

Редкие проблемы и пути их решения

Михаил Саравайский

Поговорим про тестирование



Автоматизированность



Единая среда



Низкий порог вхождения

CI:



Code



Build



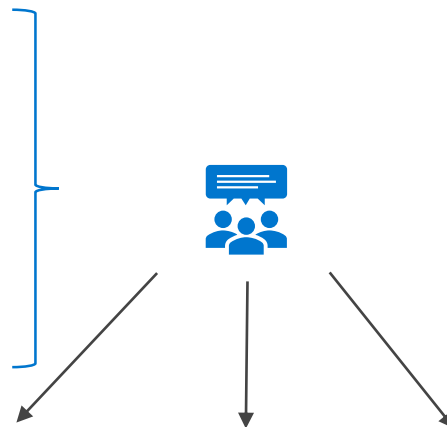
Unit-test



Integration



Acceptance



Тестирование СХД



I/O

Throughput

Latency

Requires external actions



Storage

Availability

Consistency

Sort of system-internal



Additional Features

Compression

Encryption

Replication

Тестирование СХД



I/O

Throughput

Latency

Requires external actions

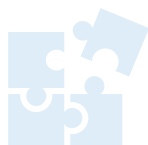


Storage

Availability

Consistency

Sort of system-internal



Additional Features

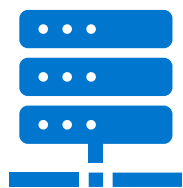
Compression

Encryption

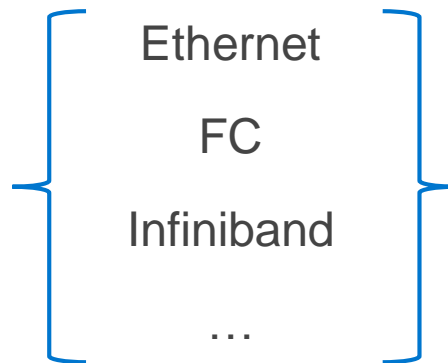
Replication

Про Айо в нормальном мире

Windows/Linux



Client Host



Front-end



Storage



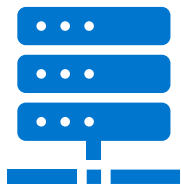
fio, iometer, FF5B, dd...



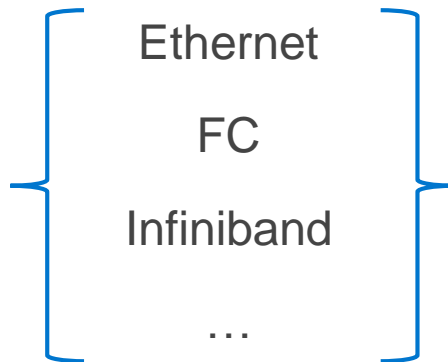
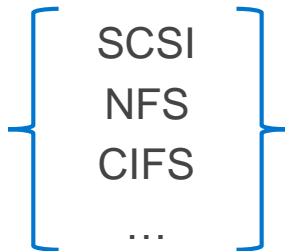
netstat, iostat, tcpdump, iotop, ...

