R*TIME Server Version 12.6 New Features

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RTIME

R*TIME Server Version Releases

- R*TIME 12.6 (Windows)
  - R*TIME WebView Release

R*TIME Server Version Releases

- R*TIME 12.5 (Windows/Unix)
  - Quad Cities PPC
  - Seabrook DAS Server
  - Susquehanna PPC
- R*TIME 12.4.1 (Windows)
  - Fukushima Daiichi Unit 2 PPC
- R*TIME 12.4 (Windows/Unix)
  - Clinton PPC

R*TIME Server Version Releases

- R*TIME 12.3 (Windows)
  - Wolf Creek PPC
- R*TIME 12.2 (Windows/Unix)
  - Prairie Island PPC
  - Dresden PPC
- R*TIME 12.1 (Windows)
  - Kewaunee PPC
- R*TIME 12.0 (Windows)
  - D.C. Cook Plant Server System (upgraded to R*TIME 12.2)
  - TEPSCO PPC Pilot (upgraded to R*TIME 12.1)

- eatures Session on Friday morning

R*TIME Server Version 12.6
New Features

- CMTool
- R*TIME WebView
- Windows Server 2008

R*TIME Server Version 12.6 New Features

- CMTool
  - R*TIME WebView options
    - display application build
    - CGI application build

R*TIME Server Version 12.6 New Features

- R*TIME WebView

R*TIME Server Version 12.6 New Features

- Windows Server 2008

R*TIME Server Version 12.5
New Features

- Archive
- DAS
- Equipment Monitoring
- Excel Report
- Messages
- Miscellaneous
- Notification Monitor
- OPC

R*TIME Server Version 12.5
New Features

- Post Trip Reporting
- Redundant System Health
- Resource Monitoring
- System Monitoring

R*TIME Server Version 12.5 New Features

- Archive
  - Add server point groups for archive file point selection
  - Archive recorder service
  - Redundant archive file recording
  - Remove subfile
  - Remove memory mapped files

R*TIME Server Version 12.5 New Features

- DAS
  - Eliminate RTP Modbus card support
  - More RTP 87xx card types
  - Updated health on Non I/O points

R*TIME Server Version 12.5 New Features

- Equipment Monitoring
  - Support for manually entered state changes
  - Improved reporting
  - Point Group Support

R*TIME Server Version 12.5 New Features

- Excel Report
  - Integration with PMAX Report Generator

R*TIME Server Version 12.5 New Features

- Messages
  - Alarm and SOE Point Filtering

R*TIME Server Version 12.5 New Features

- Miscellaneous
  - Add Unit application
  - RTCLIENT – Generic rule driven interface for R*TIME to R*TIME communication
  - RTSERVER- Needed for RTCLIENT
  - ALARM_OFF
    - Add alarm off reason
  - APAD / DPAD / SPAD / SPDD / GRPAD / GRSPDD
    - Defined Trend display as INI file parameter
  - APAD/DPAD Configurable Aux Screens,
  - APAD Plot calibration curve

R*TIME Server Version 12.5 New Features

- Notification Monitor
  - Return Address moved to INI file

R*TIME Server Version 12.5 New Features

- OPC
  - Foxboro digitals aka Boolean (-1, 0 state)
  - Security

R*TIME Server Version 12.5 New Features

- Post Trip Reporting
  - Trip State

R*TIME Server Version 12.5 New Features

- Redundant System Health
  - Set point groups points BAD on application stall

R*TIME Server Version 12.5 New Features

- Resource Monitoring
  - Expand maximum number of CPUs to 8

R*TIME Server Version 12.5 New Features

- System Monitoring
  - Make operational on Standby server optional
  - - Move to GI Model

R*TIME Server Version 12.4.1 New Features

- Alarms
- Archive
- DAS
- Language Localization
- Messages
- Miscellaneous
- ODBC Server
- PDF
- Point Summaries

R*TIME Server Version 12.4.1 New Features

- Alarms
  - User definable alarm messages
  - Different EU and Signal Range alarm messages
  - Updates to POOR alarm processing
  - User configurable trend display from Alarm Summary display

