# **MANAGEMENT OF THE MicroTCA SYSTEMS AND ITS COMPONENTS** WITH A DOOCS-BASED CONTROL SYSTEM

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# Abstract

The extensive management functionality is one of the <sup>2</sup>/<sub>∃</sub> key advantages of the MicroTCA.4 standard [1]. Monitoring and control of more than 350 MicroTCA crates and thousands of AMC and RTM modules installed at XFEL, FLASH, SINBAD and ANGUS experiments has been integrated into the DOOCS-based [2] control system. A DOOCS middle layer server together with Java-based GUIs - JDDD and JDTool - developed at DESY, enable GUIS - JDDD and JD1001 determined remote management and provide information about MicroTCA shelves and components. The integrated management includes inventory information, monitoring  $\cdot$  = current consumption, temperatures, voltages and various types of the built-in sensors. The system event logs and collected histories of the sensors are used to investigate collected histories of the sensors are used to investigate failures and issues.

## **MOTIVATION**

The main goal was:

- Monitor basic health of the shelves
- Receive event reports and failure notifications from the boards and other intelligent FRUs
- Manage power, cooling & interconnect resources in the shelves
- Report anomalies

 Take corrective actions when needed
 Retrieve inventory information
 Read sensors and store their values for further investigations
 IMPLEMENTATION
 The integration of IPMI interface into DOOCS system
 gives the possibility to monitor and control hundreds of C crates and modules during operation. A DOOCS server communicates to MicroTCA Carrier Hub (MCH) of the  $\frac{1}{2}$  crate via IPMI over LAN interface and provides overall

 Crate via IPMI over LAN interface and provides overall management functionality for the DOOCS control system (Fig. 1).
 VIEWS OF THE MicroTCA CRATES IN DOOCS
 JDDD – Java DOOCS Data Display GUI (DESY designed) - was used for visualisation and management of MicroTCA crates (Figs. 2 and 3). MicroTCA crates (Figs. 2 and 3).

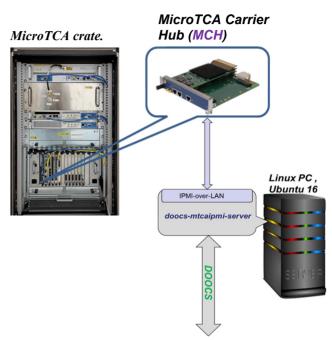


Figure 1: Hardware and software components.



Figure 2: MicroTCA 12-slot crate view JDDD.

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Figure 3: MicroTCA 6-slot crate view JDDD.

17th Int. Conf. on Acc. and Large Exp. Physics Control SystemsISBN: 978-3-95450-209-7ISSN: 2226-0358

All crate information, current consumptions, links connections and fans control are available via according panels opening from the main crate panel (Fig. 4).

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30. Aug., 2019 10:23:45.000 AMC1 sensor: HOTSWAP1 Type:FRU Hot Swa	Jo. Avg.         Three           36. Avg.         2016         16           30. Avg.         2018         16           30. Avg.         2019         16	23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000 23.45.000	The sense in the s	pe:FRU Hot Swap pe:FRU Hot Swap	···· ····
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Figure 4: Main crate information and System Logs.

### **MANAGEMENT OF THE MODULES**

The pluggable modules (FRU-Field Replaceable Unit) like Power Modules, Fan-Trays, AMCs and RTMs which are integrated in the chassis can be monitored and controlled with generic JDDD panels (Fig. 5).

AMC_generic.xml X	FEL.CRATE/XFELMCHLLA9M/ —	□ ×
AMC Module	SIS8300L2	FRU info
Slot: IPMB Addr: FRU ID: Manufacturer: Production Date:	11 Struck Innovative Systeme GmbH Mon Jun 29 15:46:00 2015 077 v1.0	M/AMC7/
HOTSWAP Hot Swap		1
HOTSWAPI HS 011 A		16
	All sensors	
50.0- 45.0- 35.0- 30.0- 2.9, 4.9, 6.1, 2019 2019 201 [Volts] Voltages 14.0		16. 9. 18. 9. 2019 2019
4.0	3. 8.9. 10.9. 12.9. 14.9. 1	6. 9. 18. 9.
2019 2019 201		019 2019
	Payload	
	Ports and interfaces	
Control functions:	Cold Reset F	Reboot
12V payload power	: Activate De	activate

Figure 5: AMC module view JDDD.

All sensors values and its statuses are collected and saved for the further investigations (Fig. 6).

ICALEPCS2019, New York, NY, USA JACoW Publishing doi:10.18429/JACoW-ICALEPCS2019-WEPHA120

		states	
Sensor	Value	Status	Dis
Hot Swap	1	Module Handle Closed	
12V PP	12.2	Ok	
3.3V MP	3.1	Ok	
1.0V Board	0.97	Ok	
2.5V	2.48	Ok	
1.8V	1.79	Ok	
1.5V DDR3	1.48	Ok	
RTM PP Current	0.2	Ok	
RTM MP Current	0.019	Ok	
nlet	31.5	Ok	
Dutlet	39.0	Ok	
Middle	38.0	Ok	
FPGA PCB	47.0	Ok	
FPGA DIE	54.0	Ok	
FPGA Done	0	Device Absent	
FPGA Init	0	Device Absent	
RTM OC Fault	0	Device Absent	
D:0004A3D16E72	0	unspecified	
HS 011 AMC7	16	Transition to M4	

#### Figure 6: Sensors.

The modules can be tracked with JDTool (DESY designed) GUI using the names (Fig. 7).

