset of different presentations given by Don Bagwell during the IBM PaymentSuite T3 class in Nov. 1998 and Share.**

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## Agenda



- ▲ Overview e-commerce
- ▲ Overview Net.Commerce
  - ▶ Installation
  - ▶ Configuration
  - ▶ Planning
  - ▶ Product Advisor
  - ▶ Utilities
  - ▶ Backend Integration samples
- ▲ Payment Server (e-Till)

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Electronic Commerce:

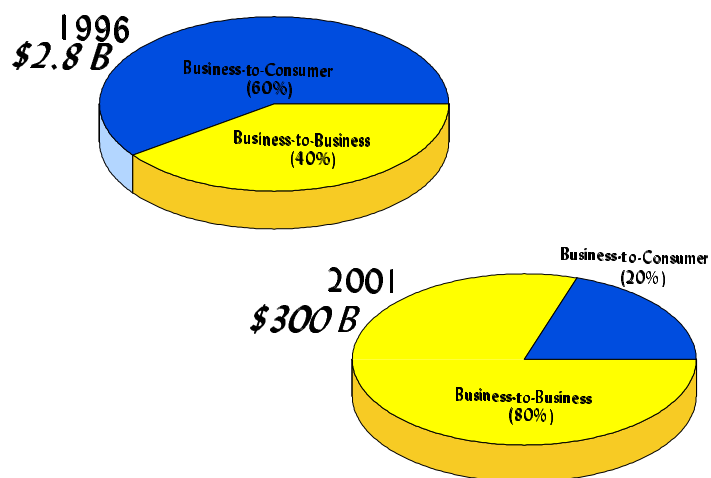


**The exchange of goods and services for payment using internet technologies.  
This includes the sales transaction and the supporting business processes.**

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Electronic Commerce Market Growth

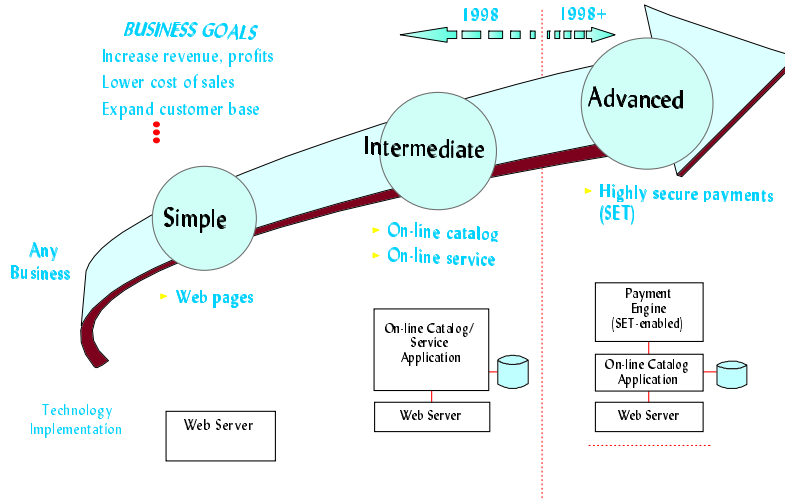


Source: Input, "Electronic Commerce Over the Internet", 1998

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# e-business Roadmap

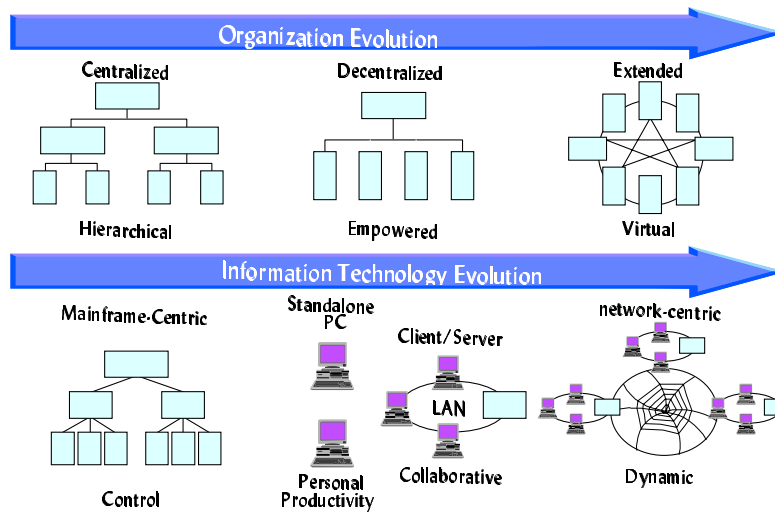


RSETC0050

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# Parallel Models



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# IBM Awards



"If you're interested in an electronic mall setup or in commerce hosting, IBM provides the best implementation. Of the products in our roundup, Net.Commerce was the easiest to set up and offered the best, most flexible site-creation tools."



"IBM's Net.Commerce gets you started quickly and lets you grow without hiccups... allows your cyberspace to match some of the customer service you deliver in the physical world... can be well integrated with fulfillment systems."



"IBM's Net.Commerce suite of Web storefront software continues to be the best designed and implemented product in this category. eTill is superior to any other credit-card processing software I've seen so far." David Strom, InfoWorld Test Center, March 30, 1998



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## more Awards & Quotes



### ■ PC Magazine—Editor's Choice (12/9/1998)

- ▶ "for delivering a very sophisticated and powerful solution and giving you the greatest flexibility no matter what decisions you've already made."

### ■ US News (12/7/1998)

- ▶ "Guess who's No. 1 in E-commerce? Still Big Blue."

### ■ PC Week (4/6/1998)

- ▶ "IBM's Net.Commerce Pro pushes the envelope for out-of-the-box electronic-commerce: Its extensibility, customizability and tight back-end integration go beyond the demands of business-to-consumer transactions, ably providing a framework for business-to-business commerce via the Internet."



### ■ InfoWorld (3/30/1998)

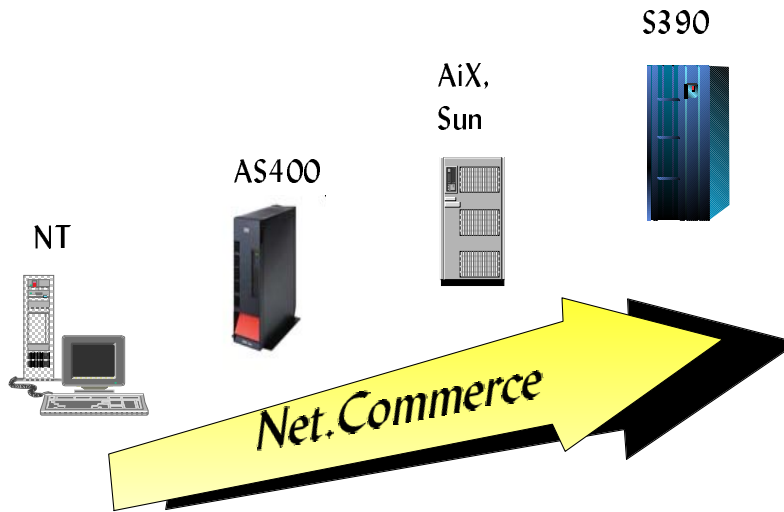
- ▶ "IBM's Net.Commerce suite of Web storefront software continues to be the best designed and implemented product in this category"

### ■ Crossroads A-List Awards (3/1998)

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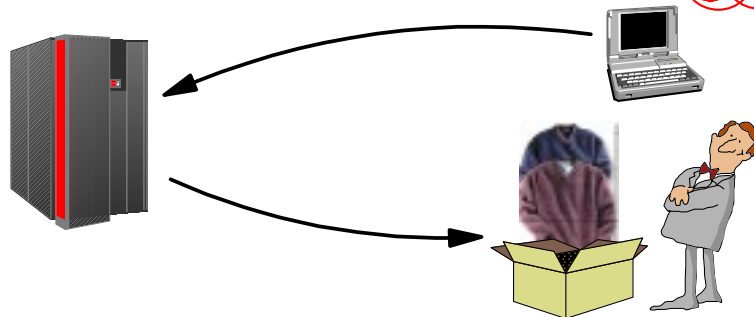
Available on 5 platforms and in 9 languages



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## Electronic Commerce



Five-fold increase of e-commerce for holiday season of 1998 over 1997

Issues ... how do we:

- Attract and keep customers
- Provide new and useful customer service offerings
- Drive down the cost per transaction
- React fluidly to the changes in "hit rates"

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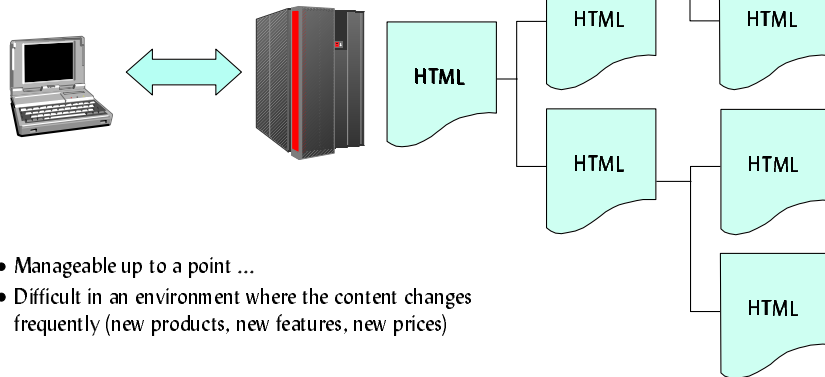
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## Static HTML

Overview



One way is linked static HTML pages:



- Manageable up to a point ...
- Difficult in an environment where the content changes frequently (new products, new features, new prices)

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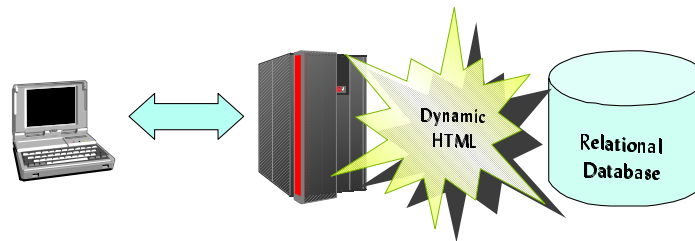
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## Dynamic HTML

Overview



Another way is dynamically creating the HTML

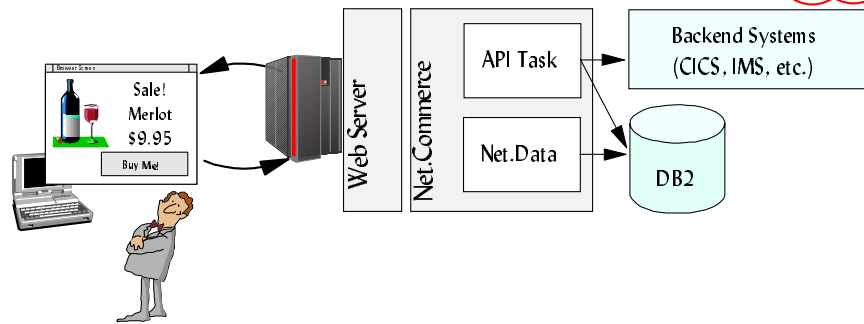


- Capable of scaling to millions of products
- Manage information in Database, not HTML files

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# What is Net.Commerce?

