NonStop, Evolution through Modernisation

Speakers: Shiva Subramanian

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- TCM – An introduction
- Shifting Perspectives: NonStop Then v Now
- A Real-World Modernisation Example
- Live Demonstration
- Questions

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TCM

Who We Are

- Dedicated NonStop service experts since ‘96
- Designing and delivering service solutions to NonStop Customers around the globe
- Onsite and Remote services delivered via Centre of Excellence based in Scotland
- Never lost a Customer, never failed an SLA
- Flexible, responsive, adaptable, trusted partner
- Preserving NonStop knowledge
- HPE Silver Partner

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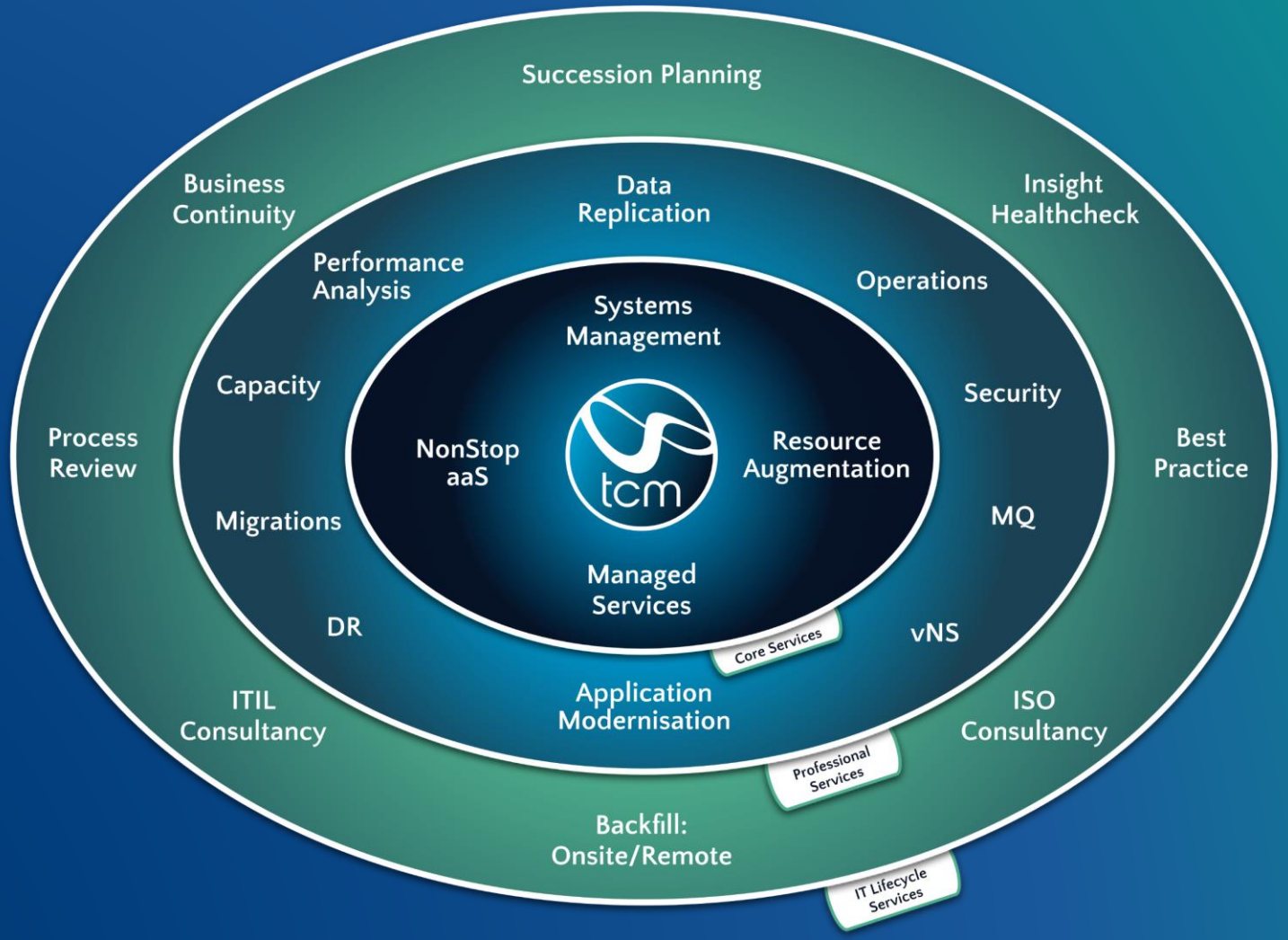
The Full Suite of NonStop Services