		Modu	les in MTO	CA crates			
MTCA module:	\$1\$8300		- Q	🖌 XFEL 🔚 FLA	SH 🗌 AMTF 🗌 SI	NBAD 🗌 ANGUS 🗌 LAB	Print
FACILITY	CRATE	SLOT	SERIAL	FIRMWARE	ALIAS -	MANUFACTURE	STATUS
XFEL.CRATE	XFELMCHLLGUN1	5	647	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
XFEL.CRATE	XFELMCHLLGUN1	4	467	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLGUN1	6	416	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
FELCRATE	XFELMCHDI301	10	218	1.46	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHDI3011	11	219	1.46	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLA2M	7	412	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLA2M	9	417	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLA2M	8	419	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLA2M	10	418	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL CRATE	XFELMCHLLA2M	11	424	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLA2M	12	422	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL CRATE	XFELMCHLLA2S	7	415	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLA2S	8	469	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
(FEL.CRATE	XFELMCHLLA2S	10	423	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
XFEL.CRATE	XFELMCHLLA2S	11	468	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
XFEL.CRATE	XFELMCHLLA2S	12	425	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
XFEL.CRATE	XFELMCHLLA2S	9	462	1.33	SIS8300L2	Struck Innovative Systeme GmbH	online
XFEL.CRATE	XFELMCHLLA6M	8	018	1.12	SIS8300L2	Struck Innovative Systeme GmbH	online

Figure 7: Tracking modules in the crates.

### CONCLUSION

The integration of the management functionality of the MicroTCA crates in DOOCS control system provided possibility to monitor hundreds of the crates via one JDDD panel (Fig. 8).