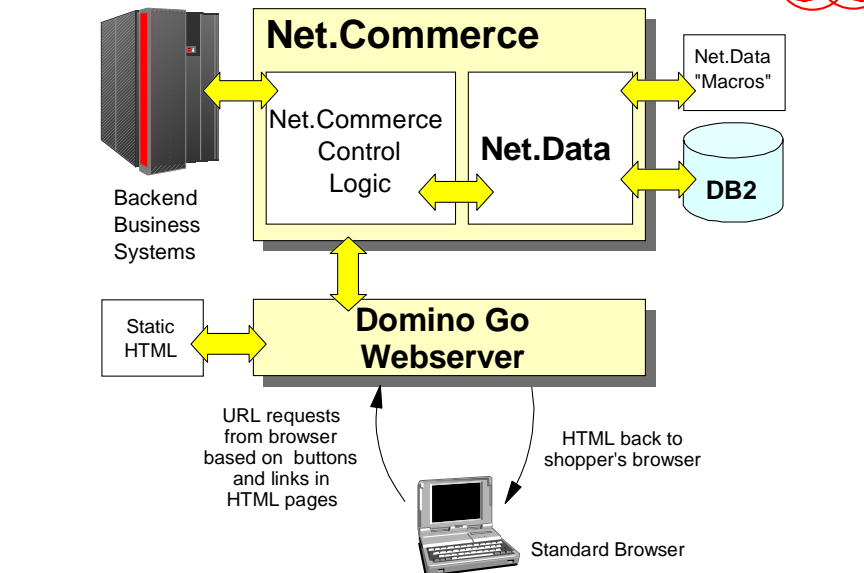


- Web Server handles all static HTML, and passes Net.Commerce commands to Net.Commerce.
- Net.Commerce determines what to do with command
- Macros query DB2 database and product HTML
- API Tasks access DB2 or Backend Systems
- All information returned to browser in the form of HTML

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# Net.Commerce Overview

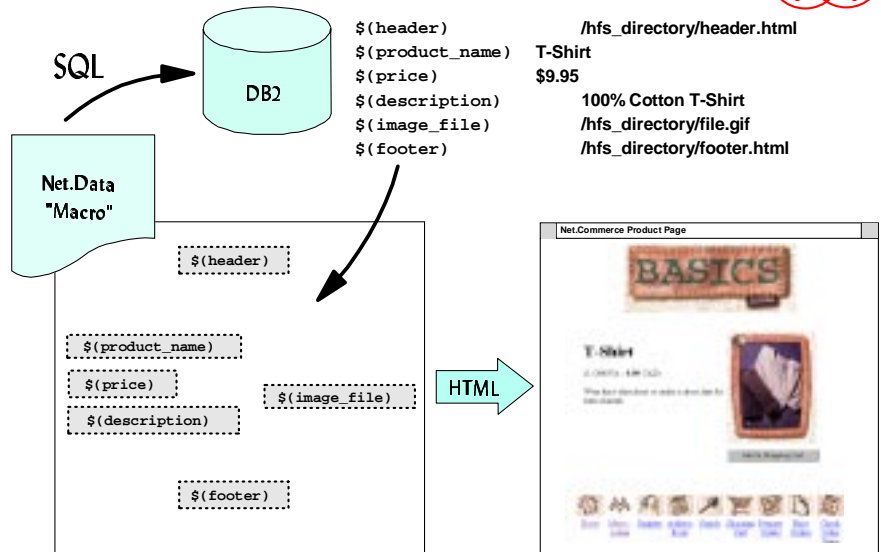


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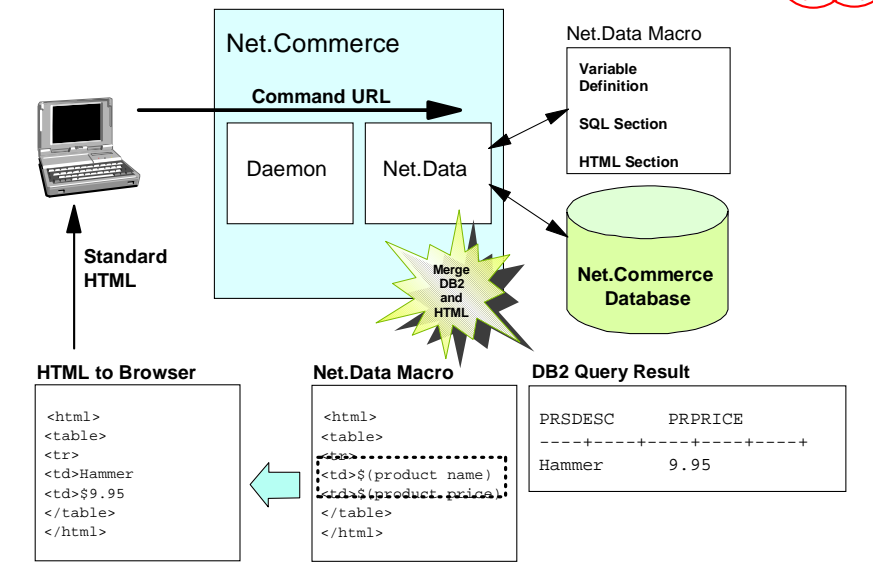
# Net.Data



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# Net.Data in Net.Commerce

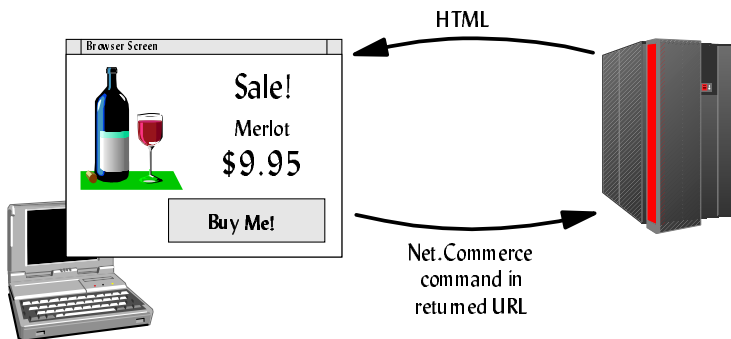


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# Net.Commerce Commands

Overview



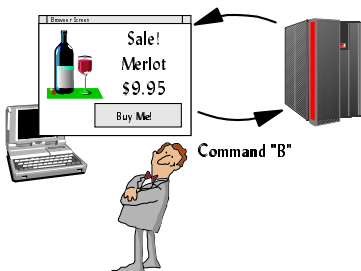
```
<FORM ACTION="/cgi-bin/msrvr/;shopcart/add">
<INPUT TYPE=HIDDEN NAME="merchant_rn"
VALUE="123">
<INPUT TYPE=HIDDEN NAME="product_rn"
VALUE="44336">
<INPUT TYPE=SUBMIT NAME="Buy Me!">
</FORM>
```

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# How Net.Commerce Handles Commands

Overview



Each command has associated with it a set of "tasks"

If Command Is ...	Then Do This ...
Command "A"	list of tasks
Command "B"	Run API Task #2 Run API Task #5 Run API Task #8 Run Macro Task #11
Command "C"	list of tasks

- Check Inventory
- Calculate Shipping Charges
- Calculate Taxes
- Run a macro to show "Order Details" with shipping and tax charges

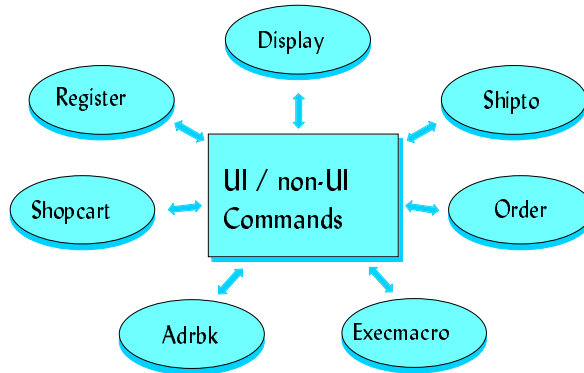
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## Net.Commerce Commands



- HTML macros that run SQL queries

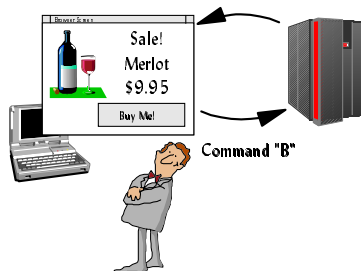


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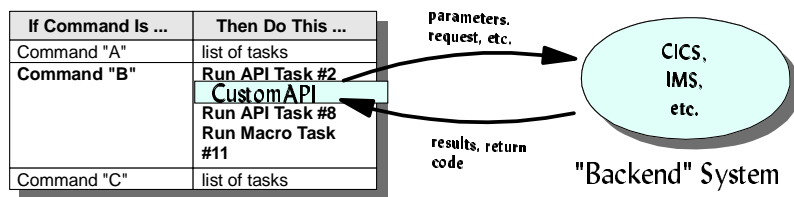
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## "Backend" Integration

Overview



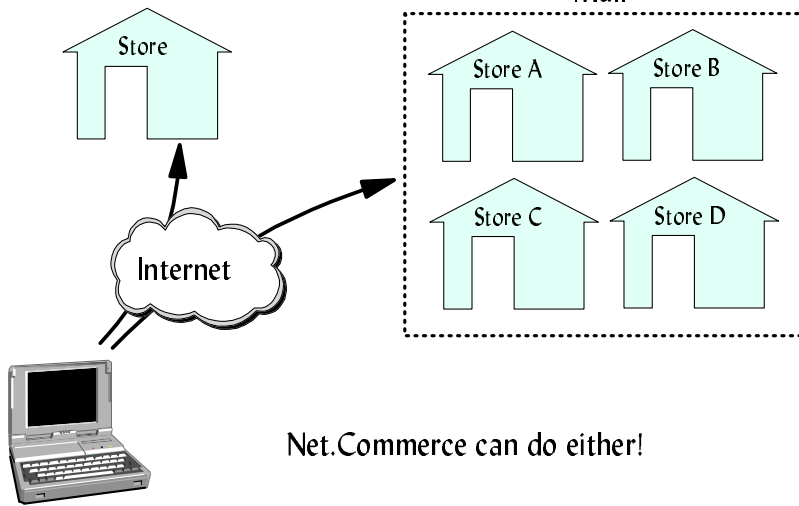
You can "override" an API task with a customized program to integrate with "backend" systems.



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# Electronic Stores and Malls

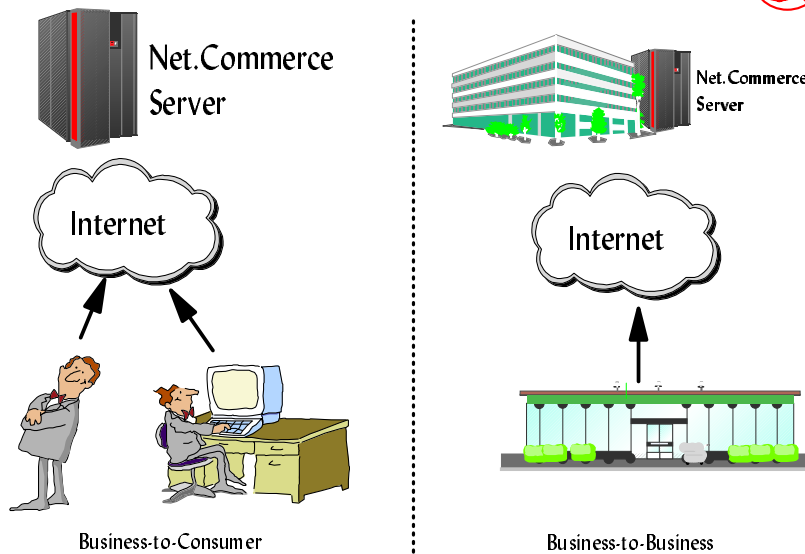


Net.Commerce can do either!

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# Business-to-Business

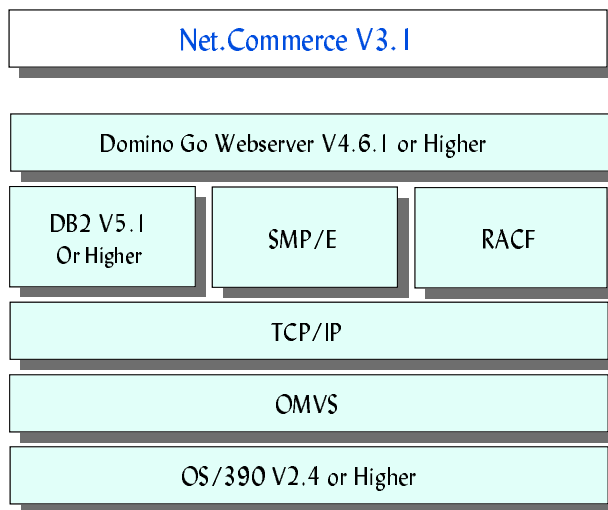


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## Prerequisites

Installation



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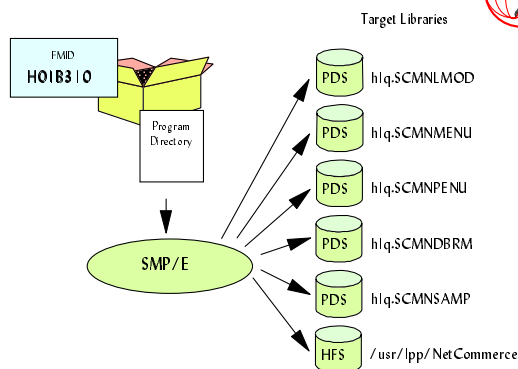
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## Installation Process

Installation



1. Receive
2. Pre-Apply
3. Apply/Accept
4. Post-Apply



### Pre-Apply Jobs:

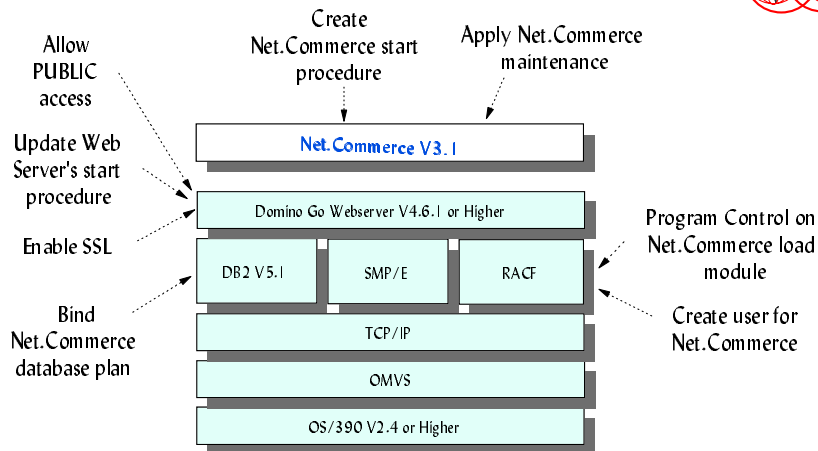
**CMNISDDD** Define SMP/E DDDEF's  
**CMNISALC** Allocate Target and Distribution Libraries  
**CMNISHFS** Allocate HFS space and set mount point  
**CMNISMKD** Invokes CMNMKDIR  
**CMNMKDIR** Create directories and symbolic links

