State of the Mainframe for 2017:
An Annual Survey of IT Professionals

**What Every Business Needs to Know About
Big Iron and Big Data: Facts and Trends**

syncsort

Executive Summary

Syncsort Inc. recently completed its year-end 2016 State of the Mainframe annual survey of IT professionals. Respondents were from a wide range of IT disciplines including executives, architects, system programmers, application analysts, database administrators, operations managers, and security professionals. Some results were expected – the IBM z/OS mainframe isn't going away in the near term, mainframe budgets remain relatively flat (albeit with two notable exceptions), organizations continue to be challenged to maintain mainframe expertise, mainframes are still the predominant platform for performing large-scale transaction processing on mission-critical applications, and meeting SLAs are still a primary focus for most organizations.
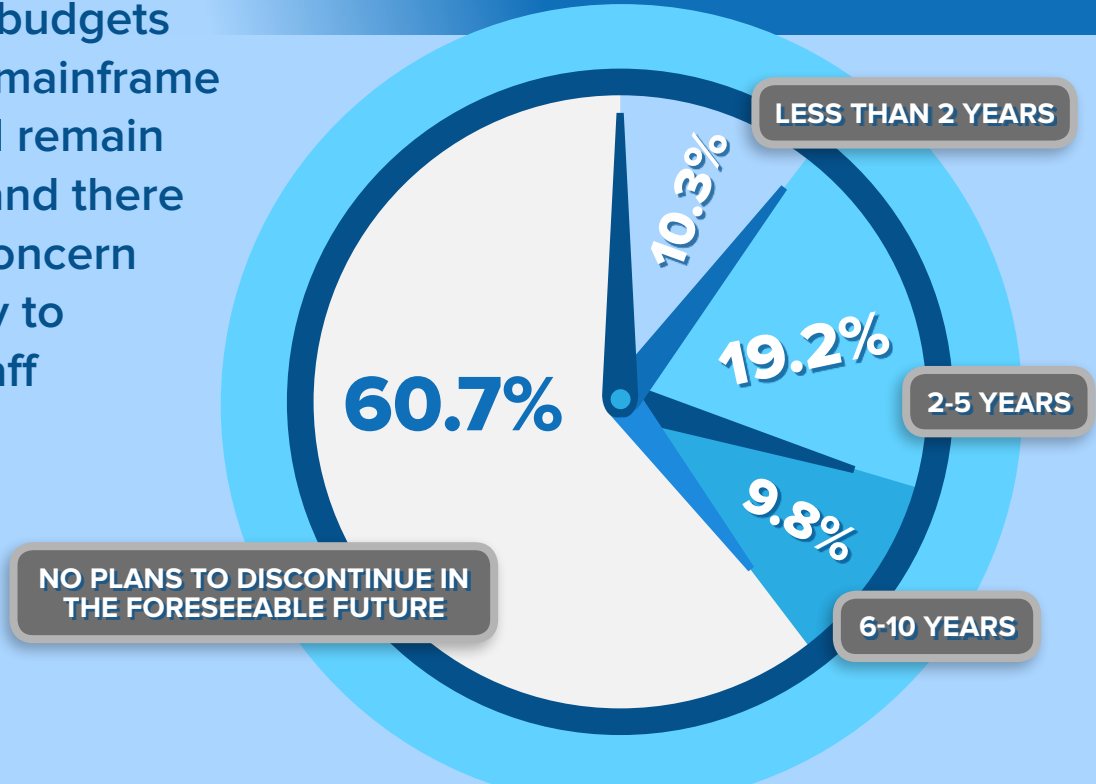
The results also indicate that analytics for both operational intelligence, as well as for security and compliance is rising in importance for many organizations (although the interest doesn't always reside in mainframe IT). The mainframe is no longer the isolated "black box" and its ability to integrate with distributed platforms, both for multi-platform application support and for enterprise-wide analytics is key for many organizations. While "Big Data" analytics for actionable operational intelligence and to meet security and compliance requirements is on the rise for mainframes, the results indicate that most organizations will perform analysis off the mainframe with Hadoop being the dominant platform of choice. As part of this analytics wave, organizations are focused on accessing and leveraging mainframe logs, SMF, and other z/OS information sources for correlation with data from open systems platforms using analytics technologies such as Hadoop and Splunk.