R*TIME Server Version 12.4.1 New Features

- Archive
  - Increase number of points supported on tabular archive retrieval to 100

R*TIME Server Version 12.4.1 New Features

- DAS
  - MON2000
    - Record RTP 2300 system monitoring parameters to data points
  - NIST Thermocouple EU Conversions
  - Multiple DAS Node types in a system
  - MV_INPUT function

R*TIME Server Version 12.4.1 New Features

- Language Localization
  - Move text messages from source code to #define per language
  - Implemented for a subset of R*TIME applications
  - Separate English and non English language resources into separate files

R*TIME Server Version 12.4.1 New Features

- Messages
  - System Event File application message replication to Standby
  - Unicode message filter

R*TIME Server Version 12.4.1 New Features

- Miscellaneous
  - U.S. Daylight Saving Time Changes
  - Updated standard alarm color index implementation
  - **CVTXFER???**
  - **APAD / DPAD / SPAD / SPDD**
    - Separate message for On / Off Scan and On / Off Alarm

R*TIME Server Version 12.4.1 New Features

- ODBC Server
  - OpenAccess V 5.6
    - Support for Unicode
  - Enable / Disable temporary alarms

R*TIME Server Version 12.4.1 New Features

- PDF
  - Switch to Adobe Acrobat Reader printing

R*TIME Server Version 12.4.1 New Features

- Point Summaries
  - Exclude points from In Alarm summary

R*TIME Server Version 12.4
New Features

- Alarms
- Archive
- DAS
- Database
- Display Applications
- Interpretive Calculations
- Miscellaneous
- OPC Interface

R*TIME Server Version 12.4 New Features

- Pen Recorder Interface
- PI Interface
- PSS interface
- Redundant System Health
- System Monitoring
- Windows Server 2003 R2

R*TIME Server Version 12.4 New Features

- Alarms
  - Separate Alarm Lists
    - Alarms can be assigned to one or more alarm categories
    - Alarm Summary display can selected one or more alarm categories
    - Multiple Alarm Summary displays supported
    - Acknowledge by alarm category
    - User definable alarm category names

R*TIME Server Version 12.4 New Features

- Alarms (cont.)
  - Print Summary Bottom Page Margin
  - Move alarm list backup to alarms subsystem
  - Cleanup alarms for deleted points

R*TIME Server Version 12.4 New Features

- Archive
  - Archive Recorder Restart Interlock
  - Archive Retrieval to PDF
  - File Format Changes – Design for higher speed retrieval

R*TIME Server Version 12.4 New Features

- DAS
  - RTP 87xx Analog Cards
  - RTP 87xx Digital Cards
  - RTP 87xx 24 channel SOE cards
  - Increase maximum number of analogs
  - Clock synchronization updates
  - RTP 2308 chassis

R*TIME Server Version 12.4 New Features

- DAS (cont.)
  - RTP Controller Detailed Status
    - Power Supplies
    - Controllers
    - Network Connections
    - Internal Temps
    - Internal Voltage

R*TIME Server Version 12.4 New Features

- DAS (cont.)
  - New EU Conversion Functions
    - Conduct
    - Bilinear

R*TIME Server Version 12.4 New Features

- Database
  - Version change
  - Generic EU Clamp
    - High and Low
    - Value or Point Driven
    - Post EU Conversion

R*TIME Server Version 12.4 New Features

- Display Applications
  - Unicode enabled functions
    - ReadFieldWc
    - WriteFieldWc
    - ParseFieldWc
    - StoreFieldWc
    - SendAppMessageWc

R*TIME Server Version 12.4 New Features

- Display Applications (cont.)
  - Unicode enabled functions
    - GetQueryResponseWc
    - GetAnswerWc
    - GetSelectionWc
    - GetConstOrPntWc

R*TIME Server Version 12.4 New Features

- Interpretive Calculations
  - New IC Functions
    - Med
      - Median Value
    - Dev
      - Point Deviation
    - Select
      - Variable Calculation
    - ROC2
      - Rate of Change