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## Post-Apply Work Needed

Installation



Covered in detail in the "Configuring and Getting Started" book (GC24-5862)

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## Maintenance for Net.Commerce

Installation



Sysmod	APAR(s)	Prereq(s)	Coreq(s)	Available	Notes
H01B310	--	--	--	Mar 1998	Base Product
UQ18426	PQ14944	Base	--	17-Jul-1998	
UQ19295	PQ15846	UQ18426	--	11-Aug-1998	
UQ20103	PQ17084 PQ17373 PQ17844	UQ18426 UQ19295	--	2-Sept-1998	
UQ22168	PQ19800	UQ18426 UQ19295 UQ20103	--	2-Nov-1998	Fixes a bunch of problems.  Defective file delivered on this PTF. Addressed with PE APAR PQ21334 and fixed with PTF UQ24884

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## Maintenance for Net.Commerce

Installation



Sysmod	APAR(s)	Prereq(s)	Coreq(s)	Available	Notes
UQ2488 4	PQ2133 4	UQ2216 8	--	3-Jan-1999	Fixes problem with UQ22168
UQ2490 5	PQ2202 5	UQ2216 8	--	3-Jan-1999	Enhanced caching facility
UQ2491 5	PQ2149 6	UQ1842 6 UQ2216 8	--	3-Jan-1999	Defective PTF. APAR PQ23119. Enhancement to work with new Payment Server V1.2
UQ2496 5	PQ2108 7	UQ2216 8 UQ2490 5 UQ2491 5	UQ2496 9	11-Jan-1999	Enhancement to display Euro currency, as well as fixed Product Advisor (2 part PTF)
UQ2496 9	PQ2248 4	UQ2490 5	UQ2496 5	11-Jan-1999	Enhancement to display Euro currency, as well as fixed Product Advisor (2 part PTF)

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## Configuration Overview

Planning



- Multi-Home Support
- Configuration Files
- Configuration Program Flow

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## Multi-Home Support

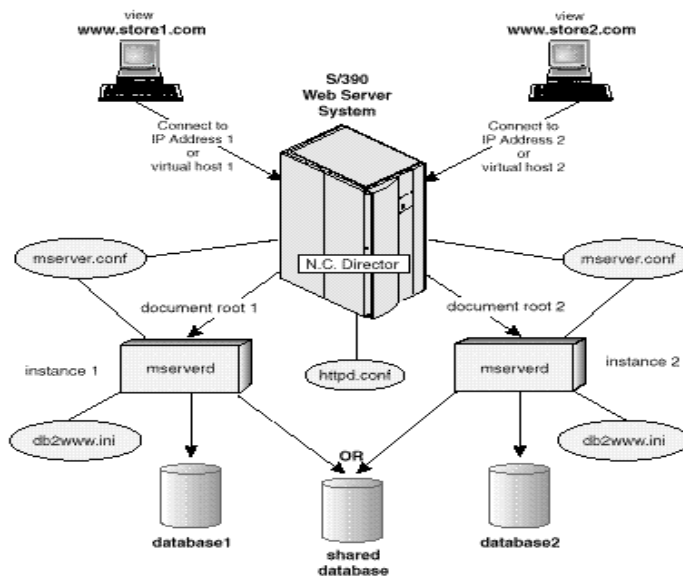


- ▶ Run multiple copies of Net.Commerce Servers, each called an instance
- ▶ Differentiate by virtual host names or separate IP addresses
- ▶ Instances can share a Net.Commerce database or have their own
- ▶ Each instance has own set of Net.Commerce configuration files
- ▶ Instance name forms part of directory structure to separate each instance's files

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## Multi-Home Diagram



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## Configuration Files



- ▲ Instance configuration file, `mserver.conf`
  - ▶ created during configuration, using values specified on panels and default values
  - ▶ can be based on a model config file
  - ▶ controls Net.Commerce server and gwapi processing
  - ▶ created in  
`/usr/lpp/NetCommerce/html/lang/inst_name/`

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## mserver.conf



```
MS_HOSTNAME icat9.endicott.ibm.com
SERVER_HOST test9a.endicott.ibm.com
MS_PORT 19370
MACRO_PATH /usr/lpp/NetCommerce/macro/en_US
MS_HTADMIN /usr/lpp/internet/sbin/htadm
MS_HTPASS /usr/lpp/NetCommerce/instance/icat/password/netc.pwd
WWW_CONFIG /etc/httpd.conf
WWW_HTML_PATH /usr/lpp/NetCommerce/html/en_US/icat
WWW_CGIBIN_PATH /usr/lpp/NetCommerce/cgi-bin
DBNAME demoicat
DBPASS edgebdddnkapdfmc
MS_DBSSID dsn5
MS_DBPLAN mserver
DBOWNER cmnsrv
MS_NUM_CHILD 2
NC_INST_PATH /usr/lpp/NetCommerce
MS_TRANS_COUNT 1000
DB_RETRY_LIMIT 0
DB_RETRY_INTERVAL 60
DB_CODESET IBM-850

DB_TERRITORY US
MERCHANT_KEY dfgjmcfoikmcdedcgfbdlhfmiklaee
NC_DBADMIN cmnsrvl
NC_LANG en_US
```

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## mserver.conf (continued)



```
MS_HTML_MAX 1000000
NC_DBDFLT_SCRIPT suset | .private.nc2 | 8.SCMNSAMP
NC_TEDITOR_PATH /usr/lpp/NetCommerce/instance/ica/teditor
NC_DMN_CACHE I
MS_ADDRBOOK_SSL I
MS_ADMIN_SSL I
MS_SHOPCART_SSL I
MS_ORDER_SSL I
MS_REGISTER_SSL I
MS_SHIPTO_SSL I
MS_DISPLAY_SSL O
MS_EXECMACRO_SSL 2
MS_AUCTION_SSL I
IC_DBMS DB390
IC_JDBC_DRIVER ibm.sql.DB2Driver
IC_JDBC_NETDRIVER COM.ibm.db2.jdbc.app.DB2Driver
IC_JDBC_URL jdbc:db2os390LOC1
IC_JDBC_NETURL jdbc:db2:LOC1
IC_NCCOMMAND_VERSION V1
MAUCTION off
```

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## Configuration Files



### ▲ Instance Net.Data configuration file,

db2www.ini

▶ copied during configuration from

*/usr/lpp/NetCommerce/html/lang/db2www.ini*

▶ config updates **MACRO\_PATH,**  
**INCLUDE\_PATH, HTML\_PATH,**  
**EXEC\_PATH**

▶ controls Net.Data macro processing

▶ created in */usr/lpp/NetCommerce/html/lang/inst\_name/*

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## db2www.ini



```
MACRO_PATH /usr/lpp/NetCommerce/instance/icat/tditor;
          /usr/lpp/NetCommerce/macro/en_US/ncsample;
          /usr/lpp/NetCommerce/macro/en_US/demomai;
          /usr/lpp/NetCommerce/macro/en_US/bus2bus;
          /usr/lpp/NetCommerce/macro/en_US
INCLUDE_PATH /usr/lpp/NetCommerce/macro/en_US/ncsample;
          /usr/lpp/NetCommerce/macro/en_US;
          /usr/lpp/NetCommerce/instance/icat/tditor;
          /usr/lpp/NetCommerce/html/en_US;
          /usr/lpp/NetCommerce/macro/en_US/bus2bus
HTML_PATH /usr/lpp/NetCommerce/html/en_US/icat
EXEC_PATH /usr/lpp/NetCommerce/macro/en_US/ncsample
ENVIRONMENT (DTW_SQL) dtwsql ()
ENVIRONMENT (DTW_DEFAULT) defcdll (OUT RETURN_CODE)
ENVIRONMENT (DTW_SYS) sysdll (OUT RETURN_CODE)

ENVIRONMENT (DTW_SYSTEM) sysdll (OUT RETURN_CODE)
ENVIRONMENT (DTW_PERL) perldll (OUT RETURN_CODE)
ENVIRONMENT (DTW_REXX) rexxdll (OUT RETURN_CODE)
ENVIRONMENT (DTW_FILE) filedll (OUT RETURN_CODE)
DB2MSGS NONE

DTW_REMOVE_WS NO
```

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## Configuration Files



### ▲ Instance environment variables file,

mserver.envvars

- ▶ copied during configuration from

`/usr/lpp/NetCommerce/install/mserver.envsamp`

- ▶ controls Net.Commerce server and gwapi processing

- ▶ created in `/usr/lpp/NetCommerce/html/lang/inst_name/`

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## mserver.envvars



```
PATH=/bin:./usr/lpp/internet/bin
SHELL=/bin/sh
TZ=EST5EDT
LANG=en_US
NLSPATH=/usr/lpp/NetCommerce/msg/%L/%N:
/usr/lpp/NetCommerce/msg/en_US/%N:
/usr/lib/nls/msg/%L/%N:/usr/lpp/internet/%L/%N:
/usr/lib/nls/msg/C/%N:/usr/lpp/internet/C/%N
LIBPATH=/usr/lpp/internet/bin:/usr/lpp/NetCommerce/lib
#RESOLVER_CONFIG=/'TCP/IP.DATA'
```

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## Configuration Files



### ▲ Web server configuration file, `httpd.conf`

- ▶ modified (not created) during configuration
  - SERVICE, PASS, PROTECT, AUTHENTICATION, and ADDTYPE records added
- ▶ controls web server processing
- ▶ `WWW_CONFIG` in `mserver.conf` specifies which webserver config file to use for this instance
- ▶ normally in `/etc`

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## httpd.conf (excerpts)



```
##### IBM Net.Commerce #####
Authentication BASIC /usr/lpp/NetCommerce/cgi-bin/cmnicipi:Authentication

Protect /msprotect/* russell9.endicott.ibm.com {
ServerId Private_Authorization
AuthType Basic
GetMask All@(*)
PutMask All@(*)
PostMask All@(*)
Mask All@(*)
Passwdfile %%DB2%%
}

Pass /te_html/* /usr/lpp/NetCommerce/instance/russell/teditor/te_html/*
russell9.endicott.ibm.com
Pass /ca_html/* /usr/lpp/NetCommerce/instance/russell/teditor/ca_html/*
russell9.endicott.ibm.com

Protect /msprotect/* icat9.endicott.ibm.com {
ServerId Private_Authorization
AuthType Basic
GetMask All@(*)
PutMask All@(*)
PostMask All@(*)
Mask All@(*)
Passwdfile /usr/lpp/NetCommerce/instance/icat/password/netc.pwd
}

Pass /te_html/* /usr/lpp/NetCommerce/instance/icat/teditor/te_html/*
icat9.endicott.ibm.com
Pass /ca_html/* /usr/lpp/NetCommerce/instance/icat/teditor/ca_html/*
icat9.endicott.ibm.com
```

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## httpd.conf (continued)



```
ServerInit /usr/lpp/NetCommerce/cgi-bin/cmnicipi:ServerInit
Service /msprotect/* /usr/lpp/NetCommerce/cgi-bin/cmnicipi:Service/*
Service /cgi-bin/msrvr/* /usr/lpp/NetCommerce/cgi-bin/cmnicipi:Service/*

Pass /storemgr/* /usr/lpp/NetCommerce/html/en_US/ncadmin/storemgr/*
Pass /sitmgr/* /usr/lpp/NetCommerce/html/en_US/ncadmin/sitmgr/*
Pass /ncacom/* /usr/lpp/NetCommerce/html/en_US/ncadmin/common/*
Pass /ncsample/* /usr/lpp/NetCommerce/html/en_US/ncsample/*
Pass /ncagif/* /usr/lpp/NetCommerce/html/en_US/ncadmin/gif/*
Pass /butnbars/* /usr/lpp/NetCommerce/html/en_US/ncadmin/butnbars/*
Pass /ncadmin/* /usr/lpp/NetCommerce/html/en_US/ncadmin/*
Pass /nchelp/* /usr/lpp/NetCommerce/html/en_US/nchelp/*
Pass /ncerror/* /usr/lpp/NetCommerce/html/en_US/ncerror/*
Pass /ncbooks/* /usr/lpp/NetCommerce/html/en_US/ncbooks/*
Pass /demomall/* /usr/lpp/NetCommerce/html/en_US/demomall/*
Pass /bus2bus/* /usr/lpp/NetCommerce/html/en_US/bus2bus/*
Pass /hs/* /usr/lpp/NetCommerce/html/en_US/bus2bus/*
Pass /nextgeneration/* /usr/lpp/NetCommerce/html/en_US/nextgeneration/*
Pass /ca_icons/* /usr/lpp/NetCommerce/html/en_US/ca_icons/*

AddType js application/x-javascript ebedic 1.0 #Net.Commerce java
##### End of IBM Net.Commerce #####
```