General State of the
Mainframe
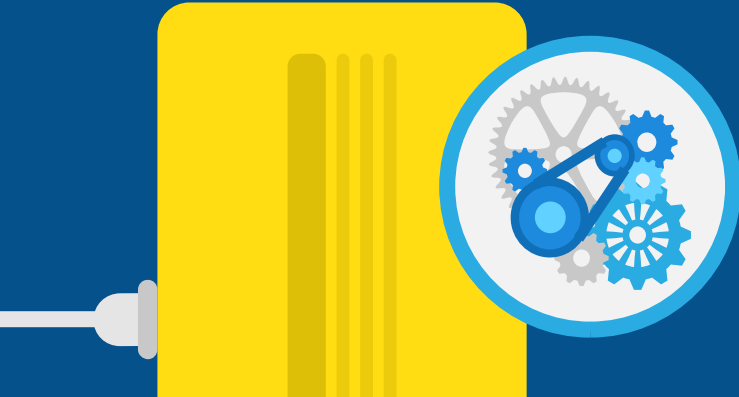
Mainframes are not disappearing in the near term but budgets for traditional mainframe operations will remain relatively flat and there is a growing concern over the ability to adequately staff going forward

HOW LONG IS YOUR ORGANIZATION CURRENTLY PLANNING TO CONTINUE USING A MAINFRAME(S)?

- 10.3%
- LESS THAN 2 YEARS
- 19.2%
- 2-5 YEARS
- 9.8%
- 6-10 YEARS
- 60.7%
- NO PLANS TO DISCONTINUE IN THE FORESEEABLE FUTURE

HAS YOUR OVERALL MAINFRAME BUDGET INCREASED OR DECREASED OVER THE PAST 2 YEARS?

33.9%
Increased

35.3%
Essentially flat, but reorganized - some budget reallocated from one area on the mainframe to another

30.8%
Decreased

HOW WOULD YOU DESCRIBE YOUR COMPANY'S MAINFRAME STAFFFNG NEEDS?