R*TIME Server Version 12.4 New Features

- Interpretive Calculations
  - Updated IC Functions
    - TIME_SINCE

R*TIME Server Version 12.4 New Features

- Interpretive Calculations (cont.)
  - Updated Functions
    - TIME_SINCE

R*TIME Server Version 12.4 New Features

- Miscellaneous
  - Language Localization
    - Point Group Descriptions
    - Native Language Message for Server Functions

R*TIME Server Version 12.4 New Features

- Miscellaneous
  - Unix Implementation Updates
    - Bar Limits
    - Equipment Monitoring
    - Notification Monitoring
    - Operator Entry
    - Operator Prompts
    - RTIME PDF
    - ASCII and UNICODE Profile (INI) function variants

R*TIME Server Version 12.4 New Features

- Miscellaneous (cont.)
  - eDNA Universal Service Interface
  - QueryServiceDatabase MMI Message
  - RTIME PDF site specific override
  - CMTOOL
    - Specification of configuration on a per package element

R*TIME Server Version 12.4 New Features

- Miscellaneous (cont.)
  - QueryServiceDatabases R*TIME Viewer message
  - Console window diagnostic output programs user definable
  - Add database change detect
    - ALARM_OFF
    - SCAN_OFF

R*TIME Server Version 12.4 New Features

- Miscellaneous (cont.)
  - DOA Handles digital output based on multiple point alarms

R*TIME Server Version 12.4 New Features

- Miscellaneous (cont.)
  - Visual Studio 2005 (Windows)
    - New versions of third party software
      - OPC toolkit
      - REGEX toolkit
      - ODBC server toolkit
    - Project setting changes
      - Program specific build log files

R*TIME Server Version 12.4 New Features

- Miscellaneous (cont.)
  - Visual Studio 2005 (Windows)
    - Compiler Changes
      - 64 bit time override
      - Secure CRT functions override
      - Better ISO standardization
      - Tighter compiler checking

R*TIME Server Version 12.4 New Features

- OPC Interface
  - Millisecond Transfer option
  - Boolean points

R*TIME Server Version 12.4 New Features

- Pen Recorder Interpretive
  - Yokogawa Trend Recorders
  - Acquire Data values
  - Output Data Values

R*TIME Server Version 12.4 New Features

- PI Interpretive
  - Eliminate duplicate point not found error messages

R*TIME Server Version 12.4 New Features

- PSS Interface
  - Message replication improvements

R*TIME Server Version 12.4 New Features

- Redundant System Health
  - Application Driven Failover
    - Computed Digital that is used by R*TIME Automatic Failover
  - System Health Failover
    - Computed Digital that is used by R*TIME Automatic Failover

R*TIME Server Version 12.4 New Features

- System Monitoring
  - New Parameter Types
    - Bit Fields (mask and shift)
    - Integer Parameters
    - Get difference
  - Specify message file for output messages
  - Add dynamic debug output level
  - Auto update of NIC card parameter descriptions

R*TIME Server Version 12.4 New Features

- Windows Server 2003 R2 Modifications
  - Message file sharing and security

R*TIME Server Version 12.3
New Features

- Alarming
- DAS
- Messaging
- Archive
- Redundant System Health
- PSS File Transfer
- Miscellaneous

R*TIME Server Version 12.3
New Features (cont.)

- Interpretive Calculations
- NETSRVR
- Database Update
- System Monitoring
- Equipment Monitoring
- Point Summaries

Version 12.3 New Features

- Alarming
  - Millisecond time stamps
  - External Alarming Point Subtype
  - Alarm DI Reflash
  - Specifiable ROC Period
  - Alarm suppression on quality based alarms

Version 12.3 New Features

- DAS
  - Expanded maximum number of DAS nodes to 48
  - Make voltage information available from ADTAG and ODBC server
  - Define logical DAS node names in INI file and modify all displays and programs to use those names
  - Added RTP 84xx 16 channel RO & DO cards
  - Added EU_PROCESS for EU conversions in the Simulator

Version 12.3 New Features

- DAS (cont.)
  - Modify Hardware Health to show raw signal (voltage or state) for all card types
  - Serial and TCP/IP based Modbus interfaces (R*TIME Native)