Shifting Perspective:

NonStop Then vs. NonStop Now

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NonStop then

Circa 1980s

- Share-Nothing architecture
- Mission-Critical computing
- RAID1 mirroring
- Fault tolerant
- High Availability
- Security & Compliance
- Superior data integrity
- Process pairs
- Linear Scalability
- And more…

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NonStop now

To infinity & Beyond

- Everything from the past
- Git
- Jenkins
- Visual Studio Code
- Eclipse
- Grafana
- Elastic
- Java
- Python
- And more…

The evolution of NonStop has already begun…

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…and your modernisation journey…

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…could be closer than you think:

Your Nonstop OS already ships with -

- Java, Python
- Make
- NSMF (Ansible setup for NonStop)
- FLOSS
- NS HTTP Server (Apache HTTP server)
- Boost Framework
- JDBC/ODBC drivers for SQL/MX

Your Organisation might already have –

- A centralised Git Repository with GitHub or GitLab
- A Jenkins master instance
- Ansible instance
- Grafana
- Elastic Stack
- Splunk
- Kafka producer setup

And on the NonStop, you can install –

- Git
- Jenkins Agent/Master
- Fortify
- Maven
- Gradle
- JMeter
- Artifactory
- Kafka libraries (to talk to Kafka producer off platform)
- Curl to communicate with -
  - Grafana / Elastic Stack / Splunk
  - Prognosis
  - Nagios
- OpenSSL & OpenSSH to communicate with -
  - Ansible
  - Jenkins
  - Git
  - Visual Studio Code
  - Nexus
  - GitHub
  - Selenium
  - Robo
  - SonarQube & more…

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Ok that’s great, but where do I start?

- How about a real world example?

A Real World example of:

NonStop Then vs. NonStop Now

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A Real World example

Something that we can all relate to!

- In-house application using COBOL and various TACL utilities that help with day to day functions
- Development - TEDIT
- Version Control – Spreadsheets, TACL macros, RMS
- Deployment – Manual Copy, NetBatch
- Monitoring, Alerting – EMS & TACL Routines
- Setup using Enscribe and manual testing for tracking and making changes to the application

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The Retro Era

- Source code changes done on TEDIT
- Comment structures tracked changes!

```
** 1.1 Begin - Updated error han

    IF SEND-ERROR NOT = 0
        PERFORM HANDLE-SEND-ERRO
    END-IF.

HANDLE-SEND-ERROR.
    IF SEND-ERROR = 233
        PERFORM SERVERCLASS-SEND
        IF SEND-ERROR NOT = 0
            PERFORM REPLY-WITH-E
        ELSE
            PERFORM REPLY-WITH-P
        END-IF
    ELSE
        PERFORM REPLY-WITH-ERROR
    END-IF.

** 1.1 End - Updated error handling format
```

```
*-------------------------------------------------------------------*
*                          Version History                          *
*-------------------------------------------------------------------*
*  Version  |    Date     |    Author     |      Amendment           *
*-------------------------------------------------------------------*
*    1.0    | 2022-08-24  | Shiva S       | Initial version          *
*    1.1    | 2022-09-10  | Mani Rajesh   | Updated error            *
*           |             |               | message format           *
*    1.2    | 2022-10-03  | Collin Yates  | Improved                 *
*           |             |               | performance of           *
*           |             |               | forwarding               *
*    1.3    | 2022-11-18  | Ian Horrocks  | Fixed issue              *
*           |             |               | causing crashes          *
*           |             |               | during open              *
*           |             |               | request handling         *
*    1.4    | 2023-02-02  | John Groats   | Enhanced                 *
*           |             |               | error handling           *
*           |             |               | for specific             *
*           |             |               | request types            *
*    2.0    | 2023-05-15  | Andy Vasey    | Major refactor           *
*           |             |               | for modularity           *
*           |             |               | and readability          *
*-------------------------------------------------------------------*
```

