

A hand holding a glowing blue globe with a city skyline in the background. The globe is illuminated with a bright light, and the city skyline is reflected on a blue grid floor. The background is a deep blue with various geometric patterns and lines.

# TANDsoft

Business Continuity and  
Ransomware solutions

Jack Di Giacomo





# TANDsoft - Jack Di Giacomo

TANDsoft is a global provider of innovative HPE NonStop software solutions for use in time virtualization, application modernization, backup and recovery, and business continuity.

We have over 25 years of learning, building and supporting HPE NonStop software solutions.

Nonstop servers ARE and continue to be an Amazing story.....

And over the many years... I have met, worked and partnered with so many Amazing people from HPE and Tandem.

Our areas of expertise are developing :

- Seamless Interception technologies for System Clock, Enscribe, SQL/MP and SQL/MX.
- Efficient and performance leading Business Continuity and other solutions.



# TANDsoft - Jack Di Giacomo

TANDsoft – NonStop solutions used for business continuity, system backup and recovery, time virtualization and application modernization.

Business Continuity - Blazing fast products using Block reading and hashing technology:

- FS Compare & Repair (fastest Compare and Repair solution for NonStop)
- FS Backup & Restore (speeds up Backups and provides Rapid Ransomware Recovery)
- FileSync (fastest DR file synchronization solution for NonStop)

Seamless intercept technology products:

- OPTA2000 – Virtual Clock and Time Zone simulator
- SDI (seamless Sensitive Data Intercept for Enscribe, SQL/MP and SQL/MX).
- E2S 4.0 – Enscribe to SQL ( supports SQL/MP and SQL/MX and uses static SQL )



# Who is using TANDsoft products and Why ?

A large European bank, was running a complex environment that had grown and evolved considerably over the course of decades.

“To help this client enhance its file comparison and repair capabilities, we tested **FileSync and FS Compare and Repair**.

Both solutions were easy to install and configure.

Most importantly, compared to alternatives that employ record-by-record comparisons, TANDsoft’s block-level approach was ten times faster.”

A hand holding a glowing blue globe with a city skyline in the background. The globe is held in the center, and the city skyline is visible in the background. The text "Who is using TANDsoft products and Why?" is overlaid on the image.

# Who is using TANDsoft products and Why ?

A world leading technology company  
uses FS Compare and Repair to  
compare very large files and SQL/MP tables,  
exceeding 300 partitions and 1 TB.

\*Compared 333 SQL/MP partitions, EOF = 1.6 TB, in 2 hours and 42 minutes,  
Versus competitor compare product which took more than 1 week...



# Who is using TANDsoft products and Why ?

The largest provider of electronic transactions  
in Latin America  
uses TANDsoft to  
automatically replicate, synchronize and  
compare thousands of files between NonStop systems.  
It was used extensively during System Migration.

A hand holding a glowing blue globe with a city skyline in the background. The globe is illuminated with a bright light, and the city skyline is visible in the background. The overall scene is set against a blue and white background with a grid pattern.

# Who is using TANDsoft products and Why ?

An American multinational investment bank and  
financial services holding company  
uses TANDsoft  
to compare and repair Enscribe, SQL/MP and  
especially SQL/MX tables.



# What is Block Hashing Technology ?

TANDsoft 'Block technology' incorporates **Blazing fast Block reading** and **Hashing** of Enscribe, OSS, SQL/MP and SQL/MX tables.

Block or Record hashing allows for very quick identification of File or Table data block differences.

This core Block Hashing technology is used in the TANDsoft FS family of products.