Version 12.3 New Features

- Messaging
  - Create standardized message formatting and unique identification support function
    - All messages will have a unique message identifier number and standard format (framework in Version 12.3, completed implemented in Version 13.0)
    - All messages will be reviewed for standardized format and content (completed in Version 13.0)
    - All messages will be defined in the System Engineers manual and corrective action defined (completed in Version 13.0)

Version 12.3 New Features

- Messaging (cont.)
  - Exclude option filtering for Message Retrieval and Message Summary

Version 12.3 New Features

- Archival
  - Modify archive file format to move timestamp to the end of the record from the beginning of the record
  - Monitor recording status for defined archive files
  - Suppress archive file monitoring on Simulator during freeze
  - Convert archive.ini to Windows INI file format
  - Modify Archive Patch to support different point counts in the two files.

Version 12.3 New Features

- Redundant System Health
  - Add SAVE_PROC_ID to all command line programs
  - Add critical process monitoring to all standard R*TIME programs
  - Create INI file based configuration for critical process monitoring (framework in R*TIME Version 12.3, completed in R*TIME Version 13.0)

Version 12.3 New Features

- PSS File Transfer
  - CRC32 on files
  - Delay logic for database updates

Version 12.3 New Features

- Miscellaneous
  - Auto create temporary directories on system startup
  - Add point quality to viewer dynamic data stream
  - Diagnostic output for command line background programs
  - Show / Hide Command Line Window Applications
  - Bar Limits
  - Operator Entry
  - Operator Prompt

Version 12.3 New Features

- Miscellaneous (cont.)
  - Periodic Logs
  - Add archive file searching to Point Source Summary
  - Add operator comments to point group functions
  - Add ability to filter group name on tabular display.

Version 12.3 New Features

- Interpretive Calculations
  - Display Values for Interpretive Calculation Display
  - Fix memory leak in IC processor

Version 12.3 New Features

- NETSRVR
  - Popup Display Support
  - Terminal Services Support
  - Display Alias Names (TrackDisplayEx, QueryMMIWindowsEx messages)

Version 12.3 New Features

- Database Update
  - Modify the R*TIME Database Utility to store all C-Point information used for downloading

Version 12.3 New Features

- System Monitoring
  - Provide SNMP based monitoring function for all system components
  - Save performance parametric or operational states
  - Use existing alarming functions for alarming and notification monitoring function for reporting / notification

Version 12.3 New Features

- Equipment Monitoring
  - Redesign and implementation

Version 12.3 New Features

- Point Summaries
  - Validity Limit alarm type on alarm reports
  - Alarm Digitals report
  - Add point subtype (DAS, C-Point) to Points Other Than Good report
  - Add DAS hardware definitions to Points Other Than Good report
  - Add operator comment to Points Deleted From Processing report
  - Add operator comment to Points with Substituted Values report

R*TIME Server Future Versions New Features

- Question - What new functions and features will there be in R*TIME Server future versions?

R*TIME Server New Features

- Answer –
  - (1) The new functions and features that our customers want to see!
  - (2) The new functions and features that make it easier for Scientech to deliver PPC systems.

R*TIME Server New Features
New Features

- Standard disclaimer
  - All new features described in this presentation are planned and are not a firm commitment and are subject to change until the feature set for R*TIME is finalized!

R*TIME Server New Features

- Scientech Ideas
  - Alarming
  - Archive
  - Messaging
  - Redundant System and Health
  - Database Update
  - DAS
  - Misc.

R*TIME Server New Features

- Messaging
  - Create standardized message formatting and unique identification support function
    - All messages will have a unique message identifier number and standard format (framework in Version 12.3, continue implementation in future versions)
    - All messages will be reviewed for standardized format and content
    - All messages will be defined in the System Engineers manual and corrective action defined

R*TIME Server New Features
New Features

- Messaging (cont.)
  - Message file backup status monitoring

R*TIME Server New Features

- Alarming
  - Support integration of external alarmed data
    - Alarm definitions exist in the R*TIME database for reference
    - Alarm status shown in the R*TIME system is determined externally to R*TIME
    - Alarm events processed normally (Alarm Summary Display, Alarm Message File, etc.) even though not determined by R*TIME