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## httpd.conf (continued)



```
# ===== #
#   Default configuration file for httpd, running as a normal
#   HTTP server.
#
Userid   PUBLIC
##### IBM Net.Commerce (Pass) #####
Pass /* /usr/lpp/NetCommerce/html/en_US/russell/* russell9.endicott.ibm.com
Pass /* /usr/lpp/NetCommerce/html/en_US/icat/* icat9.endicott.ibm.com
##### End of IBM Net.Commerce (Pass) #####
Pass    /*      /usr/lpp/internet/server_root/pub/*
```

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## Configuration Files



### ▲ Web server servlet configuration file,

servlet.conf

- ▶ **modified (not created) during configuration**
  - **ESERVLET and SERVICE records added**
- ▶ **controls web server servlet processing**
- ▶ **in same directory as httpd.conf**

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## servlet.conf (excerpts)



```
# ===== #
# Servlet Configuration Directives
# ===== #
MaxActiveJavaThreads 10
ServletLog /home/suset1/logs/servlet-log
JVMLog /home/suset1/logs/JVM-log
JavaPath /usr/lpp/java/bin
JavaLibPath /usr/lpp/java/lib/mvs:/usr/lpp/java/lib/mvs/native_threads
JavaClassPath /usr/lpp/java/lib/classes.zip:
/usr/lpp/internet/server_root/cgi-bin/icclass.zip:
/usr/lpp/internet/server_root/servlets/public:
/home/suset8/classes/db2jdbcclasses.zip:
/usr/lpp/NetCommerce/www/Servlets/Public

##### IBM Net.Commerce #####
ESERVLET icmsrver icmsrver {
    configfile=mserver.conf
}
SERVICE icmsrver /servlet/icmsrver

ESERVLET icviewer icviewer {
    configfile=mserver.conf
    content=text/html
    russell9.endicott.ibm.com=/usr/lpp/NetCommerce/html/en_US/russel
    icat9.endicott.ibm.com=/usr/lpp/NetCommerce/html/en_US/icat
}
SERVICE icviewer /servlet/icviewer
##### End of IBM Net.Commerce #####
```

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## Configuration Files



### ▲ Web server environment variables file,

httpd.envvars

- ▶ **NOT** modified during configuration
  - need to manually modify NLSPATH
- ▶ controls web server processing
- ▶ **in** same directory as httpd.conf

```
PATH=/bin../usr/lpp/internet/bin
SHELL=/bin/sh
TZ=EST5EDT
LANG=EN_US
NLSPATH=/usr/lib/nls/msg/%L/%N:/usr/lpp/internet/C/%N:
/usr/lpp/NetCommerce/msg/%L/%N
LIBPATH=/usr/lpp/internet/bin:/usr/lpp/internet/sbin
#RESOLVER_CONFIG=/'SHR.TCPIP.DATA'
#CMN_TRACE=1
```

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## Configuration Program



### ▲ ISPF-based configuration dialog, invoked

by:cmnconf ["ncdata\_file"]

### ▲ ncdata\_file

- ▶ contains a record for each configured Net.Commerce instance, specifying:  
inst\_name config\_file\_path
- ▶ default name is /etc/nconfig.dat
- ▶ created/maintained by cmnconf
- ▶ might need to create file or rename it if trying to recover a configuration

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## Configuration Program (*continued*)



### ▲ Provides function to create, modify, or delete the configuration information for an instance

- Creates or updates configuration files
- Creates and populates directories used by the instance
- Creates and loads the database used by the instance

### ▲ Source Files - in /config

- ncconfigmvs.c - main
- ncinimvs.c - read/write mserver.conf
- ncprocessmvs.c - perform config steps

### ▲ Common Mistakes

- Change a value in System Configuration step but don't do Access Control step to update other config files
- Forget to restart Net.Commerce Server AND Webserver after making changes

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## Configuration Program Data Structures



### ▲ temporary chain of instance structures

- ▶ each structure contains the unique data for a configured instance
- ▶ built during configuration
- ▶ located via insthead and insttail ptrs

### ▲ temporary ispf table, NCCONFIG

- ▶ row for each configured instance, containing:  
inst\_name inst\_hostname
- ▶ created during configuration to display existing instances

### ▲ mserver.conf structure

- ▶ contains a field for each supported record in mserver.conf
- ▶ additional fields for other instance info
- ▶ created during configuration for instance being deleted, modified, or created

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## Configuration Flow



### ▲ Read in the nconfig file (read\_config) For each record:

- ▶ use the config file path to read the mserver.conf for the instance
- ▶ Add a new instance structure to the instance chain
- ▶ Fill in the structure using the values from the config file

### ▲ Create a temporary ispf table from the instance chain (create\_ispf table)

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## Configuration Flow cont....



▲ Display the table of existing instances in the CONFIGURING THE  
NET.COMMERCE SYSTEM panel (display\_table) Loop until exit:

- ▶ For delete an instance, remove the instance structure from chain and rename the configuration files
- ▶ For create/modify an instance (ex\_main)
  - read instance configuration file (read\_mserver\_ini)
    - read mserver.envvars and set environment variables
    - read mserver.conf (get\_mserver\_ini\_values)
      - ◆ read file and set values in MSini structure
      - ◆ set default values for variables not in mserver.conf

## Configuration Flow(cont...)



- Loop until exit:
  - Display the NET.COMMERCE INSTANCE CONFIGURATION MANAGER panel
  - Call correct handler for choice
    - ◆ system configuration (handle\_config\_command)
    - ◆ access control (handle\_access\_command)
    - ◆ database create (handle\_db\_create\_command)
    - ◆ database load (handle\_db\_load\_command)
  - Create or update the instance structure in instance chain

## Sources of Additional Information

---



- ▲ **Configuring and Getting Started book**
  - ▶ Complete step-by-step explanation of planning, preparing, and performing configuration
  - ▶ Description of each record in mserver.conf
  - ▶ Messages appendix explaining each message issued during configuration
- ▲ **The E-Commerce Publications down-load site**
- ▲ **(locate from [www.s390.ibm.com](http://www.s390.ibm.com))**
  - ▶ Corrections and additions to the Configuring and Getting Started book
  - ▶ Hints and tips from development and customers

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## Planning Overview

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- Structure of the "Mall"
- Shoppers/Users
- Product Catalog
- Shopping Flow
- Integration/Customization

---

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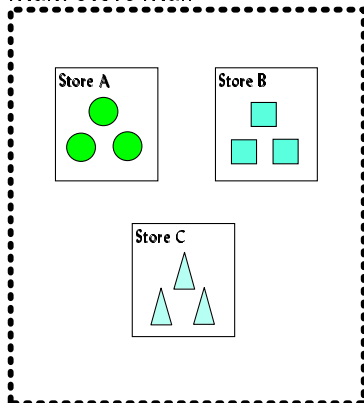
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## Mall Structure

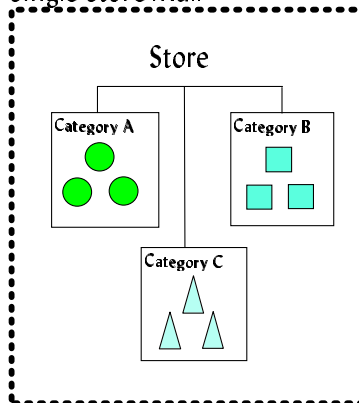
Planning



### Multi-Store Mall



### Single-Store Mall



- A "Mall" may consist of one store, or many
- A shopper may have items from many stores in their "shopping cart"
- Payment must not span stores
- Consider single-store with categories if you wish single-payment option

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## Shoppers

Planning



### Unregistered

- May browse and order just like any other shopper
- Can't "personalize" pages with shopper name
- Shipto addresses not saved
- Can't belong to "shopper groups"
- Can't check on order status

### Registered

- Information on shopper saved in DB
- Net.Commerce can "identify" the shopper
- Order information can be queried by shopper
- Shopper Groups can be used to offer special promotions, discounts, products

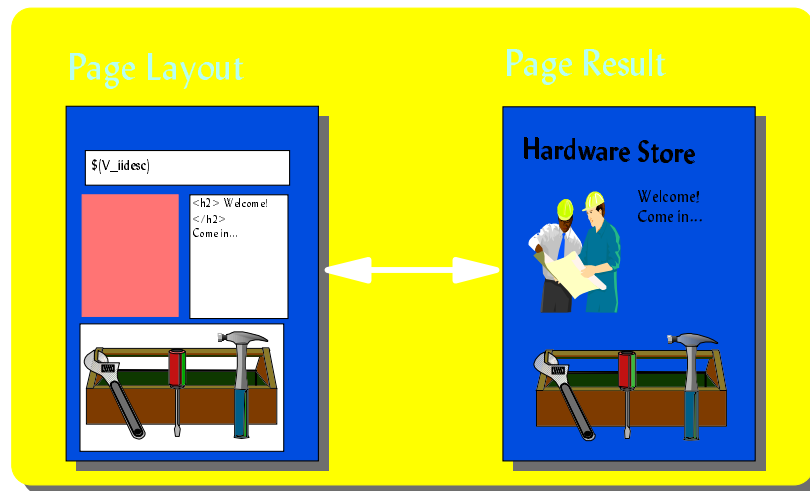
### Administrator

- Able to access "Administrator Functions"
- Access Control function can limit admin ID from seeing other store's information
- Consider as a Registered Shopper with "superuser" authority

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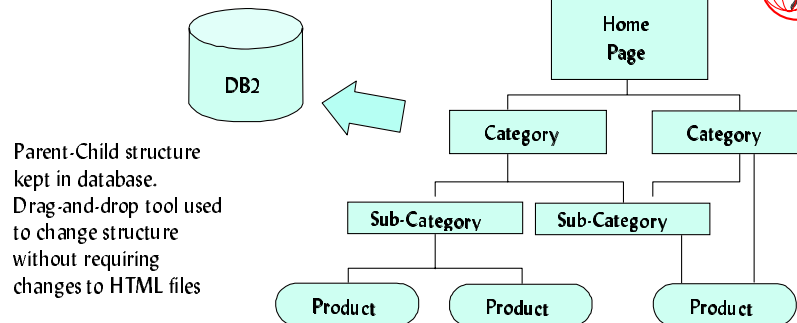
## Template Designer



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## Product Catalog



Parent-Child structure kept in database. Drag-and-drop tool used to change structure without requiring changes to HTML files

### Planning Issues:

- Depth of Categorization
- Keeping it easy to navigate
- Capturing digitized images (thumbnail, large)
- Providing alternative methods of locating products
  - Search engines
  - Other paradigms

Products and Categories may point to multiple parents. Gives shoppers multiple paths to products.

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## How to Describe Products

Planning



### Text Description

Our sweater comes any way you like it: wool or cotton, crew neck or V-neck. In sizes S, M, L and XL, it will fit anyone in your family. Three colors (blue, green or white) allow you to match any outfit.

### Attribute "Name/Value" Pairs

Name	Value
Size	S, M, L, XL
Color	Blue, Green, White
Fabric	Cotton, Wool
Form	Crew, V-Neck

Powerful data model for search engines and other product selection methods (Product Advisor)

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## Product Advisor Function

Planning



The screenshot shows the IBM Product Explorer window titled "IBM Product Explorer". On the left, there are icons for "15 Products", "Product Comparison", and "Sales Assistance". The main area is titled "ThinkPads" and contains several configuration sections:

- Processor:** A dropdown menu showing "Pentium 120MB", "Pentium 75", and "Pentium 50".
- Memory:** Radio buttons for "32MB", "16MB", and "8MB".
- Hard Drive:** A dropdown menu showing "1,200MB".
- Bus:** Radio buttons for "ISA/VESA", "PCI/ISA/VL", "2X", "4X", and "None".
- Form Factor:** A dropdown menu showing "Notebook".
- Operating System:** A dropdown menu showing "Microsoft Windows NT 3.51 Work", "none", and "Select a System".

Each section has a "Undo" link below it.