И это все можно завернуть в какой хочешь соус

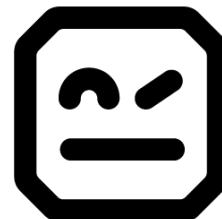
Windows/Linux



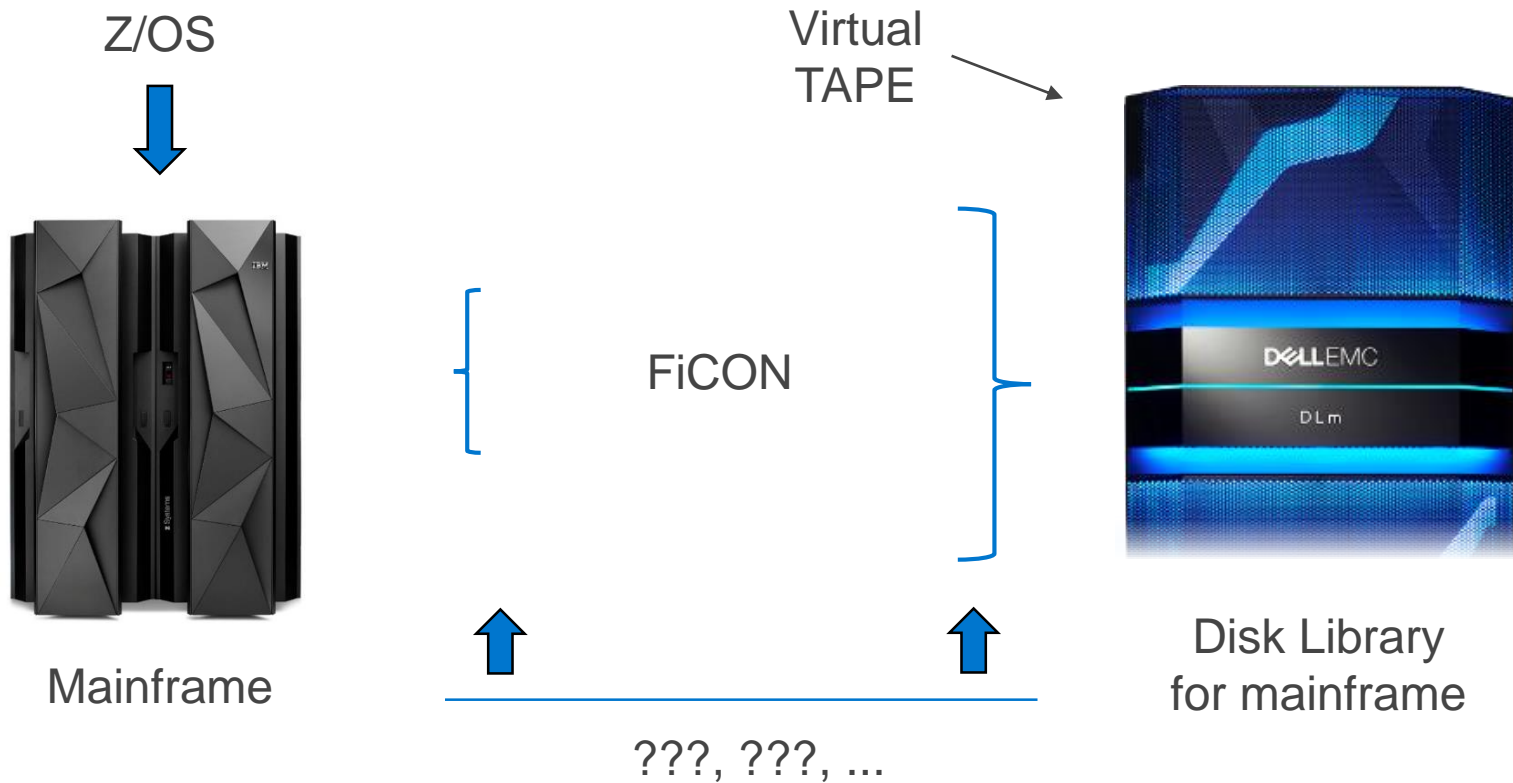
Client Host



Storage



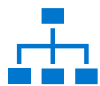
Бывает не все так гладко



А в чем проблема и кому это надо?



Автоматизированность



Единая среда



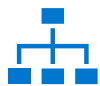
Низкий порог вхождения



А в чем проблема и кому это надо?



Автоматизированность



Единая среда



Низкий порог вхождения



А в чем проблема и кому это надо?