R*TIME Server New Features

- Archive
  - New file format for point order recording
  - Optimized for data retrieval performance
  - Dual recording formats supported
  - Archive file backup status monitoring

R*TIME Server New Features

- Redundant System and Health
  - Dynamic program diagnostic support

R*TIME Server New Features

- Database Update
  - Integrate R*TIME Database Utility into R*TIME Server
  - Improve database comparison
  - Automatic C-Point update processing (make it like data points)

R*TIME Server New Features

- DAS
  - Native support for Allen Bradley I/O hardware
  - Direct interface to RTP NetArrays (auto generated RTP NetArrays projects from R*TIME database definitions

R*TIME Server New Features

- Misc.
  - Security Configuration Centralization

R*TIME Server New Features

- Customer Features?
  - Need your input on R*TIME Server new features, functions and changes.
  - New Features Session on Friday morning

R*TIME Server Version 12.2
New Features

- Message File Backup
- Message Retrieval
- Alarming
- Communications
- DAS
- Resource Monitoring

Version 12.2 New Features

- Automatic Message File Backup (msg_backup_ex.exe): The ability to specify message files to backup to disk on a “Roll-over” basis rather than a timing basis was added. Requires the use of new R*TIME Environment Variable RTIME_MESSAGE_BACKUP to specify the directory where the backup files will be saved.

Version 12.2 New Features

- ret_msg: Display application to retrieve messages has been updated to retrieve secondary messages from the RTIME_MESSAGE_BACKUP directory. (*NOTE: Old backup files must be renames with a valid naming convention. The naming convention is this : MMDDYY_MMDDYY_R*TIME file name. The first MMDDYY is the start Month, day and Year of the messages in the file. The second MMDDYY is the end Month, day and Year of the messages in the file. Ex. 121204_011905_system.msg*)

Version 12.2 New Features

- Alarming
  - Alarm on Poor – INI file parameter added to ALARM.INI to be able to treat poor quality as an alarm condition
  - Alarm at Limit – INI file parameter added to ALARM.INI to control limit violation at limit versus limit violation above/below limit

Version 12.2 New Features

- Communications
  - ULINK_CLNT / ULINK_SRVR – provides ability to transfer named data points from system to system

Version 12.2 New Features

- DAS
  - NIST Thermocouple EU conversion functions

Version 12.2 New Features

- Resource Monitoring
  - Converted to SNMP based implementation
  - Supported on Unix based systems

R*TIME Server Version 12.1 New Features

- PPC/PSS database replication. Database file copying from a PPC to a PSS using an outbound socket connection was added. A client/server pair supports copying database and users file to the PSS. The database files are copied to the PSS when the modification time/date changes. User files can be copied to the PSS by a user application explicitly calling the copy2remote API. User files can be copied to the PPC by a user application explicitly calling the copy2ppc API. Module file_clnt runs on the PPCs and module file_srvr runs on the PSS.

Alarming

- Alarm processing was modified to so that when a point is acknowledged, the limit deadbands are not applied on the first iteration, so that a point can come out of alarm if its value is less than the alarm limit but has not cleared the alarm limit by the deadband value.

Alarming

- Alarm DI logic was modified for analog points to support a alarm DI defined on multiple points and the results will be if one or more points are in-alarm then the alarm DI is set. If no points are in-alarm the alarm DI is reset. This functionality is similar to the function of doa (doa supports annunciators).

Alarming

- Operator alarms: A fifth alarm block was added to analog points. The contents are NOT defined in the RTDU only via APAD/SPAD. The operator alarms are protected through a dbupdate as long as the binary database files are retained.

Alarm Logging

- Modified to support the ability to print to line type printers.
- Added ability to suppress alarm hard copy printing based upon the value of a digital point.

Alarm Summary

- Added parameter to ALMSUM.INI to set default setting for All Alarms or Unacknowledged Alarms.
- Modified Alarm Response File support to support any file extension instead of just .txt. Also remove case sensitivity in matching point name.

DAS

- Moved the Scan Auxiliary information out of the scan database into the “database name.aux” file and created interface modules to access it.
- Added the “REDUNDT” conversion types to analogs and digitals, modified ASP and DOA to perform redundant points calculations.
- Added “PULSECNT” conversion type for SOE digitals.