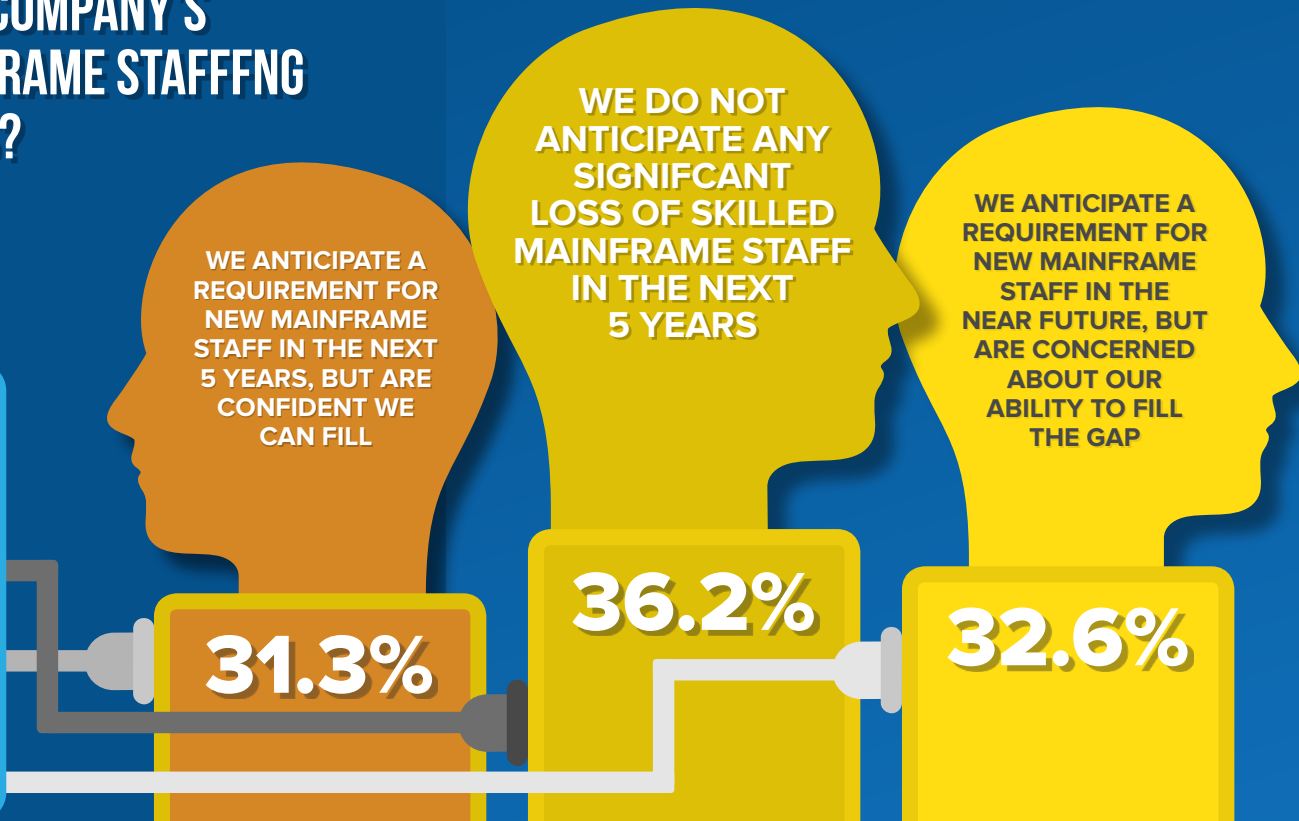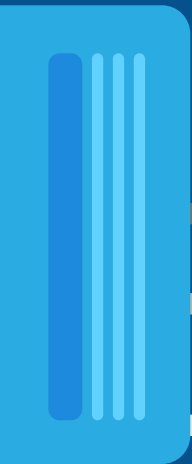WE ANTICIPATE A REQUIREMENT FOR NEW MAINFRAME STAFF IN THE NEXT 5 YEARS, BUT ARE CONFIDENT WE CAN FILL

31.3%

WE DO NOT ANTICIPATE ANY SIGNIFCANT LOSS OF SKILLED MAINFRAME STAFF IN THE NEXT 5 YEARS

36.2%

WE ANTICIPATE A REQUIREMENT FOR NEW MAINFRAME STAFF IN THE NEAR FUTURE, BUT ARE CONCERNED ABOUT OUR ABILITY TO FILL THE GAP
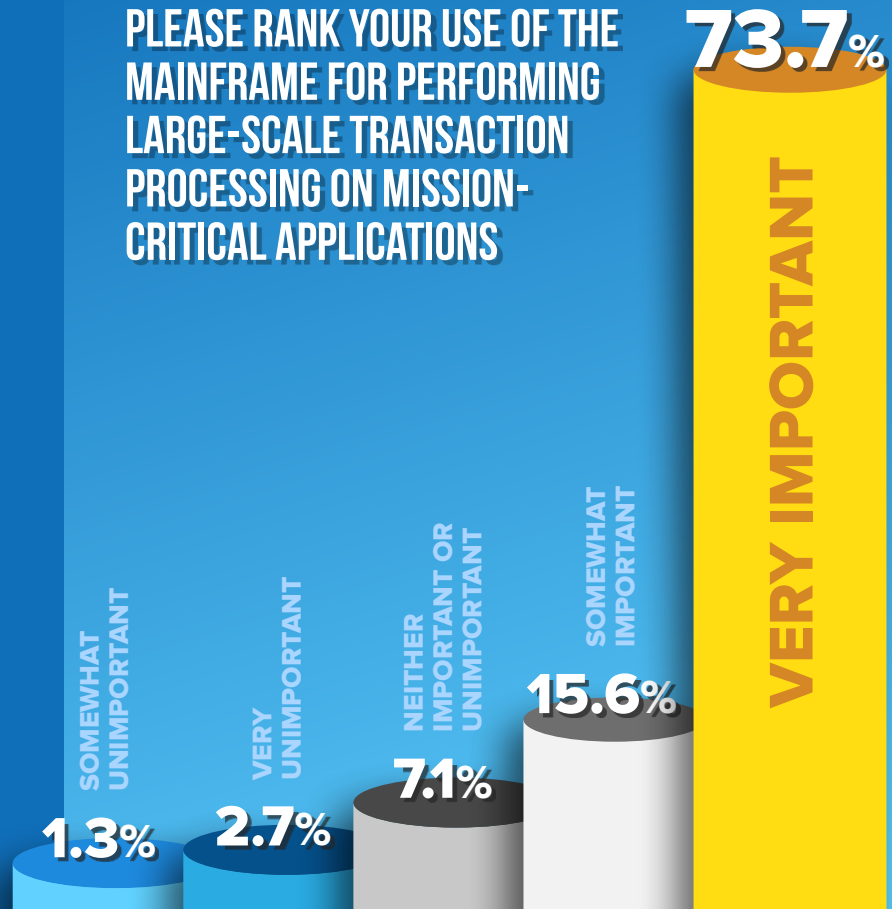
32.6%