The Retro Era

- Version control done through spreadsheet for SOX compliance

Version	Date	Author	Change Description	Testing/Review	Approval	Control ID	Testing method	Test evidence	Testing results	Exception	Documentation
1	15/03/2022	Shiva S	Initial version of ROUTER code	N/A	N/A	N/A	N/A	N/A	N/A	None	N/A
1.1	10/06/2022	Mani Rajesh	Updated error handling for SOX compliance	QA Testing	Manager	CTRL_001	Manual	/test_evidence/ctrl_001	Success	None	/doc/sox_changes/ctrl_001_update.docx
1.2	05/09/2022	Ian Horrocks	Improved data validation for audit trail	Code Review	Manager	CTRL_005	Manual	/test_evidence/ctrl_005	Success	None	/doc/sox_changes/ctrl_005_improvement.docx
1.3	20/12/2022	Collin Yates	Added logging for critical operations	Audit Review	Auditor	CTRL_012	Manual	/test_evidence/ctrl_012	Success	None	/doc/sox_changes/ctrl_012_logging.docx
1.4	05/04/2023	John Groats	Enhanced documentation for control validation	QA Testing	Manager	CTRL_007	Manual	/test_evidence/ctrl_007	Success	None	/doc/sox_changes/ctrl_007_documentation.docx
1.5	18/07/2023	Andy Vasey	Security patch: Input sanitization	Code Review	Manager	CTRL_003	Manual	/test_evidence/ctrl_003	Success	None	/doc/sox_changes/ctrl_003_security_patch.docx

- While some of us used ‘intricate’ Guardian tools like RMS (while others descended to TACL routines to keep the versions from spiralling out of control)

```
TESTCMP2
TESTCOMP
$RMP:\APPL\RMSTEST 6> icv testcmp2
COMPONENT:  \APPL\RMSTEST\TESTCMP2
    1.001  26FEB2014(16:55:55)  \72.LODGE.MGR
       STATE:  LATEST
    1.000  11NOV2008(14:05:44)  \71.SUPER.LODGE
       STATE:  PRODEXEC
$RMP:\APPL\RMSTEST 7> ic testcmp2
PATH                                MODE       TYPE/LANG  FILE/DEFINE
----------------------------------- ---------- ---------- ---------------------------

\APPL\RMSTEST\TESTCMP2                          SOURCE     \TANP.$RMS.RMDDL.TESTCMP2
                                                 TACL
$RMP:\APPL\RMSTEST 8> add comp testcmp4,type source,lang tacl,file \tanp.$rms.
ddl.testcmp4,define =rmstest^testcmp4
COMPONENT \APPL\RMSTEST\TESTCMP4 ADDED
$RMP:\APPL\RMSTEST 9>
```

The Retro Era

- Ran obey files or compile statements manually to compile objects

```
COBOL85 /IN ROUTER, OUT $S.#ROUT.COMP, NOWAIT/
```

```
$DATA02 APPSRC 5> obey routerc
COBOL85 /IN ROUTER, OUT $S.#ROUT.COMP, NOWAIT/
$DATA02 APPSRC 6>
ABENDED: $Z37C
CPU time: 0:00:00.003
3: Premature process termination with fatal errors or diagnostics
$DATA02 APPSRC 6>
```

- Test cases involved manual verification of generic tests and some specific tests for the respective code change
- Production implementation was a carefully documented manual process that involved FUP DUP across systems using operational user IDs for security purposes

```
$DATA02 APPSRC 8> fup dup prodsrc.router, backsrc.router, purge
FILES DUPLICATED:  1
$DATA02 APPSRC 9> fup dup prodsrc.router, backsrc.router, purge
FILES DUPLICATED:  1
$DATA02 APPSRC 10>
```

