KENAN/BP HIGHLIGHTS

8.5–11.5

KBP-11.5-Highlights-2003-08-31

KENAN®/BP

Note: Kenan/BP and Kenan/OM are the products formerly known as Arbor/BP and Arbor/OM.

Contents

Notational Conventions

Note Important notes appear in this format.

Caution Indicates possible danger to data, software, or hardware.

Warning! Indicates serious risk of damage to data, software, or hardware.

Table 1 Notational Conventions

Notation	Explanation of Convention
References to printed documents	*Helvetica italic* **Example:** See *Database Reference Volume 2*.
<Keys>	Uppercase Helvetica, in angle brackets **Example:** Press <CTRL><q><SHIFT><P> to create an em dash.
Buttons and icon names	*Helvetica italic* **Example:** Click *OK* to apply the chosen action.
User-entered text	**Courier bold** **Example:** Enter **Total Charges** in the field.
Placeholders for user-determined text	*Courier italic, in angle brackets* **Example:** Enter your *<password>*.
Code samples, TABLE_NAMES, field_names, file and directory names, file contents, user names, passwords, UNIX ENVIRONMENT_VARIABLES	Courier
Placeholders for system-generated text	*Helvetica italic* **Example:** Messages appear in this form: *timestamp messageID >> text*.
Menu items	**Helvetica bold** **Example:** Choose **Reports** from the main menu.

Additional Documentation

The Kenan/BP documentation set for release 11.5 consists of the following manuals:

- *ARCH Guide*
  ARCH-1.2-AG-2003-08-31

  Instructions for using the Archiver module to archive, restore, count, and delete data from Kenan/BP database tables.
- *Database Reference (Administration Tables, Vol. 1)*
  KBP-11.5-DRA1-2003-08-31

  Database Reference (Administration Tables, Vol. 2)
  KBP-11.5-DRA2-2003-08-31

  Detailed description of fields and tables in the Admin database.
- *Database Reference (Catalog and Customer Tables)*
  KBP-11.5-DRCC-2003-08-31

  Detailed description of fields and tables in the Catalog and Customer databases.
- *Kenan/BP Highlights*
  KBP-11.0-Highlights-2003-08-31

  Overview of Kenan/BP functionality
- *Order Services Guide*

  KBP-OSG-1.0-2003-08-31

  Instructions for using the Orders Services component for the generation, management, and fulfillment of orders and sub-orders.
- *Software Documentation Update*
  KBP-11.5-SDU-2003-08-31

  Detailed description of the enhancements in the current release of Kenan/BP.
- *System Administrator Guide*
  KBP-11.5-SAG-2003-08-31

  Installation, configuration, and maintenance instructions for the Kenan/BP system.

The Kenan/BP documentation set for release 11.0 consists of the following manuals:

- *Billing Operations Guide*
  KBP-11.0-BOG-2002-10-30

  Operation and maintenance instructions for modules.
- *Advanced Collections Guide*
  KBP-11.0-ACG-2002-10-30

  Instructions on using the Advanced Collections module to identify and aid in the collection of delinquent debts.
- *Common Configuration Tasks*
  KBP-11.0-CCT-2002-10-30

  Detailed instructions for configuring data model entities.
- *Documentation Overview*
  KBP-11.0-DO-2002-10-30

  Describes the documentation for Kenan/BP.
- *Guide to Products, Rates, and Discounts*
  KBP-11.0-GPRD-2002-10-30

  Overview of data model entities (such as products and rate schedules).

- *Journals Guide*
  KBP-11.0-JG-2002-10-30

  Detailed description of Journals module functionality.
- *Module Configuration Guide*
  KBP-11.0-MCG-2002-10-30

  Detailed instructions for configuring modules.
- *Reports and File Layouts*
  KBP-11.0-RFL-2002-10-30

  Detailed descriptions of control reports, summary and detail reports, and input and output file formats.
- *Software Documentation Update*

  KBP-11.0-SDU-2002-10-30

  Details changes in this release.
- *Technical Reference*
  KBP-11.0-TR-2002-10-30

  Detailed descriptions of inputs, outputs, and processing flow of all modules.

Additionally, *Release Notes* may be available for your deployment, containing additional information not covered in other documents.

You may also need to refer to documentation for other products, such as operating systems, database management systems, tax packages, and third-party software integrated with Kenan/BP.

Highlights for Kenan/BP 8.5 – 11.5

This document provides a high-level overview of highlights to standard Kenan/BP functionality between release 8.5 and 11.5.

The changes for each release are divided into the following subsections:

- Usage Processing
- Contracts, Discounts, and Unit Credits
- Invoice Processing
- Invoice Formatting and Dispatching
- Payments Processing
- Financials Processing
- Taxation
- System Administration
- Application Programmer Interface
- Graphical User Interfaces

Changes for Release 8.5

The sections that follow list changes for Kenan/BP release 8.5.

Usage Processing

The following section describes changes to the Message Processing System (MPS).

As of this release, Kenan/BP supports real-time usage processing, during which a real-time usage record generator dispatches usage records via an inter-process queue to the Usage Router (MCAP) in Flash mode, which guides and rates the usage as it arrives.

IPC Messaging Layer for Real-Time Processes

Kenan/BP now uses an IPC (interprocess communication) messaging layer based on a third-party software package to support real-time processing. Deployments that want to use real-time processing and hot billing must install the third-party software package on both client and server machines.

Real-Time Record Generator for Inputting Usage Records

To use real-time processing, each deployment must build, with consultant help, a real-time record generator — a custom client application using the new set of real-time usage API functions available through a new library. This custom application inputs usage records into the real-time usage record message queue, sending usage events across the network in real-time mode to one or more real-time MCAP processes that operate on the server.

CIBER Roaming Usage

Kenan/BP supports roaming usage processing for CIBER (Cellular Interchange Bill Exchange Record). Cellular carriers can establish roaming agreements with multiple carriers and exchange roaming usage records that conform to the CIBER standard.

GSM Roaming Usage

You can configure GSM roaming usage processing to exchange individual TAP files with specific roaming partners or to exchange composite TAP2 files with roaming clearinghouses.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 8.5.

Incremental Unit Credits ("Nth Item Free")

You can now configure unit credits with incremental rates. For example, you can define a unit credit for one free usage event that applies only after four usage events have accrued — in other words, a "buy three, get one free" unit credit.

Four-Decimal Usage Discount Modifications

You can now control how BIP rounds the "extra precision" digits in a four-decimal usage discount through the ROUNDING_METHOD_4DEC (BIP) system parameter and whether BIP allows negative four-decimal usage discounts through the NO_SIGN_RESTRICT_4DEC (BIP) system parameter.

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 8.5.

Specifying Operating Currency in Euros

The configuration process for currency conversion now conforms to international regulations governing the use of the euro, as follows:

- If the CONVERT_CURRENCY_DIRECTION (BIP) system parameter is set to 0 or is not set, configure exchange rates as the conversion factor between each currency and the operating currency, as in previous releases.
- If the CONVERT_CURRENCY_DIRECTION (BIP) system parameter is set to 1, configure exchange rates as the conversion factor between the operating currency and each currency, as mandated by euro regulations.

Hot Billing (Real-Time Invoice Processing)

Kenan/BP now supports real-time invoice processing during which CSRs can produce and review a formatted, up-to-date customer invoice within a matter of seconds.

CSRs access this feature through the Bill Invoice window of the Customer Care interface, which uses an inter-process queue to notify BIP and BIF (running in Flash mode) to calculate and format a pro forma or production invoice for that customer.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 8.5.

Limiting Payment Request Resubmissions

EFT stores the number of submissions for a payment request in the `EFT_TRANS.pay_req_sent_counter` field for each transaction. Before resubmitting a payment request, EFT compares `pay_req_sent_counter` to the system parameter MAX_RETRIES (EFT). In previous releases, EFT compared the counter field (which tracks the number of hold/release operations on a transaction) to the MAX_RETRIES parameter.

A similar modification has been made to the `CCARD_TRANS` table and the CPM module with respect to the system parameter MAX_RETRIES (CPM), although this has limited effect on CPM payment processing.

Holding and Releasing EFT Transactions

In EIU (EFT Investigation Unit), you can hold and release a single EFT transaction an unlimited number of times. The counter field counts only the holds and releases for a given EFT transaction, and Kenan/BP no longer validates this count against the system parameter MAX_RETRIES (EFT). Formerly, EFT accumulated totals for both holds and releases and resubmission of payments to clearinghouses (payment requests) in the counter field and validated its value against MAX_RETRIES.

Submitting Payments for Multiple Transactions

EFT stores the number of submissions for a payment request in the `EFT_TRANS.pay_req_sent_counter` field for each transaction. When a single payment request involves multiple transactions (for example, if a previously posted transaction is rejected and a chargeback occurs), EFT can continue incrementing `pay_req_sent_counter` correctly across the various transactions. The system parameter
CHGB_NEW_PMT_REQ (EFT) controls this behavior.

Processing Returned Payments for Disconnected Accounts

Now EFT can process returned EFT payments for disconnected accounts (with `account_status` = DISC_DONE) that are already posted, even if posting occurs automatically after a specified delay. In the past, if CSRs disconnected an account that subsequently had a returned payment, EFT could not process it properly because of its DISC_DONE account status.

Correcting Bank Details on Rejected Transactions in EIU

In EIU, you can view and correct bank details on both a rejected transaction and on the CMF record for this customer before resubmitting a rejected transaction manually or automatically. In the past, you could not correct these fields on a rejected or returned transaction.

Marking Refunds Rejected by the Treasury

The API marks refunds (by EFT or check) that have been rejected by the Treasury (refund_status 5).

Processing Post-Dated Checks from External Sources

You can now use LBX to enter current and post-dated checks in separate batches into the system from an external source (for example, using an optical character reader). Kenan/BP holds batches of post-dated payments until they become due before entering them into the BMF table.

Financials Processing

This section summarizes changes to the Journals (JNL) and module and other changes related to financials processing in Kenan/BP 8.5.

Processing Disconnected Accounts with a Balance Due

Now disconnected accounts are processed normally for collections if they have a balance due and cured once the outstanding balance is paid.

Specifying a Delay Period

Now you can use the reschedule_delay field in the COL_EVENT_DEFINITION table to set up any collections event to have a delay period between the time it is scheduled and rescheduled.

Maintaining Audit Trails for CSR Changes

CSRs can click a particular collections event displayed in the Collections Event Queue window, and suspend, reactivate, complete, reschedule, or reassign it. Now when a CSR changes the status for a collections event, the date of the change in status and the CSR's user name appear as read-only fields in the COL_EVENT_QUEUE table.

Enforcing API Completion of Collections Events

You can configure one or more collections events in COL_EVENT_DEFINITION, and set the value for event_category to 8 (completion by API). Neither COL nor a CSR can mark a collections event as complete with an event_category of 8 until the API marks it as complete.

Journalizing by New Keys

As a result of changes to deposits and refunds, you can use the following three journalizing keys:

- `DEPOSIT.pay_method` — journalize deposits
- `DEPOSIT.refund_type` — journalize refunds of deposits
- `REFUND.refund_type` — journalize refunds

Booking Payment Reversals by Transaction Date of Original Payment

Now Customer Information, BIP, and the API use the original transaction date (`trans_dt`) for a payment as the transaction date for the corresponding payment reversal so that both are booked in the same cycle. This ensures accurate calculation of VAT taxes based on `CMF_BALANCE`.

Taxation

This section summarizes changes to tax processing in Kenan/BP 8.5.

Passing Charges to CommTax and CommTax/21 Individually

Kenan/BP passes all charges to CommTax and CommTax/21 individually. For the tax category/tax code combinations of 01/01 and 10/01, Kenan/BP populates the CommTax field for the number of billed lines with 1. This causes CommTax to assess taxes applicable on billed lines. This does not, however, enable CommTax to implement caps properly on the number of lines subject to tax.

System Administration

This section summarizes changes to system administration in Kenan/BP 8.5.

Multiple Databases on a Single Instance

Kenan/BP now supports multiple "pseudo-databases" on a single Oracle instance, allowing multiple databases to be supported by a single instance. The database installation scripts have been modified to create several secondary schemas with private synonyms to the base schema containing the database, each identified by a user name derived from the base schema name.

This feature is intended to support multiple databases during acceptance and configuration testing.

Warning!	Do not use this feature with Oracle instances running production databases.

Application Programmer Interface

This section summarizes changes to the Application Programmer Interface (API) in Kenan/BP 8.5.

API Real-Time Usage Libraries

The API now supports real-time usage processing using several additional real-time libraries. Use these libraries and their corresponding queue management functions when developing real-time usage generator applications.

New Objects

- External ID Type — represents a valid external ID type
- Note Text — holds the text of a note
- Raw Usage — represents a raw usage event, used during real-time usage processing

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 8.5.

Search by Phone Number in the Open Accounts Window

Now, CSRs can search for an account using the `Customer Phone` number in the Open Accounts window in Customer Care. To access this window, select **Open** from the **File** menu or click the *Open File* icon. The customer phone number is stored in the `CMF` table (`CMF.cust_phone1`).

Enter Middle Name(s) in Address Information Window

The middle initial field is renamed Middle Name on the Address Information window, which you can access by checking the Address box on the Customer Information window. As of this release, the field now has a length of thirty characters to accommodate many naming conventions. For example, in Brazil, CSRs must enter the first name, middle name, mother's maiden name, and the father's last name for a customer. The middle name and mother's maiden name are stored in the `bill_minit` field in the `CMF` table.

Enter Additional Bank Information in Payment Information Window

As of this release, for any account, you can enter the bank agency name and bank agency code on the Payment Information window, which you can access by checking the Payment box on the Customer Information window. This information is stored in the `CMF` table.

Click the radio button for Electronic Funds Transfer (EFT) in the Payment Method area to enter data into the fields under Direct Debit Information. You can enter Bank Name, Alternate Bank, Bank Agency Code, and Bank Agency Name.

Request a Hot Bill in the Bill Review Window

CSRs can request a production or pro forma invoice on demand in the Bill Review window while communicating with a customer. When the CSR clicks the *Hot Bill* button, Customer Information sends an IPC message to the real-time BIP process running in Flash mode. After flash-mode BIP and BIF process the request, the Customer Care interface displays the formatted invoice on the appropriate NT client machine.

View Account Status in Product Packages Window

As of this release, the Component area of the Product Packages window displays the account status (NEW, PENDING, CURRENT, DISC_DONE, and DISC_REQ) for each component, along with the list of all components associated with an account or service instance. In the past, CSRs had to click the *Elements* button to check account status.

Provision Optional Components Only to Valid Service Instances

When provisioning optional components by associating them with a service instance in the Component Elements window, you can select from a list of service instances associated with every account in the account hierarchy or from a filtered list containing only those service instances associated with the particular account.

View Clearinghouse Response Codes in Payments Window

As of this release, CSRs can see the clearinghouse response codes for all transactions (lockbox, credit card, and electronic funds) in the Payments window between the Status and Invoice columns, making it easier to research a transaction's payment status.

Enter Longer City Names in Expanded City Name Fields

All city name fields have been increased from 26 to 35 characters in length. This change affects Customer Care, API, and ATM windows, as well as all affected database tables and the Bill Formatter (BIF).

Specify the Payment Method for a Deposit

Specify the payment method for a deposit (EFT or check) in the Deposits window and in the API.

Specify the Payment Method for a Refund

Specify a refund payment method (EFT or check) in the Refunds window and in the API. The refund payment method defaults to the original payment method in the CMF.

Specify the Refund Method for a Deposit

Specify, when refunding a deposit, whether it is refunded by EFT or check.

Specify a Refund Type for a Refund

Specify a refund type (EFT or check) for the refund in the Refunds window and in the API.

Specify a Reason for a Refund

Specify a reason for the refund in the Refunds window and in the API. Reasons for refunds are stored in the `reason_code` field in `REFUND_REASON_CODE_REF`, a configurable table.

Provision Free Usage Contracts through the Product Packages Window

Now CSRs can provision a cycle-independent unit credit contract (contract category 8) and specify an override number of units (similar to the functionality in the Usage Credits window) through the Product Packages window in Customer Care.

Track Usage Jurisdiction in ADJ Table

The `ADJ` table now stores usage jurisdiction in the `jurisdiction` field.

Navigation Changes to iCARE

As of this release, there are several changes to the method for coding extensions to iCARE's menu structure and navigation system. The module `Actions.pm` replaces the two modules `Account_actions.pm` and `Service_actions.pm`, simplifying `csr_actions.cgi` and `arc.conf`.