DAS

- If the signal range limits are not defined and the alarm validity limits are defined then the alarm validity limits will be used to determine the RANGE_FAILED quality in place of the signal range limits.
- Support for RTP MODBUS and 8455/38 AO cards.
- Modified SOE processing to only create SOE messages based upon the SOE trigger field in the database.

Other

- Point Suppression on point pick lists: On a per data point basis, the security level at which the data point is visible in the point picklist can be defined.
- Point pick list search: Can search using additional database fields

Other

- Systime and the format of systime.ini were simplified. For each database the name of the second (SDZTIME) and millisecond (MSTIME) time points must be specified in the INI file. Additional time points are optional.
- Message Logging: The ability to route application log messages to the alarm printer was added.

Startup

- Startrt configuration tabs were simplified. The standard R*TIME processes (calc_process, systime, loadivm (PMAX), message, archctrl, netsrvr, back_monitor, shmatt (PMAX), ldmon_ivm (PMAX), ldmon_sdf (PMAX), afs_log (PMAX), afs (PMAX), avg (PMAX), seq (PMAX), pepsemon (PMAX), lowload (PMAX)) that were previously defined in startrt.ini to startup are now started automatically by Startrt and no longer have to be defined in startrt.ini.

Point Summaries

- Added two new point summaries, All Points (no selection criteria for the report) and Points with Alarm Limits Inactive.
- Added ability to produce reports with All Analog Points only, All Digital Points only, All Points and Selected Points
- Added standalone summary report programs that support the ability to generate printed reports via a single executable.

Periodic Logs

- Added generic Excel based log reports function. Reports can be generated on –demand or scheduled for execution using the Executive Scheduler or Excel Report Generator. Ability to view previously generated reports is also provided. Can be extended for any user defined logs or reports by editing an INI file.

Interpretive Calculation

- FLW - Kewaunee flow compensation
- K_AVG - Average function with Kewaunee quality rules
- WORSTP - Worst point with assoc. quality
- ACCUM_TM - Accumulation of value in minutes, gathered at the minute
- RATE_T - Rate per minute of value over interval
- MIN_TM - Minimum of N best quality points , Minute based interval
- MAX_TM - Maximum of N best quality points , Minute based interval
- AVG_TM - Average of N best quality points , Minute based interval

Interpretive Calculation

- Increased the maximum number of inputs to 24.
- Added automatic failover data files for all transform IC functions.

Other

- Increased the maximum number of shared memory segments on Windows from 50 to 200.
- Site Specific Status Bit in the CVT to identify special data points.
- Added support for data/failover directory. Any files placed in this directory are automatically copied to the Standby server.

Other

- Area / Group Displays:
  - Added ability to control security on an area by area basis.
  - Added ability to print area groups on a periodic basis.
- Digital Display: - updated the digital display function created for LaSalle to make it generic and configurable via an INI file and moved to a standard R*TME function.

Other

- Steam Table HMI: - added a new display and application that provides the ability to access the steam table functions from R*TIME Viewer.
- TDBM changes: Jumping SDZTIME, Function code “Z”. This was added to decrease testing times for large histories, especially when data is only gathered once a minute.

Database Update

- When a point is added while R*TIME is running the point will be off-scan and must be manually placed on-scan. The scan status is not changed as the results of a dbupdate for an existing data point while the system is running.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Reload_db modifications**:
    - -- Added reload_db flag to the following processes/modules to shut them off during database updates:
      1. calc_process module
      2. Alarm summary
      3. Proc_monitor
      4. clnt_srvr

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Database update modifications**:
    - Modified dbupdate to process point deletions differently. Instead of actually deleting points they are renamed to AI_CALC_Z + point ID for analogs and DI_CALC_Z + point ID thus producing a unique name. The point description is changed to “Deleted Point”. R*TIME filters all points with a prefix of “AI_CALC_” and “DI_CALC_” from pick lists and reports therefore points with these prefixes will be invisible to the operator. These “deleted” points are available for reuse by specifying another point name for a point ID.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Database loading modifications**:
    - Inserting points within holes in the point ID allocation range, were corrected in node_monitor