Mainframes are still the predominant platform for performing large-scale transaction processing on mission-critical applications
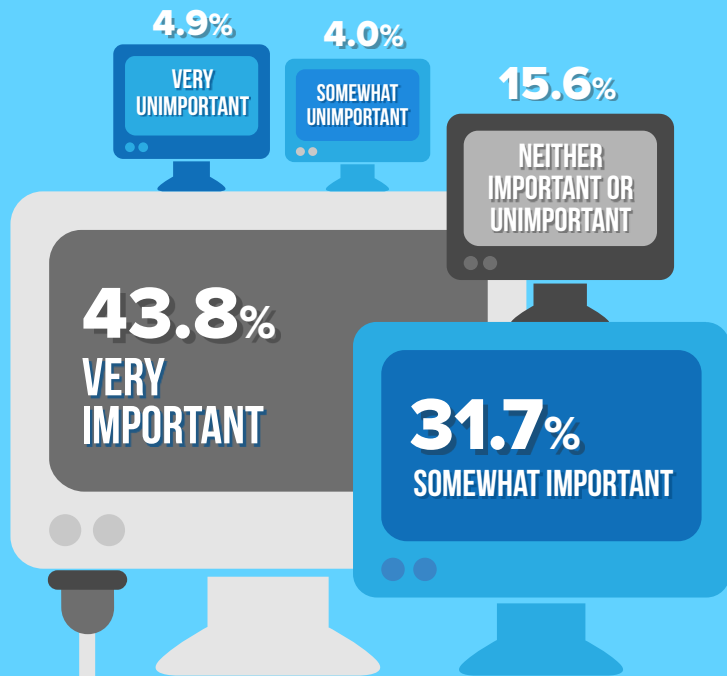
Key points

- Multi-platform distributed applications still rely on the mainframe for critical transaction processing

- CICS, DB2, and IMS will remain strategic components for supporting these applications

- Even as new application development occurs in distributed environments, expect mainframes to still play a key role in transaction processing