Aber of the craiter         22           MCH         Manufacturer         Status         AMC           XE 3R. SY SUTC 4.4C.H         Schott Grabt         online         5           XE 3R. SY SUTC 4.4C.H         Schott Grabt         online         57           XE 3R. SY SUTC 4.4C.H         Schott Grabt         online         67           KE 3R. SY SUTC 4.4C.H         Schott Grabt         online         67           KE 3R. SY SUTC 4.4C.H         Schott Grabt         online         67           KE 3R. SY SUTC 4.4C.H         Schott Grabt         online         63           KE 3R. SY SUTC 4.4C.H         Schott Grabt         online         63           KE 3R. SY SUTC 4.4C.H         Schott Grabt         online         63           AT 4.4S SY SUTC 4.4C.H         Schott Grabt         OCOL_UNIT27.4MS is in Lower Kon Scover 50         7           AS 4.5S YUTC 4.4C.H         Schott Grabt         OCOL_UNIT27.4MS is in Lower Kon Scover 50         7           AD 2.6S ASY SUTC 4.4C.H         Schott Grabt         OCOL <unit27.4ms 50<="" in="" is="" kon="" lower="" scover="" td="">         7           AD 2.6S ASY SUTC 4.4C.H         Schott Grabt         Ocolume         7           AD 2.6S ASY SUTC 4.4C.H         Schott Grabt         Ocolume         7           AD 2.6S AS</unit27.4ms>	CLCRATE         Value           MEX Manufacturer         22           MEX M         Manufacturer         Status         AMC           XER RY SUIC LAUCH         Schont Granbi         online         5           XER RY SUIC LAUCH         Schont Granbi         online         7           BE XR SYS UIC LAUCH         Schont Granbi         online         7           BE XR SYS UIC LAUCH         Schont Granbi         Online         3           BE XR SYS UIC LAUCH         Schont Granbi         Online         3           ALLAS SYS UIC LAUCH         Schont Granbi         Online         3           ALAS SYS UIC ALICH         Schont Granbi         Online         4           ALIAS SYS UIC ALICH         Schont Granbi         Online	BLARATE         Schult           MEM CH Catality         22           MEM CH Catality         Status         AMC           SZER RAYSULC 14 MEM         Schult Control         online         5           SZER RAYSULC 14 MEM         Schult Control         online         5           SZER RAYSULC 14 MEM         Schult Control         online         7           SZER RAYSULC 14 MEM         Schult Control         online         7           SZER RAYSULC 14 MEM         Schult Control         online         7           SZER RAYSULC 14 MEM         Schult Control         online         3           SZER RAYSULC 14 MEM         Schult Control         online         3           ALUAS SYSULC 14 MEM         Schult Control         OCOL, UMT 7 KME is in Lower You Recoverale         3           ALUAS SYSULC 14 MEM         Schult Control         ACC 14 (17) SWOP 1 is in Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Control         ACC 24 (17) SWOP 1 is in Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Control         ADMC 20 (SWIP 1 is Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Control         ADMC 20 (SWIP 1 is Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Co	BLARATE         Schult           MEM CH Catality         22           MEM CH Catality         Status         AMC           SZER RAYSULC 14 MEM         Schult Control         online         5           SZER RAYSULC 14 MEM         Schult Control         online         5           SZER RAYSULC 14 MEM         Schult Control         online         7           SZER RAYSULC 14 MEM         Schult Control         online         7           SZER RAYSULC 14 MEM         Schult Control         online         7           SZER RAYSULC 14 MEM         Schult Control         online         3           SZER RAYSULC 14 MEM         Schult Control         online         3           ALUAS SYSULC 14 MEM         Schult Control         OCOL, UMT 7 KME is in Lower You Recoverale         3           ALUAS SYSULC 14 MEM         Schult Control         ACC 14 (17) SWOP 1 is in Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Control         ACC 24 (17) SWOP 1 is in Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Control         ADMC 20 (SWIP 1 is Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Control         ADMC 20 (SWIP 1 is Translation to MT         7           ALUAS SYSULC 14 MEM         Schult Co	DYELECARE         Control           MADE of the crise:         23           MCH         Manufacturer         Status           MCH         Manufacturer         Status           MCH         Schwind Gubbi         online           JER.RR STSUTC AMCH         Schwind Gubbi         online           HED EDR STSUTC 1 MCH         Schwind Gubbi         online           HED EDR STSUTC 1 MCH         Schwind Gubbi         online           HED EDR STSUTC 1 MCH         Schwind Gubbi         online           LALLAS STSUTC 1 MCH         Schwind Gubbi         online           LALLAS STSUTC 1 MCH         Schwind Gubbi         COOL, UNIT / TAKS is is Lower Non Record           LALLAS STSUTC 1 MCH         Schwind Gubbi         COOL, UNIT / TAKS is is Lower Non Record           LALLAS STSUTC 1 MCH         Schwind Gubbi         COOL, UNIT / TAKS is is Lower Non Record           MD EDR STSUTC 3 MCH         Schwind Gubbi         COOL, UNIT / TAKS is is Lower Non Record           MD EDR STSUTC 3 MCH         Schwind Gubbi         Online           MD EDR STSUTC 3 MCH         Schwind Gubbi         Online           MD EDR STSUTC 3 MCH         Schwind Gubbi         Online           Sch 3 MD EDR STSUTC 3 MCH         Schwind Gubbi         Online           Sch 3 M	5           7           sale           3           011           6           3           011           6           30           011           7           100           33           011           7           100           33           011           100           33