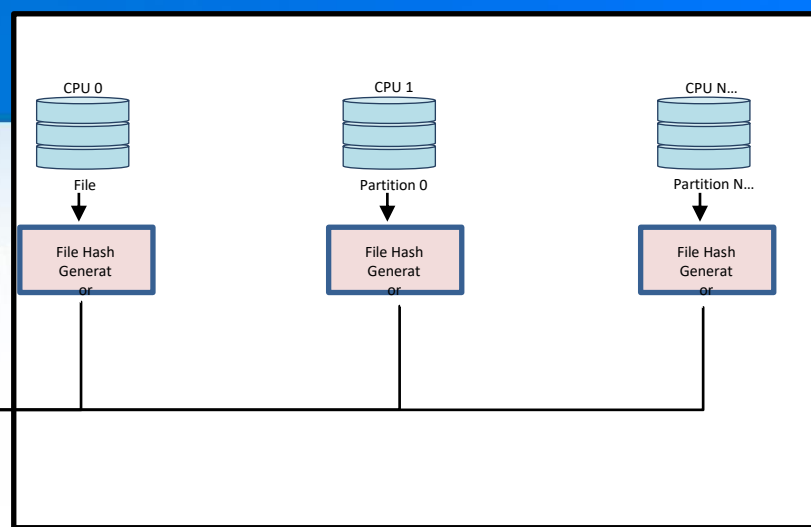
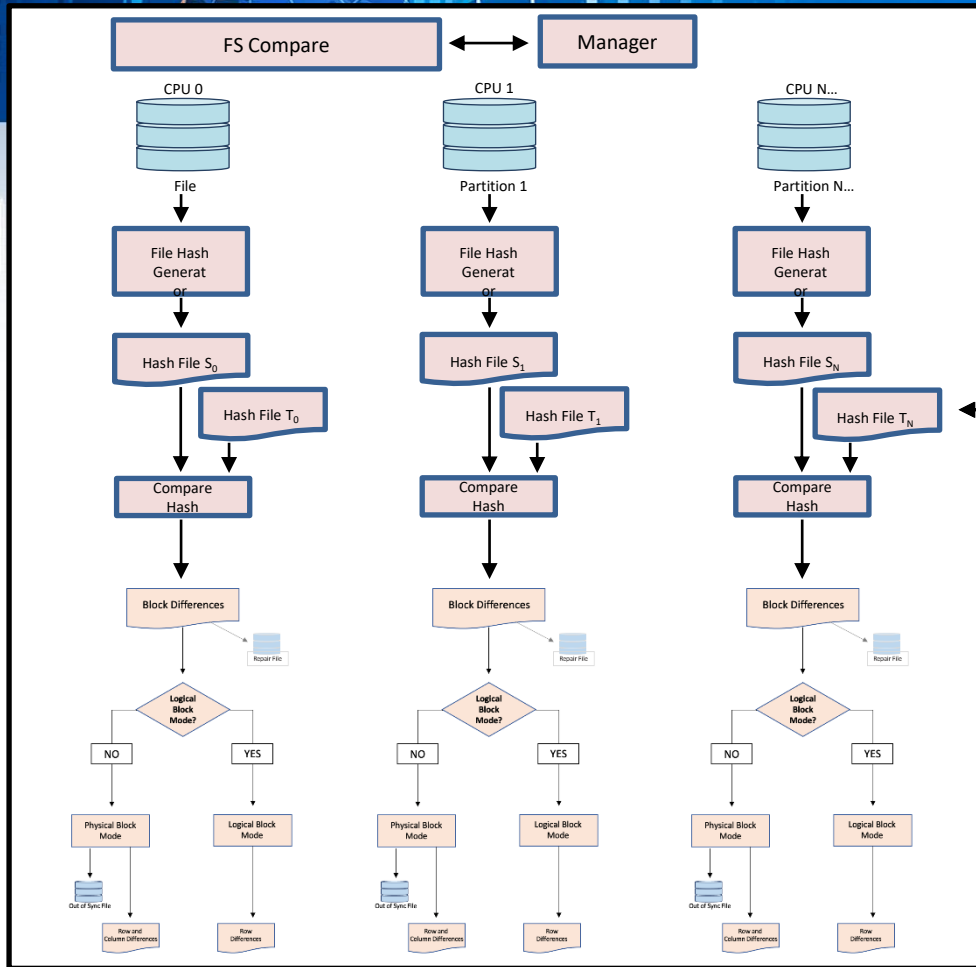
- FS Compare and Repair
- FS Backup and Restore
- FileSync