99% банковских операции



99% авиабилетов



99% всех перевозок

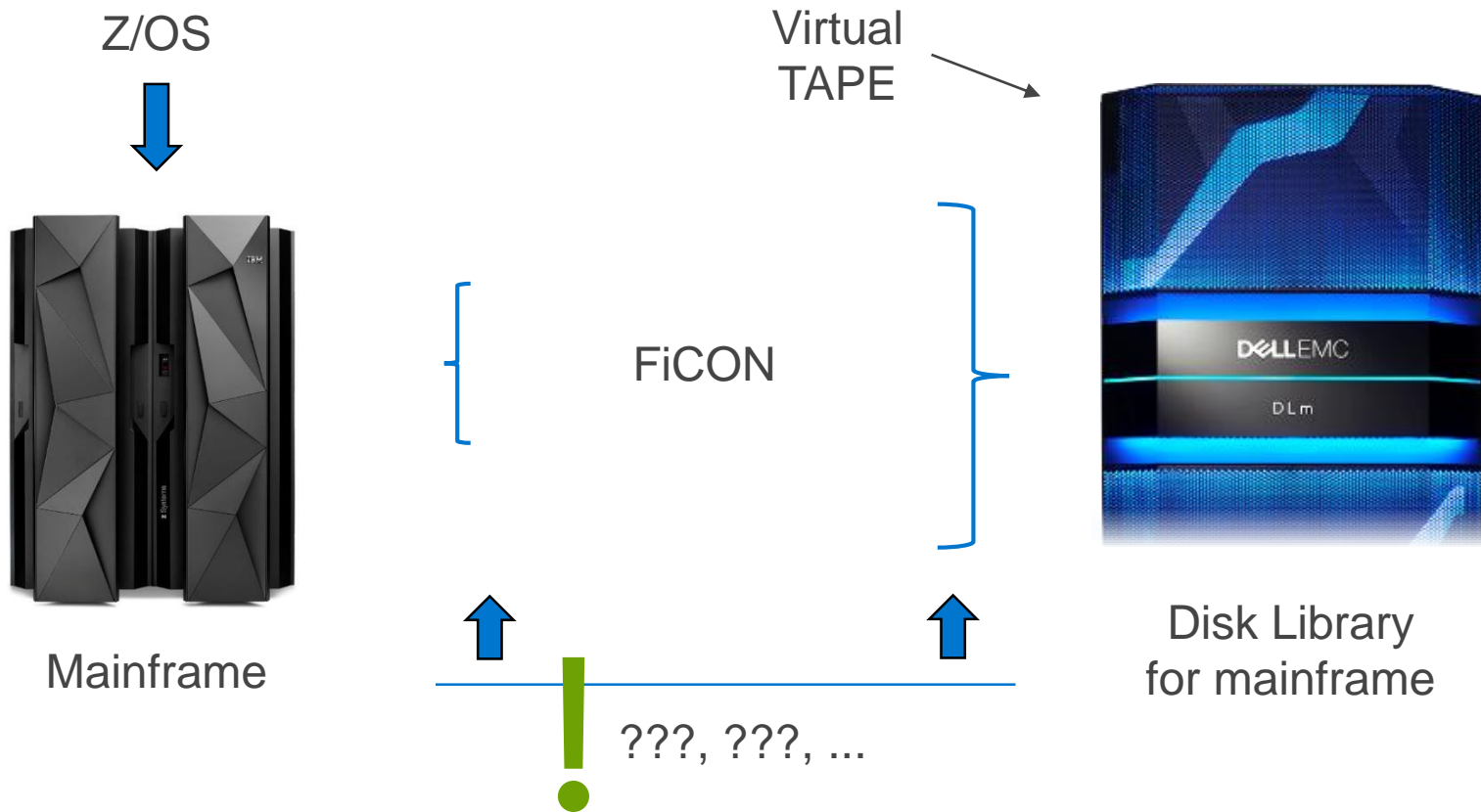


Вы каждый день общаетесь
с Мейнфреймом



Качество

Бывает не все так гладко



Особенности Z/OS

<https://www.ibm.com/ru-ru/it-infrastructure/z/zos>

Простота ИСПОЛЬЗОВАНИЯ

System Display and Search Facility (SDSF)

Обеспечивает мониторинг и управление
сисплексом в средах JES2/JES3.

→ [Подробнее об SDSF](#)