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XX 88. SYS JIC 14/CH         Schroff Centle         online         5           XX 88. SYS JIC 14/CH         Schroff Centle         online         7           EED RES YS JIC 14/CH         Schroff Centle         COOL, UNIT214/SS is in Lover Non-Recoverable         3           EED RY SUIT 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ALSA SYS JIC 14/CH         Schroff Centle         AAVT 110/TSWDPT is in Transition to MT         6           AJ21AS SYS JIC 14/CH         Schroff Centle         AMC 12 HOT SWDPT is in Transition to MT         7           AD 23/S SYS JIC 14/CH         Schroff Centle         AMC 12 HOT SWDPT is in Transition to MT         7           AD 23/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AD 24/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AD 24/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AS 3/S SIT 14/S XIC 14/S	XE AR. SYS JUTC 14/CH         Schroff Emble         online         5           XE AR. SYS JUTC 14/CH         Schroff Emble         online         7           RED RF. SYS JUTC 14/CH         Schroff Emble         COOL, UM7274/SIS in Lower Non-Recoverable         3           RED OFF SYS JUTC 14/CH         Schroff Emble         Online         3           RED OFF SYS JUTC 14/CH         Schroff Emble         Online         3           RED OFF SYS JUTC 14/CH         Schroff Emble         Online         3           RED OFF SYS JUTC 14/CH         Schroff Emble         AMC1116/07 SWDPT is in Transition EMF         6           A12A5 SYS JUTC 14/CH         Schroff Emble         AMC1116/07 SWDPT is in Transition EMF         7           A12A5 SYS JUTC 14/CH         ELMA Electronic Cmble         AMC112107 SWDPT is in Transition EMF         7           A12A5 SYS JUTC 14/CH         ELMA Electronic Cmble         AMC112107 SWDPT is in Transition EMF         7           A12A5 SYS JUTC 14/CH         Schroff Emble         Online         3         3           A12A5 SYS JUTC 14/CH         Schroff Emble         Online         3         3           A12ATD SYS JUTC 24/CH         Schroff Emble         Online         4         3           A14ATD SYS JUTC 812/CH         Schroff Emble         Online	XX 88. SYS JIC 14/CH         Schroff Centle         online         5           XX 88. SYS JIC 14/CH         Schroff Centle         online         7           EED RES YS JIC 14/CH         Schroff Centle         COOL, UNIT214/SS is in Lover Non-Recoverable         3           EED RY SUIT 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ALSA SYS JIC 14/CH         Schroff Centle         AAVT 110/TSWDPT is in Transition to MT         6           AJ21AS SYS JIC 14/CH         Schroff Centle         AMC 12 HOT SWDPT is in Transition to MT         7           AD 23/S SYS JIC 14/CH         Schroff Centle         AMC 12 HOT SWDPT is in Transition to MT         7           AD 23/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AD 24/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AD 24/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AS 3/S SIT 14/S XIC 14/S	XX 88. SYS JIC 14/CH         Schroff Centle         online         5           XX 88. SYS JIC 14/CH         Schroff Centle         online         7           EED RES YS JIC 14/CH         Schroff Centle         COOL, UNIT214/SS is in Lover Non-Recoverable         3           EED RY SUIT 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ED OFT SST JIC 14/CH         Schroff Centle         Online         3           ALSA SYS JIC 14/CH         Schroff Centle         AAVT 110/TSWDPT is in Transition to MT         6           AJ21AS SYS JIC 14/CH         Schroff Centle         AMC 12 HOT SWDPT is in Transition to MT         7           AD 23/S SYS JIC 14/CH         Schroff Centle         AMC 12 HOT SWDPT is in Transition to MT         7           AD 23/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AD 24/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AD 24/S SYS JIC 14/CH         Schroff Centle         Online         3         3           AS 3/S SIT 14/S XIC 14/S	XEX.RR.YYSUTC.14XCH         Schnotf Gabit         online           PXE.RR.YYSUTC.24XCH         Schnotf Gabit         online           HEG.DER.YYSUTC.24XCH         Schnotf Gabit         COLL_UNIT27AX5's in Lower Non-Record           HEG.DER.YYSUTC.14XCH         Schnotf Gabit         COLL_UNIT27AX5's in Lower Non-Record           HEG.DER.YYSUTC.14XCH         Schnotf Gabit         COLL_UNIT27AX5's in Lower Non-Record           HEG.RR.YYSUTC.14XCH         Schnotf Gabit         COLL_UNIT27AX5's in Lower Non-Record           MAX.YYSUTC.14XCH         Schnotf Gabit         COCL_UNIT27AX5's in Lower Non-Record           MAX.XYSUTC.14XCH         Schnotf Gabit         COCL_UNIT27AX5's in Lower Non-Record           MAX.XYSUTC.14XCH         Schnotf Gabit         COCL_UNIT27AX5's in Lower Non-Record           MAX.XYSUTC.14XCH         Schnotf Gabit         Collea           Schnotf Gabit         Collea         Collea           Schnotf Gabit         Collea         Collea <th>5           7           sale           3           011           6           3           011           6           30           011           7           100           33           011           7           100           33           011           100           33</th>	5           7           sale           3           011           6           3           011           6           30           011           7           100           33           011           7           100           33           011           100           33
XX RR, YY SUTC 24/CH     Schortf Emble     online     7       HED EXR YY SUTC 24/CH     Schortf Emble     COCC, UNIT 27 AKS1 in Lower Non-Recoverable     3       HED EXR YY SUTC 14/CH     Schortf Emble     online     3       HED RR YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     6       MD EXP SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     5       Schortf Emble     Online     3     3     3       AD SR SYS UTC 41/CH     Schortf Emble     Online     4       Schortf Emble	XX RR YS UTC 24/CH         Schreif GmbH         online         7           EGB 287 SYS UTC 44/CH         Schreif GmbH         COCL_UNIT 27A/SE is in Lower Non-Recoverable         3           EGD 267 SYS UTC 44/CH         Schreif GmbH         online         3           ED 267 SYS UTC 44/CH         Schreif GmbH         online         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         online         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         A4/C 111 975 SKB/F1 is in Lower Non-Recoverable         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         A4/C 111 975 SKB/F1 is in Lower Non-Recoverable         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         COCL_UNIT 274/SKB is in Lower Non-Recoverable         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         COCL_UNIT 274/SKB is in Lower Non-Recoverable         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         COCL_UNIT 274/SKB is in Lower Non-Recoverable         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         COME         3           