The Retro Era

- Used ENSCRIBE files to store and retrieve information and ENFORM to query the database

```
$DATA02 ENFORMS 59> fup copy app
param from I9;
!Title "ENFORM DATA QUERY OUTPUT"
?assign APPDATA to $data02.APPFILES.APPDATA
open APPDATA
list by app-count noprint
by loadid noprint
     loadid as A8 nohead, tab 10
!    heading "time", tab 10
     app-num as i2 nohead
!         heading "app/num/a" as I2
!         tab 15
     ((home-trans * 1.00)/(delta-time / 1000000)) as f6.2 nohead
!         heading "home/trans" as F6.2
!         tab 23
```

- Alerting and monitoring in production involved scrolling through EMS events or polling for messages in EMS through TACL macros

```
$SYSTEM SYSTEM 28> emsdt 22:30
23-09-10 22:34:00 \TCMVNS.$X7RV     TANDEM.SPI.0           000001 This is a
                                    non-critical message
23-09-10 22:34:18 \TCMVNS.$X7RV     TANDEM.125.0           000001 This is a
                                    critical message
23-09-10 22:35:54 \TCMVNS.$X7RV     TANDEM.STORAGE.0       000001 Error in
                                    CONFIG file; Retcode ?; ErrDetail ?
```

The Modern Trajectory

- On the NonStop
  - Git
  - Jenkins
- On Windows servers / Linux distributions
  - Elastic / Grafana
  - Ansible
- On user machines
  - Visual Studio Code / Eclipse IDE
  - GitHub Desktop / IDE Git plugin
  - Postman
  - DBeaver

Demonstration

Using Git, Jenkins, Elastic, DBeaver & Postman

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A Real World example

Then:

- Development - TEDIT
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A Real World example

Then:

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Now:

- Development – Visual Studio Code
- Version Control - Git
- Deployment – Jenkins
- Monitoring, Alerting – Elastic
- Using Dbeaver to manage your SQL database and PostMan for testing and other automation testing tools

A Real World example

Why did we take you through this?

- The Benefits

Rewards

for the picking

- **Lower costs**
- **Reduce risks**
- **Fast feedback**
- **Faster delivery**
- **Consistent and stable system**
- **Collaboration improves business ability**

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A Real World example

Why did we take you through this?

- The Benefits
- But also, this is just one of many small steps we can take on a journey to modernisation.
- You need to find yours…

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Your journey

Finding out what works for you

- No production impact
- Easy install

Git

Make

- Automate builds
- Create dependencies

- Trigger builds
- Setup notifications

Jenkins

C, C++, Java

- No production impact
- Monitor everything

ELK Stack

Boost/Selenium

- Automate tests
- Create code coverage

- Trigger tests
- Setup notifications

Jenkins

Rest Interface

Language set

API Gateway

VS Code, Eclipse

10K to 1M TPS

Kafka

Modern IDEs

Ansible Orchestration

SQL/MX

DBS for NS & others

Deployment automation

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A Real World example

Why did we take you through this?

- The Benefits
- But also, this is just one of many small steps we can take on a journey to modernisation.
- You need to find yours…
- …here a few bonus tips to get you started

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HPE & Vendor products that help you modernize

(by minimizing your effort)

Speak to TCM

- **NuWave LightWave Client/Server** – REST API on the NonStop
- **NuWave Prizm Gateway** – Load Balancing and NGNIX server capabilities on the NonStop
- **Nexbridge NSGIT** – Guardian & ENSCRIBE support with familiar Guardian use and feel for Git
- **Comforte EscortSQL** – remove Enscribe files without code changes and start using NonStop SQL
- **Comforte Jpath** – remove Screen COBOL green screens without code changes and start using HTML web GUI interfaces
- **Infrasoft uLinga for Kafka** – Out of the box NonStop integration for Kafka
- **HPE NonStop HTTP Server** – NonStop deep port of Apache's famous HTTP server that runs about 25% of all websites
- **HPE NonStop Manageability Framework (NSMF)** with out of the box frameworks to support your Ansible modernization effort
- **NonStop In-Memory Cache (NSIMC) which is a port of REDIS**

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HPE & Vendor products that help you modernize

(by minimizing your effort)

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Summing up...

before we close

- Don’t let the jargons put you off!
- Innovations & outcomes without technical debt
- Clarity better than certainty
- Micro steps towards MicroServices
- Era of Phoenix Servers
- Collaboration improves business ability

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Thank You

TCM – The NonStop Experts

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