Особенности Z/OS

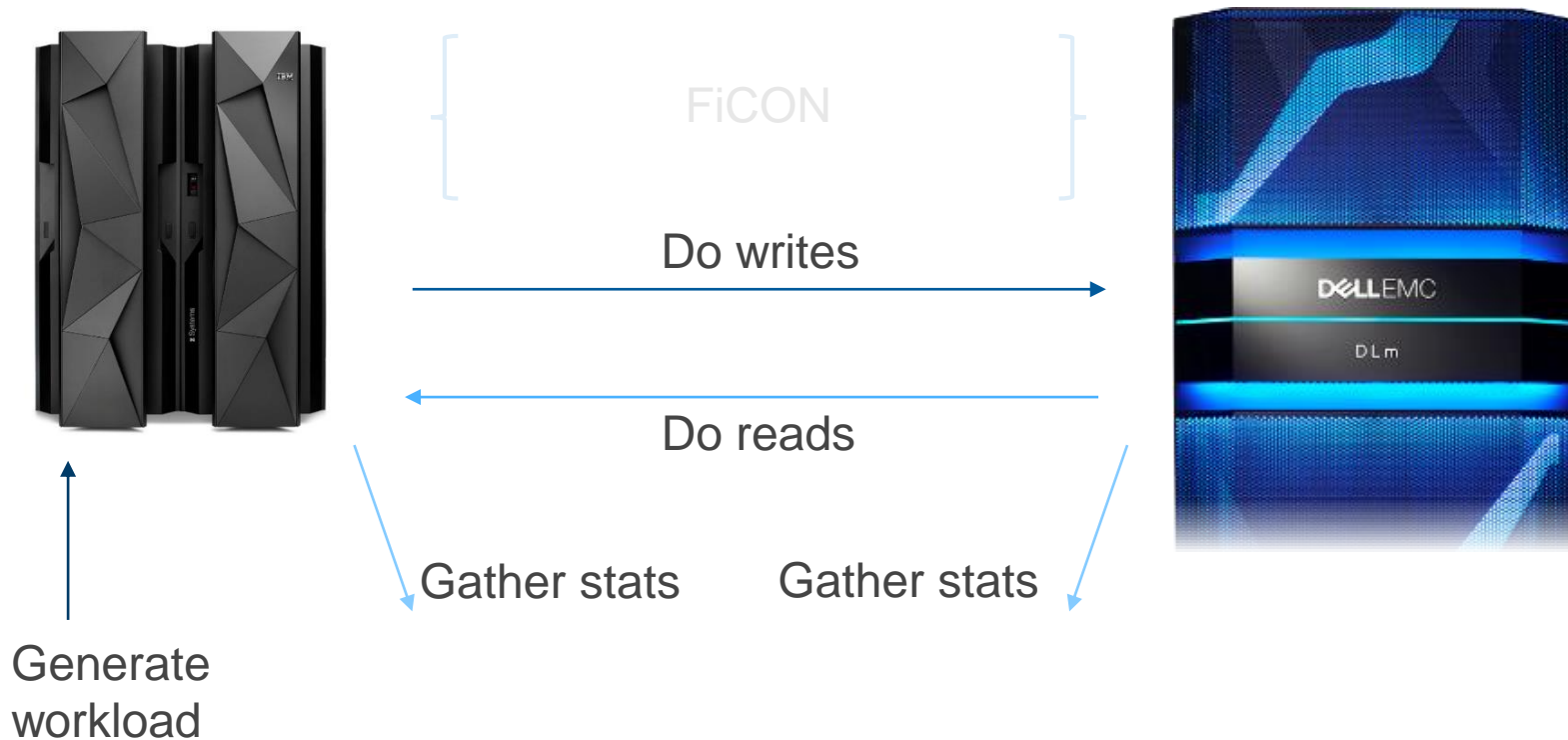
```
Display Filter View Print Options Search Help
-----
HQX7790 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==> SCROLL ==> CSR

DA Active users          INIT Initiators
I  Input queue          PR  Printers
O  Output queue         PUN Punches
H  Held output queue    RDR Readers
ST Status of jobs       LINE Lines
SYM System symbols      NODE Nodes
LOG System log          SO  Spool offload
SR  System requests     SP  Spool volumes
MAS Members in the MAS  NS  Network servers
JC  Job classes         NC  Network connections