A14.X5 SYS UTC 44/CH         Schreif GmbH         online         5           A14.X7D SYS UTC 44/CH         Schreif GmbH         online         4           A14.X7D SYS UTC 744/CH         Schreif GmbH         online         4 </td <td>XX RR, YY SUTC 24/CH     Schortf Emble     online     7       HED EXR YY SUTC 24/CH     Schortf Emble     COCC, UNIT 27 AKS1 in Lower Non-Recoverable     3       HED EXR YY SUTC 14/CH     Schortf Emble     online     3       HED RR YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     6       MD EXP SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     5       Schortf Emble     Online     3     3     3       AD SR SYS UTC 41/CH     Schortf Emble     Online     4       Schortf Emble</td> <td>XX RR, YY SUTC 24/CH     Schortf Emble     online     7       HED EXR YY SUTC 24/CH     Schortf Emble     COCC, UNIT 27 AKS1 in Lower Non-Recoverable     3       HED EXR YY SUTC 14/CH     Schortf Emble     online     3       HED RR YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     6       MD EXP SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     5       Schortf Emble     Online     3     3     3       AD SR SYS UTC 41/CH     Schortf Emble     Online     4       Schortf Emble</td> <td>F2R.RR.SYS.UTC.24XCH     SchmittGauel     online       HSB.E2R.SYS.UTC.24XCH     SchmittGauel     COCU_UNT274XS1 in Lown Kon-Rock       HCB.07F.SYS.UTC.14XCH     SchmittGauel     online       HCD.07F.SYS.UTC.14XCH     SchmittGauel     online       HCD.07F.SYS.UTC.14XCH     SchmittGauel     online       HCD.07F.SYS.UTC.14XCH     SchmittGauel     AAKC11HOTSMP1 in Translot       LATALS.SYS.UTC.14XCH     SchmittGauel     AAKC11HOTSMP1 in Translot       LATALS.SYS.UTC.14XCH     SchmittGauel     AAKC12 ADDTSMP1 in Translot       MD.EXP.SYS.UTC.14XCH     SchmittGauel     Online       MD.EXP.SYS.UTC.14XCH     SchmittGauel     Online       MD.EXP.SYS.UTC.14XCH     SchmittGauel     Online       MD.EXP.SYS.UTC.24XCH     SchmittGauel     Online       Stattling.SYS.UTC.14XCH     SchmittGauel     Online       Stattling.SYS.UT</td> <td>7           rable         3           3         3           0 M1         6           rable         3           0 M1         7           ffine         0           3         3</td>	XX RR, YY SUTC 24/CH     Schortf Emble     online     7       HED EXR YY SUTC 24/CH     Schortf Emble     COCC, UNIT 27 AKS1 in Lower Non-Recoverable     3       HED EXR YY SUTC 14/CH     Schortf Emble     online     3       HED RR YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     6       MD EXP SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     5       Schortf Emble     Online     3     3     3       AD SR SYS UTC 41/CH     Schortf Emble     Online     4       Schortf Emble	XX RR, YY SUTC 24/CH     Schortf Emble     online     7       HED EXR YY SUTC 24/CH     Schortf Emble     COCC, UNIT 27 AKS1 in Lower Non-Recoverable     3       HED EXR YY SUTC 14/CH     Schortf Emble     online     3       HED RR YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY SUTC 14/CH     Schortf Emble     online     3       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 111/015940/11 in 1 Transition to MI     6       At LAS YY UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     6       MD EXP SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     A/XC 121/015940/11 in 1 Transition to MI     7       AD SR SYS UTC 14/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     0       AD SR SYS UTC 41/CH     Schortf Emble     Online     5       Schortf Emble     Online     3     3     3       AD SR SYS UTC 41/CH     Schortf Emble     Online     4       Schortf Emble	F2R.RR.SYS.UTC.24XCH     SchmittGauel     online       HSB.E2R.SYS.UTC.24XCH     SchmittGauel     COCU_UNT274XS1 in Lown Kon-Rock       HCB.07F.SYS.UTC.14XCH     SchmittGauel     online       HCD.07F.SYS.UTC.14XCH     SchmittGauel     online       HCD.07F.SYS.UTC.14XCH     SchmittGauel     online       HCD.07F.SYS.UTC.14XCH     SchmittGauel     AAKC11HOTSMP1 in Translot       LATALS.SYS.UTC.14XCH     SchmittGauel     AAKC11HOTSMP1 in Translot       LATALS.SYS.UTC.14XCH     SchmittGauel     AAKC12 ADDTSMP1 in Translot       MD.EXP.SYS.UTC.14XCH     SchmittGauel     Online       MD.EXP.SYS.UTC.14XCH     SchmittGauel     Online       MD.EXP.SYS.UTC.14XCH     SchmittGauel     Online       MD.EXP.SYS.UTC.24XCH     SchmittGauel     Online       Stattling.SYS.UTC.14XCH     SchmittGauel     Online       Stattling.SYS.UT	7           rable         3           3         3           0 M1         6           rable         3           0 M1         7           ffine         0           3         3
ED-EXP-SYS-UTC-1ACH         Schreit Einble         COOL, UNIT27ASE is is Lower Non-Recoverable         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         Online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble         ACT-TASYS-UTC-1ACH         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         0         0         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         0         Schreit Einble         3           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         5           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         4         5           MD-RE-SYS-UTC-1ACH <td< td=""><td>ED-EXP SYS UTC-14CH         Schnett Grade         COOL_UNIT27A55 is is Lower Non Recoverable         3           ED-EXP SYS UTC-14CH         Schnett Gradel         online         3           ED-EXP SYS UTC-14CH         Schnett Gradel         online         3           At1AS SYS UTC-14CH         Schnett Gradel         online         3           At1AS SYS UTC-14CH         Schnett Gradel         online         3           At1AS SYS UTC-14CH         Schnett Gradel         ACC 1110 SWD/11 is it Transition IoVI         6           At1AS SYS UTC-14CH         Schnett Gradel         ACC 1110 SWD/11 is it Transition IoVI         7           At1AS SYS UTC-14CH         Schnett Gradel         AMC 210 SWD/11 is it Transition IoVI         7           At1AS SYS UTC-14CH         ELMA Electronic Gradel         AMC 210 SWD/11 is it Transition IoVI         7           At1AR SYS UTC-14CH         Schnett Gradel         online         0         3           At1AR SYS UTC-14CH         Schnett Gradel         online         5         3           At1AR SYS UTC-14CH         Schnett Gradel         online         4         3           At12 ATS SY UTC-14CH         Schnett Gradel         online         4         3           At12 ATS SY