PLEASE RANK YOUR USE OF THE MAINFRAME FOR PERFORMING LARGE-SCALE TRANSACTION PROCESSING ON MISSION-CRITICAL APPLICATIONS

73.7%

VERY IMPORTANT

SOMEWHAT UNIMPORTANT
1.3%

VERY UNIMPORTANT
2.7%

NEITHER IMPORTANT OR UNIMPORTANT
7.1%

SOMEWHAT IMPORTANT
15.6%

PLEASE RANK THE ABILITY OF THE MAINFRAME TO INTEGRATE WITH OTHER STANDALONE COMPUTING PLATFORMS SUCH AS LINUX, UNIX, OR WINDOWS AS A KEY STRENGTH OF THE MAINFRAME AT YOUR COMPANY
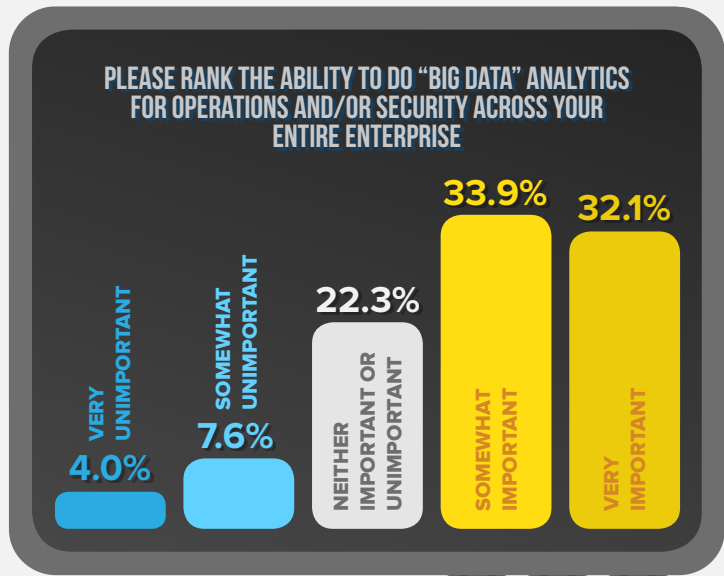
4.9%
VERY UNIMPORTANT

4.0%
SOMEWHAT UNIMPORTANT

15.6%
NEITHER IMPORTANT OR UNIMPORTANT

43.8%
VERY IMPORTANT

31.7%
SOMEWHAT IMPORTANT

Ability for mainframe to integrate with distributed platforms is key for many organizations

Key points

- 75% rank the ability of the mainframe to integrate with other standalone computing platforms as Very Important or Somewhat Important

- The mainframe is no longer an isolated technology within the IT infrastructure

- Corporations need enterprise-wide integration to support applications, operational intelligence, and security

Emerging Analytics for
Operational Intelligence and Security

PLEASE RANK THE ABILITY TO DO "BIG DATA" ANALYTICS FOR OPERATIONS AND/OR SECURITY ACROSS YOUR ENTIRE ENTERPRISE

- VERY UNIMPORTANT — 4.0%
- SOMEWHAT UNIMPORTANT — 7.6%
- NEITHER IMPORTANT OR UNIMPORTANT — 22.3%
- SOMEWHAT IMPORTANT — 33.9%
- VERY IMPORTANT — 32.1%

"Big Data" analytics for operations and/or security across the enterprise is critical.

Key points

- 66% rank the ability to do "big data" analytics for operations and/or security across the entire enterprise as Very Important or Somewhat Important

- Organizations understand how critical it is to be able to leverage mainframe log data for operational intelligence, as well as security and compliance auditing

Meeting Security and Compliance Requirements and addressing SLAs are at the front for many organizations

Key points

- Security and compliance concerns continue to rise in many organizations

- Service delivery remains critical while attempting to control CPU related costs

PLEASE RANK THE TOP CORPORATE OBJECTIVES TO IMPROVE OVER THE NEXT 12 MONTHS, WITH 1 BEING OF HIGH PRIORITY/CONCERN AND 9 BEING OF LEAST CONCERN/PRIORITY.

Rank		Score
1	Meeting Security and Compliance Requirements	1492
2	Meeting Service Level Agreements	1467
3	Reducing CPU Usage and Related Costs	1423
4	Performing Problem Resolution Management	1148
5	Performing Operational Health Management	1103
6	DB2 Optimization and/or Standardization	995
7	Consolidation of Duplicative Systems/functions from M&A Activity	888
8	Leveraging Investment in zIIP Engines	823
9	Learning About "Big Data" Analytics and Tools	741

DOES YOUR IT ORGANIZATION UNDERSTAND THE MOVEMENT OF APPLICATION DATA BOTH ON AND OFF THE MAINFRAME?