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## Component Overview

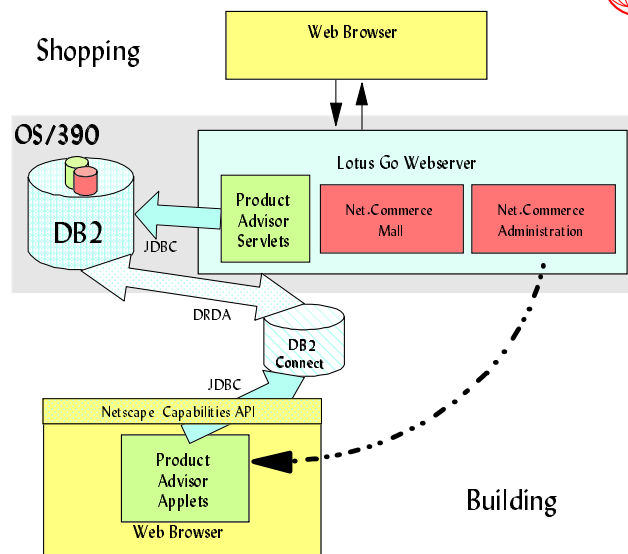


- The Product Advisor provides a set of build tools to allow the store administrator to create product advisor shopping metaphors
- Product Advisor enhances the Net.Commerce catalog by the addition of shopping metaphors, which allow a customer to shop based on their knowledge of the product area

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## System Overview



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## Terms



Term	Definition
Build-time	The Product Advisor functions that are used to create catalogs and metaphors
Catalog	Product Advisor's copy of data contained in the Net.Commerce tables
Metaphor	A way to display a Product Advisor catalog to enhance the shopper's experience
Run-Time	The Product Advisor functions that are used to display metaphors to the shopper

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## Types of Metaphors



**Sales Assistant** - leads the shopper through a question and answer dialog



**Product Exploration** - presents a table of product features and allows shopper to select desired feature values



**Product Comparison** - allows side-by-side comparison of features for a set of products

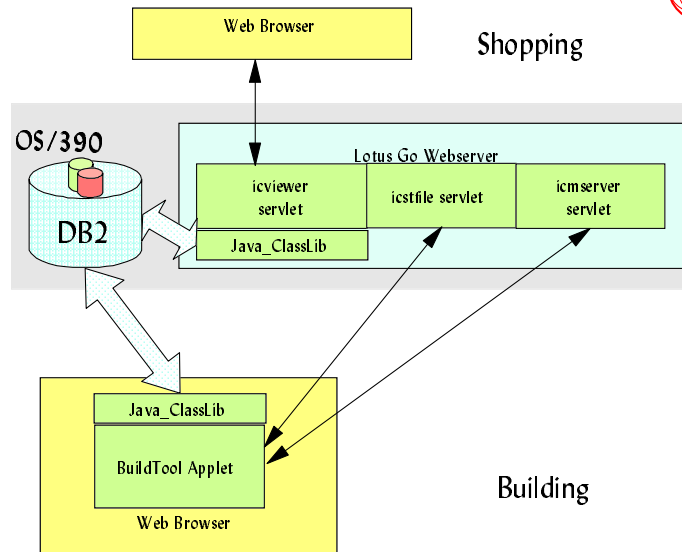
A metaphor is associated with a template that defines the layout when rendering the metaphor.

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## Component Overview



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## Component Overview, cont.



### ▲ Servlets

- ▶ icmserver.java - reads the requested variables from the mserver.conf file
- ▶ icstfile.java - uses the value in NC\_TEDITOR\_PATH to find Product Advisor templates
- ▶ icviewer.java - renders a metaphor for a shopper. Also called from the build tool applets to view.

### ▲ Applets

- ▶ BuildTool.java - the anchor class for the applets.

### ▲ Common Components

- ▶ Java\_ClassLib - the CMVC component that contains the classes that perform the JDBC access. About 100 classes in this component. Shipped in **COM.ibm.ict.netcatalog** package.

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## OS/390 Porting Issues



- ▲ In general, the majority of the Product Advisor code is common across all platforms (about 20 unique OS/390 classes out of 220 total classes).
- ▲ The areas that require OS/390 code are:
  - ▶ DB2 Support
    - Difference in SQL, such as no recursive selects, table creation and drop differences
    - JDBC/ODBC Support, mainly no remote JDBC support
  - ▶ ASCII/EBCDIC Issues

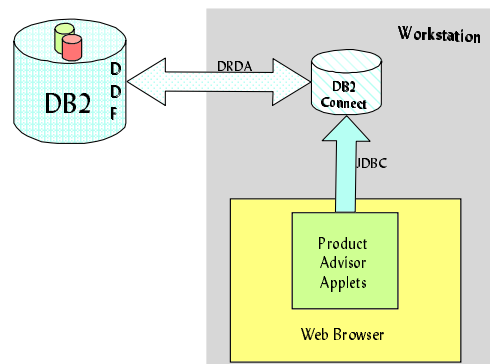
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## JDBC Issues



- The Product Advisor build tools run as applets. These applets use JDBC to get data from the database.
- There is no JDBC support on OS/390 for applets.
- To get around this limitation, we use DB2 Connect.



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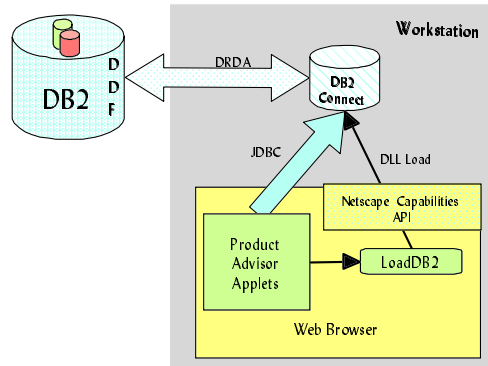
# JDBC/Security Issues



▲ However, browsers don't allow applets to execute code installed on the workstation.

▲ To get around this restrictions, we provide a Netscape SmartUpdate script to install a class, LoadDB2.java.

▲ Prior to trying to establish a JDBC connection, LoadDB2.java uses the Netscape Capabilities API to request permission to "break out" of the applet sandbox to load a DLL. A Verisign certificate is used to guarantee the owner and authenticity of LoadDB2.java.

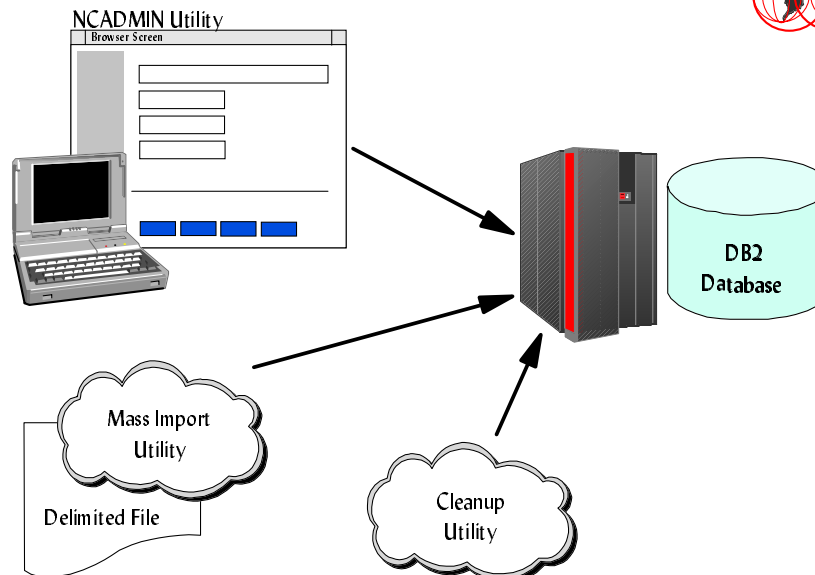


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# Utilities to Manage Catalog Data

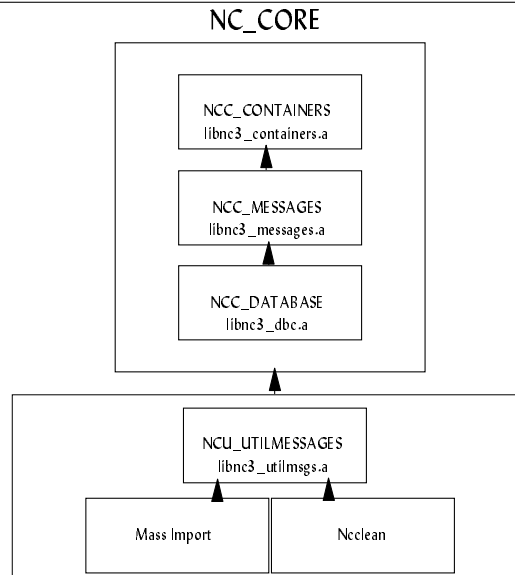
Planning



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## Net.Commerce Utilities Architecture



### Net.Commerce Utilities

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## Ncclean Overview



- Ncclean is a utility designed to help the administrator clean up the NC database
- Ncclean Syntax:
  - ncclean  
-table{shopper | shaddr | orders -status orderstatus |  
product | cache -delete {all | product} [-merch name]}  
{[-o DbOwner] [-p PlanName] [-s DbSubSysId] -f ConFile  
| -o DbOwner -p PlanName -s DbSubSysId }  
[-days DaysOld] [-loglevel 0 | 1 | 2] [-log LogFile]
- Tables
  - SHOPPER-deletes all guest shoppers that have no orders pending.
  - SHADDR-deletes all temporary address book entries which are not referenced by shipto table.
  - PRODUCT-deletes all products where prpub is 2 (marked for deletion) and is not referenced by shipto table.
  - ORDERS-deletes all orders of type 'orderstatus' where 'c'=placed, 'x'=cancelled and 'p'=pending. Using -status is required.

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## Ncclean Overview Continued



- **NC\_CACHE**-deletes entries from the cache. The `-delete` option is required. Select all, to delete all entries or select product to delete products that have changed since appearing in the cache. If you specify the `-merch` option only entries from that merchant are deleted.

### ■ Database Parameters

- You must use `DbOwner`, `DbSubsysId` and `DbPlanName` or specify the specific `mserver.conf` file
- `-o DbOwner`- Enter the DB2 database owner
- `-s DbSubSysId` - Enter the DB2 subsystem ID
- `-p DbPlanName` - Enter the DB2 plan name
- `-f ConfFile` - Specify the mserver file and location. Must be specified if all of the above are not.

### ■ Other Options

- `DAYS`-use this option to specify the minimum age of the entries to delete
- `LOGLEVEL`-use this option to change the level of logging. 0=No Logging, 2=Log every delete(default)
- `LOG`-use this option to specify a specific log file. The default log file is `dbclog.txt`.

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## Running ncclean



- ▲ Delete all guest shoppers older than 4 weeks
  - `ncclean -table shopper -days 28 -o cmnsrv -p mserver -s dsn5`
- ▲ Delete all entries from the cache from 1 store
  - `ncclean -table cache -delete all -merch Basics -f /usr/lpp/NetCommerce/html/en_US/mserver.conf`
- ▲ Delete all pending orders
  - `ncclean -table orders -status p -o cmnruss -f /usr/lpp/NetCommerce/html/en_US/mserver.conf`

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## Component Overview Mass Import



- Mass import utility reads in raw data from a text file, and populate it to several tables in the Net.Commerce database.
  
- The tables are:  
 MERCHANT, PRODUCT, CATEGORY,  
 KEYS, SHOPGRP, PRSPCODE,  
 PRODPRCS, PRODATR, PRODSGP, PRODDSTATR, CATESGP, CGPREL,  
 DISCCODE, CGRYREL

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## New NCADMIN Form



The screenshot shows the Net.Commerce Monitor Webpage. It features a main data table with columns for Shop Group, Number of Merchants, Total Merchants, and Last Update. Below this is a 'Net.Commerce Data Summary' table with columns for Shop Group, Number of Merchants, First Merchants, and Last Merchants. The interface includes a menu bar, a toolbar, and a status bar.