UTC-14CH         Schnett Gradel         online</td><td>ED-EXP-SYS-UTC-1ACH         Schreit Einble         COOL, UNIT27ASE is is Lower Non-Recoverable         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         Online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble         ACT-TASYS-UTC-1ACH         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         0         0         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         0         Schreit Einble         3           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         5           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         4         5           MD-RE-SYS-UTC-1ACH         <td< td=""><td>ED-EXP-SYS-UTC-1ACH         Schreit Einble         COOL, UNIT27ASE is is Lower Non-Recoverable         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         Online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble         ACT-TASYS-UTC-1ACH         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         0         0         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         0         Schreit Einble         3           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         5           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         4         5           MD-RE-SYS-UTC-1ACH         <td< td=""><td>HED EXP SYS UTC 14CH School COMP (UNIT 27455 in Lower Non-Record HED EXP SYS UTC 14CH School Comp Comp Comp Comp Comp Comp Comp Comp</td><td>rable 3 3 3 3 0 M1 6 rable 3 0 M1 7 7 ffine 0 3 3 5</td></td<></td></td<></td></td<>	ED-EXP SYS UTC-14CH         Schnett Grade         COOL_UNIT27A55 is is Lower Non Recoverable         3           ED-EXP SYS UTC-14CH         Schnett Gradel         online         3           ED-EXP SYS UTC-14CH         Schnett Gradel         online         3           At1AS SYS UTC-14CH         Schnett Gradel         online         3           At1AS SYS UTC-14CH         Schnett Gradel         online         3           At1AS SYS UTC-14CH         Schnett Gradel         ACC 1110 SWD/11 is it Transition IoVI         6           At1AS SYS UTC-14CH         Schnett Gradel         ACC 1110 SWD/11 is it Transition IoVI         7           At1AS SYS UTC-14CH         Schnett Gradel         AMC 210 SWD/11 is it Transition IoVI         7           At1AS SYS UTC-14CH         ELMA Electronic Gradel         AMC 210 SWD/11 is it Transition IoVI         7           At1AR SYS UTC-14CH         Schnett Gradel         online         0         3           At1AR SYS UTC-14CH         Schnett Gradel         online         5         3           At1AR SYS UTC-14CH         Schnett Gradel         online         4         3           At12 ATS SY UTC-14CH         Schnett Gradel         online         4         3           At12 ATS SY UTC-14CH         Schnett Gradel         online	ED-EXP-SYS-UTC-1ACH         Schreit Einble         COOL, UNIT27ASE is is Lower Non-Recoverable         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         Online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble         ACT-TASYS-UTC-1ACH         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         0         0         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         0         Schreit Einble         3           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         5           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         4         5           MD-RE-SYS-UTC-1ACH <td< td=""><td>ED-EXP-SYS-UTC-1ACH         Schreit Einble         COOL, UNIT27ASE is is Lower Non-Recoverable         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         Online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble         ACT-TASYS-UTC-1ACH         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         0         0         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         0         Schreit Einble         3           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         5           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         4         5           MD-RE-SYS-UTC-1ACH         <td< td=""><td>HED EXP SYS UTC 14CH School COMP (UNIT 27455 in Lower Non-Record HED EXP SYS UTC 14CH School Comp Comp Comp Comp Comp Comp Comp Comp</td><td>rable 3 3 3 3 0 M1 6 rable 3 0 M1 7 7 ffine 0 3 3 5</td></td<></td></td<>	ED-EXP-SYS-UTC-1ACH         Schreit Einble         COOL, UNIT27ASE is is Lower Non-Recoverable         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           H2D-OPE-SYS-UTC-1ACH         Schreit Einble         online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         Online         3           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble           AFUA-SYS-UTC-1ACH         Schreit Einble         AACT-SYS-UTC-1ACH         Schreit Einble         ACT-TASYS-UTC-1ACH         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         0         0         Schreit Einble         0           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         0         Schreit Einble         3           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         5         Schreit Einble         5           MD-RE-SYS-UTC-1ACH         Schreit Einble         online         4         5           MD-RE-SYS-UTC-1ACH <td< td=""><td>HED EXP SYS UTC 14CH School COMP (UNIT 27455 in Lower Non-Record HED EXP SYS UTC 14CH School Comp Comp Comp Comp Comp Comp Comp Comp</td><td>rable 3 3 3 3 0 M1 6 rable 3 0 M1 7 7 ffine 0 3 3 5</td></td<>	HED EXP SYS UTC 14CH School COMP (UNIT 27455 in Lower Non-Record HED EXP SYS UTC 14CH School Comp Comp Comp Comp Comp Comp Comp Comp	rable 3 3 3 3 0 M1 6 rable 3 0 M1 7 7 ffine 0 3 3 5