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Alarm_List shared memory size modification**:
    - One of the problems occurs when points are deleted, added and one redundant server is restarted. This scenario produces a mismatch in Alarm_List size between the two servers that is only resolvable by restarting both servers.
    - To correct this problem, the initial size of Alarm_List shared memory along the warm start file is set at 1000 over the number of analogs and 1000 over the number of digitals. This sizing allows for 500 analog and digitals to be added to the system without taking R*TIME down on either server.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Alarm_List shared memory size modification (cont.)**:
    - In startrt, the logic reads the size of the warm start file and compares the size the actual number of analogs and digitals. If 500 spares are present for analogs and digitals, the size of Alarm_List remains the same and the redundant server is in sync. If not, the Alarm_List is initializes to the new size and all points are re-alarmed. When this occurs messages will be written by clnt_srvr in the system message file to indicate the problem and possible solution. The solution is to stop R*TIME on the redundant server and copy alrm_wrm.db_name file in ~/unit/bku/local from the new active server and restart R*TIME.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Alarm_List shared memory size modification (cont.)**:
    - Following database updates with one server down, it is advisable to copy the alrm_wrm.db_name file from the online server before starting the offline redundant server.

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Modified R*TIME Applications**:
    - -- alrm_shm
    - -- arch_rec
    - -- calc_process
    - -- clnt_srvr
    - -- dbupdate
    - -- calc_process
    - -- startrt
    - -- node_monitor
    - -- summary

Database Update

- Point Addition / Deletion Reliability Improvements
  - **Required Site Specific Application Modifications**:
    - -- Check reload_db flag and don't access the CVT/WCVT if it is set

Version 12.0 New Features

- UNICODE support was added for point description, units, and tags database fields. APIs were added to support Unicode. The message files are Unicode.

Version 12.0 New Features

- PDF format support was added for the alarm message files and the point summary reports. PDF is needed for any file that contains Unicode characters.
- A PDF file generation library was added as an R*TIME library to support PDF output file generation by applications.

Version 12.0 New Features

- A millisecond time data point MSTIME was added. MSTIME contains the number of milliseconds since midnight of the current day.
- Archive support for shared disk system between redundant servers. The STANDBY server will not write archive data to the shared disk system.

Version 12.0 New Features

- Calc_process was modified to process alarms faster that once per second. Set in calc_process.ini. Analog point “MSTIME” is now a required system point. Contains number of milliseconds since midnight. MSTIME is updated by systime. MSTIME is stored into ALMTIME to trigger alarming on the STANDBY server.
- Clnt_srvr was modified to support alarms faster than once per second on multiple databases.

Version 12.0 New Features

- Message Files: Alarm and SOE message were modified to have one file per database.
- Millisecond Archive Resolution: Five milliseconds is the minimum archive resolution for PPCs. This is tunable in edarcdef.ini for hardware limitations which changes the pick list selection in edarcdef.

Version 12.0 New Features

- DAS Modifications:
  A. RTP2x00 support for thirty-two DASes. Support for sixteen chassis per DAS node was added to support the RTP 2300.
  B. Added support for RTP2X00 internal points (float or state variables) as inputs or outputs. These points are viewable on Hardware Addressing chassis display, via the View RTP Points button.
  C. Millisecond data acquisition: Twenty milliseconds is the practical limit. Set in param.txt per DAS(node).

Version 12.0 New Features

- DAS modifications:
  A. Changed the format of the “database name.scn” file from ASCII to binary and move the scan database into the point database structure in memory.
  B. If the signal range limits are not defined and the alarm validity limits are defined then the alarm validity limits will be used to determine the RANGE_FAILED quality in place of the signal range limits.
  C. Added the ability to specify the scan rate on a per node basis in PARAM.TXT.

Version 12.0 New Features

- Point Name Alias: The ability to support point alias names was added. An alternate point name can be defined in the database and referenced by any server based function as an alternate name for the point.
- Steam Table Functions: Added the ability to perform calculations using either English or SI units.
- Added separate Server Type from Server Mode to support redundant Simulator and PSS systems.