Customer Self-Registration Site for Self-Care Customers

Self-care customers can use the Customer Self-Registration site, accessed from the iCARE home page, to start their own account. In the past, only CSRs could activate accounts.

New Customer Care Functions

As of this release, iCARE has several new tasks added to the Customer Care Functions menu. CSRs can do the following:

- view and cancel a non-recurring charge (NRC). In the past, CSRs could only add or modify an NRC
- add, view, and modify unit credits
- provision a cycle-independent unit credit contract to an account or service instance
- add, view, modify, or cancel adjustments
- add and view customer notes

Expanded and Reorganized Customer Care Functions Menu

The Customer Care Functions menu that appears on the top View Account page is reorganized, and the buttons to access various Customer Care pages have been renamed. Several new Customer Care functions are available through this menu. Customer care tasks that you could perform prior to this release are not affected by the name changes.

Account Searches Using External ID Type

Now you can search for accounts in iCARE using any valid External ID type value in the target database.

Product Package Retrieval by External ID

In iCARE, using an account or service instance external ID, you can now retrieve all the active or inactive product packages and components ever associated with the account or service instance, including those for service instances that are no longer active. In the past, iCARE did not display product packages or components for inactive service instances.

Account Power Searches

In the first Customer Care page in the iCARE interface, CSRs can now perform account searches identical to those in the Customer Care Interface. Searches can be case-sensitive or case-insensitive, with or without wild cards, depending on configurable settings in the API.

Changes for Release 9.0

The sections that follow list changes for Kenan/BP release 9.0.

Usage Processing

The following section describes changes to the Message Processing System (MPS).

"15-Minute Rule" for Multiple Rate Periods

You can configure CAP to ensure that events spanning multiple rate periods and rounded up are not over-charged, and events less than a given duration are rated based on the initial rate period even if they span multiple rate periods. This is known as the "15 minute rule" and is required by law in some countries.

For example, you can define Daytime (6AM-6PM) and Evening (6PM-6AM) rate periods, and configure CAP so that it rates a 9 minute and 20 second phone call from 5:54:20-6:03:40 PM as a nine-minute call using Daytime rates, but rates a 20-minute call of the same type from 5:50:00-6:10:00 using Daytime rates for one half and Evening rates for the other. In earlier releases, CAP would either segment or use the initial rate period for both calls and might round the segments separately and charge for a 10-minute call in the first case, depending on CAP and usage type configuration.

Running Usage Total

Internet and wireless clients have to keep a running usage total per bill cycle for each customer to ensure that if a customer's credit limit is exceeded they can take appropriate action (disconnect service, send reminder letter, and so on).

Now CAP maintains a running total of the value of rated but unbilled records and stores these totals in a summary table. This enables the system to make periodic comparisons of unbilled usage with customer usage limits.

Usage Record Summarization

You can run CAP in "summary" mode in which it writes a small number of summary rows into `CDR_DATA` for each processed usage file, based on configurable consolidation fields and customer account category.

CAP in summary mode consolidates information for all usage records in each file for each service instance on each day, broken down by summary key fields such as usage type, product, jurisdiction, and rate period, or by fields determined by configurable keys, such as `file_id`, `type_id_usg`, `jurisdiction`, `trans_dt` (day portion), and so on.

CAP does the following:

- guides and rates each usage event normally
- stores the total charge for all consolidated usage events in a single `CDR_DATA` row
- produces detailed information for each usage event in a flat file for validation and post-processing

Configurable Long-Distance Usage Taxation

Kenan/BP supports a configurable method for taxing long-distance usage for Canada. MPS determines the originating point, the terminating point, and billing address for toll calls, and applies federal and provincial sales tax according to a "two out of three" rule.

Variable Usage Rating and Preprocessing

Certain industries (for example, the wireless industry), implement many different pricing plans for the same products and services. Previously, usage rating had very few variable components. This release adds `component_id` as a rating key to provide variable usage rates without requiring additional definition of usage types or creating many different service instance configurations. This modification simplifies setup and makes data maintenance much less complicated.

Enhanced Usage Reprocessing

You can now use RAP (the Usage Reprocessor) to reguide successfully guided usage, in cases where changes occur after usage events have been processed. In previous releases, RAP would only rerate such usage. For example, you can now change the `guide_to` field for a particular usage type and run RAP to reguide usage based on the new `guide_to`.

As in previous releases, RAP only reprocesses unbilled usage. To reprocess billed usage, you must back out the bill or reverse billed usage events through the Kenan/BP API.

Load Usage Points Modifications

The LOAD_USG_PTS utility has been enhanced as follows:

- greater flexibility

  In previous releases, LOAD_USG_PTS mapped values from LERG and TPM files into usage point tables in largely hardcoded ways. As of this release, LOAD_USG_PTS loads usage points from LUP files, which reflect the structure of the usage point tables themselves.

  Use TIP to produce LUP files, based on LERG files, TPM files, and any other information you wish. You can configure TIP to do the following:
- concatenate fields
- perform arithmetic operations
- populate fields with default values
- derive fields based on database lookups

  (TIP initialization scripts may be available for your release.)
- improved error handling and reporting

  LOAD_USG_PTS writes failed LUP records to an error file for correction and reprocessing and continues to process the original file unless an error threshold is reached. It reports number of records processed and usage points handled for each operation for later verification.
- improved performance

  LOAD_USG_PTS reads database usage point information more efficiently.

GSM Roaming Usage Support for TAP2+ Specifications

Kenan/BP now supports the TAP2+ specification, which includes new record types and new fields for existing record types. The TAP2+ specification does the following:

For two GSM networks with a bilateral agreement in place:

- measures SMSC (Short Message Service Center) roaming usage
- uses Intelligent Network (IN) features while roaming
- writes air and toll charges to separate TAP records to meet North American roaming requirements

For all GSM networks:

- provides extra location information for satellite operators to identify the type of network originating the charge (network types)
- provides CLIR (Calling Line ID Restriction) Status Indicator, which meets the privacy requirements incumbent upon home operators

Cell Name Identifies Cell Sites/Base Stations

To accommodate variable naming conventions for cell sites or base stations, CAP looks up their identity using `CELL_ID_REF.cell_name` instead of `CELL_ID_REF.cell_id`. In addition, the `cell_name` field has been expanded from ten to fifteen characters.

Standard Set of Rating Keys for Usage Processing

MPS uses a standard set of rating keys for usage processing, including:

- `rate_class`
- `component_id`
- `element_id`
- `equip_type_code`
- `equip_type_class`
- `class_of_service`

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 9.0.

BIP Alert When Discount Amounts Are Not Allocated

BIP now writes a line in the BIP log file when a portion of a headquarters discount is discarded because of insufficient new charges on the target account. This alerts administrators to discounts that are not allocated.

Global Discounts

You can now configure global contracts — that is, contracts that apply to all accounts. You can select all global-level contracts, in either of two ways:

- when you select account-level contracts in the procedure
- once, at start time, and then applied to every account processed

For example, you can configure a global, time-sensitive, 100%-off contract and provision it (to all customers at once) with an end date of just before the beginning of the current bill cycle, thereby ensuring that all old charges are free.

Annual Bill Cycles for Product Package Components

You can choose to align the billing cycle associated with a product package component to January 1st following the start date of the service to support the use of annual fees.

Corridor Plans Associated with Owning Accounts

Now you can designate an owning account when provisioning a contract plan containing a corridor discount. BIP applies the correct corridor discount, even if overlapping corridors exist.

Discount Quantum Has Additional Value

A new value (4) has been added for `DISCOUNT_DEFINITIONS.discount_quantum`. When you create a discount definition that uses this value `CDR_DATA.secondary_units` is aggregated to determine discount threshold.

Guaranteed Minimum Discounts

You can configure a discount that reduces the cost for a recurring charge by up to 100%, and include it in a contract with other discounts. BIP can calculate all applicable discounts and determine the guaranteed minimum discount due the customer.

To determine the guaranteed minimum discount amount, BIP completes the following steps:

1. Applies the discount amounts for other discounts in the contract in the normal way and maintains a total of all the discounts for that contract.
2. Calculates the minimum discount on the net amount.
3. Compares the minimum discount to the total discount.
   - » If the minimum discount is greater, the difference is applied as a discount against the recurring charge.
   - » If the minimum discount is less than the total already generated, BIP does nothing — the discount has exceeded the guaranteed minimum so no additional discount is applied.

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 9.0.

BIP Performance Improvement

BIP now updates provisioned products and bills usage events up to 70% faster than in earlier releases.

Standard Set of Rating Keys for Recurring and Non-Recurring Charges

Recurring and non-recurring charge rates use a standard set of rating keys including:

- `rate_class`
- `component_id`
- `element_id`
- `equip_type_code`
- `equip_type_class`
- `class_of_service`

Component ID as Rating Key for NRCs

Now you can set up one or more rating keys based on the `component_id` by which an NRC is provisioned. Previously, you had to create a separate charge type for each different rate.

Configurable Business and Residential Account Categories

The `ACCOUNT_CATEGORY_REF` table now supports values for business and residential accounts.

Add Implied Decimals to Various Rates

You can control implied decimals separately for recurring charge rates, late fees, and discount rates (flat and percentage).

Bill Old Charges Separately

You can configure BIP not to include old charges — that is, charges with effective dates earlier than the start of the current bill cycle — on cyclical bills. Instead, BIP automatically schedules an interim bill to include old charges.

Invoice Formatting and Dispatching

This section summarizes changes to invoice formatting and dispatching in Kenan/BP 9.0.

Flexible Bill Formatter

IGEN is a new bill processing module that performs essentially the same tasks that BIF does, but in a more flexible, configurable way.

IGEN accepts XML files that contain an invoice layout, and produces a virtual bill (and subsequent printer commands, bill images, HTML files and so forth) based on that layout. By supporting invoice layouts through XML layout files, IGEN simplifies the development of custom bill formats, reducing the time and expense of creating them.

HTML Bills

BIF and IGEN support HTML-specific resource controls and HTML formatting of virtual bills so you can produce customer bills suitable for viewing via standard HTML browsers. You can review these bills through iCARE, the Web-based customer care system.

Bill Image Compression

BIF supports compression of bill images, thereby reducing the database size required to store customer bills and consequently reducing hardware costs, backup and recovery time, and other database-growth related issues.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 9.0.

Payment Refinancing

In the Account Balances window, a CSR can select an unpaid balance and click the *Refinance* button to set up a refinancing scheme for a customer who is unable to pay off an outstanding balance all at once. The partial payment is treated as a miscellaneous adjustment to an NRC. Details for the refinancing scheme are stored in a new table. CSRs can manually cancel one or more payments associated with a refinancing plan and the associated adjustments to NRCs. In addition, outstanding balances can be written off.

Payments in Non-Account Currencies

You can now manually enter and process payments received in non-account currencies. Kenan/BP stores the amount paid in its original currency in the `BMF` table in the `external_amount` and `external_currency` fields. The external currency amount and the external currency can be used in invoice formatting and journalizing. Supervisors can adjust payments manually for discrepancies due to rounding during currency conversion.

This functionality is controlled by a new system parameter, ENABLE_NON_ACCOUNT_CURRENCY, which must be set to 1 (true).

Changes to EFT File Format

Minor changes have been made to the FRN EFT detail record. Each deployment can determine formatting at build time.

Payments Allocation across Different Service Types

Kenan/BP now provides support for allocation of payments across different service types. You can break down customer balances by open items, and you can prioritize open items flexibly to allow for differences in business or regulatory requirements. When it generates invoices, BIP aggregates new charges and calculates balance subtotals for each open item.

You can now allocate payments to open items in order of priority. This allocation is configurable, so that you can apply payments either in order of priority within a specific invoice, or regardless of the invoice on which they appear.

You can move open item balances into collections, even if they span a number of invoices. You can also journal individual open items separately.

Phone Shop Support

You can set up phone shop support in Kenan/BP. Phone shops are storefronts where customers make phone calls. On a periodic basis, the phone shop passes on phone call revenue to your deployment in exchange for one or more service fees. Kenan/BP recognizes gross revenue and calculates service fees owed to the phone shop as follows:

- stores the gross amount received from the phone shop
- calculates and stores the associated service fees
- calculates and stores the net amount owed to phone shops after taxes
- controls rounding behavior for all calculations to record revenue and service fees properly

Financials Processing

This section summarizes changes to the Journals (JNL) and module and other changes related to financials processing in Kenan/BP 9.0.

Collections to Take into Account Open Items

COL can consider open items when determining entities to be put in Collections. The COL_ENTER_TYPE (COL) and COL_ENTER_SUB_TYPE (COL) system parameters control this functionality. The system can apply collections events to any of the following:

- account-level items
- account-level open items
- invoice-level items
- invoice-level open items

If you want different reports for different `open_item_id`s, you can now create extra report templates in the form *<report name>.<language_code>.<open_item_id>*. If you do not create extra reports, COL uses the existing standard report template in the form *<report_name>.<language_code>*.

Collections by Age of Debt

This functionality applies to deployments where accounts enter collections at the account level. An account in Collections may have a number of outstanding invoices. Payments made to the account may be used to pay off the oldest invoice(s) first. The subsequent decrease in the account balance may lessen the severity of the collections events applied to the account.

After the payment, COL re-evaluates the collections status of the account. For an account not already in Collections, COL determines the date it would be eligible to enter Collections, based on the new account balance. If the newly calculated eligible date for entering Collections is later than the original date for entering Collections, collections events are rescheduled to reflect this new date.

Additional Collections Keys

You can configure additional optional parameters (`pay_method`, `account_category`, and `open_item_id`) in `COL_SCENARIO_PARAMETERS` to determine which collections scenario COL assigns to an entity due for collections.

Suspension of a Collections Event

An audit trail of suspended events is now maintained in `COL_EVENT_QUEUE_HISTORY`. This contains information on the event, the date of suspension and reactivation (when it occurs), and the reason code for the suspension.

Open Items Used as Journals Keys

You can use open item IDs as journalizing keys. They work identically to other journalizing keys in `JNL_KEYS`.

Collections Records Tax on Write-Offs Separately

COL now records the tax that is written off when it writes off an account in the new `JNL_WRITEOFF_TAX` table. JNL can book this as tax with a transaction type of 7 (tax, not write-offs). The tax has a negative sign to indicate that this is a write-off.

Conversion Gain/Loss between Currencies with Fixed Conversion Rates

You can use specific values for `JNL_KEYS.id_types` and `JNL_KEYS.id_value2` to ensure that JNL books payments in non-account currencies and calculates and books gain/loss amounts that occur when conversion occurs between two fixed currencies.

Taxation

This section summarizes changes to tax processing in Kenan/BP 9.0.

VAT Taxation on Phone Shops

To enable proper recording of VAT taxes, Kenan/BP now calculates, applies, and recognizes all VAT taxes associated with phone shop support for a given period as follows:

- calculates and stores VAT taxes on the gross receipts from the phone shop
- calculates and stores VAT taxes on service fees

VAT Taxation on Miscellaneous Adjustments

Kenan/BP can calculate and journalize VAT taxes on miscellaneous adjustments (adjustments applied to an invoice rather than to a specific line item).

Configurable Long Distance Usage Taxation

Kenan/BP supports a configurable method for taxing long-distance usage for Canada. MPS determines the originating point, the terminating point, and the billing address for toll calls, and applies federal and provincial sales tax appropriately according to a “two out of three” rule.

System Administration

This section summarizes changes to system administration in Kenan/BP 9.0.

Move Accounts Among Customer Servers

The Account Move (AMP) module can move accounts and account-specific information from one Customer server to another in a multi-server environment. Use AMP to consolidate accounts from multiple servers into a single hierarchy or to balance server load. Account hierarchies must always move as a unit — that is, when you move an account all parent and child accounts must move as well.

Changes to Log File Names

Log file names are now of the form *Pname-YYMMDD-HHMMSS-serverID-Pid.log*, where:

- *Pname* is the Kenan/BP process identifier (`bip01`, `cap05`, and so forth).
- *YYMMDD* and *HHMMSS* indicate the time the process began. All *YY* combinations are interpreted correctly for the century they fall in.
- *serverID* is the server against which the process ran.
- *Pid* is the UNIX process ID issued to the process.

Report file names are similar, except with *Pname* in uppercase and an *rpt* extension.

For example, if `bip01` runs at 1:50:21 on Feb. 16, 1999 on server #3, with UNIX pID of 07865, BIP creates a log file named `bip01-990216-135021-03-07865.log` and a report file named `BIP01-990216-135021-03-07865.rpt`.