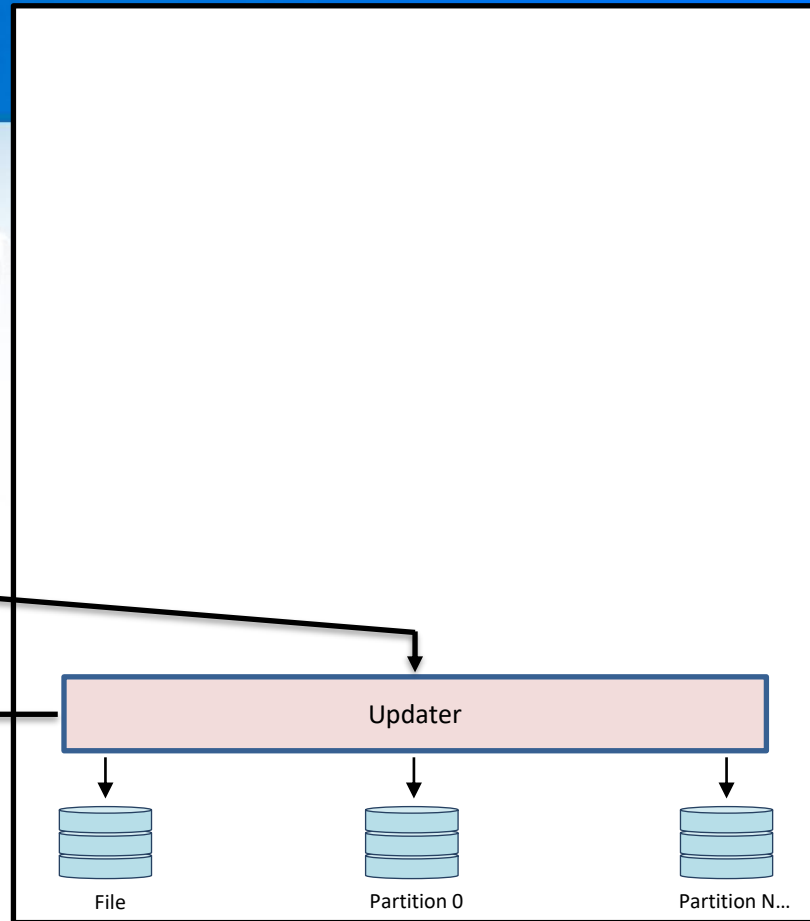
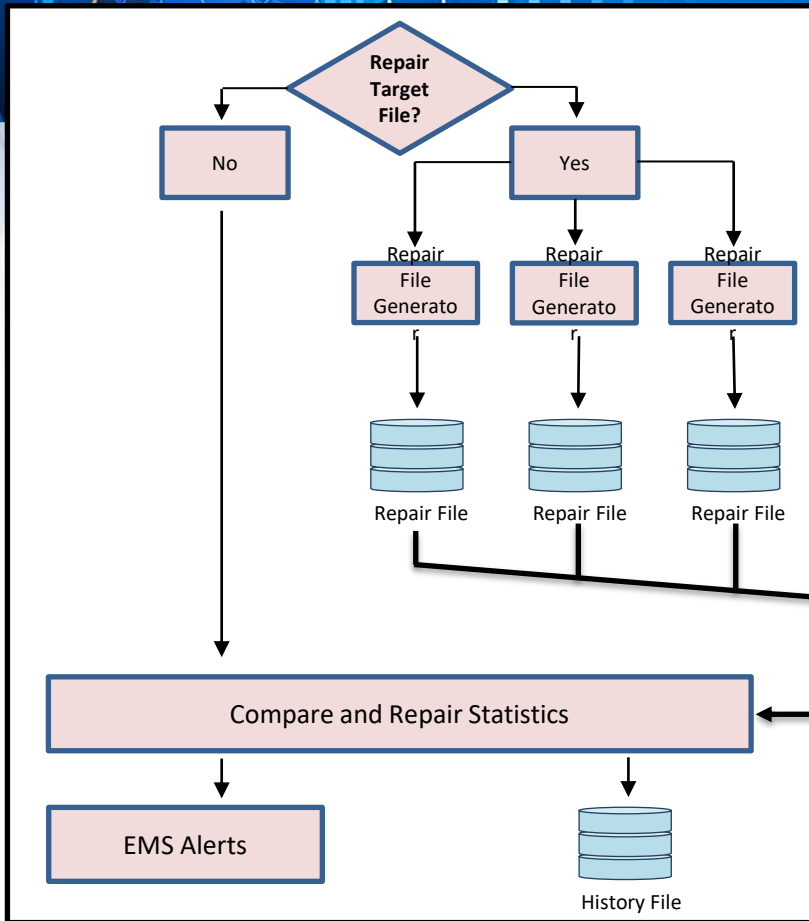


# Source System

# FS Compare and Repair

# Target System







# FS Compare and Repair - Highlights

## **Blazing Fast Compare**

10,000,000 records in 13 seconds, or 1 TB multi-partitioned file in 10 minutes, or 333 SQL/MP partitions, EOF = 1.6 TB, in 2 hours and 42 minutes (throttled to 4 partitions at a time and max cpu priority = 50%)

## **Supports Compare and Repair for all NonStop databases**

OSS, Enscribe, SQL/MP and SQL/MX

## **Accurately detects and displays data differences in Live Databases.**

Ignores False positives.