44.2%

> WE HAVE A GOOD IDEA, NOT SURE OF ALL MOVEMENT BUT KNOW THE IMPORTANT JOBS

38.8%

> WE KNOW FOR SURE WHAT DATA IS MOVED, BY WHOM, WHEN AND WHERE

> IT'S NOT CLEAR, MANY USERS ARE DOING THEIR OWN THING AND NO ONE PERSON HAS A CLEAR VIEW

13.8%

3.1%

> WE HAVE VERY LITTLE UNDERSTANDING WHO IS MOVING DATA AND/OR WHERE

Understanding the movement of application data both on and off the mainframe is critical for organizations.

Key points

- Understanding data movement is critical for addressing security issues and compliance mandates

Trends in Mainframe

Big Data Analytics

Analysis of transactional log data from the mainframe primarily done via batch processes with on-platform tools
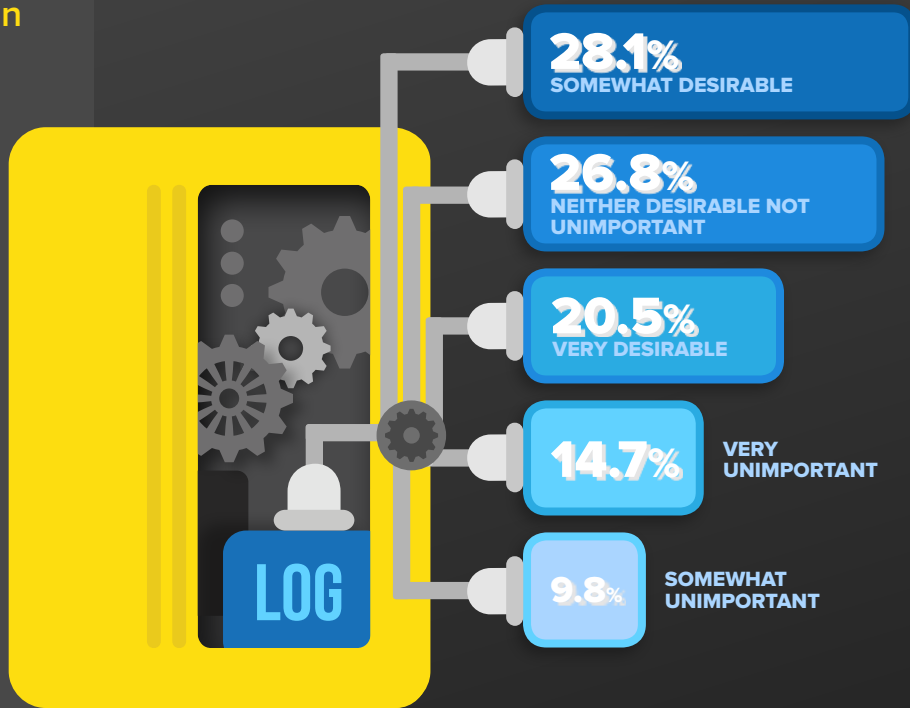
Key points

- Organizations still taking a legacy batch mode approach to collecting mainframe data for analytics

- Batch processing will cause delays in getting critical operational intelligence driving the need for more real-time analysis to address exposures

- Decline in mainframe subject matter experts will warrant a different approach with different tools

HOW DO YOU CURRENTLY ANALYZE TRANSACTIONAL LOG DATA FROM THE MAINFRAME?