SE  Scheduling environm RM  Resource monitor
RES WLM resources       CK  Health checker
ENC Enclaves           LNK Link list data sets
PS  Processes          LPA Link pack data sets
SYS System information  APF APF data sets
ENQ Enqueues           PAG Page data sets
DYNX Dynamic exits     PARM Parmlib data sets
AS  Address space memoy ULOG User session log

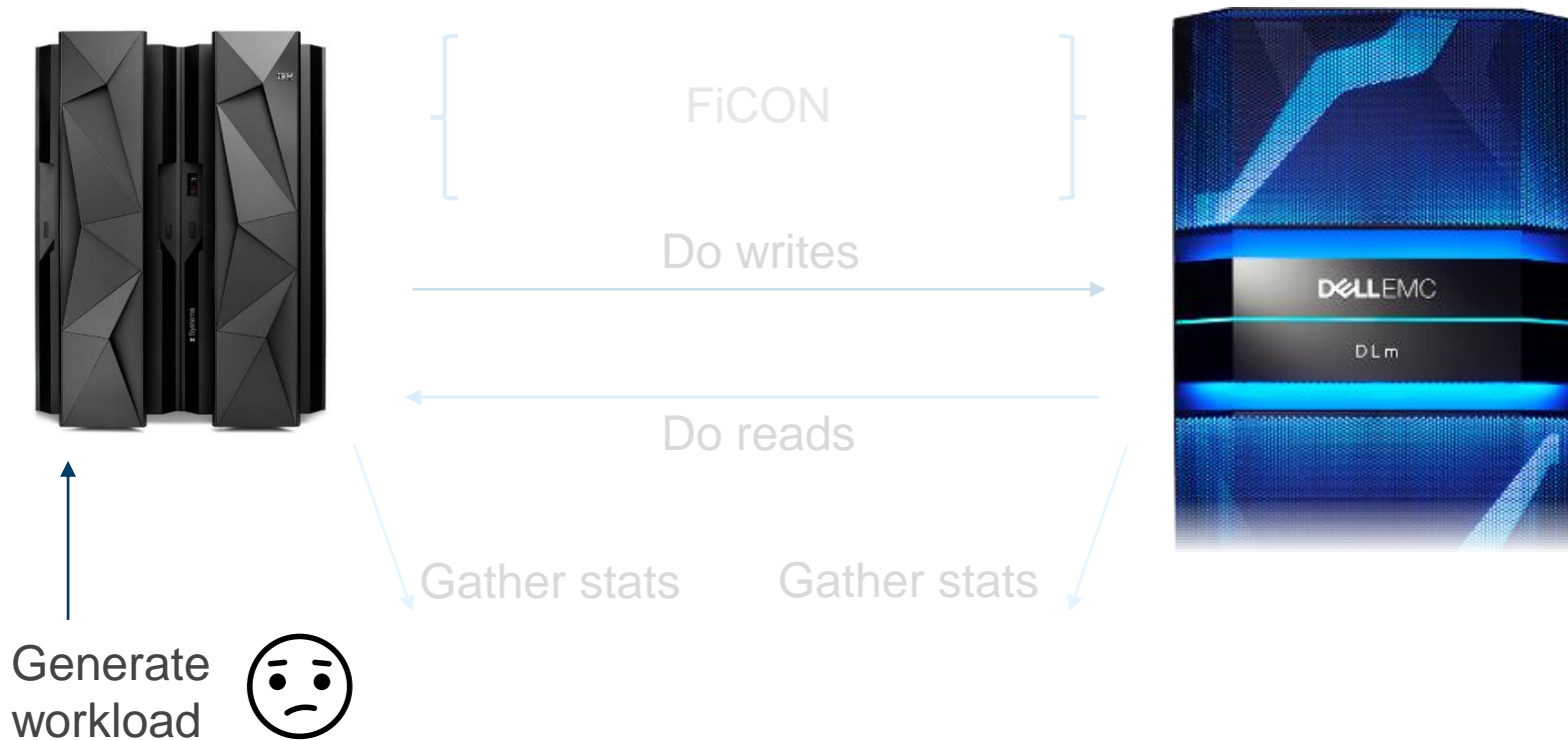
END  Exit SDSF

PF 1=HELP      2=SPLIT      3=END      4=RETURN      5=IFIND      6=BOOK
PF 7=UP        8=DOWN       9=SWAP    10=LEFT      11=RIGHT     12=RETRIEVE
*ISFPCU4
```