## **The DBA “must have” solution for NonStop OSS, Enscribe, SQL/MP and SQL/MX files.**

Compare and Repair of ALL NonStop files and SQL Tables.



# ES Compare and Repair - version 4.2

**Compare and Repair of ALL file types using TCP/IP instead of Expand.**

**Support for SQL/MX table wildcarding.**

**Added Compare and Repair for Active – Active environments.**



# FS Compare and Repair - Differences

SQLCI **Update** \CGNAC2.\$DATA11.FS32.PANP1 set Pan2 = '**123456**' where Pan = '**000000**';

**Update** Record on **Target** -----

## Source ...

Block: 00002000 Record: 0 **Key: (0: PAN,8), Len 8**

0000: 0006 3030 3030 3030 ..**000000**

... Address: 002B, Column: 5, **PAN2**, Len 8

0000: 0006 3132 3334 3536 ..**123456**

## Target ...

Block: 00002000 Record: 0 **Key: (0: PAN,8), Len 8**

0000: 0006 3030 3030 3030 ..**000000**

... Address: 002B, Column: 5, **PAN2**, Len 8

0000: 0006 3030 4333 3433 ..**00C343**

# FS Compare and Repair – Blazing fast

```
run FSCOMP Source " \cgnac2.$data11.fs32.test4gb " Target " \cgnac2.$data11.fs32.test4gbx "
```

File	Last Modtime [*]	<b>EOF</b>	Blocks	!=	Rows
S-1	20-04-26 10:27:56	<b>4,483,469,856</b>	1,094,598	0	1,094,598
T-1	20-04-26 10:27:56	<b>4,483,469,856</b>	1,094,598	0	1,094,598

S-1 = \CGNAC2.\$DATA11.FS32.TEST4GB

T-1 = \CGNAC2.\$DATA11.FS32.TEST4GBX

Profile : Profile-Enscribe-4gb, Config-file \$DATA11.FS32.FSCONFIG

File/Part/Index : 1 (Equal) , Blocks : 1094598 (Equal)

Records/Rows : Source 1094598, Target 1094598 (Not Equal 0) : **Inserts 0, Deletes 0, Updates 0**

**Elapsed Time : 00:00:48.402**

File Equal : **Yes**

File Repaired : No



# Solving Enterprise Challenges today

## **How do I ensure that my Active-Passive or Active-Active databases are equal ?**

Compares over 250,000 files between Production and DR environments.

Compares very large files and tables in minutes or hours, not days and weeks.

## **I want to know if my Production data is ever out of Sync ?**

Scheduled and repeated Compares for critical production files.

Automatic EMS alerts are generated when File discrepancies are detected.

## **Has my Production data ever been out of sync before ?**

Compare statistics database can be queried using SQL.

Simple and easy to read Compare reports for Management.



# Compare product differences

Block Hashing, not Record or Block compression

Very little Network and System resources ( Block hashes vs Data )

Repairs ALL NonStop File and SQL Tables.

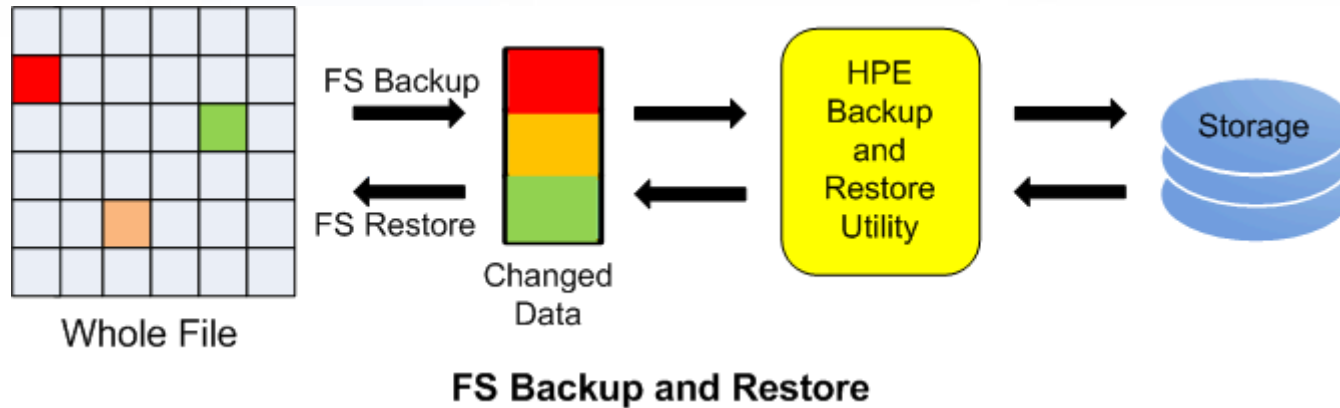
**FS Compare - CO-operative Licensing model available.**