The server ID is optional; processes that do not run against a particular server (for example, Command Center processes) use the *Pname-YYMMDD-HHMMSS-Pid.log* form (for example, `sbem-990216-135515-07834.log`).

Application Programmer Interface

This section summarizes changes to the Application Programmer Interface (API) in Kenan/BP 9.0.

Component Includes a Provisioned Contract

The serv_inst_contract API now returns the `tracking_id` and `tracking_id_serv` values. These provide the only unique keys into the table and the only link between contracts and component elements. With them, you can tell reliably whether a provisioned contract is part of a component, and if so, which one. Also, they enable you to see provisioning details of a contract from the component from which it is provisioned.

The serv_inst_contract API uses the combined values of `tracking_id` and `tracking_id_serv` to determine if a contract is a member of a specific package component and lets you access provisioning details of the contract from that component.

New Objects

- Account Headquarters Contract — adds, removes, lists, and updates a contract's HQ group
- Adjustment Tax — enables the applicati*on of different tax rates according to the jurisdiction where the charge occurs*
- Balance Line Item — displays the line item values for all charges or adjustments
- Global Contract — *creates and describes a global contract*
- Open Item — *creates and defines open items*
- Refinancing Plan — cross-references refinancing plans with the adjustments used to zero out the refinanced balances
- Regulatory ID — identifies regulatory jurisdiction values

Reusing the External IDs for New Service Instances

A new API function enables reuse (for a new service instance) of one or more external IDs that are presently in use for an existing service instance with a specified disconnect date in the future, as long as the reuse occurs on or after the specified disconnect date.

Select from Different Rate Classes for Service Instances

The `abp_serv_api.h` file contains the following new standard functions that allow the selection of a specific `rate_class` (at the account level only) when inserting a service instance:

- set_abp_serv_inst_rate_class_default
- unset_abp_serv_inst_rate_class_default
- get_abp_serv_inst_rate_class_default
- null_abp_serv_inst_rate_class_default

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 9.0.

Improved Command Center

The setup process is improved. The daemon processes underlying the Command Center interface now simplify the architecture and improve performance, especially when supporting real-time usage processing using the IPC messaging layer. The most visible impact of this change is that the QMAN and IMAN processes no longer exist — their functions are subsumed by SBEM and MBEM, respectively. The Command Center interface itself has not changed, and the interface continues to schedule and define tasks as in previous releases.

iCARE Customer Care Enhancements

iCARE now enables CSRs to work with override rates. Override rates supersede previously defined rate information for a product and create special rates for specified time periods. CSRs using iCARE can add new override rates for a product, and view, modify, or delete existing override rates.

Search by Evening Phone Number for Accounts

Now, CSRs can search for an account using Customer Phone2 (the alternate phone number, stored in `CMF.cust_phone2`) in the Account Open window in Customer Care. To access this window, select **Open** from the **File** menu or click the *Open File* icon.

Payment Refinancing

The Customer Care interface Account Balances window enables CSRs to check for open item balances and view them sorted by invoice with descriptions of the open items. For an account that is in arrears, CSRs can select from a set of customizable refinancing plans, refinancing all or part of the overdue amount, and establishing a schedule of installment payments.

Installment Payments for NRCs

The Customer Care interface Non-Recurring Charges window enables CSRs to set up installment payment plans for such things as equipment fees and installations. CSRs can select the number of installments and the amount of the first installment. For an installment payment non-recurring charge (NRC), CSRs can use the Non-Recurring Charges View window to view the installment number, date, and amount of the charge. If there is a fee for the plan, a second NRC can be entered for the fee, which can also be spread out over months.

VAT Tax on Miscellaneous Adjustments

The Customer Care Interface Adjustments window now enables CSRs to calculate all VAT taxes on charges, including the tax portion of a miscellaneous adjustment.

Changes for Release 9.1

The sections that follow list changes for Kenan/BP release 9.1.

Usage Processing

This section summarizes changes to usage processing in Kenan/BP 9.1.

CAP Rates Errored and Free Usage

You can now configure a usage type so that CAP uses a default rate to rate free usage, errored usage, or both. This enables you to track and book the estimated lost revenue associated with free and errored usage.

Two new fields, `USAGE_TYPES.use_default_rate_type` and `RATE_USAGE.is_default_rate` determine how CAP handles these two types of usage.

Consolidation Billing Functionality Improved

For improved performance, to maximize the consolidation rate for deployments that have usage consolidation, CAP now consolidates across multiple usage files and writes each detail CDR to an output file by account number.

In summary mode, CAP consolidates information for all usage records in each file for each service instance on each day, broken down by summary key fields such as `file_id`, `type_id_usg`, `jurisdiction`, `trans_dt`, and the like.

Error Code Added to CAP Error Report

Previously, the CAP error report included an error message but not the corresponding error code. In the MPIU (message processing investigation unit), you filter by error code rather than by error message. Now the error code is a part of the CAP error report. Because the CAP error report is the primary tool for a user working the MIU error records, the addition of the error code is extremely useful.

TIP Can Process Radius Server Log Files

The Internet industry frequently uses Radius Server mediation to provide dialup services and capture attributes for certain usage events such as:

- login ID
- connect time
- disconnect time
- elapsed time
- download bandwidths
- upload bandwidths
- calling station ID

Now you can configure TIP, the file conversion utility (file translator), to support Radius Server logs, providing user-defined variable field lengths, field delimiters, and record delimiters.

Rating GSM Roaming Usage by Service Provider for the Called Number

You can now define separate rates for GSM roaming usage events by the service provider (`provider_id`) that has jurisdiction over the area in which the called number (`point_target`) falls. The `USAGE_TYPES.guide_to_provider` flag has a new value of 6 (use `provider_id`, `point_target`).

In this case, CAP selects the `provider_id` from `USAGE_POINTS` based on the `point_target` value and not the `point_origin` value. The `PROVIDER_CLASS_REF` table now contains these standard rating key fields, which CAP uses when selecting a rate for this type of usage:

- `rate_class`
- `equip_type_code`
- `equip_class_code`
- `class_of_service_code`
- `element_id`
- `currency_code`

Associate Unit Credit ID with Usage Event

Now BIP can indicate the type of unit credit (`unit_cr_id`) applied to a given usage event in the usage detail section of an invoice. If more than one unit credit is associated with a particular usage event, BIP uses only the first one.

Reguide Split Usage

Now, if a number of usage types have different guide_to values, MCAP can split usage automatically to different bill to numbers. For example, MCAP can reguide split usage to both the calling customer and the service provider.

As in past releases, CAP handles usage splitting for usage that belongs to the same guide_to number.

Alphanumeric Postal Codes

You can now configure a new table, ZIPCODE, to convert alphanumeric postal codes to a valid geocode.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 9.1.

Corridor Charge Aggregation

USAGE_TYPES.bill_aggr_level now controls how BIP aggregates corridor usage charges based on both rate period (rate_period) and geographic zone (access_region_origin and access_region_target), based on origin and target geographical zones defined in the ACCESS_REGION_REF table). It has the following values:

- 127 — aggregate ignoring rate period and geographical zone
- 255 — aggregate using rate period but not geographical zone
- 383 — aggregate ignoring rate period but using geographical zone
- 511 — aggregate using rate period and geographical zone

  This also affects how BIP summarizes corridor discounts. In earlier releases, BIP summarized the data either as a single total for a discount_id or as a discount against individual usage events.

Corridor Savings Booked as Discounts

You can configure double-rated corridors so savings are booked as discounts. Define a discount as part of a corridor plan with a plan_type of 4.

CSRs provision it as a double-rated corridor. CAP calculates both the regular rate for the usage event and the discounted corridor rate based on the discount_id. In addition, CAP calculates the difference in rates and stores the net amount in discount, a new field in the CDR_DATA table. The discount field can always be used by BIF, JNL, and other modules.

BIP aggregates the usage into a usage summary and sums the discounts by discount_id. It applies unit credits after the CAP-rated discount, but against the full amount for each usage event. BIF, the bill formatter, can display this type of discount on an event-by-event basis or at any level of aggregation.

Exclusive Discount Plans

Using the new `is_exclusive` field in the `PLAN_ID_DISCOUNT_REF` and `DISCOUNT_DEFINITION` tables, you can configure a discount plan so that it is applied to a charge as the sole discount plan in a series. This field works in conjunction with the `PLAN_ID_DISCOUNT_REF.plan_order` and `DISCOUNT_DEFINITION.def_order` fields, which enable you to prioritize the application of multiple discount plans to a charge.

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 9.1.

BIP Performance Enhancements

Several enhancements to BIP for this release make it more efficient. As of this release, BIP has improved performance, readability, and maintainability.

BIP Processes Disconnected Accounts with Pending Activity

If a customer requests that an account be disconnected, BIP checks for pending charges and credits for the account before changing the account status from DISC_REQ (disconnect requested) to DISC_DONE (disconnect complete). In particular, BIP checks the following account information:

- adjustments
- non-recurring charges
- unbilled usage, EFT transaction status
- CPM transaction status

If BIP finds evidence of pending activity, it leaves the account status set to DISC_REQ.

For example, under certain circumstances, a CSR may issue an adjustment to the account that brings the account balance to zero. However, the account may have a credit card transaction that hasn't completed processing (because of a hold, soft decline, slow operations staff, or the like). The account may have been billed automatically to the credit card already, but it is now entitled to a refund for the payment. When BIP runs, the credit card payment is posted back to the account. At that point the CSR can determine whether the credit card payment was received and appropriately issue a refund for it. When BIP runs again, it can change the account status to DISC_DONE after it rechecks the pending charges for that account.

Unit Credits Limited to Appropriate Bill Cycle

A new system parameter, UNIT_CR_ON_CURRENT (BIP), controls whether unit credits for usage events are applied only within the current bill period or spread out over more than one bill period. If UNIT_CR_ON_CURRENT is set to 1 (or any non-zero value), BIP applies unit credits only if the `CMF` transaction date (`CDR_DATA.trans_dt`) for that usage event is on or after the `CMF.prev_cutoff_date` for the account.

Adjustment Accruals for All Billing Periods

Adjustments for quarterly, semiannual, and annual billing periods now accrue correctly. In the past, only adjustments for monthly billing periods accrued correctly.

Distinguish the Default Currency from the System Currency for Conversion

Now the currency used for internal conversion can be different from the default currency for new account creation. That is, a deployment can, by default, provision new customers in its native currency (such as French Francs) rather than the Euro, which is still used for internal currency conversion as per EU regulations.

Interim Bills for Late Charges

Interim invoices issued to handle late charges have different statement and due dates than the current bill cycle interim bill would ordinarily contain. Collections can now handle the out-of-sequence due date.

Invoice Formatting and Dispatching

This section summarizes changes to invoice formatting and dispatching in Kenan/BP 9.1.

Kenan/BP Invoice Designer

Kenan/BP Invoice Designer enables you to create and customize invoice templates. Kenan/BP processes take the formatting instructions in the invoice template and customer information from the Kenan/BP database and merge them to produce customer invoices. Your deployment dispatches the invoice in your usual format, such as print, HTML, or fax.

Invoice Designer can handle invoice configuration in a single language while dispatching invoices in more than one language for customers with different language needs.

Archiving Bill Images

You can now use Command Center to specify whether the ARCH module archives invoices or bill images during a given run by setting the archive type for that run.

Better Name and Address Handling

IGEN output has been improved so that the appearance of names and addresses on invoices is formatted more uniformly, especially in cases where the address block spans multiple lines. This means that someone creating invoices can now specify an address format, similar to date or currency formats, for example, that handles addresses in whatever language is required.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 9.1.

Prepayments

A prepayment is a payment intended for an invoice or a charge not yet issued. In many cases, you must handle prepayments separately from other customer revenue, either for legal or business reasons. For example, prepayments are typically booked separately and they may remain as unearned revenue for several journal periods before being applied to an invoice.

Prepayments enter Kenan/BP through the Customer Care interface or the API in a customer's account currency. Each prepayment can identify a designated tax amount, which can apply only to tax charges, and an undesignated amount, which can apply to any charge (including tax charges). This distinction is frequently important for legal reasons, and tax prepayments are typically booked separately from other prepayment amounts.

BIP processes prepayments and allocates them to charges or invoices. Like payments, prepayments can be allocated in segments to different charges. Unallocated prepayment amounts remain distinct from other payments and do not affect the customer balance.

In general, BIP applies prepayments to charges in order from most constrained to least constrained. If multiple prepayments apply to a specific charge, BIP applies the most specific prepayments first.

For example, if $100 in potentially applicable prepayments apply to charge A and $80 in potentially applicable prepayments apply to charge B, BIP applies prepayments to charge B first. If two prepayments (A and B) apply to a charge, and A has `open_item_id` set while B does not, BIP applies A first.

Modification of JNL and VAT on Payments Functionality

Now it is possible to enter payments with a transaction date in the past. For the purposes of declaring VAT, the payments considered are only those whose transaction date occurred before the end of the current JNL subcycle. Rows in the `BMF_DISTRIBUTION` table are not booked, nor do they have any VAT declared due to them before the corresponding `BMF` is booked.

This change ensures that the JNL processes retrieve BMF records based on their transaction date, taking into consideration the fact that the transaction date occurs before or after the current journal range.

Financials Processing

This section summarizes changes to the Journals (JNL) and module and other changes related to financials processing in Kenan/BP 9.1.

Second Billing Address Line in Collections Letter

Now collections letters have a second billing address line to accommodate businesses with longer addresses that could not fit into the space allotted in previous releases.

Bank Account Number Fields Expanded

All fields for bank account numbers and alternative bank account numbers are expanded to a maximum of 20 characters from the previous maximum of 12 characters. This affects EFT and LBX transactions.

Clarification of Dates in BMF and BMF_DISTRIBUTION Tables

The use of dates in `BMF` and `BMF_DISTRIBUTION` tables now represent the following:

- `BMF.chg_date` — date when this database record is physically entered into the system
- `BMF.trans_dt` — date passed in at the time the `BMF` record is created
- `BMF_DISTRIBUTION.chg_date` — date when this database record is physically entered into the system
- `BMF_DISTRIBUTION` — date to be used as a distribution date

Control Frequency of Retries in Failed Credit Card Transactions

In previous releases, each time CPM ran it retried credit card "soft declines." After a certain number of tries, the soft declines became "hard declines." Often, this did not allow enough time for a customer to reinstate a credit account, which was bad for the customer and for the company. Now you can use a configurable parameter to control the frequency of retries on failed credit card transactions.

Multiple-Currency Billing

You can now use CPM to bill for charges in more than one currency. Previously, CPM picked the clearinghouse for a particular credit card transaction based on the service provider for the charges contained in that record. A user had to create separate charge elements with different service providers for each currency. This made certain other functionality in Kenan/BP useless (for example, the ability to rate one charge item differently based on a customer's invoice currency, as well as the new currency conversion functionality). This new functionality enables customers to take advantage of these other features.

CPM Support for FirstUSA Record Layout

CPM now supports the FirstUSA 96-byte record. Previously, CPM supported the FirstUSA 80-byte record, which handled only about five major currencies. This feature enables expanded currency support.

Booking by Reason Code

Now JNL can output `reason_code` for a refund (`REFUND.reason_code`) on the feed file.

Credit Note Adjustments

Now a customer can receive a credit note adjustment to a future bill if a previously issued bill has a credit applied to it after it is issued. This is necessary in some countries because their laws regard a bill as a fixed entity that cannot change after it is issued. Adjustments to the bill remain in the system as credit notes and are applied to the next bill generated as standard entries.

Thus, the credit note is considered a special type of adjustment that does not affect the invoice balance for the invoice against which it is issued, but rather applies to an invoice issued in the future.

Taxation

This section summarizes changes to tax processing in Kenan/BP 9.1.

BIP Uses Two-Out-of-Three Rule to Calculate RCs and NRCs

BIP now applies a two-out-of-three rule to recurring charges (RCs) and non-recurring charges (NRCs) to derive taxing location based on two new values for `PRODUCT_ELEMENTS.tax_location_rc` and `NRC_TRANS_DESCR.tax_location_rc`, as follows:

- 17 = use tax location for 2 out of 3 based on `cust_geocode`, `service_geocode`, and `b_service_geocode`
- 18 = use tax location for 2 out of 3 based on `bill_geocode`, `service_geocode`, and `b_service_geocode`

Variable Tax Rates

BIP can now apply incremental tax rates to incremental discounts by rate band. You can use the rate band fields (`range_origin` and `range_terminus`) in the `TAX_RATES_VAT` table to configure tax rates based on charge thresholds. For example, deployments that use phone shops can configure tax rates that are a function of the billable amount.