We use zAware
3.1%

We use Apache Spark
3.6%

We use Hadoop
5.8%

55.8%
We use a tool(s) that analyzes collected performance data by running a batch job

We use Splunk
6.7%

22.3%
I don't know

15.6%
Other

Access to mainframe logs, SMF or other data for correlation with distributed data in big data and analytics platforms (Splunk, Hadoop, etc.) is getting traction in many organizations.
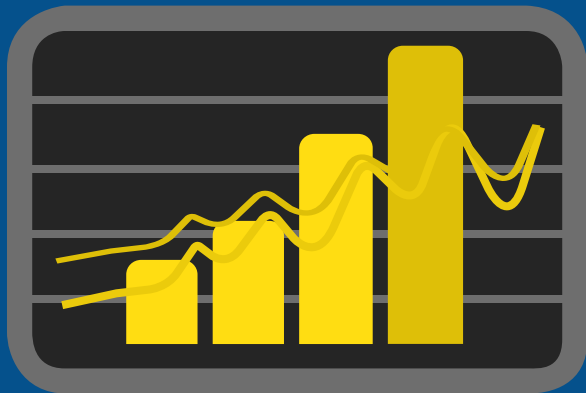
Key points

- 21% indicate it's Very Desirable for their company to access mainframe log, SMF or other data for correlation with distributed data in big data and analytics platforms

- Adoption of big data analytics platforms fueling need for mainframe data to provide a complete enterprise-wide view of operational and security intelligence

PLEASE RANK YOUR COMPANY'S DESIRE TO ACCESS MAINFRAME LOG, SMF OR OTHER DATA FOR CORRELATION WITH DISTRIBUTED DATA IN BIG DATA AND ANALYTICS PLATFORMS (SPLUNK, HADOOP, ETC.).

28.1% SOMEWHAT DESIRABLE

26.8% NEITHER DESIRABLE NOT UNIMPORTANT

20.5% VERY DESIRABLE

14.7% VERY UNIMPORTANT

9.8% SOMEWHAT UNIMPORTANT

LOG

Mainframe data is key for analytics (but analysis will be done off-platform)

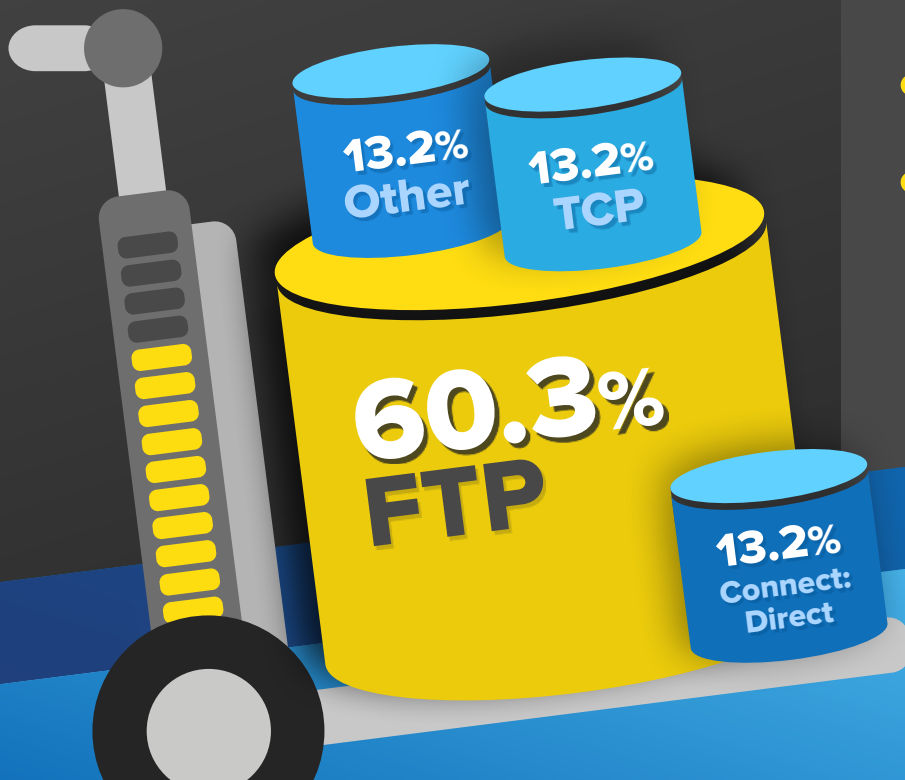## DOES YOUR ORGANIZATION MOVE DATA OFF-PLATFORM FOR ANALYTICS?