HED OFF SYS UTC-14/CH         Schreit Ginble         online         3           HED OFF SYS UTC-14/CH         Schreit Ginble         online         3           AFLARS SYS UTC-14/CH         Schreit Ginble         AACT (1015 WAPF) is in Transmitter DMT         6           AFLARS SYS UTC-14/CH         Schreit Ginble         AACT (1015 WAPF) is in Transmitter DMT         6           AZALAS SYS UTC-14/CH         Schreit Ginble         COOL_UNIT21AbL is in Lower Yee Recoverable         3           ASALAS SYS UTC-14/CH         ELMA Electronic Ginble         AMC 2005 WAPT (1015 WAPF) is in Transmitter DMT         7           ASALAS SYS UTC-14/CH         ELMA Electronic Ginble         online         0         0           ADS 285 SYS UTC-14/CH         Schreit Ginble         online         0         5           ASALR SYS SUTC-14/CH         Schreit Ginble         online         6         5           ASALR SYS UTC-14/CH         Schreit Ginble         online         6         3           ASALR SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALR SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALTD SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALTD SYS UTC-14	BD OPE SYS UTC. 1 AICH         Schreit Gmbl         online         3           BC OPE SYS UTC. 1 AICH         Schreit Gmbl         online         3           AT LAS SYS UTC. 1 AICH         Schreit Gmbl         AACT. 101 SYBAPT is in Transatore buff         6           AZ LAS SYS UTC. 1 AICH         Schreit Gmbl         COOL, UNIT / TASK is in Lower Non-Recoverable         3           AZ LAS SYS UTC. 1 AICH         Schreit Gmbl         COOL, UNIT / TASK is in Lower Non-Recoverable         7           AZ LAS SYS UTC. 1 AICH         ELMA Electronic Gmbl         ABC 2005, UNIT / TASK is in Lower Non-Recoverable         3           AD LAS SYS UTC. 1 AICH         Schreit Gmbl         online         0         0           AD RS SYS UTC. 1 AICH         Schreit Gmbl         online         5         3           AD RS SYS UTC. 1 AICH         Schreit Gmbl         online         6         3           AD RS SYS UTC. 1 AICH         Schreit Gmbl         online         6         3           AT ATD SYS UTC. 2 AICH         Schreit Gmbl         online         4         3           AT ATD SYS UTC. 2 AICH         Schreit Gmbl         online         4         3           AT ATD SYS UTC. 2 AICH         Schreit Gmbl         online         4         3           AT ATD SYS UTC.	HED OFF SYS UTC-14/CH         Schreit Ginble         online         3           HED OFF SYS UTC-14/CH         Schreit Ginble         online         3           AFLARS SYS UTC-14/CH         Schreit Ginble         AACT (1015 WAPF) is in Transmitter DMT         6           AFLARS SYS UTC-14/CH         Schreit Ginble         AACT (1015 WAPF) is in Transmitter DMT         6           AZALAS SYS UTC-14/CH         Schreit Ginble         COOL_UNIT21AbL is in Lower Yee Recoverable         3           ASALAS SYS UTC-14/CH         ELMA Electronic Ginble         AMC 2005 WAPT (1015 WAPF) is in Transmitter DMT         7           ASALAS SYS UTC-14/CH         ELMA Electronic Ginble         online         0         0           ADS 285 SYS UTC-14/CH         Schreit Ginble         online         0         5           ASALR SYS SUTC-14/CH         Schreit Ginble         online         6         5           ASALR SYS UTC-14/CH         Schreit Ginble         online         6         3           ASALR SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALR SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALTD SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALTD SYS UTC-14	HED OFF SYS UTC-14/CH         Schreit Ginble         online         3           HED OFF SYS UTC-14/CH         Schreit Ginble         online         3           AFLARS SYS UTC-14/CH         Schreit Ginble         AACT (1015 WAPF) is in Transmitter DMT         6           AFLARS SYS UTC-14/CH         Schreit Ginble         AACT (1015 WAPF) is in Transmitter DMT         6           AZALAS SYS UTC-14/CH         Schreit Ginble         COOL_UNIT21AbL is in Lower Yee Recoverable         3           ASALAS SYS UTC-14/CH         ELMA Electronic Ginble         AMC 2005 WAPT (1015 WAPF) is in Transmitter DMT         7           ASALAS SYS UTC-14/CH         ELMA Electronic Ginble         online         0         0           ADS 285 SYS UTC-14/CH         Schreit Ginble         online         0         5           ASALR SYS SUTC-14/CH         Schreit Ginble         online         6         5           ASALR SYS UTC-14/CH         Schreit Ginble         online         6         3           ASALR SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALR SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALTD SYS UTC-14/CH         Schreit Ginble         online         4         3           ASALTD SYS UTC-14	HE OFF SYS UTC AUCH School online online online ALX ASYS UTC AUCH School Online ALX ASYS UTC AT AUCH School Online ALX AT ASYS ASY UTC AT AUCH School Online ALX AT ASYS ASY UTC AT AUCH School Online ALX AT ASYS ASY UTC AT AUCH School Online ALX ASYS ASY AT A ASYS ASY ASY ASY ASY ASY ASY ASYS ASY ASY	3 3 0 M1 6 rable 3 0 M1 7 ffine 0 3 5
Austrike Providenti         Austral of transmission to Mark           Austral Ass SYS UTC 4 ACCH         Schord Ennik         AACCH HOTSWAPT is in Transition to MT         6           A22,A55 SYS UTC 4 ACCH         Schord Ennik         CCOCL_UNIT27AACH         6           A22,A55 SYS UTC 4 ACCH         ELMA Electronic Gnobil         CCOCL_UNIT27AACH         7           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         Online         3           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         0           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         3           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         5           A01,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         5           A01,C2P, DSYS UTC 2 ACCH         Schord Ennik         online         5           ASTATD 2 SYS UTC 742,ACCH         Schord Ennik         online         3           ASTATD 2 SYS UTC 742,ACCH         Schord Ennik         online         3           ASTATD 2 SYS UTC 742,ACH         Schord Ennik         online         4           ASTATD 2 SYS UTC 743,ACH         Schord Ennik         online         4           ASTATD 3 SYS UTC 743,ACH         Schord Ennik         online         4	Addition and the addition and the addition and the addition and the addition ad	Austrike Providenti         Austral of transmission to Mark           Austral Ass SYS UTC 4 ACCH         Schord Ennik         AACCH HOTSWAPT is in Transition to MT         6           A22,A55 SYS UTC 4 ACCH         Schord Ennik         CCOCL_UNIT27AACH         6           A22,A55 SYS UTC 4 ACCH         ELMA Electronic Gnobil         CCOCL_UNIT27AACH         7           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         Online         3           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         0           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         3           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         5           A01,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         5           A01,C2P, DSYS UTC 2 ACCH         Schord Ennik         online         5           ASTATD 2 SYS UTC 