Tax Exemptions at Various Jurisdictions

A CSR can now specify that an account is exempt from taxes at various configurable jurisdiction levels, such as country, franchise, state, county, and city. For example, for deployments that use the Vertex tax package, a CSR can specify the state(s) where a customer is tax-exempt. In earlier releases, Kenan/BP enabled tax exemption for customers at the taxing authority level (such as federal or state), so that a single billed account could be exempt from taxes by either all or none of the jurisdictions of the same type.

System Administration

This section summarizes changes to system administration in Kenan/BP 9.1.

Network Packet Size

To improve performance, you can now modify the network packet size sent to Kenan/BP by using the environment variable `$ARBOR_PACKET_SIZE`. Set the tcp_no_delay system parameter correctly on the client and server.

Application Programmer Interface

This section summarizes changes to the Application Programmer Interface (API) in Kenan/BP 9.1.

New API Suite Captures Point-of-Sale Activity

A new set of API functions captures point-of-sale activity for retail sales. They treat the invoice as already delivered, pre-taxed, with specific charge elements, but enable adjustment through the Customer Care and API interfaces.

New Objects

- Interim Bill — *represents an invoice issued between regular billing cycles*
- Prepayment — *represents a payment paid before charges were associated with an account, intended to adjust charges on the next invoice*
- Prepayment Distribution — re*presents a prepayment segment*
- Refund Reason — *represents the reason for a refund*
- Tax Package Instance — represents *a tax package, including tax rate, and so forth*

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 9.1.

Reports and Log Files Visible through Command Center

Certain error and control reports, as well as log files, are now visible through the Command Center interface. This improvement enables billing services staff to correct problems in the billing system more easily by viewing them through the Logfile Lister GUI.

Command Center Architecture Simplified and Streamlined

The Command Center architecture has been simplified and streamlined for better performance. This translates to fewer command line parameters to learn and one less process.

Multiple Charge Adjustment through GUI

Now CSRs can adjust multiple usage charges in a single transaction. Previously, CSRs had to perform adjustments on multiple charges one at a time, going through the entire process each time. Multiple charge adjustments apply to usage charges only.

Online Help

You can now access the WinHelp contents screen from the Help menu in Customer Information.

Bank Account Number Fields Enlarged

All fields for bank account numbers and alternative bank account numbers in the database tables and on Customer Care and Command Center interfaces have been expanded to twenty characters. The following fields are affected:

- `CMF.cust_bank_acc_num`
- `CMF.alt_bank_acc_num`
- `BMF.micr_bank_id`
- `EFT_TRANS.cust_bank_acc_num`
- `LBX_ERROR.micr_bank_id`
- `LBX_POST_DATED.micr_bank_id`

Provision Contracts through iCARE

iCARE now supports the contract functionality available in the Customer Care interface. CSRs can do the following through the iCARE interface:

- view all currently active contracts on the selected account
- provision new instances of contracts defined in `CONTRACT_TYPES`
- waive activation charges
- terminate existing contracts
- waive termination and unmet commitment charges

iCARE does not support HQ groups and HQ contracts as of this release.

Override Rates

iCARE now lets CSRs work with override rates. Override rates supersede previously defined rate information for a product and create special rates for specified time periods. CSRs using iCARE can add new override rates for a product and view, modify, or delete existing override rates.

Changes for Release 9.1.1

The sections that follow list changes for Kenan/BP release 9.1.1.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 9.1.1.

Track Budget Contract Costs and Savings

Three new fields in the `CUSTOMER_CONTRACTS` table enable you to track and display the amount saved and amount charged for any provisioned contract. This feature does not apply to global contracts.

Tiered Discounts on Usage Events and Charge Items

Kenan/BP now supports tiered discounts on usage events and charge items. You can configure bands of discounts for usage events, such as:

- 0 to 50 minutes of usage — 0% discount
- 50 to 100 minutes of usage — 5% discount
- 100 to 200 minutes of usage — 15% discount

You can also configure bands of discounts for charge items, such as:

- 1st cable box recurring charge — 0% discount
- 2nd cable box recurring charge — 10% discount
- 3rd cable box recurring charge — 20% discount
- 4th cable box recurring charge — 30% discount
- 5th and successive cable box recurring charges — 40% discount

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 9.1.1.

New EFT File Format

The First USA Paymentech Address Record format is changed. The record now includes the bank account's customer name, stored in Kenan/BP as `CMF.cust_bank_acc_name`. Kenan/BP stores this field with a size of 56 characters. However, the record format truncates after 30 characters. Kenan/BP pads the field with zeros, out to the 80th character. Here is an example of the new record format:

AMcustomer_bank_acc_name

See your First USA Paymentech documentation for more information.

System Administration

This section summarizes changes to system administration in Kenan/BP 9.1.1.

Provision LDAP in iCARE

The Network Provisioning Gateway (NPG) in iCARE now includes an interface for provisioning a Lightweight Directory Access Protocol (LDAP) server. Like other network provisioning applications interacting with iCARE, such as a mail server, the LDAP provisioning interface

1. gets requests from Kenan Remote Client (KRC) through NPG
2. provisions a network entity
3. sends responses to KRC

The information used to populate the LDAP server is formatted for use specifically with Remote Authentication Dial In User System (RADIUS).

Changes for Release 10.0

The sections that follow list changes for Kenan/BP release 10.0.

Usage Processing

This section summarizes changes to usage processing in Kenan/BP 10.0.

Check for Duplicate CDRs

You can now configure Kenan/BP so that MCAP checks for and rejects duplicate CDRs that come into the system for a period of up to twelve months. The checking method uses forward and reverse 32-bit UNIX checksums, which complies with the POSIX 1003.2 standard. The odds of a false duplicate CDR are extremely small.

The new system parameter CDR_DUPLICATE_CHECK (MCAP) determines how many months MCAP should check for duplicate CDRs.

Rate Usage Event by Distance, Then Usage Jurisdiction

Now MPS can rate a call in the following manner: it attempts to use a distance band to calculate the rate for a usage event. If that fails, it derives the usage jurisdiction instead. You can also configure the usage type so that MPS can use both distance bands and usage jurisdiction for a more complex rating scheme.

Use Corridor Plans for Account Hierarchies

You can configure a corridor plan for all the members in an account hierarchy so that the corridor applies when they call any other member. This type of corridor plan recognizes multiple calling numbers (point origins) and multiple called numbers (point targets) as participating in the corridor.

Use Corridor Plans for Roaming Subscribers

The originating and terminating points of a mobile call change frequently because the mobile subscriber moves around. Now you can configure corridor plans that recognize multiple calling (point) origins as participating in the corridor, which is applicable to roaming subscribers.

Set Provisioning Limits on Corridor Plans

You can configure a corridor plan so that there is a limit on the number of times CSRs can provision it to a service instance. Enter a value greater than 0 for the corridor plan in `max_corridors`, a new field in `CORRIDOR_PLAN_ID_REF`. Leave it set to Null if CSRs can provision the corridor plan an unlimited number of times.

Guide and Rate

Usage before and after Active Service Period

Kenan/BP can guide, rate, and bill usage that falls outside of the active service period of the subscription which generated the usage. You can configure Kenan/BP to handle usage events that fall outside of the active service period in one of the following two ways:

- "early" usage generated by a customer after the network activation of service but before the subscription is marked as active in the Kenan/BP database
- "late" usage generated by a customer after the service is terminated in Kenan/BP (when regular billing stops and `EMF` has a DISC_DONE status) but before the actual network deactivation of service

In the past, Kenan/BP was not able to guide, rate, and bill usage events that fell before or after the active service period.

Guiding and Rating Late Usage

Kenan/BP can guide, rate, and bill "late" usage — that is, usage for an active service instance that is generated by a customer in the usual manner but arrives late from the network. In this case "late" means after the normal billing period for that usage event.

Segmenting, Rounding, and Rating Usage Events across Rate Periods

As of this release, Kenan/BP can segment a usage event (such as a telephone call) by rate period, rate each segment, use various rounding methods for different segments of the call, calculate and apply rate period discounts, and display rate period information on the bill.

Information stored in `BILL_INVOICE_DETAIL` is available for use by a bill formatting application, including BIF and the Kenan Invoice Designer.

Different Rates for Calls within an Account Hierarchy

You can now configure Kenan/BP so that calls within an account hierarchy carry a different rate than calls between different account hierarchies. The new system parameter USE_HIERARCHY_RATE (MPS) controls this feature. If the system parameter is set to 1, MCAP evaluates each Call Detail Record (CDR), looks up the hierarchy ID of the originating service instance and compares it to the hierarchy ID of the target. If target and origin belong to the same account hierarchy, CAP applies a user-defined global hierarchy rate to the call.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 10.0.

Unit Credits by Transaction Date (First "N" Minutes Free)

You can now configure BIP to apply unit credits to usage events ordered by transaction date and time, regardless of the service instance that generated the eligible usage event. With this enhancement, the product manager can construct unit credit plans of the type "First N Minutes Free" across, for example, multiple telephone lines.

To have BIP process unit credits by date and time, independent of service instance, set the new system parameter APPLY_UNIT_CREDIT_BY_DATE (BIP) to 1.

Configurable Unit Credit Ordering

Unit credits can now be configured in Kenan/BP so that BIP has more explicit control over the order in which unit credits are applied to usage events. The enhancements to unit credit ordering are as follows:

- you can now configure the order of application of unit credit plans (unit credit plan Z is first, unit credit plan X is second, unit credit plan Y is third)
- you can now configure the order of application of unit credit definitions within a plan (unit credit definition A in unit credit plan Z is first, unit credit definition D within unit credit plan Z is second, and so forth)

For example, given two unit credit plans, one for international usage (unit credit plan I) and one for all usage (unit credit plan A), the two may be configured so that unit credit plan A is applied first. New fields have been added to the `UNIT_CR_PLANS` table to configure a unit credit order.

Rollover Unit Credit Contracts

You can now associate unit credit plans with a "rollover unit credit" contract. Rollover unit credit contracts enable you to control how unit credits such as "free minutes" expire and how subscribers spend them. Unit credits that are part of a rollover unit credit contract and are unused in one billing period will then become available for use in a subsequent billing period (unused credits are said to be "rolled over" to the next billing period). Unit credits that are not part of a rollover unit credit contract are lost if they are unused in a particular billing period.

In addition, you can configure rollover unit credit contracts so that you can control the order of application of a previous period's unused credits with respect to the current period's available credit. Furthermore, you can configure the rollover contract so that the oldest unused credits are applied first or last. You can also specify how rolled over unit credits expire.

Discounts for Multiple Rate Periods

As of this release, Kenan/BP can calculate and apply rate period discounts to each segment of a usage event that crosses multiple rate periods and uses rate period as a rating key.

Back Allocation and Display of Discounts on Usage Aggregates

As in the past, you can configure Kenan/BP to aggregate usage events and to calculate and apply discounts to those usage aggregates. You can now specify that discounts applied to usage aggregates and stored in `BILL_INVOICE_DETAIL` can be prorated and apportioned to the individual usage events that make up the aggregate. These prorated discounts are stored in `BILL_EQUIP_DETAIL`. A bill formatting application can display them on the bill.

The new system parameter CALC_USAGE_DETAIL_DISCOUNTS (BIP) controls whether BIP prorates and back-allocates discounts on usage aggregates to the individual usage events that comprise those aggregates.

Global Contract Exclusion

When a global contract is available, the API automatically provisions it to all accounts in the deployment — the CSR does not have to provision it. As of this release, the CSR can elect to exclude a particular account from global contracts. The exclusion setting applies only to a particular account and not to account hierarchies.

Hierarchy Branch Discounts

You can configure a hierarchy branch discount that is provisioned and billed to a parent account (`owning_account_no`) in an account hierarchy but applied to the charges generated by the child accounts belonging to the account hierarchy. Hierarchy branch discounts also work for complex account hierarchies (hierarchies within hierarchies, where a child account of one parent account is the parent account for other child accounts). The `CONTRACT_TYPES` table has a new value for `contract_category` of 10 (hierarchy branch discount) to support this type of contract.

By contrast, if you provisioned a contract with a `contract_category` of 6 (standard promotion), the contract would apply only to the hierarchy parent (`owning_account_no`), but not to any hierarchy child (`account_no`s associated in a hierarchy with the `owning_account_no`).

Multi-Threshold Discounts

Prior to this release of Kenan/BP, a discount could only vary according to a single quantum (such as total charges, number of events, number of minutes). This release of Kenan/BP enables a discount to be defined according to the combination of values of two different quanta. This functionality enables discounts over multiple quanta (for instance, usage or dollar amount), with the discount determined by the threshold amount of more than one discount within a discount plan. The final multi-threshold discount depends upon the thresholds of each discount in the plan.

Bonus Points

This release of Kenan/BP enables accounts to earn bonus points and maintains point balances for accounts. Bonus points constitute a secondary balance system within Kenan/BP, independent of an account's monetary balance. Customers can earn (accrue) or spend (disburse) bonus points through point transactions similar to monetary transactions. Point transactions can appear on a customer's invoice (customization is necessary). The transactions can be canceled or configured to automatically expire after a period of time.

These bonus points are internal to Kenan/BP; they have no particular monetary value. They are not journaled. Much of the functionality associated with bonus points is only available through the Kenan/BP API. Kenan/BP provides no mechanism for redeeming bonus points nor for converting them into an entity with monetary value, that is, a unit credit or discount contract. However, the Kenan/BP API can be used to construct an external points redemption system that is closely tied to the Kenan/BP bonus points balance system.

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 10.0.

Rate NRCs with New Rating Keys

You can configure non-recurring charge types and their rates so that the CSR can choose several standard rating keys when provisioning them, in addition to the old keys `type_id_nrc`, `rate_class`, and `currency_code`. The new rating keys are: `class_of_service_code`, `equip_class_code`, `equip_type_code`, and `component_id`.

Back-Out Usage Rated and Billed in Different Currencies

You can back out usage that is rated in one currency and billed in a different currency. The billing module (BIP) converts charges stored in `CDR_DATA` for rated usage to another currency when the invoice currency is different from the rating currency.

Transfer Payments for Unbilled Items to a Different Open Item ID and Invoice

The API can transfer a payment for unbilled items to a different open item ID (the destination open item ID) on a different bill. The CSR cannot perform this transfer in the Customer Care interface. Otherwise, the ability to transfer payments to different open item IDs on unbilled and billed items is the same.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 10.0.

Balance Billing Updates Status of Hold Records

When a Ready record exists for a particular account, Balance Billing now updates the status to CANCELED for all transactions for that account that have HOLD status. This means that no time is wasted investigating transactions in CCIU that have already gone to the clearinghouse. Set the system parameter BALANCE_BILLING to 1 or 2 to make this feature available.

LBX Enhancements

- LBX Stores the Batch Number from the LBX File
- LBX Stores the Annotation from the LBX File
- LBX Processes Very Large Post-Dated and Errored Payment Files
- LBX Processes Very Long External IDs

Financials Processing

This section summarizes changes to the Journals (JNL) and module and other changes related to financials processing in Kenan/BP 10.0.

JNL Uses New TOP Tables to Journalize Outcollect Usage

In addition to its normal tasks, TOP now calculates income and tax for outcollect usage, summarizes it, and writes the result to new tables: `OUTCOLLECT_BATCH`, `OUTCOLLECT_BATCH_DETAIL`, and `OUTCOLLECT_BATCH_TAX`. This summary process creates batches, which are statement-specific for CIBER and TAP. JNL uses these tables together with existing ones to journalize outcollects, producing accruals for unsent outcollects, and standard entries for sent outcollects.

JNL Type 1 and 2 Runs Store Aggregated Information in JNL_TRANS

JNL Type 1 and 2 runs now write aggregated information to `JNL_TRANS` at the end of each run. The Type 3 run is therefore no longer needed to perform the aggregation from `JNL_DETAIL` to `JNL_TRANS`.

JNL Type 3 Runs Journalize Payment Types

The JNL Type 3 run is now used to journalize payments, tax on payments, pre-payments, payment reversals, and recoveries. These items are no longer journalized in Type 1 runs if running subcycles, or Type 2 if not. The Type 3 Control Report is now similar to those for Type 1 and 2 runs.

JNL Type 1, 2, and 3 Control Reports Include New Columns

The JNL Control Report for Type 1, 2, and 3 runs now include a `JNL_TRANS` column. The `JNL_TRANS` column shows the number of entries created in `JNL_TRANS`.

JNL Run Types 1, 2, and 3 Support Parallel Queries

The queries within JNL run types 1, 2, and 3 are no longer performed in order. Instead, the different queries run in parallel. This substantially reduces the amount of time needed to perform these runs.