If you already License a Compare product and would like to use FS Compare for very large files or thousands of files, contact us to see how we can help.



# FS Backup and Restore

Provides Fast Ransomware recovery  
Reduces Daily Backup times from Hours to Minutes





# FS Backup and Restore - Highlights

## Ransomware

- Provides Continuous Data Protection (CDP), used in Air-Gap environment and data immutability.
- Recovery - Supports database Roll forward and backward ( planned for a future release )  
Start with a Full backup (gold backup) from a known good state then **backs up only Data Block changes**.  
Like TMF, restore from the gold backup and apply Data Block changes.  
CDP is implemented on disk or immutable storage.

## Daily Backups

- Uses TANDsoft 'Block Technology' to detect and save file block changes to reduce Daily, Weekly and Monthly backup times from hours to minutes.
- Supports Backup and BR2, all NonStop files (OSS, Enscribe, SQL/MP, SQL/MX) and works with ALL Tape and Virtual Tape Storage solutions.

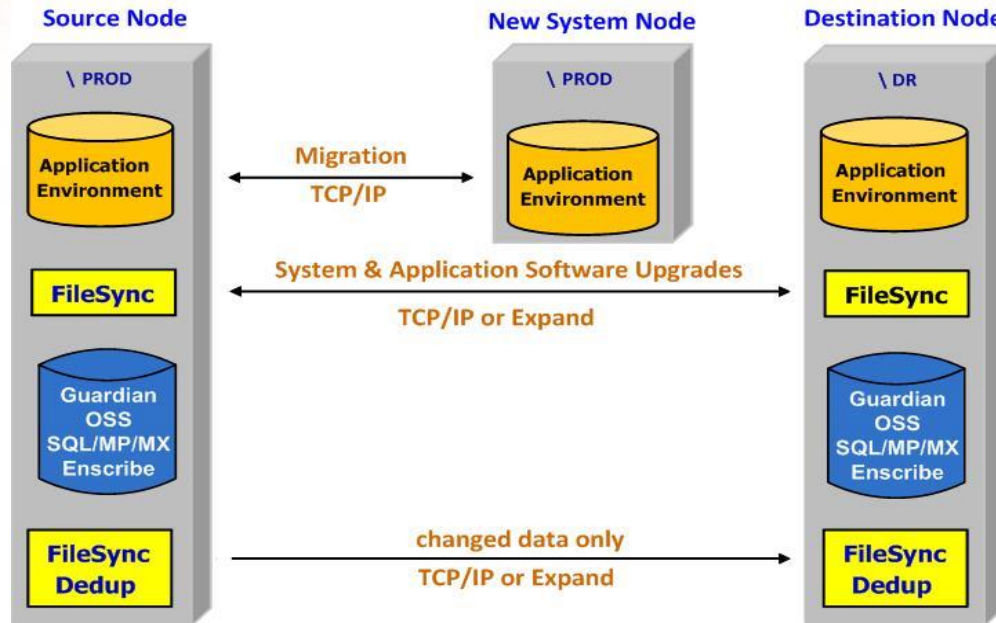


# FS Backup and Restore - Highlights

## Performance

- Initial FS Backup: 37 minutes ( Backup of 5,000 Tables )
- Next FS Backup: 7 minutes ( Backup of Data Block Changes to 2,000 Tables )
- FS Restore: 7 minutes ( Restore 100 Tables and Data Block changes )
- FS Compare: 90 seconds ( Compare 100 Tables )

Replicates and synchronizes File modifications between NonStop Servers





# FileSync - Highlights

Replicates and Synchronizes all NonStop files, Enscribe, OSS, SQL/MP and SQL/MX between Production, DR and Migration environments, over Expand or TCP/IP and works with ALL file replicator solutions.