Что мы хотим?



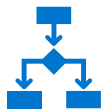
Что мы хотим?



Управление задачами в z/OS



Batch Processing



WorkLoad Manager



Job Entry Subsystem



Job Control Language

Job declaration

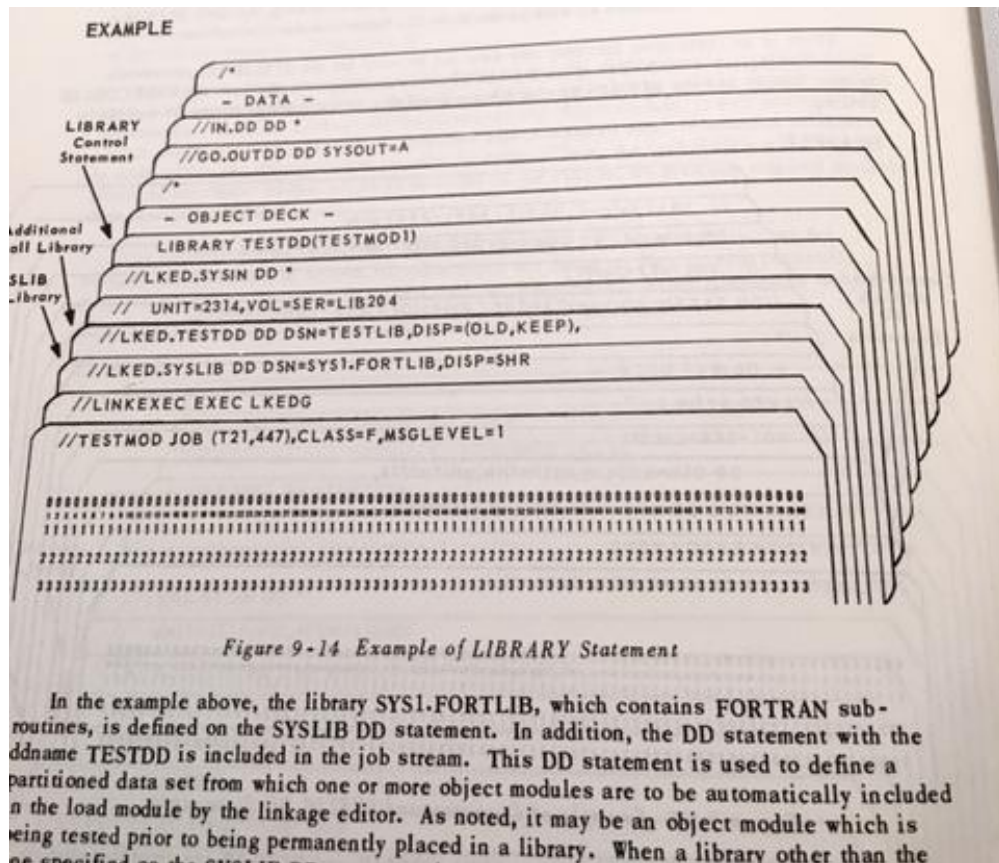
EXEC

Data definition

Well yeah, location
on the disk


```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT BS9U.DEVT3.PAUL.JCL(PACK) - 01.00 Columns 00001 00080
Command ==> Scroll ==> HALF
***** Top of Data *****
000001 //PACK JOB (BS94,B444,1,999), 'PP PG',NOTIFY=&SYSUID,
000002 // TIME=(99),MSGCLASS=X,REGION=100M
000003 //DFLT OUTPUT JESDS=ALL,DEFAULT=Y,DEST=LOCAL
000004 //* BS9U.DEVT3.PAUL.JCL(PACK)
000005 //*-----
000006 //TERSE EXEC PGM=TRSMAIN,PARM='PACK'
000007 //SYSPRINT DD SYSOUT=*,DCB=(LRECL=133,BLKSIZE=12901,RECFM=FBA)
000008 //INFILE DD DISP=SHR,DSN=BFCU.TOMZOS.ICAT.INSTLIB,VOL=SER=STOMZ6
000009 //OUTFILE DD DISP=(,CATLG,DELETE),
000010 // DSN=USER123.BFCU.TOMZOS.ICAT.INSTLIB.PACKED,UNIT=SYSDA,
000011 // DCB=(LRECL=1024,BLKSIZE=10240,RECFM=FBA),
000012 // SPACE=(10240,(2000,800),RLSE)
000013 /*
***** Bottom of Data *****
```

Actually valid manual

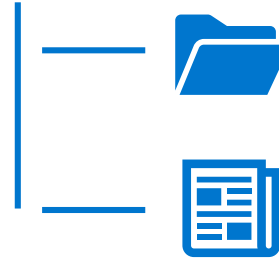


What to do



↑
Generate workload 

1) Get needed JCLs



Complete library

Templates!

2) Get them to MF



Communication with z/OS (JES)

- Operator on the management console



Communication with z/OS (JES)

- Operator on the management console
- Operator on the Terminal



TN3270

```
Menu Utilities Compilers Options Status Help
-----
Option ==> ISPF Primary Option Menu

0 Settings Terminal and user parameters User ID : MSARAV0
1 View Display source data or listings Time : 09:26
2 Edit Create or change source data Terminal : 3278
3 Utilities Perform utility functions Screen : 1
4 Foreground Interactive language processing Language : ENGLISH
5 Batch Submit job for language processing Appl ID : PDF
6 Command Enter TSO or Workstation commands TSO logon : IKJACCNT
7 Dialog Test Perform dialog testing TSO prefix : MSARAV0
9 IBM Products IBM program development products System ID : V142
10 SCLM SW Configuration Library Manager MVS acct : 1172131
11 Workplace ISPF Object/Action Workplace Release : ISPF 7.1

SD SDSF System Display & Search Facility
IP IPCS Interactive Problem Control
IS ISMF Interactive Storage Management
RAF RACF RACF Services and Dialogs
RMF RMF Resource Measurement Facility
SM SMP/E SMP/E Services and Dialogs
MXI MXI System Information Utility

S DFSORT DFSORT R13 dialogs
OE OE/MVS Shell Open Edition/MVS ISPF Shell
1F OE/MVS Browse Open Edition/MVS File Browse
2F OE/MVS Edit Open Edition/MVS File Edit

%D +DTS DTS Software Products
LV LOGR Viewer Logrec Viewer

SC Serv & Config Service and Configuration Tools

TH TXT2HTML TXT to HTML conversion
TP TXT2PDF TXT to PDF conversion
TR TXT2RTF TXT to RTF conversion

Enter X to Terminate using log/list defaults

F1=Help F2=Split F3=Exit F7=Backward F8=Forward F9=Swap
F10=Actions F12=Cancel
```



*ISR@PRI

TN3270 and alike testing






<https://habr.com/ru/company/alfa/blog/446332/>

Communication with z/OS (JES)

- Operator on the management console 
- Operator on the Terminal 
- NJE
 - Requires predefined network
 - Requires ton of low-level implementation
 - There's ~230 page book on formats and protocols

Communication with z/OS (JES)

- Operator on the management console 
- Operator on the Terminal 
- NJE 
- FTP(!)