JNL Updates JNL_INVOICE_AUDIT More Efficiently

JNL now updates the `JNL_INVOICE_AUDIT` table independently of recurring charge processing and uses a more efficient process.

JNL No Longer Updates run_success in JNL_DETAIL and JNL_TRANS

JNL no longer updates the `run_success` field within `JNL_DETAIL` and `JNL_TRANS`. If required, you can retrieve this information from the `run_status` field in `JNL_RUNS_STATUS`.

Taxation

This section summarizes changes to tax processing in Kenan/BP 10.0.

BIP Calculates Taxes on Zero Charges

You can configure instances of the Universal tax package with one or more taxes on charges of zero, such as when a flat fee or surcharge applies to free E911 calls.

BIP Passes Correct Transaction Dates to Vertex CommTax

You can configure the setting for the `tax_type` field in the `TAX_PKG_INST_ID_REF/VALUES` tables so that BIP passes different transaction dates for each different charge type (recurring, non-recurring, and usage charge types) to the Vertex CommTax tax package.

BIP Passes Usage Duration to Vertex CommTax

BIP can now pass usage duration rated in hundredths of minutes to the third-party tax package Vertex CommTax, allowing deployments to calculate taxes more precisely and improve tax compliance in jurisdictions that require this degree of precision in usage rating.

While Kenan/BP can handle usage measured in any type of unit, CommTax expects usage duration measured in hundredths of minutes. Accordingly, before passing data to CommTax, BIP must convert usage units to hundredths of minutes.

Users must set the new system parameter COMMTAX_ADDITIONAL_TAX_UNITS (BIP), the values for two new fields in `TAX_CODES_COMM`: `tax_units_indicator` and `tax_units_type`, and specify conversion information in `USAGE_UNITS_CONVERTS`.

System Administration

This section summarizes changes to system administration in Kenan/BP 10.0.

XFER (Service Instance Transfer Utility)

The new service instance transfer utility (XFER) uses a cease-and-reprovide method to provide service transfer and suspension functions. XFER enables more complicated offers and transactions for clients, particularly in the mobile market. Possible XFER uses include:

- customer A purchases a mobile phone and an associated contract and then sells the phone and the remaining contract to customer B. XFER enables CSRs to transfer billing responsibility in one step.
- a mobile customer wants to suspend a special six-month contract because she is not going to use her phone for a month. XFER can suspend the contract on the network and skip bill processing for the service for that month.

XFER can only be used with Kenan/OM and versions 10.0 and higher of Kenan/BP. Kenan/OM contains all front-end XFER capability. Kenan/BP includes all back-end features such as Kenan/BP database tables and API objects. The XFER utility is scheduled by the UTL module and can be run in an MSA environment.

Note XFER does not handle bonus points (because they are account-level entities) or installment NRCs.

Initialize Languages in Kenan/BP Database

You can now specify which languages are initialized in the Kenan/BP database when you create it. Also, you can add support for additional languages to your Kenan/BP database.

High Speed Messaging

The IPC messaging layer now includes High Speed messaging. This type of messaging is available in place of Guaranteed-Delivery messaging. The type of messaging used in your deployment depends on implementation and processing requirements.

The speed of message delivery is significantly faster. When sending 100,000 messages, each of 35 bytes, delivery times are as follows:

Guaranteed-Delivery	143 seconds
High Speed Messaging	4 seconds

The “message burst” capability of High Speed messaging delivers the same batch of messages in 1 second. However, High Speed messages, including those sent in a “message burst,” are not guaranteed and may be lost in system or application crashes.

Application Programmer Interface

This section summarizes changes to the Application Programmer Interface (API) in Kenan/BP 10.0.

Bonus Points

Kenan/BP now allows for the accumulation of non-monetary bonus points or loyalty points. Bonus points are calculated for each bill based on total eligible charges for eligible accounts. To implement this new functionality, the following new API objects have been added:

- Bonus Point ID
- Bonus Point Rate
- Bonus Point Transaction Type
- Account Bonus Point Balance
- Account Bonus Point Transaction

List by Range

The Kenan/BP API now enables you to query and list an object by a range. For example, if you wanted to query for `language_code`, you can now specify ranges such as:

`language_code` >= 1

`language_code` < 5

`language_code` >= 1 AND `language_code` < 5

The List, List Active, and Cease and List functions have an argument called `keys`. Previously, the API interpreted `keys` as a single API object. Now the API allows you to construct a linked list (maximum of 2 objects) and pass this list as `keys`. The first element of `keys` contains the lower bound of the range and the second element contains the upper bound of the range.

Split Period Discount Functionality

To enable BIP to discount only a portion of a multiple-rate period usage event and discount different portions of a multiple-rate period usage event with different discount rates, new fields have been added to existing API objects. Also, a new argument (`split_row_num`) has been added to the prototype of the Select function for the Billed Usage object.

Storage of Individual Rate Period Data

Kenan/BP now stores the individual rate, duration, and rate period of a call that crosses multiple-rate periods. New fields have been added to existing API objects to enable this functionality.

Global Discount Exclusion

To provide a mechanism for excluding an account from a global discount, a new field has been added to the Account API object.

Rollover Unit Credits

Kenan/BP now enables customers to roll over unused unit credits from one bill cycle to another. For example, if a customer has purchased a package that includes 60 free minutes of usage per month, the unused portion of that usage will now be carried over to the next bill period. To implement this functionality, new fields have been added to existing API objects.

Service Transfer and Suspension

Kenan/OM version 3.0 now enables you to transfer a service instance from one account to another and also suspend a service instance for a period of time. In order to support this Kenan/OM functionality, the following new API objects have been added. You can ignore these objects if your deployment does not support Kenan/OM version 3.0.

- Xfer Reason
- Connect Reason

Transfer a Payment to a Different Open ID

Kenan/BP API enables you to transfer payment to a different open item ID. In the past, the API enabled you to:

- transfer an unbilled payment to an open item ID on the same bill
- transfer a billed payment to an open item ID on the same bill
- transfer a billed payment to an open item ID on a different bill

Now, the API enables you to transfer an unbilled payment to an open item ID on a different bill.

Multi-Threshold Discounts

This release of Kenan/BP enables you to define a discount according to the combination of values of multiple quanta (such as total charges, number of events, number of minutes). To implement this new functionality, a new API object, Discount Threshold Tier, has been added.

Internationalization Changes

The Kenan/BP API now supports the UTF-8 charset for international characters. What this means for you, the API user, is that the prototypes for strings are now `ABP_LOCSTR *`. However, these strings are `#define`'ed to be `char *` and continue to function as multibyte character strings as before. Therefore, the *API Reference* will continue to document these internationalization and localization changes to the API as they were documented in the past, since the changes are transparent to the user.

However, all applications that do not use UTF-8 character set encoding and use the Kenan/BP API must now call `abp_set_string_conversion_functions()` before making any other API function call.

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 10.0.

Customer E-mail Fields Extended to 145 Bytes

Now CSRs can enter up to 48 characters safely in the Customer E-mail Address and Statement E-mail Address fields in the Kenan Contact Information window in the Customer Care interface. The `cust_email` and `statement_to_email` fields in the `CMF` table have been extended from 32 bytes to 145 bytes (144 plus one byte for null-terminated character strings) to accommodate multibyte encoding for a variety of languages and long e-mail addresses. They are now the same length as `external_id`, another field that stores e-mail addresses. BIF accommodates this length.

External ID Field Extended to 145 Bytes

The Kenan/BP database supports very long external IDs, such as e-mail or internet addresses. All `external_id` fields have been changed from mchar[48] to mvarchar[144], plus one byte for null-terminated character strings. This length is consistent with multibyte requirements to support internationalization. In the Customer Care interface, CSRs can enter or make a filter request for very long external IDs. This change affects the following Customer Care interfaces: CCIU, COL, EIU, LIU, LBX, MPS, and MIU.

Social Security Number Fields Extended to 21 Bytes

Now CSRs can enter up to 20 characters in the `Social Security No.` field in the Kenan Verification Information window. This length accommodates national identifiers that are longer than the U.S. Social Security number or Canada's Social Insurance number. The `CMF.ssn` field now extends from 11 bytes to 21 bytes (20 bytes plus 1 null terminate).

Hide External IDs in Some Customer Care Windows

You can now hide external IDs in some Customer Care windows. The `EXTERNAL_ID_TYPE_REF` table has a new configurable field, `is_viewable`. When it is set to 1, the external ID appears as a string of asterisks in the dialog boxes. This change applies to both account-level and service-instance-level external IDs. Users can still see external IDs in the CCIU, EIU, LIU, and MIU. This setting affects the display of external IDs in the Account External ID Entry dialog box and Equipment External ID Entry dialog box in the Customer Care interface. It can be used to hide the IMSI from ordinary users.

New Method of Storing and Displaying Logged Results

This release introduces a new method of storing and displaying logged results of processes. In previous releases, each process logged its results in a separate text file. Because most MPS and billing cycle tasks require the use of multiple processes to handle the entire workload, several control reports had to be scanned to determine the outcome of a single billing operation.

Now, in addition to generating a log file and control file, each process also logs its results — start and end times, items processed, status — in database tables. This makes it simple to determine the results of a set of processes, for example, in the case of a BIP run where twenty BIP processes ran against a series of invoices across multiple servers.

Changes for Release 10.1

The sections that follow list changes for Kenan/BP release 10.1.

Usage Processing

This section summarizes changes to usage processing in Kenan/BP 10.1.

TOP Included in Mobile Roaming Feature Package

As of release 10.0, TOP (the usage postprocessor) is not included in core Kenan/BP releases. As a result, full roaming support is not part of core Kenan/BP releases. Now TOP functionality is part of the Kenan/BP Mobile Roaming Feature Package. The Kenan/BP *Guide to Mobile Roaming* contains information about TOP.

Aggregate Usage Rating

Aggregate usage rates specify a usage charge for a billing period based on the total usage amount for that period. Normal usage rates apply to each usage event separately, but aggregate usage rates apply once (when the bill is calculated) to a collection of eligible usage events that occurred during the bill period.

This release of Kenan/BP introduces the following aggregate usage rating features:

- enhanced distribution methods
- variable rates
- new aggregation levels
- ability to rate to greater precision
- new usage restriction fields

Usage Jurisdiction by Zone Class and Bill Class

With this release, you can use zone class and bill class to determine different jurisdictions for a usage event. Using `zone_class` and `bill_class` as additional `USAGE_JURISDICTION` rating keys enables you to use jurisdiction in discounting.

Multiple Criteria for Usage Splitting

As of this release, Kenan/BP's usage splitting functionality can use multiple criteria instead of usage type only. In earlier versions, configuring usage splitting was somewhat inflexible. For example, if a certain offer affected usage of a given type in a particular service class, MPS split all usage of that type. As a result, MPS needlessly split many usage records in other service classes, adversely affecting system performance.

Now CAP can split usage according to element ID, equipment type code, equipment class code, class of service, rate class, and usage type. Somewhat more careful setup is necessary, but the result is more efficient Kenan/BP operation.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 10.1.

Individual Case Basis (ICB) Discount Rates

Now you can enable individual case basis (ICB) discount rates for discounts provisioned through a contract. CSRs use ICB rating to assign account-specific discount rates for products and services for accounts, account groups, service instances, and service instance groups.

ICB discount rates:

- can consist of override and default rates
- provide a whole or fractional percentage-off or amount rebate according to the terms of the original discount
- can apply to flat, bulk, or incremental discounts
- are provisioned through the Customer Care interface

Historic Contracts

Kenan/BP now supports a new contract type called historic contracts. Each historic contract is associated with a contribution period that can include several billing periods. At evaluation time, accumulated contributions are used to determine the discount rate. Any discount you use currently can be included in a historic contract.

There are two types of historic:

- historic discount contracts — offer either dollar-amount rebates or percentage discounts on current charges, based on historic charges
- historic payback contracts — offer either dollar-amount rebates or percentage discounts on target amounts accumulated over a period of time

Contract Proration

Proration is the calculation of charges accrued over a partial billing cycle in which a bill is issued for a partial period or in which the contract does not cover a full billing cycle.

Kenan/BP now includes two types of proration:

- threshold proration — calculates the threshold charge total that would have resulted from collecting charges for an entire period. The threshold proration factor is the product of the billing cycle threshold proration factor and the contract threshold proration factor.
  - » billing cycle threshold proration factor = configured bill days/actual bill days
  - » contract threshold proration factor = charge bill days/contract bill days
- rebate proration — calculates proration in which the time covered by the bill does not equal the time covered by the configured bill period. For example, if the contract is active for half the bill period, the rebate rate is valid for half the bill period only.

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 10.1.

BIP Stores Tax Rates for Display on Invoices

Kenan/BP stores all tax calculation rates and displays them with the tax amounts on invoices when the system parameter STORE_TAX_RATES (BIP) is set to 1. The tax rates and calculated tax amounts are stored in `BILL_INVOICE_TAX`. Federal, state, country, city, and other tax rates applied to a charge are stored in separate fields to permit a detailed display on the invoice.

Multibyte Font Support for HP PCL and AFP Printer Drivers

Kenan/BP now supports the use of multibyte characters with HP PCL and AFP printers.

Dynamic Bill Messages and Inserts

Kenan/BP 10.1 introduces dynamic bill messages and inserts that complement existing static inserts and messaging. Dynamic messages and inserts enable you to vary the messages on each customer's bill, or the printed inserts included with the invoice, based on account-level attributes. For example, you can direct a message about an existing service to only those customers who subscribe to it or send a promotional insert to nonsubscribers only.

Enhanced Product Rating

Kenan/BP 10.1 introduces two enhanced product rating features:

- units-based rating

  Units-based rating now enables you to vary the rate for a product based on the units type and specified number of units associated with a particular product instance. The units associated with this product can change dynamically without requiring a cease-and-reprovide.

  This new units-based rating is distinct from previous distance-sensitive rating. Previous distance-sensitive product rates were based on the `pop_units` value associated with the service instance parent of the product instance. It was not possible to associate two product rates to a single service if the rate distinction depended on different units measurements.

  With new units-based rating, you can provision a single service for a 512-KB Internet line and a 5GB user account. You can also configure a recurring charge rate as a bulk rate so that products below a configured units threshold have one rate and those above the threshold have another, unrelated rate.

- jurisdiction-based rating

  Jurisdiction-based product rating enables you to vary the rate of a product based on the product instance’s geographic location. Jurisdiction is determined by a product instance’s origin and target location.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 10.1.

Multiple Currency, Division Support for CPM and First Data Merchant Services (FDMS)

When a First Data Merchant Services (FDMS) clearinghouse processes a credit card transaction, CPM can fine-tune its selection of clearinghouse within FDMS, based on the merchant ID listed for the charges in `SERVICE_PROVIDERS_REF.merchant_account_no`. This field is tied to distinctions such as service provider and currency.

This feature removes the need to create separate charge elements with different service providers for each currency to handle credit card payments for multicurrency transactions.

Transaction Cleanup Scripts for Failed CPM, EFT Runs

If CPM/EFT fails midway through a processing task, the module picks up from the first unprocessed record when the file is reprocessed. It does not pick up and complete any partially processed record — for example, a Create task that was interrupted after records were assigned to transaction files and `CCARD_TRANS.cc_trans_status` / `EFT_TRANS.eft_trans_status` was set to 2 (pending) but before the final payments send file was created.

Financials Processing

This section summarizes changes to the Journals (JNL) and module and other changes related to financials processing in Kenan/BP 10.1.

JNL Books Payback Contract Prepayments

The JNL module can now book payments due to payback contracts by `discount_id` or `tax_type_code` now stored in the `BMF` table. Historical contracts do not require any changes to JNL.

Reporting Balances Aged Greater Than 90 Days

Before this release, Kenan/BP generated reports for aged balances up to 90 days. As of this release, you can report overdue balances in the following time increments:

- 1–30 days
- 31–60 days
- 61–90 days
- 91–120 days
- 121–150 days
- 150–180 days
- >180 days

Taxation

This section summarizes changes to tax processing in Kenan/BP 10.1.

Third Party Tax Package Compatibility

Kenan/BP 10.1 is compatible with CommTax 2.01 and 1.06. Kenan/BP 10.1 is not compatible with other CommTax versions.

Kenan/BP 10.1 is compatible with Quantum 2.0. Kenan/BP 10.1 is not compatible with previous Quantum versions.

Tax Paybacks

With historic contract functionality, you can offer paybacks on tax paid on target charges.