For Large files, it uses TANDsoft 'Block Technology' to identify and synchronize only the **File Data Block differences** to the Target, instead of the Entire file, reducing Synchronization time from hours to minutes.

FileSync can be used to continuously synchronize thousands of files between Production, DR and Migration environments.



# Why Enscribe to SQL ?

**E2S 4.0** is the next generation of the ENSCRIBE-to-SQL Toolkit solution.

ENSCRIBE to native SQL/MX (or SQL/MP) migration

Transparent Intercept - No code changes required

Automatic Data Transformations (e.g. JULIANTIMESTAMP from/to DATETIME(6))

Uses Static compiled SQL/MX, not Dynamic SQL for much better performance.

E2S APIs exposed for customer use

Supports Guardian, OSS, TNS & Native ENSCRIBE applications (C, C++, Cobol, Tal & pTal)

**E2S is the most cost efficient and secure solution to modernize your application**



# TANDsoft – other solutions

**OPTA2000** - Virtual clock and Virtual time zone simulator.

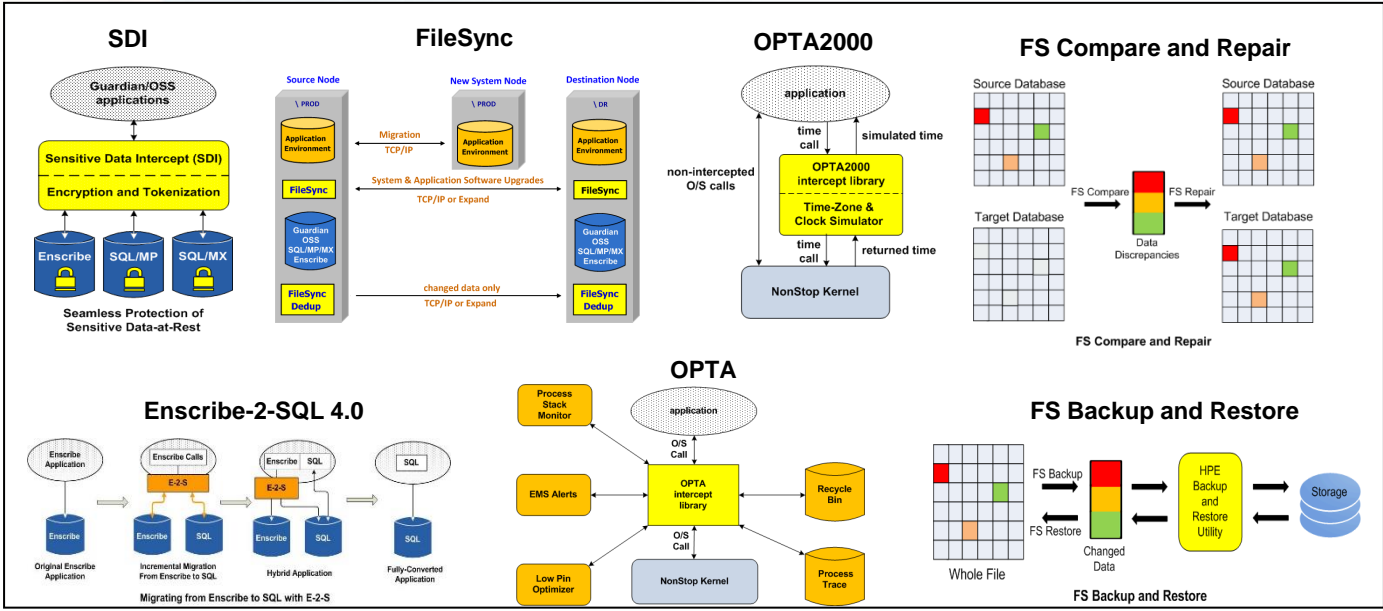
HPE, third-party and customer applications can run in different time zones on one NonStop server with NO source code changes.

One customer in Boston, uses OPTA2000 with NetBatch and schedules Jobs to run every Weekday at 4:00 pm Local time in New York, London, Paris and Sydney, regardless of the Daylight Savings Time.

**SDI** – Seamless interception of Enscribe, SQL/MP and SQL/MX DB access.

- Used for encryption, auditing, E-2-SQL and tracing of database access.

# TANDsoft products





**Thank You for Attending**

**Additional information or questions ?**

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