YES 60.7%

NO 39.3%

HOW DO YOU MOVE DATA OFF-PLATFORM FOR ANALYTICS?

13.2%
Other

13.2%
TCP

60.3%
FTP

13.2%
**Connect:
Direct**

Key points

- 60% of organizations indicate that they are moving data off the mainframe for analytics

- FTP is the dominant technology for moving data (60% use FTP)

- Hadoop is the current platform of choice for consuming mainframe data (23%)

5 Trends to
Watch for in **2017**

1 Big data analytics for operational intelligence, security, and compliance will continue to grow and emerge as a critical project in organizations. The abundance of information collected on z/OS is a logical target to be leveraged to gain better insights. Organizations will look to exploit this information using analytics tools to provide enhanced visibility beyond what can be gained from the traditional on-platform tools. Furthermore, the emerging analytics platforms such as Splunk provide abundant flexibility around how data can be used versus the static nature of the display capabilities of existing mainframe tools.

2 Mainframe-based tools and batch processes will yield ground to new technologies including Hadoop, Spark, and Splunk for big data analytics. Most of the analytical capabilities for existing mainframe tools require post-processing of data that does not lend itself to near real-time analysis. The net result is that in many cases, analysis does not happen until the "next day" when batch offload processes have completed. As organizations are

challenged to determine root cause issues and resolve problems in a more timely manner, they will continue to drive toward more automated solutions requiring minimal batch processing and human interaction to generate required analytics.

3 Security and compliance mandates will be key drivers for technology evaluations and purchases. Reducing security exposures, fulfilling audit requirements, and addressing compliance mandates has become a key initiative for IT executives and IT organizations. The cost of conducting an audit, or even worse failing a compliance mandate, far exceeds the cost of the technologies that can be put into place to help address security and compliance initiatives. As a result, organizations will be budgeting for and purchasing technologies that assist to addressing these types of requirements.

4 Technologies that enhance data movement, as well as monitoring data movement between platforms, will rise in importance. Data movement across the variety of platforms in distributed enterprises is an important function that must be secured, monitored, and performed efficiently. Files moving onto or off of a z/OS mainframe must be tracked to ensure that only authorized parties are initiating those transfers, that the security of the information whether it be social security numbers, personal health information, or credit information is protected from unauthorized access, and that the movement of data occurs in a manner which meets the requirements of the business without impacting delivery of IT services. Technologies that can enhance and monitor data movement including what, who, when, and "how long" are going to get high priority in budget decisions.

5 Technologies that help address the diminishing pool of mainframe talent and expertise will rise in importance. Mainframe organizations understand that subject matter experts are aging and retiring. New IT professionals entering organizations are not coming in with the exposure and experience needed to backfill and replace existing mainframe subject matter experts. They don't have the experience with the tools or the technologies currently in use in z/OS environments. New professionals must be armed with tools architected with newer and familiar technologies including easy search, reporting, and analytics facilities enabling them to address the same issues as their predecessors without having to immerse themselves into older toolsets. For this reason, organizations must look to add these newer technologies that can be easily embraced and used to meet corporate challenges, by a newer and younger workforce, with less z/OS expertise.

B **Bonus Observation:** Interest and budgets for both compliance-related and potentially growth-driving analytics activities for mainframe are growing, but may appear in non-mainframe budget lines (i.e. Risk & Compliance, Business IT, etc.).

About Syncsort

Syncsort is a provider of enterprise software and the global leader in Big Iron to Big Data solutions. As organizations worldwide invest in analytical platforms to power new insights, Syncsort's innovative and high-performance software harnesses valuable data assets while dramatically reducing the cost of mainframe and legacy systems. Thousands of customers in more than 85 countries, including 87 of the Fortune 100, have trusted Syncsort to move and transform mission-critical data and workloads for nearly 50 years. Now these enterprises look to Syncsort to unleash the power of their most valuable data for advanced analytics. Whether on premise or in the cloud, Syncsort's solutions allow customers to chart a path from Big Iron to Big Data. Experience Syncsort at **www.syncsort.com.**

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