Bulk-Tiered Taxes

Kenan/BP currently supports tiered incremental taxation, in which each tier has a different tax rate. This release adds tiered bulk tax rates in which the highest tier reached determines the tax rate for the total. For instance, you can configure a tax rate of 10% if taxable totals are $500.00 or less and 15% if taxable charges are greater than $500.00.

System Administration

This section summarizes changes to system administration in Kenan/BP 10.1.

Improved replicate.pl

The `replicate.pl` script has been improved for this release of Kenan/BP. New functionality includes the ability to selectively replicate particular customer databases and selected database tables. Referential integrity between tables is also maintained because the script checks foreign keys and tables with parent-child relationships while it replicates them.

TCP/IP Functionality for MCAP Flash Processing

This release of Kenan/BP introduces a second, socket-based Flash mode for MPS real-time usage guiding and rating. MCAP can connect to mediation devices to receive real-time data through TCP/IP, eliminating the need for XIPC messaging software. XIPC Flash mode is still available for deployments that have XIPC installed and XIPC is still required to use BIP in Flash mode.

Note	As of this release, the MCAP TCP/IP Flash mode feature is available for Sun installations only.

New Module: HDP — Historic Discount Processor

The Historic Discount Processor (HDP) handles the calculation of historic contracts. HDP works in conjunction with BIP and processes the contribution amounts that BIP has determined as contributing to a particular historic contract. HDP generates total historic threshold values for historic discount contracts and payback amounts for historic payback contracts. When an evaluation period is completely evaluated, HDP moves historic contracts forward to the next evaluation period.

New Procedures for Allocating Sequential Numbers in Tables

A new subdirectory, `/sequences`, exists under `$ARBORSITE/dba/$DBMS/admin, /catalog`, and `/customer`. The `/sequences` subdirectories contain procedures for generating sequential numbers for certain tables that frequently access the `SEQ_NUM` table. By generating numbers through these procedures instead of using `SEQ_NUM`, performance can be substantially enhanced.

ARCH Independent of Kenan/BP

Beginning with Kenan/BP 10.1, the Archiver module (ARCH) is a standalone component, independent of Kenan/BP. The new ARCH component also works with Kenan/BP 9.0, 9.1, and 10.0 and will work with all future versions. The ARCH tables no longer appear in the Kenan/BP *Database Reference*. All ARCH information is included in the Kenan/BP *ARCH Guide*.

ARCH Enhancements

This release of ARCH includes the following enhancements:

- improved RESTORE performance

  ARCH performance in RESTORE mode now has a unified bulk copy interface that enables the use of bulk insert procedures for faster insert operations and reduced network traffic.
- new archive type for historic contracts

  ARCH supports a new archive type for historic contracts.
- ARCH handles JNL tables

  Now you can archive JNL tables with ARCH.

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 10.1.

Collections Status Information Added to Account Information Screen

The Customer Information interface Account Information window includes a Collection Indicator field. This field holds a numerical value that indicates if an account has been placed in collections (0 = no, 1 = yes).

Now you can see collections status text as well. The new Collection Status field holds a text description of the account's collections status.

Individual Case Basis (ICB) Discounts

Individual Case Basis (ICB) discount rates enable you to create override (account-specific) discount rates for discounts you provision through contracts.

Through the Discounts windows you can:

- view an account's contract-provisioned discounts
- view discount rates
- view override rates and details
- add, modify, terminate, and reactivate override rates

Stored Tax Rates

With this release of Kenan/BP, you can store the tax rates used in invoice calculations and display these rates on the invoice. You must customize the user interface to display these stored tax rates in the Customer Information windows.

Account and Service Instance Groups

CSRs can create groups of accounts and service instances and manage the memberships of these groups. Group membership is dynamic. Members need no relationship beyond a shared Customer database. Group members need not share account characteristics. You can group service instances regardless of service type or owning account.

You can use account and service instance groups to provision certain contracts such as historic contracts. Only contracts that allow groups can be provisioned to account or service instance groups.

Filtering by Open Item ID

Now you can filter items in the Invoice Summary area of the Account Balances window by invoice or by open item ID.

Rating by Units Type or Jurisdiction

Now you can rate service-instance-level products by units such as bandwidth or distance and by jurisdiction (origin and target geographical zones). Units rating enables you to rate a product with a rating key that stores bandwidth, distance, or other units. Jurisdiction rating enables you to rate a product by the originating and terminating locations.

You can provision a units- or jurisdiction-rated product:

- as an a la carte product through the Kenan Add Product window
- as a product associated with a contract added to an account or service instance
- as a product associated with an account or service instance as an element or part of a contract for a product package added to an account or service instance

Historic Discount Contracts

Discounts provisioned within historic contracts enable you to discount based on charges accumulated over a configured period. There are two types of historic contracts: historic discount contracts and historic payback contracts. Historic discount contracts can be provisioned to accounts, service instances, account groups, or service instance groups. Historic payback contracts can be provisioned to accounts or account groups only.

You can provision historic contracts in four ways:

- provision contracts to service instances from the Kenan Equipment Information window
- provision contracts to accounts from the Customer Information window
- add contracts to accounts and service instances as part of a product package
- provision historic contracts to account groups or service instance groups from the Groups interface

Changes for Release 10.1.1

The sections that follow list changes for Kenan/BP release 10.1.1.

Usage Processing

This section summarizes changes to usage processing in Kenan/BP 10.1.1.

Determine Billing Units from Rate Plans

In previous versions of Kenan/BP, CAP derived the billing units of a usage event from the rating units of the usage type.

Now you can vary the billing units or billing increment size for a usage event according to the associated rate plan. This means that calls of the same type can have different billing units depending on the associated rate plan. A single usage event can have segments in different billing units.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 10.1.1.

ICB Unit Credit Contracts

Kenan/BP 10.1 introduced individual case basis (ICB) discount rate functionality. Now with Kenan/BP 10.1.1 you can enable ICB unit credit rates for contract-provisioned unit credit plans. The Kenan/BP APIs support ICB unit credit rates. CSRs using custom provisioning applications can use ICB rating to assign account-specific unit credit rates for products and services provisioned to accounts, account groups, service instances, and service instance groups.

Pay-As-You-Go Unit Credit Contracts

Kenan/BP 10.1.1 introduces pay-as-you-go contracts, standard or rollover contracts that enable you to offer unit credits in a unique way. Pay-as-you-go contracts consist of a single recurring charge (the contract charge) and a single unit credit plan offering a single unit credit in either monetary or units amounts. For instance, you could offer 100 free minutes (good for one bill period only) for $10, or 300 minutes of weekend national calls (good for 60 days) for $50.

Pay-as-you-go contracts have special termination behavior. When a customer cancels a pay-as-you-go contract, the contract charge is prorated to reflect the amount of unit credits used at the point of cancellation. A terminated pay-as-you-go contract charges only for the used unit credits.

Limit Unit Credit Rollovers by Bill Period

Rollover unit credit contracts enable you to control how unit credits expire and how subscribers spend them. Unit credits that are part of a rollover unit credit contract and are unused in one billing period become available for use in a subsequent billing period (unused credits are said to be "rolled over" to the next billing period). Unit credits that are not part of a rollover unit credit contract are lost if they are unused in a particular billing period.

In previous versions of Kenan/BP, you could limit the availability of rolled-over unit credits by a configurable number of days (using the `CUSTOMER_CONTRACTS` fields `rollover_period_start` and `rollover_period`). Now you can limit rollover credit availability by bill periods as well. This enables you to offer unit credits that expire after three billing periods, rather than 90 days, after the rollover date (the date on which unused unit credits become rolled-over unit credits).

Service Instance Group Contracts

Previously, only cycle-dependent unit credits with service-instance-level distribution could be provisioned to service instance groups. Kenan/BP 10.1.1 introduces service instance group distributed unit credits, which can be provisioned with any of the following unit credit contracts to service instance groups:

- rollover
- cycle-independent
- cycle-dependent
- pay-as-you-go and pay-as-you-go rollover (new)

Service instance group distributed unit credits:

- define a single pool of credits that is shared by all members of the service instance group
- apply only to usage
- offer free units or monetary amounts
- can be applied to usage in a first-come, first-serve order

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 10.1.1.

Sequential Invoice Numbering

Kenan/BP 10.1.1 introduces Sequential Invoice Numbering (SIN), an optional component that enables you to assign unique sequential numbers to invoices and to open items on invoices.

SIN-generated sequences are continuous and without gaps. SIN can assign independent sequences for invoice or open-item groups based on common attributes (for example, country or market code). SIN can run in two modes: single-SIN, in which one SIN instance runs against all Customer servers; or multi-SIN, in which a separate instance of SIN runs against each Customer server.

The SIN module is sold separately from Kenan/BP and is described in detail in the Kenan/BP *Guide to Sequential Invoice Numbering*.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 10.1.1.

Write-Off Recovery Payment Processing

When LBX processes a payment, it checks to see if the account to which the payment applies was written off and disconnected. (A written-off account is one for which COL has issued a payment for the remaining total due, paying the balance so the account can be disconnected.)

In previous versions of Kenan/BP, although you could not automatically apply payments to written-off, disconnected accounts, payments received for these accounts (called write-off recovery payments) could be processed manually. When LBX received a write-off recovery payment, normal processing failed and the payment was recorded in `LBX_ERROR`. Then the payment appeared in LIU where it could be manually processed by supervisors or administrators.

Now you can choose how LBX processes write-off recovery payments. The new AUTO_RECOVERY (LBX) system parameter determines if LBX processes full and partial write-off recovery payments or sends them to LIU for manual processing.

Application Programmer Interface

This section summarizes changes to the Application Programmer Interface (API) in Kenan/BP 10.1.1.

New Sorting Functionality

Several objects now support sorted lists of records based on one or more fields in the object. Set sort criteria using the `key` argument of the pertinent field's set method. Sort order (which field becomes the primary sort criteria, which the secondary criteria, and so on) and the method of sorting (ascending or descending) are the final arguments of the relevant object's list function.

New Wildcard Search Functionality

Several fields now support wildcard searching. Searches are run through the objects' list methods. Both * and % are valid wild cards, each representing 0-n characters. Set search criteria using the `key` argument of the pertinent field's set method.

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 10.1.1.

Adjustment Invoice Display

Clients want options for displaying adjustments on invoices. Some clients prefer CSRs to create annotations on a case-by-case basis, while some prefer CSRs to use pre-configured adjustment descriptions. Other clients want the invoice adjustment to be an identical match to the item that was adjusted. Now you can use a new field in `ADJ_TRANS_DESCR`, `annotation_type`, to determine how adjustments are described. BIF uses this field to control how a specific adjustment is shown on a customer invoice.

Date Formats

Previously, users of Kenan/BP interfaces such as Customer Information, Bill Invoice Browser, and Collections could select a standard date format for the interface when setting the database registry. Now Kenan/BP uses the user's system date format. Users who want to reset the date format need to do so through Windows Regional Settings. Kenan/BP restricts valid date formats.

Changes for Release 11.0

The sections that follow list changes for Kenan/BP release 11.0.

Usage Processing

This section summarizes changes to usage processing in Kenan/BP 11.0.

Minimum Usage Charges

Now you can define a minimum charge amount for usage records. If a rated charge amount is below the minimum charge, the minimum charge is recorded instead.

Minimum-Duration Usage Rates

Now you can configure a usage rate with a defined minimum duration as well as a minimum charge. This functionality is similar to the existing Kenan/BP minimum duration rounding for usage, except that it applies to usage rates rather than usage types. Minimum-duration usage rates affect the way that unit credits are applied. For example, you can create a one-minute minimum to ensure that a unit credit plan offering free usage minutes can take into account even very brief usage events.

Storing Usage Record Rate Information

Now Kenan/BP can store information about the rate CAP used for a usage record. `CDR_DATA.seqnum_rate_usage` and `seqnum_rate_usage_override` store the standard or override usage rate. You can choose to store the rate period and the rate's implied decimal places in `CDR_DATA.annotation` or `ext_tracking_id`. The SAVE_RATE_USAGE_SEQ (MPS) system parameter controls this behavior. If a usage record uses multiple rate periods, CAP stores the rate information from the first (beginning) rate period only.

Internet Protocol Data Record (IPDR) Support

Kenan/BP 11.0 complies with Network Data Management–Usage (NDM–U) for IP-Based Services, version 3.1. Kenan/BP supports both XML and XDR encodings and implements the NDM–U File Sharing Protocol for document transfer.

Kenan/BP supplies sample configurations for the following IP-based Service Specifications:

- Voice Over IP
- Streaming Media

Kenan/BP processes IPDR documents with the help of the CSG Systems Application Integrator.

Record Usage Record Details

Now Kenan/BP records the number and units total of usage records that compose a usage aggregate. You can display these details on customer invoices. For example, you could display the following information on a customer invoice:

- international calls: 23 calls; total duration = 02:34:22
- local calls: 10 calls; total duration = 01:04:26

New Usage Consolidation Mode

CAP has optional new usage consolidation functionality. Now CAP in Production mode creates a master usage detail file for each account for the entire billing cycle. Each time CAP runs during the billing cycle in Production mode, it performs usage consolidation to the master usage detail files. CAP in Consolidate mode writes consolidated records from these detail files to `CDR_DATA` as it does with normal detail files, but now there is only one consolidated record for each account and combination of key fields for the entire billing cycle, instead of a separate record from each CAP run.

Rounding Options for CDR Amounts

The system parameter OVERRIDE_CURR_ROUNDING (MPS) controls how CAP rounds CDR amounts (how CAP calculates `CDR_DATA.amount` from `CDR_DATA.unrounded_amount`). This release introduces a new set of values for this parameter. Choose one of the following values:

- 0 or unset — use `RATE_CURRENCY_REF.`*rounding_method*
- 1 — round down
- 2 — round up
- 3 — round nearest up
- 4 — round nearest down

Use Usage Point Field Lengths to Determine Jurisdiction

You can configure jurisdiction-based rates using the `point_origin` and `point_target` fields, using either a usage point prefix or the entire usage point to determine a rate. Now you can use the length of these fields for additional rating accuracy by configuring field length as a rating key. `USAGE_POINTS.raw_point_size` holds the size of each configured usage point.

For example, the following two numbers represent adjacent areas in a city:

- 21 123 4567
- 21 1234 5678

These usage points have the same prefix, but now they can be guided separately because they have different numbers of digits.

Kenan Prepaid Usage Records Inserted Directly in Database

The Kenan/BP MCAP and CAP processes now insert prepaid and pre-rated usage records sent by Kenan Prepaid directly in the `CDR_DATA` and `CDR_DATA_WORK` database tables without guiding or rating the data again. This change applies to both the real-time and batch modes of MCAP and CAP.

FILE_STATUS Helper Tables

Every time the CAP and MCAP modules start or recur, they perform two full scans of the FILE_STATUS table: one to identify previous failures (files to back out), and one to get the list of files to be processed. This can cause serious performance problems, particularly in large deployments.

Kenan/BP 11.0 introduces two new tables, FILES_TO_PROCESS and FILES_IN_PROCESS, to address this problem. These tables track the status of usage files, maintaining a current list of files to be processed and files to be backed out. By isolating this information, this procedure reduces the frequency of FILE_STATUS queries, dramatically improving performance in installations with a large number of FILE_STATUS records.

Performance Enhancement

MCAP is now significantly faster in high-volume installations.

Rules-Based Rating

Kenan/BP and the CSG.net Core Rating Engine application support rules-based rating, which enables you to define a custom rule that applies to additional fields on the Call Detail Record (CDR) after Kenan/BP uses the regular criteria to calculate the rate. Rules-based rating is available only to users of the Core Rating Engine, which is not included in Kenan/BP 11.0. To use rules-based rating, you must install and run the Core Rating Engine.

Note The rules-based rating feature is not standard — check with your system integrator to determine if your deployment supports it.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 11.0.

Recurring Charge Discount and Disconnect Proration

When a recurring charge rate changes during a bill cycle, BIP can use both rates to calculate the correct total charge. BIP prorates the valid rates and adds the segments to create an accurate rate for the month. With this calculation method, BIP uses the full prorated charge when calculating RC discounts or disconnect credits rather than calculating discounts and credits from the valid charge portion.

Now BIP can split recurring charges into segments to calculate discounts and disconnect credits based on the actual per-day contribution to the charge. The result is more accurate discount and credit totals on charges that have a rate or contract change in the middle of a billing period. BIP can split charges:

- if a discount applies to only a portion of a recurring charge
- if a recurring charge rate changes during a bill cycle

The new system parameters SPLIT_RCS_FOR_DISCOUNTS (BIP) and SPLIT_RCS_FOR_RATE_CHANGE (RC) control this functionality.