Shop Group	Number of Merchants	Total Merchants	Last Update
shop/ntm	20	1,111	05-01-1999 14:11:50
shop/ntm/sgv	10	60	05-01-1999 14:11:50
ntm/ntm/ntm/ntm	47	1,322	05-01-1999 14:11:50
shop/ntm/ntm	30	1,001	05-01-1999 14:11:50

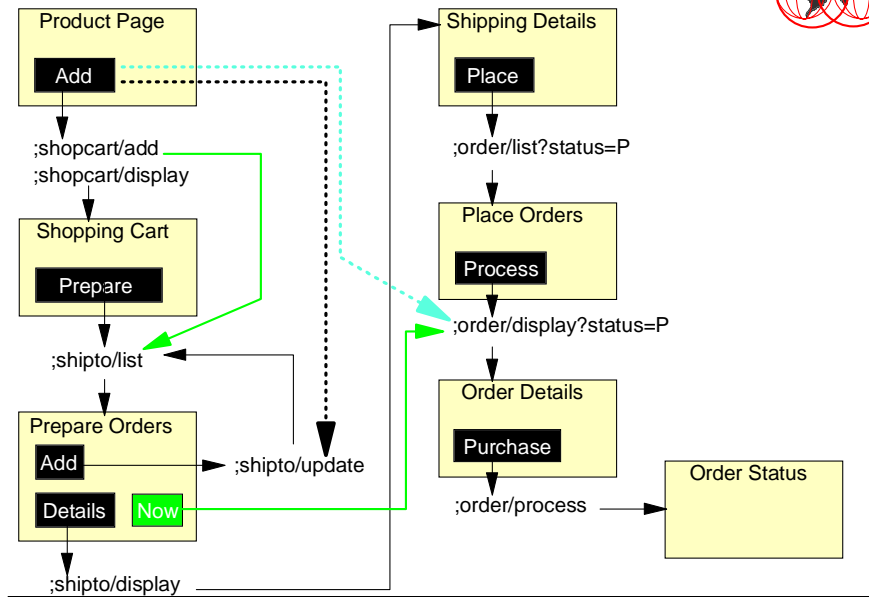
  

Shop Group	Number of Merchants	First Merchants	Last Merchants
shop/ntm	20	05-05-1998 15:34:08	05-20-1999 15:22:15
ntm/ntm/ntm/ntm	-4330	05-05-1998 15:54:08	05-30-1999 22:08:22
shop/ntm/ntm	11	05-05-1998 15:54:08	05-15-1999 02:12:55

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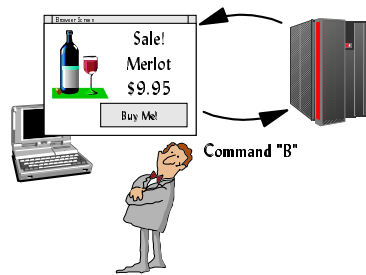
## Shopping Flow



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## Customization/Integration Planning



If Command Is ...	Then Do This ...
Command "A"	list of tasks
Command "B"	Run API Task #2 Run API Task #5 Run API Task #8 Run Macro Task #11
Command "C"	list of tasks

Net.Commerce is capable of extensive customization:

### Macro Tasks

- Override macro that runs

### Macros

- Change SQL
- Change HTML
- Change Net.Commerce commands

### API Tasks

- Override DLL that runs with customized version

### Database

- Add tables
- Utilized "customizable fields"

### Error Macros

- Change HTML
- Add additional logic

### Static Error HTML Pages

- Change look and feel

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## Customization/Integration Overview

---

Customization



- Macros
- APIs
- Database

---

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## Terminology

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- Commands are triggered from the browser by a click on a button or hyperlink
  - `http://host_name/cgi-bin/msvr/command/action?values`
  - `http://host_name/msprotect/msvr/command/action?values`
- These commands cause the Net.Commerce server to invoke pre-defined sets of API and/or macro tasks.
- The Net.Commerce DB2 database controls which API function or macro is invoked
- Macros can be customized
- APIs can be customized by generating a DLL containing a customer-written API function.
- The Net.Commerce administrator forms enable database changes

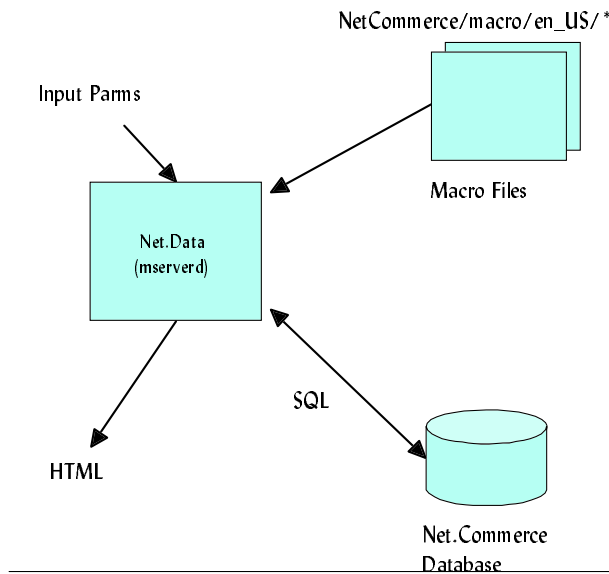
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## Net.Data Macros

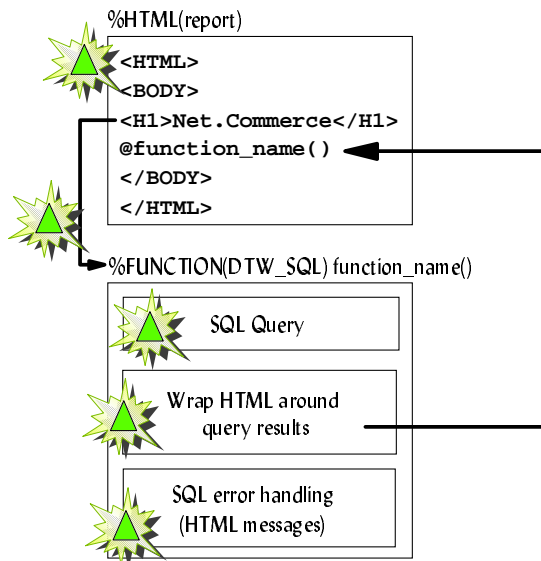


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## Macro Customization

Customization



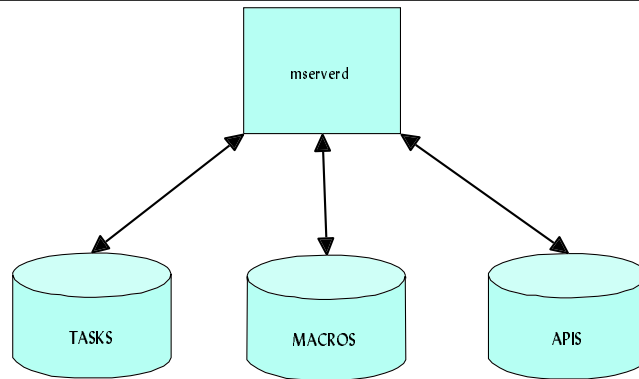
### Issues:

- Knowing what macros to customize
- Knowing how to incorporate new macros into shopping flow
- Understanding the database structure well enough to modify/create SQL queries
- Understanding SQL well enough to structure queries
- Knowing HTML to create the desired "look and feel"
- Understanding the Net.Commerce commands to alter the flow of pages.

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## Command/API Code Flow



Task Ref#  
Task Name  
Task Comment  
Task Group  
Task Scope

Task Ref#  
Merchant Ref#  
Filename

Task Ref#  
Merchant Ref#  
API DLL name  
API function name

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## Net.Commerce API Set



- 19 customization API's, including the following:
  - ▶ Audit registration and address book entries
  - ▶ Check inventory
  - ▶ Update inventory
  - ▶ Handle shopping information
  - ▶ Calculate price
  - ▶ Calculate tax
  - ▶ Place order
  - ▶ Do paymentlll

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## Fulfillment Samples



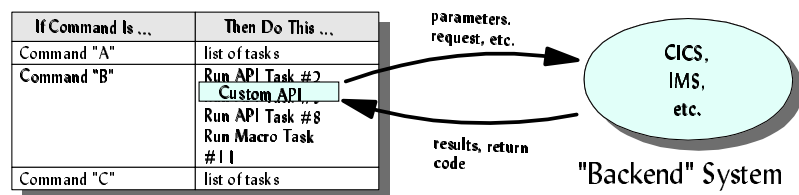
- Sample replacement functions for the Net.Commerce API functions
- Sample exception macros
- High-level communications functions for CICS and IMS
- A family of data conversion functions
- Makefiles and source code for all the supplied functions
- Documentation on API task tailoring
- All source and documentation are "as is" materials
- Distribution is via the internet (web browser download)

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## API Customization

Customization



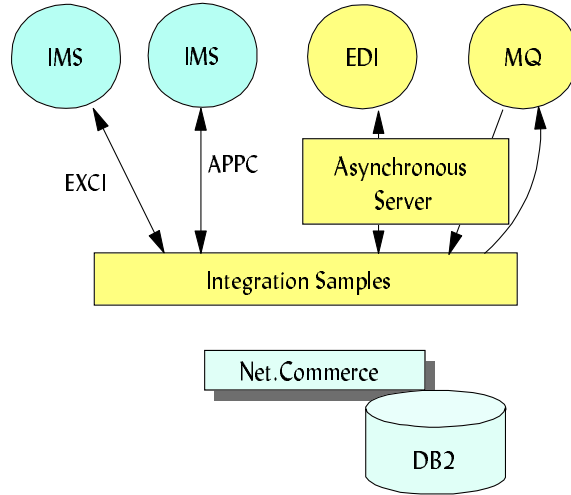
### Issues:

- Override functional tasks or "place holder" tasks
- Choose the communication method
  - Synchronous (sockets, EXCI, LU6.2)
  - Asynchronous (EDI, MQSeries)
- Develop macro to handle exceptions in your API
  - Return codes are passed into exception macros
- Follow "Standards for Writing APIs" found in on-line help

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## Enterprise Integration



New function that manages asynchronous communications

Run as MVS started task, MVS batch, OMVS foreground or OMVS background

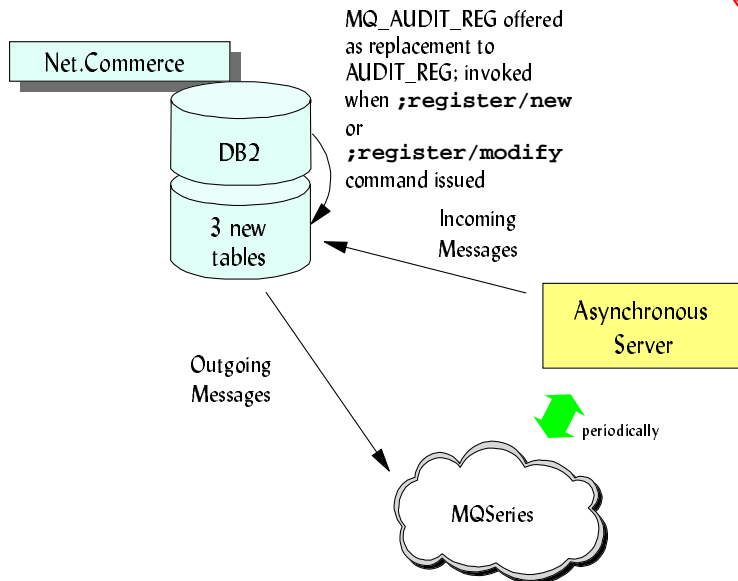
Customize a set of external functions

[www.s390.ibm.com/ecommerce/sampcode.html](http://www.s390.ibm.com/ecommerce/sampcode.html)

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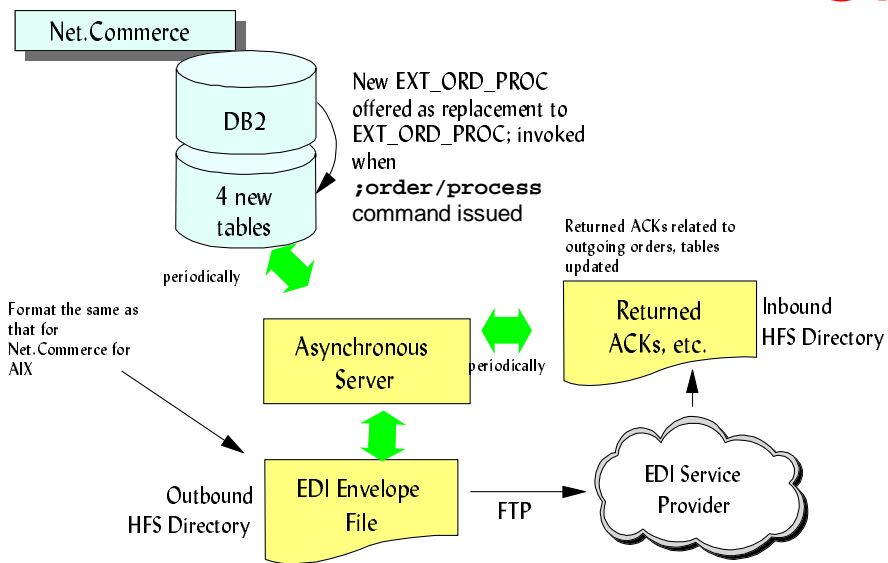
## MQSeries Sample



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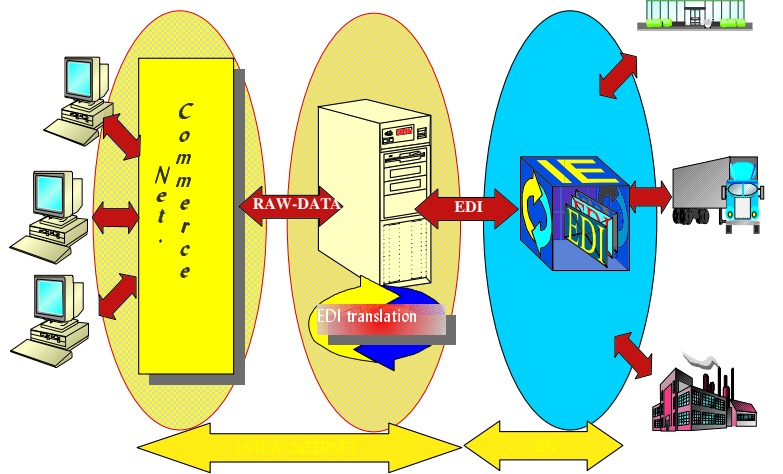
# Electronic Data Interchange Sample