FTP



Connect

open
quote site filetype=jes



Submit job

put



Check job status

dir



Get job output

get

What to do



↑
Generate workload



1) Get needed JCLs



Complete library



Templates!

2) Get them to MF

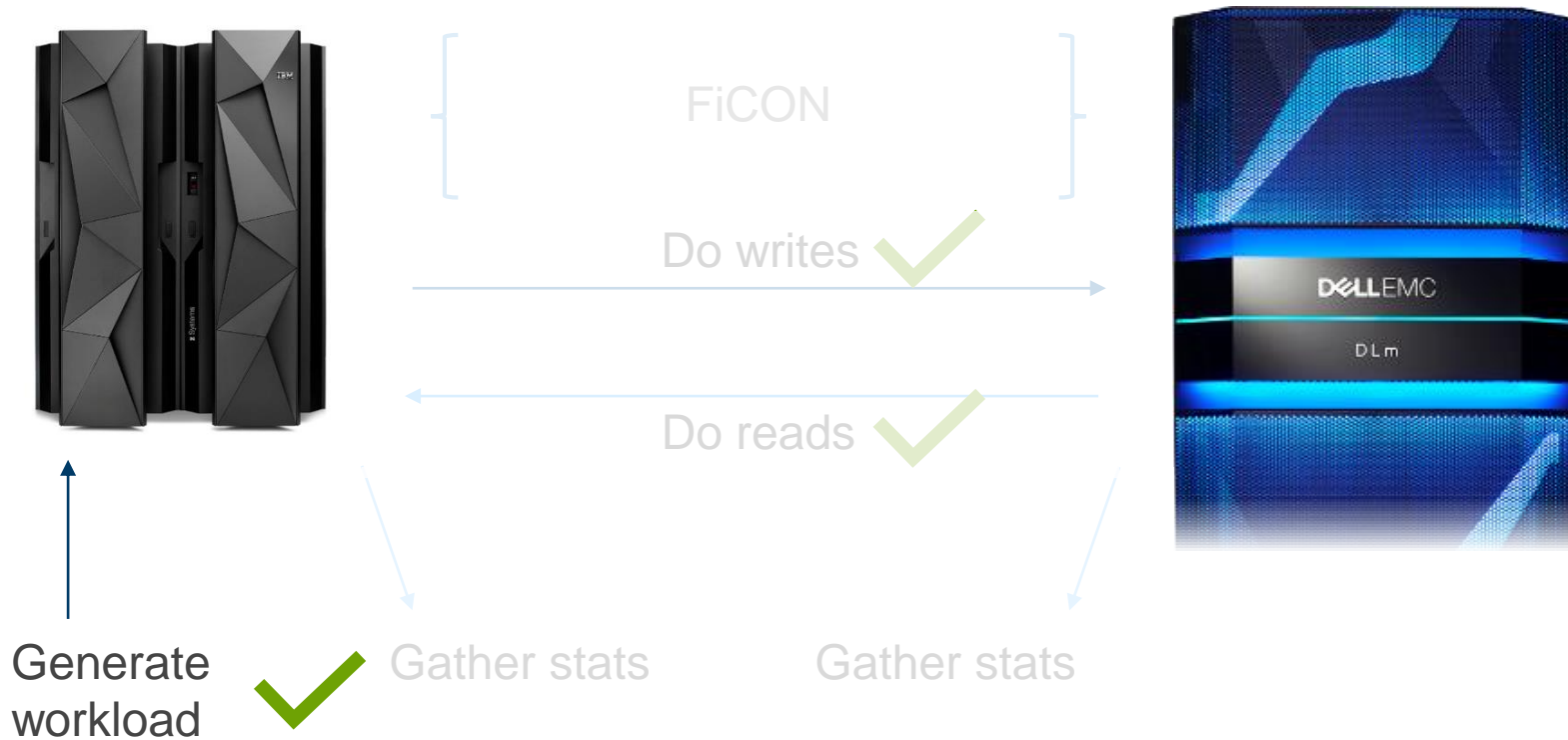


FTP!