Historic Payback Contract Restrictions

When calculating historic payback contracts, BIP accumulates contract contributions (threshold charges) which it uses to determine a payback amount.

Now BIP can subtract historic payback amounts from historic payback threshold totals so that only totals actually billed to the customer are used to calculate paybacks. With the new `DISCOUNT_RESTRICTIONS.restriction_type` 8, you can determine which historic payback discounts should affect threshold contribution totals.

Active Dates for Override Contract Rates

In previous releases CSRs created override discount and unit credit contract rates with active and inactive dates. This release changes override contract provisioning. Now override discount or unit credit rates are active for the entire contract period.

Daily Unit Credits

Kenan/BP 11.0 introduces daily unit credits, service-instance-level unit credits that offer discounts or rebates per calendar day. Daily unit credits offer the same discounts as periodic unit credits. You configure daily unit credit rates as usual in `RATE_UNIT_CR`, but rates are applied daily rather than periodically. Examples of offers include:

- 10 free long distance minutes each day for every 50 long distance minutes charged that day
- $1 of free mobile usage each day for every $5 of mobile usage charged that day
- send 15 text messages in a day, get three free

New Discount Restrictions

Kenan/BP 11.0 introduces enhanced discount restriction functionality. In addition to existing functionality, now you can use the following restrictions:

- restrict discounts on usage guided to one or more product elements.
- restrict discounts by recurring charge rating keys (`count/count_unit` and `zone`)
- restrict discounts by usage rating keys - bill class and zone class.

All restrictions are valid for both discounts and unit credits, can be used with all types of Kenan/BP discounts, and can be used together.

New Rollover Unit Credit Application Order

This release adds a new option for rollover unit credit processing order. In previous releases, you could set `CONTRACT_TYPES.rollover_grouping` so that BIP processed rollover credits before current credits. Now you can configure contracts that use the rollover credits first, but use them as defined in `UNIT_CR_PLANS.plan_order` and `def_order`.

Changes in Disconnect Behavior for Advance-Billed Products

Two new system parameters enable you to control how BIP disconnects and calculates disconnect credits for advanced-billed products:

- NO_DISC_PRORATION_ON_DISCONNECT (BIP) controls how BIP uses discounts when calculating disconnect credits for advance-billed products with an associated recurring charge discount. Use it to specify whether BIP calculates the discount before or after calculating the disconnect credit.
- ADVANCE_PERIOD_DISCONNECT (BIP) controls how BIP bills disconnected advance-billed products. Use it to specify whether BIP calculates the final balance on advance billed products at the end of the bill period during which they are disconnected, or defers final balance calculation until the following bill period.

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 11.0.

Negative Balances

Sometimes accounts generate more credits than charges in a bill cycle, creating a negative new charge total. Previous versions of Kenan/BP did not accept negative new charge totals — BIP errored when processing these accounts. Now you can configure Kenan/BP to accept negative new charges. Use the ALLOW_NEGATIVE_NEW_CHARGES (BIP) system parameter to determine if your system accepts negative total new charges.

Negative Non-Recurring Charges

Now you can use negative non-recurring charges (NRCs) to allocate charge credits. Negative NRCs behave similarly to regular NRCs. Like standard NRCs, negative NRCs can be:

- taxable or non-taxable
- backed out
- entered through Customer Information or with the Kenan/BP API
- adjustable or not adjustable

New Credit Note Capability

Credit notes are a special type of adjustment that adjust charges on the invoice after the invoice on which they first appear. Previous releases offered only one type of credit note. Now you can use a new type of credit note, called a real credit note. Real credit notes are similar to credit notes but appear only on interim bills.

BIP Performance Enhancement for MSA Deployments

Previous versions of Kenan/BP used the `BILL_REF_NO_MASTER` table to ensure that `bill_ref_no` values did not overlap across multiple customer databases. Kenan/BP 11.0 uses Oracle sequence objects (or Sybase “pseudo” sequences) to perform the same function, yielding a significant performance gain. The new process improves BIP performance by reserving a series of values for `bill_ref_no`, instead of repeatedly retrieving the next sequential value from the database.

Off-Cycle Recurring Charges Support Advance Billing

The BILL_OFFCYCLE_AS_ADVANCE (BIP) system parameter has been revised to support advance periods correctly for off-cycle products.

Enhanced Late Fee Calculation

This version of Kenan/BP introduces new calculation methods for late fees. In previous versions, late fees were fixed fees or fixed percentages of the overdue charges. Now late fees can also be tiered percentages, with rate bands determined by how overdue the charges are.

Several exemptions from late fees are introduced. You can:

- configure charge, adjustment, and tax types so that late fees are not charged against them
- configure late fees to be charged only against charges from the previous billing cycle instead of against the customer's entire outstanding balance
- give accounts a goodwill exemption from late fees if the customer has made all payments on time for a period specified by the system parameter LATE_FEE_GOOD_PAY_TIME (LF).
- assess late fees either when a bill is generated using BIP or when a late payment is made through any of the payment modules (CPM, EFT, LBX) or manually. This behavior is selected with the system parameter `LATE_FEE`. Late fees assessed on payments appear as non-recurring charges on the customer's next invoice.

BIP Log Files Count Charges Processed

BIP log files now include information on the number of usage records, recurring charges, and non-recurring charges processed. A line is written to the log file for

- total recurring charges for each service instance
- total CDRs processed for each service instance
- cumulative recurring charges for the account after each service instance's total
- cumulative CDRs processed for the account after each service instance's total
- total NRCs processed for each account
- every specified number of recurring charges processed for a service instance
- every specified number of CDRs processed for a service instance
- every specified number of NRCs processed for an account

BIP Uses Bulk Copy

BIP can now use bulk-copy insert in Sybase instead of single-row insert to insert rows into `BILL_EQUIP_DETAIL`. The new BLK_SWITCH (BIP) system parameter controls this functionality.

Invoice Suppression

In previous versions of Kenan/BP, BIP produced scheduled cyclical bills whenever any of the following criteria were met:

- Total new charges are greater than zero and exceed or equal `CMF.charge_threshold`, and this is not the customer's first bill.
- A payment, adjustment, or other balance-affecting transaction appears on the bill. This does not include backout adjustments and similar pseudo-transactions.
- The account has a credit (that is, a negative balance due) after the bill is run.
- This is the first bill for the customer and activity has occurred.
- This is the final bill for the customer (account status is disconnect-requested).
- An error occurred when processing the bill.

In all other cases, BIP suppressed the bill. This schema had certain limitations, though, and sometimes too many bills were produced and the cost of bill processing exceeded the amount to be collected. In other cases, bill production was unduly delayed, even though the account had charges to be collected.

This version of Kenan/BP adds these criteria for bill suppression:

- Discounted new charges do not exceed a specified threshold.
- Net new charges do not exceed a specified threshold level.
- Current balance does not exceed a specified threshold level.

Bills can be suppressed for failure to meet thresholds even if they meet certain criteria for production. A bill can be suppressed:

- even if it has payments
- even if it has adjustments
- even if it is the first bill for the account
- even if it has a credit balance (provided that the amount of the credit balance is less than a specified threshold)

Bill suppression can also time out. BIP can be set to produce a bill if bills for that account have been suppressed for a specified number of billing periods, even if that bill meets all other criteria for suppression.

Invoice Formatting and Dispatching

This section summarizes changes to invoice formatting and dispatching in Kenan/BP 11.0.

HTML Output Default for BIF

HTML is now a default bill format output type. BIF's default output formats include:

- screen (produced for all invoices)
- PCL (produced only for invoices with `BILL_INVOICE.bill_disp_meth` = 1)
- HTML (produced for all invoices)

The HTML option produces .html output files. Standard BIF no longer produces batch XML output.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 11.0.

Payment Allocations — Enhanced Open Items

In previous releases, open item IDs provided a configurable method for allocating payments according to your business rules. But you could use open item IDs only to identify groups of charges and specify the order in which payments are allocated to each group.

Now open item IDs are more flexible and can be used for charge redirection as well as charge grouping. Kenan/BP 11.0 introduces the following enhanced open item functionality:

- more varied charge groupings
- more complicated payment systems
- more flexible charge redirections

Full Address Verification for FDMS File Format

Full address verification is now available for the First Data Merchant Services (FDMS) file format. When CPM runs in Create mode, it checks the clearinghouse address in the Address Verification record in the FDMS data file.

New Field Added to FDMS CPM File Format

An Electronic Commerce Indicator (ECI) field has been added to the FDMS CPM detail record at position 41, length 1. This field identifies the level of security for Electronic and Internet transactions. This ECI field is set depending on the value of the Mail Order/Telephone Order field (in position 32) in the FDMS CPM file format. In addition, the Mail Order/Telephone Order field now accepts more values.

New Table for Inapplicable Payments

Kenan/BP has a new method for processing payments that cannot be immediately applied to a customer's account due to partially-processed credit transactions. This version introduces a new table, `BMF_UNAPPLIED`, to catch inapplicable payments. When CPM or EFT runs in Process mode and tries to process a payment that it cannot insert in `BMF` for the above reasons, it inserts a row in `BMF_UNAPPLIED` instead and continues processing the acknowledgement file.

EFT Handles Credit Transactions

EFT handles credit transactions as CPM does. BIP can generate credit transactions in `EFT_TRANS` for adjustments or other credits. Credits have `eft_trans_type` 5 and `eft_trans_status` 1 (credit hold) and must be manually approved in EIU.

Support for NACHA CheckFree EFT

Now Kenan/BP supports the NACHA clearinghouse and all associated file formats. Kenan/BP no longer supports the Gateway clearinghouse or associated file formats.

Support for New CIBER Record Types

The CIBER clearinghouse sends batches of incollect records to your deployment. The Reports interface now supports CIBER record types 22, 32, and 52.

New Field Added to KNN and FRN EFT File Formats

A Transaction Type field has been added to the KNN and FRN EFT detail records. This field indicates direct-debit file transfer.

Financials Processing

This section summarizes changes to the Journals (JNL) and module and other changes related to financials processing in Kenan/BP 11.0.

JNL Books Separate Backout Adjustments for Discounts and Charges

The Journals module can now book backed-out discount and charge adjustments as separate amounts for more precise journaling. This feature can be used in cases where an adjustment does not prorate equally against a charge and a discount amount, such as the following:

- adjustments against multiply discounted charges
- adjustments against an incorrectly discounted charge

The BIP system parameter BACKOUT_DETAIL (BIP) has been removed, which means you need to configure fewer rows in `ADJ_TRANS_DESCR` to enable backouts. A new system parameter, SUPPRESS_NON_JOURNALLED_BACKOUTS (JNL), controls the booking of backed-out charges.

JNL Accrual Reversals in JNL_DETAIL

Prior to this release, JNL recorded standard and accrual transactions in `JNL_DETAIL` and standard, accrual, and accrual reversal entries in `JNL_TRANS`. With this release, JNL can record accrual reversal entries in `JNL_DETAIL` that can be output to JNL feed file. The new system parameter ACCRUAL_REV_LEVEL (JNL) controls this behavior.

JNL Revenue Smoothing

Company revenues fluctuate from month to month depending on the number of days in the month (all other factors remaining the same). For a large company, this fluctuation can be in the millions of dollars and inaccurately represents financial status.

With this release, the new JNL_SMOOTH_RC (JNL) system parameter lets you set a fixed number of days to be used for all months when you calculate the earned and unearned portions of recurring charges. This prevents revenue fluctuation resulting from differences in the number of days in different months.

Paybacks Journaled by Discount or Charge

This release introduces a way to book historic payback (contract) payments by `discount_id`. Prior to this release, contracted paybacks were always associated with a specific `jnl_code_id` (all journaling of paybacks against pretax amounts go to the same journal code). Now payback amounts can be journaled to the `discount_id` or against the original charges.

Using Default Journal Keys Values

Before this release, the `JNL_KEYS` fields were global keys; if they were activated, every possible JNL key value for each usage type had to be configured. This was unwieldy to maintain. For example, if the jurisdiction JNL key were turned on, all usage types rating by jurisdiction had to input the corresponding values into this field in `JNL_KEYS`.

With this release, you can use `JNL_KEYS` values as default journaling keys for selected usage types, rather than only as global journaling keys.

Journaling Negative Balances

With this release, JNL checks for approval of negative non-recurring charges before booking. If there is no approval for the negative NRC, JNL will ignore it.

Taxation

This section summarizes changes to tax processing in Kenan/BP 11.0.

Kenan/BP With Multiple Vertex Quantum Versions

Previously, a given Kenan/BP version worked with only one Vertex Quantum tax version. Now one version of Kenan/BP can support multiple versions of Vertex Quantum. Clients can specify which supported Quantum version they will use with a particular Kenan/BP release. If necessary, clients can upgrade from one supported version of Quantum to another supported version without changing the Kenan/BP version.

Tax Thresholds

In some areas, tax laws dictate that a certain amount of monthly charges for a service are tax exempt. For example, in some U.S. states the first $25 of Internet usage is nontaxable.

Now you can configure a tax threshold for specified tax packages below which taxes do not apply. Accumulated charges on a single invoice must reach the specified threshold value before they are taxed. For example, say you define a $25 threshold on tax package 3. If a customer's eligible charges for tax package 3 are $20, no charges are taxed. If a customer's eligible charges for tax package 3 are $40, $15 of charges are taxed.

A tax package can be associated with one threshold only, but you can use active dates to define multiple non-overlapping thresholds for a single tax package. You can define tax thresholds for Universal, Vertex Quantum, or Vertex CommTax tax packages.

TCU Reports

The Tax Compliance Utility (TCU) module, which runs tax charges through external tax packages to generate tax compliance data, produces two different control reports:

- TCU Summary — Shows the total number of tax records written to tax compliance and the total cash amounts
- TCU Detail — Shows tax breakdowns by tax jurisdiction level

System Administration

This section summarizes changes to system administration in Kenan/BP 11.0.

AMP Changes

This release of Kenan/BP introduces several changes to AMP:

- AMP now has three task modes: Move Only, Delete Only, and Full Move
- ADD_MOVE_ACCT assigns accounts to a specific AMP process instance
- AMP can perform bulk inserts of account data and delete many rows at once
- multiple AMP processes can run simultaneously (Oracle only)
- AMP can use a database link in updating the catalog database (Oracle only)

Detailed AMP Logging

AMP log files have been improved. In previous versions of Kenan/BP, AMP log files only indicated if the utility moved all accounts successfully or if it terminated with a failure.

AMP now records total successfully moved accounts, total errored accounts, and total accounts processed in the log file. AMP also records error messages for each account that failed processing.

MPS TCP/IP Socket Flash Mode Supported for HPUX

Kenan/BP 10.1 introduced a socket-based Flash mode for MPS real-time usage guiding and rating on Solaris platforms. This Flash mode eliminates the need for XIPC messaging software in usage guiding and rating. In Kenan/BP 11.0, TCP/IP socket Flash mode for MPS is also available for HPUX platforms.

XIPC Flash mode is still available for deployments that have XIPC installed, and XIPC is still required on all platforms to use BIP in Flash mode.

Kenan/BP is XA Compatible

This version of Kenan/BP is XA compatible, enabling an XA external transaction coordinator to control database connections and transactions. This enables Kenan/BP to work with a larger variety of other products, including CSG Systems NextGen, if an external transaction processor is running.

Process Work Logging

This version of Kenan/BP introduces changes to the process work logging and monitoring data accessible through Command Center. New capabilities include the following:

- logging work at intervals while the process runs
- measurement of process success/failure based on work performed
- measurement of process success/failure based on rate of work

Standardized Log Files

This version of Kenan/BP standardizes log files as follows:

- all batch processes create messages in a standard format
- placeholder module name LOG enables default system parameter settings for log files
- process instances can be set to emit messages of a certain log level or higher
- log message size is increased
- maximum log file size can be specified for individual modules
- log files are automatically deleted or moved into an old log directory after a time limit or after enough newer log files accumulate.

New Password File

This version of Kenan/BP uses a new encrypted password file, `.arborpwe`, instead of `.arborpw`.

Uniform Process Exit Codes

Exit codes have been standardized across all Kenan/BP modules. All processes return 0 for successful completion and 1 for any abnormal termination.

Configurable Actions Server

The Configurable Actions Server (CAS) provides a configurable generic call-out or triggering mechanism for Kenan/BP components to communicate with external processes or with services outside of their functional scope. An action defines whether a Kenan/BP entity is added, deleted, or modified in some way. CAS enables you to control what actions occur at different points in a client-configured process flow.