Version 12.0 New Features

- eDNA Historian Interface: - the ability to record data to an eDNA historian and retrieve data from eDNA for display on R*TIME Viewer was added.
- OPC Client and Server: the OPC client and server developed for PMAX was made a standard R*TIME component. The ability to support digital points was added.

Version 12.0 New Features

- PI Historian Interface: the PI interface developed for LaSalle was made generic and added as a standard R*TIME function. The interface was updated to updated to make it completely configurable from INI files.
- PSS to PPC Interface: the PPC to PSS interface developed for SONGS that is socket based and connected from the PPC to the PSS was included in the standard R*TIME. Both styles of PPC to PSS interfaces (PPC acting as a server and PPC acting as a client) are now supported by R*TIME.

Version 12.0 New Features

- Resource Monitor: the ability to monitor server resource utilization and compute hourly and daily average values is provided for CPU utilization, disk utilization and memory utilization (network utilization will be added as a future capability). The instantaneous, hourly and daily utilization values can be recorded to data points for archival and display.

Version 12.0 New Features

- Equipment Monitoring:
- For monitored plant components, this module calculates and accumulates:
  - Imports archived data
  - Resets accumulations for user specified components
  - Generates summary and detailed reports over user specified time intervals

Version 12.0 New Features

- Notification Monitoring:
- Provides capability to define an event based on user defined criteria
- Monitor Events
  - Send the following types of notification:
    - Page
    - Email
    - Display Activation
- Log event notifications

Version 12.0 New Features

- Excel Report Generator:
- Standalone version of the Excel Report Generator created for PMAX
- Can be used from applications or from the Executive Scheduler

Version 12.0 New Features

- TDBM Test Case File Upload
- Wintag
  - Windows based application that provides a superset of the command line ADTAG program has been added to R*TIME as a standard component. Wintag provides all of the functions available in ADTAG, mdb_drv and various other administration programs:
  - The program can be either local VSUPPORT or RPC based allowing it to run on a remote computer (subject to the R*TIME RPC Interface security limitations). (Currently not supported for R*TIME V 12.1 until RPC issues affected by the changed to Visual Studio .NET are resolved.

Version 12.1 Upgrade Issues

- **Database Changes**
  - Version 3.1 of the R*TIME Database Utility includes a built in database converter for converting previous version databases to Version 12.1 format.
- **Message File Format Changes**
  - A message file converter has not been developed. This first upgrade project to R*TIME Server Version 12.1 will require a message file converter utility be developed.

Version 12.1 Upgrade Issues

- **Archive File Format Changes**
  - An archive file converter has not been developed. This first upgrade project to R*TIME Server Version 12.1 will require an archive file converter utility be developed.

Version 12.1 Upgrade Issues

- **INI File Format Changes**
  - SYSTIME.INI - will have to be manually converted to the new parameter format for all upgrades to R*TIME Server Version 12.1.
  - PARAM.TXT – PERIOD parameter to define DAS node scanning frequency
  - AREASECURITY.INI – will have to be manually created for all upgrades to R*TIME Server Version 12.1
  - PROC_MONITOR.INI – format changed to Windows INI style format.

Version 12.2 Upgrade Issues

- **Source Code Movement**
  - The PrintPDF project was relocated from src/excelreport to src/cPDF/PrintPDF

Version 12.2 Upgrade Issues

- **INI File Format Changes**
  - PI ini file has a new setting to control if stalling should cause a server failover.

Version 12.2 Upgrade Issues

- ***Notification Monitoring***
  - The notif event definitions have been changed from a binary data file to independent files located in the R*TIMEHOME\data\notif directory. This directory must exist for the new software modules.
  - An event converter has not been developed. All events currently must be re-entered through the use of the notif displays.

Version 12.3 Upgrade Issues

- ***Archive File Format Changes***
  - The location of the time stamp in the archive file has been moved. Existing 12.x archive files must be converted using ARCHCONV. Requires space for a duplicate copy of the archive file during conversion.

Version 12.4 Upgrade Issues

- ***Server Point Group Format Changes***
  - The format of the server point group has been modified to support Unicode description.