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# Net.Commerce - EDI data flow



Phase 1 - FTP  
Phase 2 - Note-E-mail

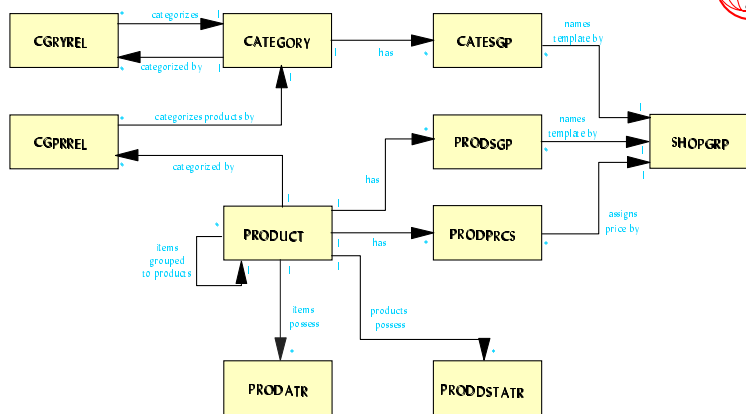
850 - X12 EDI Standard Purchase Order  
997 - X12 EDI Standard Functional Acknowledgment

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## Database Customization

Customization



- Add new tables
- Use fields left open for customization
- Create new indexes

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## Payment

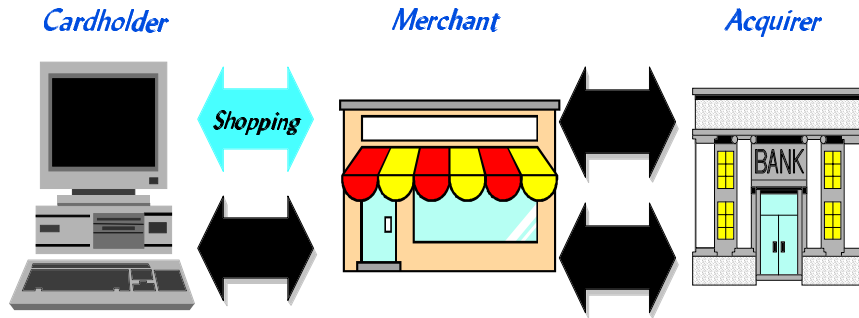


- E-Till Integration Overview
- Objectives
- Net.Commerce E-Till Integration Details
- Helpful Hints
- Summary

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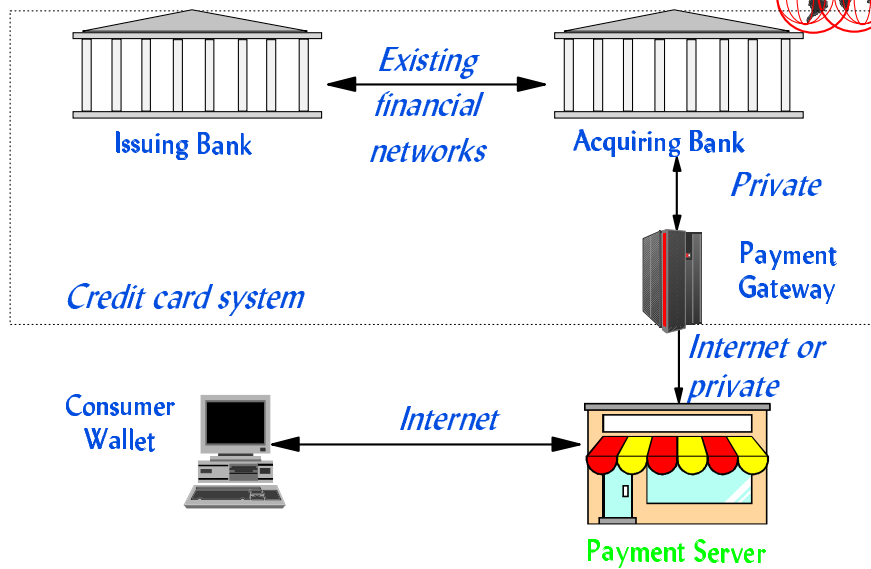
## Today's Payment Messages



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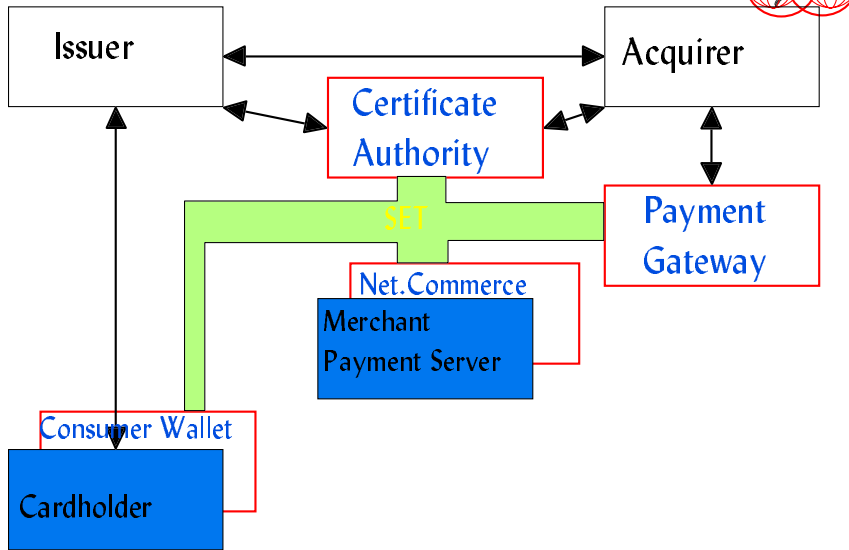
## SET Payment Scenario



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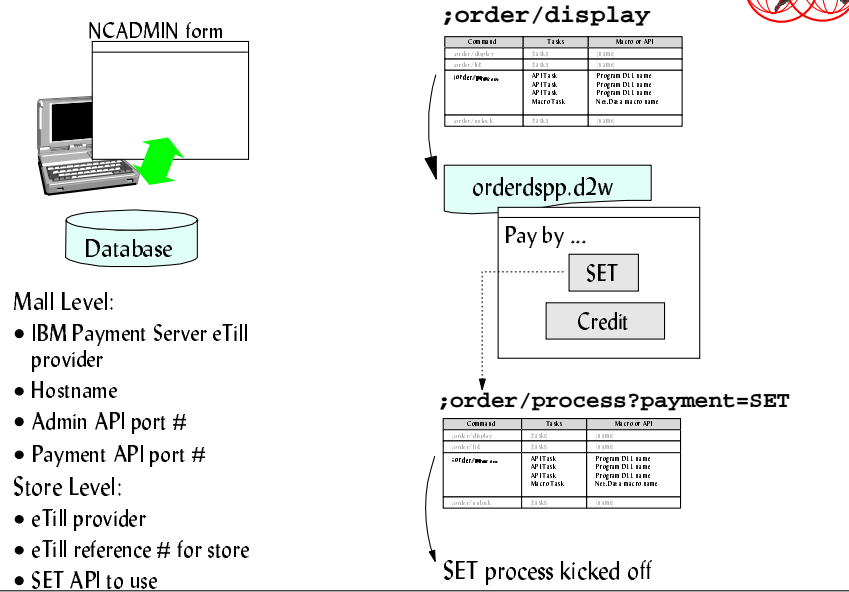
## Terminology - Software



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## Net.Commerce and SET



Mall Level:

- IBM Payment Server eTill provider
- Hostname
- Admin API port #
- Payment API port #

Store Level:

- eTill provider
- eTill reference # for store
- SET API to use

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## Purpose



- Provide a secure environment for conducting credit-card based electronic commerce
- Provide a mechanism for Merchants to advertise and sell their products to Consumers over the Internet
- Provide products ready for handling additional payment methods as they are defined
- Provide the products necessary for automated authorization of credit card transactions

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## Secure Electronic Transaction (SET)

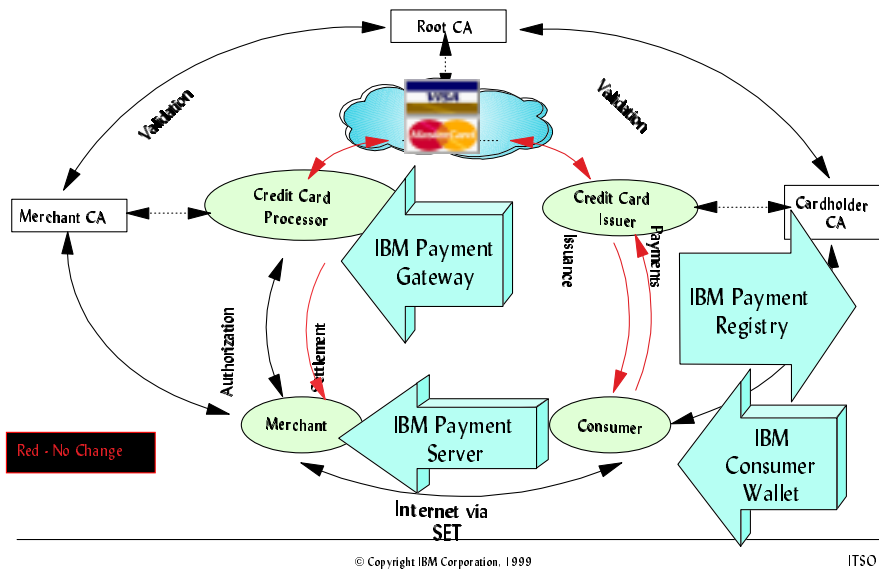


- Protocol relies on Public Key Infrastructure
- Protocol Specification for data transfers between Cardholder, Merchant, Payment Gateway and Certificate Authorities
- SET-specific Certificate Format (based on X.509v3)
- SET-specific mechanics for certificate creation, distribution, revocation, CRL distribution, and management
- Protocol does not specify wire transfer semantics. Guidelines exist for:
  - HTTP
  - SMTP
  - TCP sockets

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## Payment Suite SET Credit Card Processing Cycle



## Payment Options



- IBM Payment Server
  - IBM Payment Server for SET transactions
  - NetVerify Cartridge (optional)
  - IBM 4758 Cryptographic Coprocessor (optional)
- Cybercash
- Other SET products
  - IBM Consumer Wallet<sup>1</sup>
  - IBM Payment Gateway
  - IBM Payment Registry<sup>1</sup>



## Net.Commerce - Payment Server



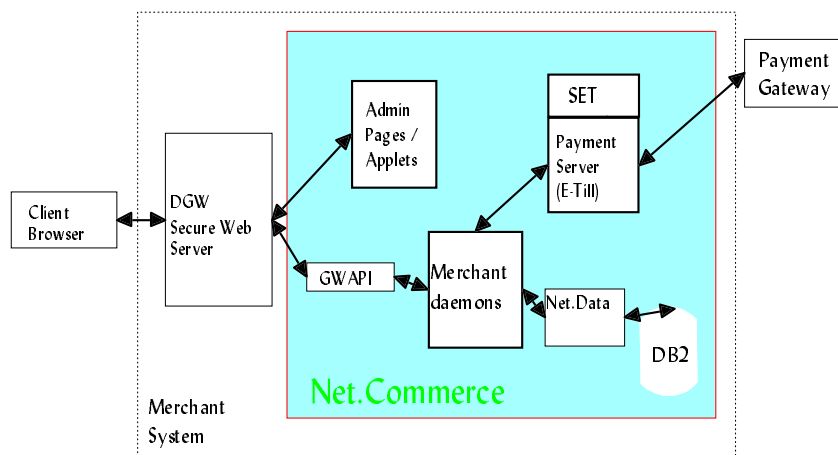
- Processes SET protocol elements from Cardholders and Payment Gateways
- Creates Authorization Requests upon receipt of Payment Requests from Cardholder
- Processes Authorization Responses from Payment Gateway and forwards Payment Responses to Cardholder
- Performs Capture operations between Merchant and Payment Gateway