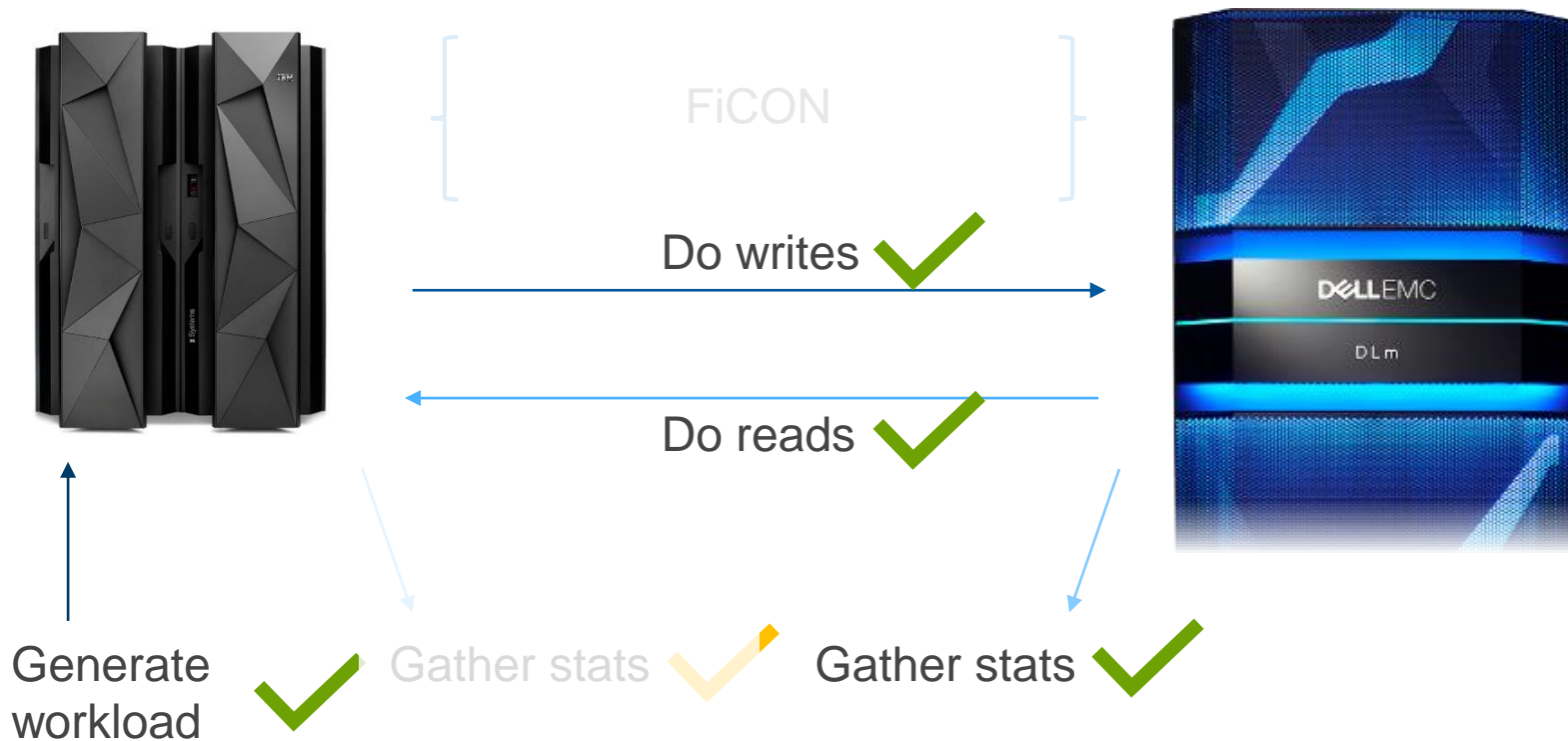
3) ???

4) PROFIT!!!

Что мы хотим?



Что мы хотим?



Зачем все эти танцы?

DELLTechnologies

Хотим получить



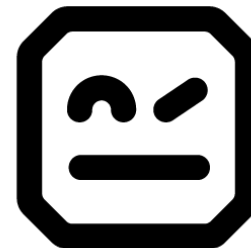
Автоматизированность



Единая среда



Низкий порог вхождения



Структура демо



Возьмем питон



Обертка для FTP



Шаблоны



Завернем в библиотеку робота



Напишем тест

DELLTechnologies