CAS associates events that occur in Kenan/BP modules with actions that are triggered when these events occur. It does not replace standard processing within Kenan/BP components, but rather it provides a means of extending component functionality outside of the usual defined process flow. CAS is not intended to provide generic workflow capabilities, nor is it a generic gateway to external systems.

Application Programmer Interface

This section summarizes changes to the Application Programmer Interface (API) in Kenan/BP 11.0.

Enhanced Open Item IDs

Open item ID functionality has been enhanced for Kenan/BP 11.0. Kenan/BP 11.0 introduces the following four new open-item-related objects:

- Account Balances
- Open Item ID Map
- Global Open Item ID Map
- Global Account Balances

The Account Balances object has been added to support Kenan/BP when it is used in conjunction with Kenan Prepaid. If your site does not use Kenan Prepaid, you probably do not need to use this object.

The Open Item ID Map, Global Open Item ID Map, and Global Account Balances objects have been added as part of the effort to make the open item ID feature work with Kenan Prepaid. However, all three of these objects work with postpaid charges (that is, the kind of charges that Kenan/BP has always worked with).

Note	Prepaid functionality requires the use of Kenan Prepaid, an optional software component. Check with your system integrator to see if Kenan Prepaid is available in your deployment.

Account Ceasing and Inactive Dates

In versions prior to 11.0, ceasing an account with the `cease_abp_acct` function did not automatically update the `inactive_date` fields in the corresponding rows of the `CUSTOMER_ID_ACCT_MAP` and `EXTERNAL_ID_ACCT_MAP` tables.

In addition to updating the `date_inactive` field for the Account object itself, this function now updates the corresponding `inactive_date` fields in both of these tables.

Approving and Rejecting Charges

When a user of your application creates a charge, that charge can be queued until a user with a higher threshold reviews and approves (or rejects) it. This is true of the following types of charge objects:

- Account Charge
- Product Charge
- Service Instance Charge

Service Instance Date Precision

Functions that set the active date or inactive date for a Service Instance's external ID can record dates with date/time precision or with date-only precision. The new trunc_si_ext_id_date (API) system parameter controls this functionality.

Contact Object for Refunds

The new Contact object has been added to provide alternative contact information for a customer. The Refund object's new `alt_contact_id` field is designed to point to a Contact object.

Object Access by Effective Date

You can now use the API to access future-dated objects using those objects' effective dates. This allows you to provision products, non-recurring charges, contracts, discounts, and external IDs to accounts and service instances that are not yet active.

Unapplied Payments

Beginning with version 11.0, if you try to create a debit payment that cannot be balanced against pre-existing credits (the situation that used to result in the error message, "20006, Could not distribute debit amount N"), Kenan/BP inserts the payment into the `BMF_UNAPPLIED` table (represented by the new Unapplied Payment object) and gives the object's `applied_status` field a value of 0 (unapplied).

Once the account has reached a state where it will accept the payment, you can use the API to manually apply the payment to the account and then set the Unapplied Payment object's `applied_status` field to 1 (applied). If the payment ceases to be applicable before it is applied to the customer's account, you can set the Unapplied Payment object's `applied_status` field to 2 (no longer applicable).

Wildcard Search Functionality

Case-insensitive wildcard searching is now available for the following fields:

- Account ID::external_id
- Account::external_id
- Account::bill_lname
- Account::bill_fname
- Account::bill_company
- Account Server Select::external_id
- Service Instance::external_id
- Service Instance::service_lname
- Service Instance::service_fname
- Service Instance Server Select::external_id
- Product Type::description_text

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 11.0.

General Information

The new Customer Information interface for Kenan/BP 11.0 provides a better organized, easier to read, and easier to navigate user experience. Most of the screens, while functionally the same, have been updated to present the screen information in a clearer, better organized format. The new Navigation Tree facilitates moving between Customer Information screens. Newly designed menu bar icons while visually pleasing, provide accurate symbolic representation of function.

The following changes have been made to the Customer Information interface:

- New Login screen
- The Customer Information screen is divided into two panes: a left Navigation Bar and a right pane corresponding with the selected application function.
- New dockable toolbar icons with improved functionality
- Re-arranged and improved menu drop-down lists
- New contextual bar identifying basic account information
- New applications status bar at the window base

Alternative Refund Capabilities

Kenan/BP 11.0 provides optional alternative refund functionality. You can issue refunds to an alternate name, address, and in an alternate currency.

Remove Usage Amount Limit/Usage Units From Some Windows

For the Kenan/BP 11.0 release, the Usage Amount Limit and Usage Units fields have been removed from the following Customer Information windows:

- General Information
- Service
- A la carte package
- Add Package
- Add Component

Provisioning Future Products

With Kenan/BP 11.0 you can provision products, non-recurring charges, contracts, discounts, and external IDs for future-dated (not yet active) accounts and service instances.

Add Post Payment Column

Added functionality for Kenan/BP 11.0 places a Post Payment column in the Kenan/BP Payments window.

Adjustment-Invoice Detail Screen

The `point_origin` field is now filter-and-sort criteria in the Adjustment — Invoice Detail Screen. You can search `CDR_DATA` for pre-billed usage records and `BILL_EQUIP_DETAIL` for post-billed usage records. This expedites finding usage records for customers who have a lot of calling card usage and no consistent point of origin for calls.

Performance Enhancement

Customer Information now retrieves accounts faster than with previous releases, and is significantly faster in high-volume installations.

Add Fields/Disable Fields — Service Window

The Service Instance screens listed in this section have changed to include inactive and active time settings. Time settings are in military time.

Payment Information Window — Order Type

CSRs use the Kenan Payment Information window to set payment method for an account. Now with Kenan/BP 11.0 you can specify the payment order method for credit card orders. Select the payment order method form the drop-down menu in the Order Type field.

Selections for payment order method are as follows:

- Internet Order
- Mail Order
- Recurring Order (Visa/MC only)
- Telephone Order

Add Bill Order Number Field to Add/Modify Adjustment Window

This release adds a new Bill Order Number field to the Kenan Add/Modify Adjustment window. This new field gives a CSR the ability to separate and tax post-bill adjustments at billing time.

CSG Kenan Prepaid Support and Enhancements

Kenan/BP 11.0 is compatible with Kenan Prepaid, a new CSG Systems product designed to support real-time authentication and authorization of subscriber activity and convergent prepaid and postpaid billing. The Customer Information interface now supports both Kenan/BP and converged Kenan/BP and Prepaid systems.

GUI Changes to Support Enhanced Open Items

The Customer Information GUI has changed for Kenan/BP 11.0 to accommodate enhanced open items and balance mapping features. Items once assigned to an Open Item ID are now assigned to a *Balance ID*. The Balance ID accommodates the dynamic balance for Prepay accounts and the static balance for Postpaid (Global) accounts.

Charge Mapping Features

Kenan/BP 11.0 includes a charge mapping feature for prepaid and postpaid balances. Charge mapping occurs at the product level. New charge mapping features are used with following application windows:

- Account Information window — a Prepay Status field has been added to show whether the account is Prepay, Postpay, Both (converged prepay/postpay), or Anonymous prepay
- Prepaid Balances window — to view and assign balance IDs and other properties
- Charging Rules window — set owning properties and charge type (RC, NRC, usage) rules

Changes for Release 11.5

The sections that follow list changes for Kenan/BP release 11.5.

Usage Processing

The following section describes changes to the Message Processing System (MPS).

Event-Time Unit Credits

Previous versions of Kenan/BP calculated unit credits only at invoice time. Now you can opt to issue service-instance-level unit credits at rating time. This new functionality enables Kenan/BP to perform complete charge calculation on incoming CDRs and maintain dynamic unit-credit balances.

Restructuring of Large Call Data Record and Billing Tables

The tables `CDR_DATA` and `BILL_EQUIP_DETAIL` have been heavily restructured and broken down into a family of smaller tables in Kenan/BP 11.5. This eliminates duplication of information between the two large tables, makes database maintenance easier, improves performance, and enables the use of partition keys for database maintenance in Oracle installations.

Contracts, Discounts, and Unit Credits

This section summarizes changes to contracts, discounts, and unit credits in Kenan/BP 11.5.

Unit-Credit Rate Limits

Kenan/BP 11.5 introduces unit credit rate limits that enable you to create unit credit rates that apply to the individual call legs that make up a single usage event. For example, you can create a unit credit that applies only to the domestic leg of an international call.

Usage Rating and Discounting by Zone Class

Kenan/BP 11.5 adds flexibility to usage rating and discounting by zone class. Now you can specify whether individual usage types use zone class as a rating key, as a discounting metric, derive it but don't use it, or don't derive it at all.

Proration During Service Suspension

You can now configure recurring charges so that the charge is suspended during service suspensions, and the total charge for a bill period is proportionally reduced to account for the time the service was suspended.

Hierarchy Branch Unit Credit Contracts

In previous versions of Kenan/BP, discount plans could be provisioned to hierarchy branch discount contracts, but unit credit plans could not. This restriction has now been eliminated.

Require Owning Account Number for Service-Instance Contracts

In Kenan/BP 11.5, service-instance-level contracts are always evaluated in the context of the service-owning account. This ensures that the billed account receives the contract benefits for all of its service instances.

Invoice Processing

This section summarizes changes to invoice processing in Kenan/BP 11.5.

Tracking Unit Credit Transactions

Kenan/BP now records the number of usage events on each invoice to which each unit credit has been applied. You can use this information to display on the invoice the number of usage events to which each unit credit has been applied.

Restructuring of Service-Instance-Related Tables

The Kenan/BP tables `EMF_PRODUCT*` and `CMF_PRODUCT*` have been broken down and restructured into the `PRODUCT_*` family of tables. This change unifies account-level and service-instance-level products in the same set of tables.

Invoice Formatting and Dispatching

This section summarizes changes to invoice formatting and dispatching in Kenan/BP 11.5.

BIF Supports Embedded Bitmapped Graphics

Kenan/BP now supports embedded bitmapped graphics in BIF PCL files.

Payments Processing

This section summarizes changes to payments processing in Kenan/BP 11.5.

Balance Mapping by Rate Period

Now you can configure Kenan/BP to map usage charges to account balances based on rate period. Using this functionality, you can design calling plans that group calls by time of day or day of week. For example, you can create a plan that enables a business to pay for its employees' mobile phone usage during business hours, while the employees pay for after-hours usage.

Improved Payment Modules Performance

Several changes have been made to the Kenan/BP payments modules to improve performance. The result is that the payments modules require less frequent access to the database and update transactions more efficiently.

Financials Processing

This section summarizes changes to the Journals (JNL) and module and other changes related to financials processing in Kenan/BP 11.5.

Booking Four-Decimal Usage Rounding

Prior to this release, JNL handled four-decimal usage rounding as a standard discount. In Kenan/BP 11.5, JNL can handle four-decimal usage rounding independently from real and standard discounts. Now you can book usage rounding at the charge (usage) level with all the required details.

Booking Unit Credits on Unbilled Usage

With this release, JNL books unit credits on unbilled usage. Kenan/BP calculates unit credits at the time of rating, so JNL can book them as unit credit accruals.

Booking Tax on Unbilled Usage

With this release, JNL books taxes on unbilled usage. Kenan/BP calculates taxes at the time of rating, so JNL can book them as tax accruals.

Booking RCs as Revenue up to jnl_end_dt

Prior to this release, if a recurring charge's cutoff date was the same as the end date of the journal cycle, JNL did not book the charge as revenue. Now JNL can book recurring charges and payments made by the bill cutoff date.

Collections Now a Standard Component

The Collections module, previously an optional module called Advanced Collections or Accounts Receivable Manager (ARM), is now part of the core Kenan/BP offering.

Collections XML Data Output

Prior to this release, collections letters could be formatted and output only through Microsoft Word. With this release, the Letter Writer outputs data in XML format, which enables you to use a wide range of third-party formatting applications.

Using Custom SQL Query to Extract Data for Collections Letters

Previous releases of Collections used Microsoft Word query files to define flexible queries. With this release, you can define flexible SQL queries on UNIX without using Microsoft Word.

Collections Output Groups

Previous releases of Collections enabled formation of different Letter Writer action group types. With this release, Letter Writer supports letter types that correspond to output groups.

Multiprocessing and Multithreading Support

Previous versions of the Collections Letter Writer process did not support high-volume, multiserver implementations. This release introduces the following performance enhancements:

- You can run multiple Letter Writers on one customer server or run multiple Letter Writers across several customer servers.
- The Letter Writer server can handle multiple concurrent requests by spawning multiple threads.

CAS/Collections Integration

Collections events are configured in the Kenan/BP Collections module with the expectation that they should happen automatically. Now, Collections can be configured to communicate with an external provisioning system through the Configurable Actions Server (CAS). The provisioning system can receive the requests from the collections module and perform tasks such as:

- create an order
- disconnect or reactivate a Service Instance
- add or disconnect products, NRCs, contracts, and packages

These events happen as close to real time as possible so that clients can immediately take action against delinquent accounts, or can immediately reconnect an account that returns to good standing, so that revenues are not delayed.

Taxation

This section summarizes changes to tax processing in Kenan/BP 11.5.

Bollo su Fattura Taxation

Kenan/BP now supports tax calculation for Italy's Bollo su Fattura (BSF).

Aggregation of Taxable Charges

Kenan/BP 11.5 includes three new ways of aggregating taxable charges: by service instance, by invoice, or in accordance with Bollo su Fattura taxation rules.

Service-Instance-Level ICB Taxation

Kenan/BP 11.5 introduces service-instance-level taxation with rates determined on an individual-case basis. You can use this functionality to define negative tax rates that function as tax-exempt discounts.

Distribute Taxes at the Usage-Event Level

Kenan/BP now enables you to distribute tax amounts at the usage-event level. When this functionality is turned on, taxes are distributed proportionally to individual usage events. Individual usage items can then be displayed on the invoice with the tax amount included.

Real-Time Taxation

Changes have been made to the Kenan/BP tax structure to support real-time taxation and collection of tax details. With this change, CAP can now calculate taxes at rate time and save and return tax details.

Real-Time Taxation and Adjustments

When an adjustment is applied against usage events or other charges, the tax must be adjusted as well. In previous versions of Kenan/BP, this was done by prorating the tax on the original aggregated charges proportionately to the adjustment to the original aggregated charges. This method was prone to rounding errors. In the new functionality, tax is calculated on each charge separately instead of as a group.

Tax-Inclusive Rates

Kenan/BP now supports tax-inclusive rates for recurring charges, non-recurring charges, and usage. Such taxes are calculated as a withholding from the rate total rather than as an additional surcharge.

System Administration

This section summarizes changes to system administration in Kenan/BP 11.5.

Operations Center Replaces Command Center

In Kenan/BP 11.5, all Command Center functionality has been replaced by CSG Operations Center. Operations Center provides an enterprise-wide solution to ensure the availability, performance, and recovery of mission-critical applications running in a geographically distributed environment. It enables seamless and automated real-time monitoring and control, and provides administrators with an instant overall view of the system.

Multiview Data Model

In previous versions of Kenan/BP, products and services were represented at a single moment in time. The new data model enables not only storage of current information on a product or service's status, but also of information on its past status and pending changes.

New Replication Script

The database replication scripts `replicate.pl` and `replicate_oracle.pl` have been replaced with a new script, `replicate.ksh`. This new script enables more frequent updates of customer server copies of admin tables because instead of replicating the entire table, only the rows that have changed are updated.

Table Statistics Analysis for Oracle

Kenan/BP comes with table statistics analysis scripts that use Oracle's DBMS_STATS package. Run the script `anatbl.sh` to generate up-to-date table statistics for a template of tables, or `anaschema.sh` to generate table statistics for all tables in a database schema, to help optimize database performance. Each script generates a histogram for all columns.

Multithreaded Tax Lookups

Kenan/BP 11.5 adds read/write locking to the tax libraries. This enables multiple threaded applications to have concurrent access to the tax libraries and improves throughput for tax library clients.

Application Programmer Interface

This section summarizes changes to the Application Programmer Interface (API) in Kenan/BP 11.5.

API Transaction Set Replaces Kenan/BP APIs

As of version 11.5, the Kenan/BP Application Programmer Interface (API) is being replaced by the new API Transaction Set. CSG Systems, Inc. will make exceptions for some upgrading customers who meet certain restriction criteria, but most existing customers and all new customers will use the API Transaction Set.

Graphical User Interfaces

This section summarizes changes to the graphical user interfaces (GUIs) in Kenan/BP 11.5.

Customer Center Replaces the Customer Information Interface

With this release, the Customer Information interface has been superseded by Customer Center, which offers support for Ordering and Billing in the same interface.