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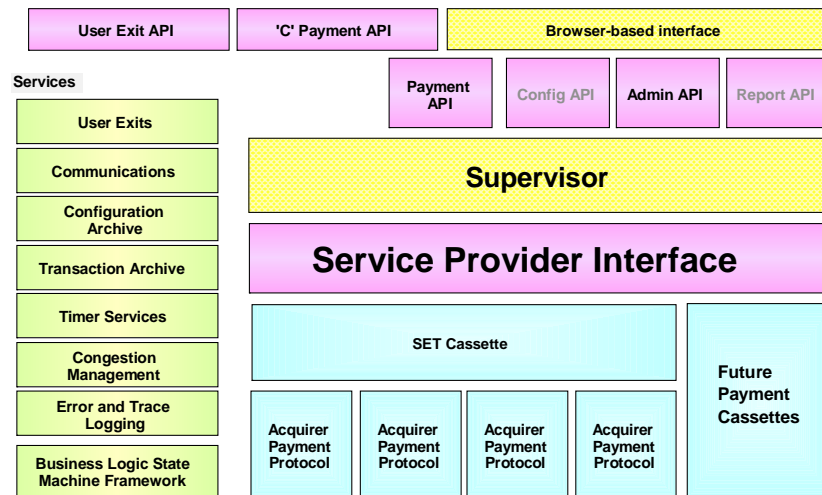
## Net.Commerce Payment Server Interaction



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## Payment Server Framework



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## Software Prerequisites for OS/390



- OS/390 V1R4 or later
- DB2 Version 5.1
  - JDBC Support Feature
  - DB2 APAR PQ09901
  - DB2 PMR 88428 (APAR not available yet)
  - DB2 PMR 73992 / APAR PQ20602 (not complete)
- WebServer (sample GUI, support Java CGI)
  - Domino Go WebServer 4.6.1
    - PTF UQ12779
- JDK 1.1 or later
  - APAR UW53424
- TCP/IP
  - PTF AQ12835
  - APAR PQ16813
- LE
  - APAR I9804

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## Installation

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- A component of Net.Commerce for OS/390 Version 3 Release 1.1
- Uses SMP/E for installation
- Post-installation setup and configuration

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## Post installation scripts

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- installPaymentServer script
  - Copies message catalog
  - Copies sample GUI interface files
  - Creates external links to DLLs in datasets
- cot.config configuration file
  - Creates cot.envvars for started task
  - Creates addendum to .profile for command line
  - Creates addendum to httpd.envvars for sample GUI
  - Creates a started task procedure

---

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## Install/Configuration Steps



- Obtain merchant and acquirer Business and Bank IDs from an acquirer
- Confirm install of Java JDK product
- Confirm install and operation of DB/2, with CLI
- Confirm install of JDBC for DB/2 with service
- Confirm install of web server for sample administrative GUI
- SMP/E install the Payment Server

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## Install/Configuration Steps (Cont.)



- Edit and run the install script 'installPaymentServer'
- Use EECertreq utility to obtain merchant certificates
  - New ISPF interface in addition to OE command line
- Create and configure the Payment Server database tables
- Customize the Payment Server configuration file 'cot.config'
- Obtain a copy of a CLI initialization dataset

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## Payment Server Database Configuration

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- Uses DB/2 database
- DB/2 SPUFI script found in SCOTSAMP dataset for initial creation of tables
- Sample Configuration GUI for updates
- Payment Server Administration Guide

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## Starting the Payment Server

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- Starting from OE Command Line
- Starting as an OS/390 Started Task

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## Starting from the OE command line

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- IBMPaymentServer.mvs script
- Addendum to .profile via cot.config

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## Starting as an OS/390 Started Task

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- Uses COTPYMGR JCL procedure
  - cot.envvars file used by started task for initialization
  - cot.envvars contains environment variable values, java properties and Payment Server parameters
  - cot.envvars created during customization of cot.config
  - configure a JCL procedure COTPYMGR via cot.config

---

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## OS/390 Differences from AIX/NT



- ASCII/EBCDIC translation
- Java variable types
- Started task program COTPYMGR
- Operator's console I/O
- DLLs in OS/390 PDS
- Single connection per thread ability
- ODBC support for SET
- Limited toleration of CommercePoint eTill 1.0 API

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## Understanding the new User Exits

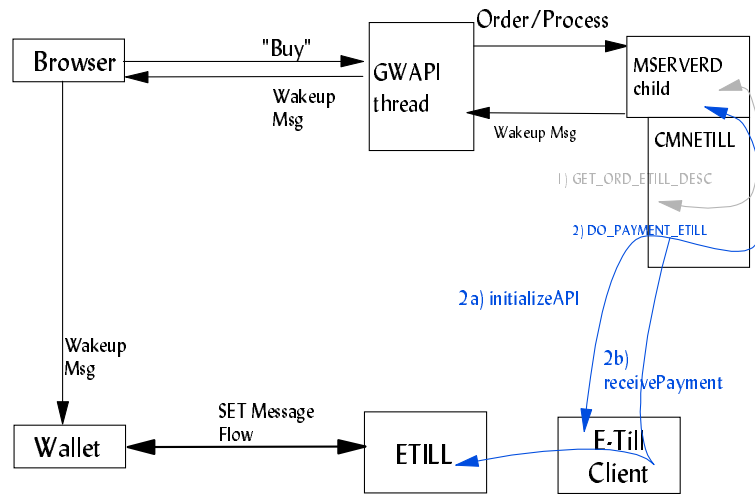


- ▲ ***DO\_PAYMENT\_ETILL***
  - ▶ Accept payment via an E-Wallet/E-Till
  - ▶ Sample code in *HANDLE\_ETILL\_PAYMENT*
- ▲ ***GET\_ORD\_ETILL***
  - ▶ Display the status of a previously submitted E-Till order
  - ▶ Sample code in *HANDLE\_ETILL\_INQUIRY*
- ▲ ***GET\_ORD\_ETILL\_DESC***
  - ▶ Get the description of an order about to be placed. This will be passed along to the *DO\_PAYMENT\_ETILL* exit. This description is shown inside the E-Wallet.
  - ▶ Sample code in *HANDLE\_ETILL\_GETDESC*

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## DO\_PAYMENT\_ETILL and GET ORD ETILL DESC



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## Configuration Settings



### 1) Tell Net.Commerce where an E-Till is installed



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## Configuration Settings



2) Assign stores to accept E-Till orders from a specific E-Till instance



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## E-Wallet

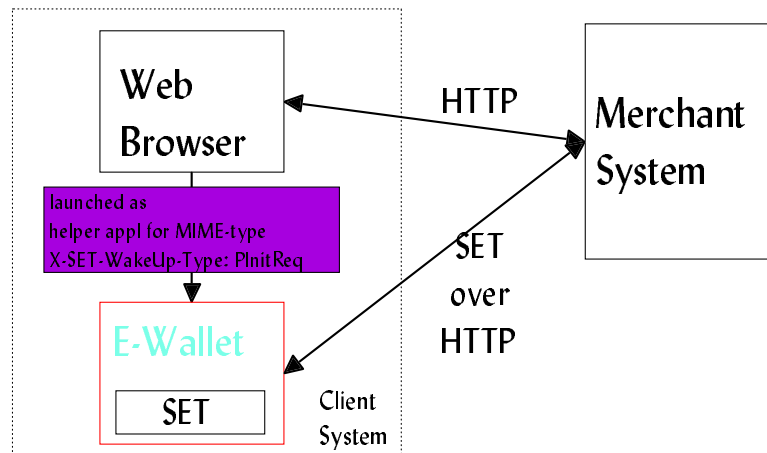


- Helper application for Web Browsers
- Launched by a "wakeup" message sent by the Net.Commerce server (a "page" returned over HTTP that has a specific MIME-type)
- Allows a choice to be made from multiple payment instruments
- GUI interface displays logo of credit card, proposed invoice, and "buy"/"cancel" buttons.
- On "buy", SET protocol flows are initiated between Cardholder and Merchant

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## E-Wallet



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## Payment Gateway

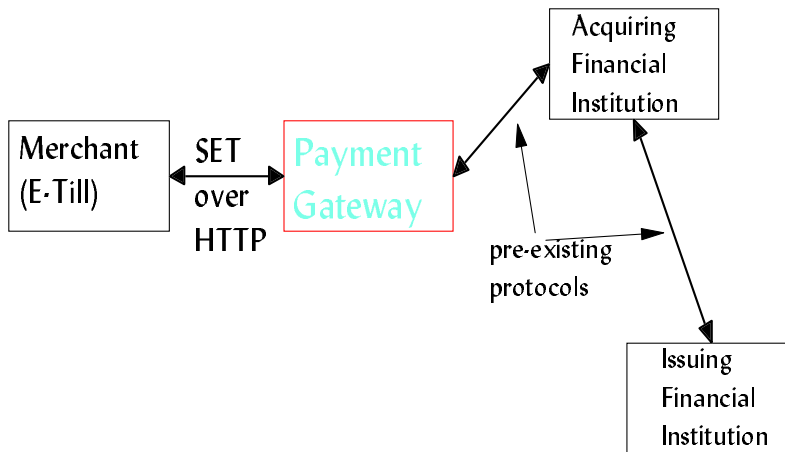


- Translates SET protocol elements into financial institution-specific credit-card authorization requests
- Translates financial institution-specific credit-card authorization responses into SET protocol elements
- Existing financial networks are used for interaction between Acquirer and Issuer financial institutions

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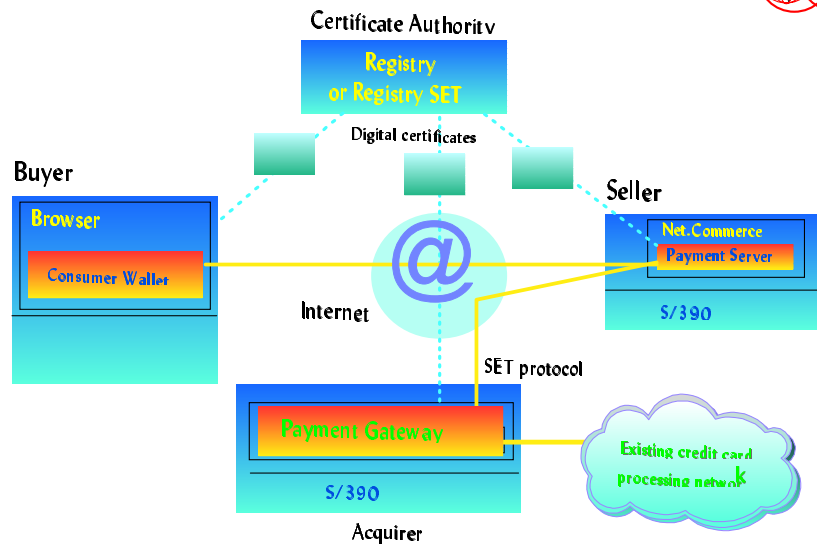
## Payment Gateway



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## IBM e-commerce Solutions



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## Additional Informations



- **Net.Commerce:**

*<http://www.internet.ibm.com/commercepoint/net.commerce/>*

- **e-business**

*<http://www.ibm.com/e-business/>*

- **Internet connection secure server:**

*<http://www.ics.raleigh.ibm.com/ics/>*

*<http://www.software.ibm.com/webservers>*

- **DB2:**

*<http://www.software.ibm.com/data/db2/>*

- **Net.Data:**

*<http://www.software.ibm.com/data/net.data/>*

- **IBM PaymentSuite:**

*<http://www.internet.ibm.com/commercepoint/>*

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## Net.Commerce Demo is Live ! 1999



### Experience Easy Online Shopping

#### Visit the Mall Online

Read the demo script at URL:

<http://demont.demopkg.ibm.com/dominoint/dominoint.html>

Then try the Net.Commerce & Domino Order Workflow Demo live at

URL:

<http://demontm.demopkg.ibm.com/demomall/hasemall.htm>

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## Net.Commerce Education



- ▲ **Net.Commerce Solution Selling** 2 Days BESTeam BTSBI
- ▲ **Selling e-business Solutions:  
IBM Net.Commerce** CD ROM ZV3 1.4057.00
- ▲ **Net.Commerce Demo CD** CD ROM GK3T.2318-01
- ▲ **Net.Commerce V2 to V3  
Update Guide** Study Guide available via  
[www.ibm.com/certify](http://www.ibm.com/certify)
- ▲ **Net.Commerce for OS/390** N3390 5.Dave
- ▲

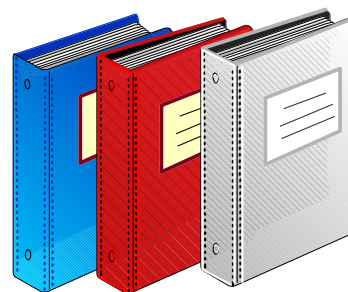
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## Publications and Documentation



- **Net.Commerce for OS/390 Redbook**  
SG24-5154
- **Net.Commerce for OS/390  
Configuring and Getting Started**  
GC24-5862
- **Payment Server Administrator's  
Guide** SC24-5879-00
- **Payment Server Programmer's Guide  
and Reference** SC24-5880-00
- **SET Redbook** SG24-4978



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