742,ACCH         Schord Ennik         online         3           ASTATD 2 SYS UTC 742,ACCH         Schord Ennik         online         3           ASTATD 2 SYS UTC 742,ACH         Schord Ennik         online         4           ASTATD 2 SYS UTC 743,ACH         Schord Ennik         online         4           ASTATD 3 SYS UTC 743,ACH         Schord Ennik         online         4	Austrike Providenti         Austral of transmission to Mark           Austral Ass SYS UTC 4 ACCH         Schord Ennik         AACCH HOTSWAPT is in Transition to MT         6           A22,A55 SYS UTC 4 ACCH         Schord Ennik         CCOCL_UNIT27AACH         6           A22,A55 SYS UTC 4 ACCH         ELMA Electronic Gnobil         CCOCL_UNIT27AACH         7           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         Online         3           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         0           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         3           A00,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         5           A01,C2P, DSYS UTC 4 ACCH         Schord Ennik         online         5           A01,C2P, DSYS UTC 2 ACCH         Schord Ennik         online         5           ASTATD 2 SYS UTC 742,ACCH         Schord Ennik         online         3           ASTATD 2 SYS UTC 742,ACCH         Schord Ennik         online         3           ASTATD 2 SYS UTC 742,ACH         Schord Ennik         online         4           ASTATD 2 SYS UTC 743,ACH         Schord Ennik         online         4           ASTATD 3 SYS UTC 743,ACH         Schord Ennik         online         4	LA LLA SYS JIC LAICH         Schmtill Gmith         AMC 11 HOTSWP1 in in Transford           LA LLA SYS JIC LAICH         Schmtill Gmith         CODU, UNT 21 AME in Lower Non-Rock           LA LLA SYS JIC LAICH         Schmtill Gmith         CODU, UNT 21 AME in Lower Non-Rock           LA LLA SYS JIC LAICH         ELMA Electronic Gmith         AMC 12 HOTSWDP1 in in Transford           MD 207 SYS JIC LAICH         Schmtill Gmith         AMC 12 HOTSWDP1 in in Transford           MD 207 SYS JIC LAICH         Schmtill Gmith         online           MD 207 SYS JIC CAT AMCH         Schmtill Gmith         online           MD 207 SYS JIC RAT AMCH         Schmtill Gmith         online           MA XITD SYS JIC RAT AMCH         Schmtill Gmith         online           SALTOR SYS JIC RATACH         Schmtill Gmith         online           SALTOR SYS JIC RATACH         Schmtill Gmith         online           SALTOR SYS JIC RATACH         Schmtill Gmi	o M1 6 rable 3 o M1 7 ffine 0 3 5
JA2JAS SYS UTC. 14/CH         Schoff Emble         COOL_UNIT27AME is is Lower Non-Recoverable         3           AJ3JAS SYS UTC. 14/CH         ELMA Electronic Grahi         AACC 12 HOTSWAPT is in Transition bolf         7           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         0           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         3           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         5         5           Schortf Emble         online         6         3           ARX XFUTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         6         5           Schortf Emble         online         4         5           Schortf Emble         online         4         4           Schortf Emble         online         4         5           Schortf Emble         online         4         5         5           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         5 </td <td>A2.3A.S.SYS.UTC.43CH         Schortf GmbH         COCX_URITYTATIST is in Lower Kon Recovering         3           A3.3A.S.SYS.UTC.43CH         ELMA Electronic GmbH         AAC.12.001SWAP1 is in Transition bM         7           A3.2A.S.SYS.UTC.43CH         ELMA Electronic GmbH         AAC.12.001SWAP1 is in Transition bM         7           A0.2A.SYS.SUTC.43CH         Schortf GmbH         online         0           A0.2A.SYS.UTC.43CH         Schortf GmbH         online         5           A1.4.RS.SYS.UTC.43CH         Schortf GmbH         online         5           A1.8.RS.SYS.UTC.43CH         Schortf GmbH         online         5           A1.4.RD.SYS.UTC.412ACH         Schortf GmbH         online         3           A1.4.TD.SYS.UTC.412ACH         Schortf GmbH         online         4           A1.4.TD.SYS.UTC.812ACH         Schortf GmbH         online         4           A1.4.TD.SYS.UTC.813ACH         Schortf GmbH         online         4           A1.4.TD.SYS.UTC.814ACH         Schortf GmbH         online         4           A2.2.7015.8YS.UTC.814ACH         Schortf GmbH         online         4           A2.2.7015.8YS.UTC.814ACH         Schortf GmbH         online         4           A2.2.7015.8YS.UTC.814ACH         Schortf GmbH         onlin</td> <td>JA2JAS SYS UTC. 14/CH         Schoff Emble         COOL_UNIT27AME is is Lower Non-Recoverable         3           AJ3JAS SYS UTC. 14/CH         ELMA Electronic Grahi         AACC 12 HOTSWAPT is in Transition bolf         7           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         0           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         3           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         5         5           Schortf Emble         online         6         3           ARX XFUTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         6         5           Schortf Emble         online         4         5           Schortf Emble         online         4         4           Schortf Emble         online         4         5           Schortf Emble         online         4         5         5           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         5<!--</td--><td>JA2JAS SYS UTC. 14/CH         Schoff Emble         COOL_UNIT27AME is is Lower Non-Recoverable         3           AJ3JAS SYS UTC. 14/CH         ELMA Electronic Grahi         AACC 12 HOTSWAPT is in Transition bolf         7           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         0           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         3           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         5         5           Schortf Emble         online         6         3           ARX XFUTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         6         5           Schortf Emble         online         4         5           Schortf Emble         online         4         4           Schortf Emble         online         4         5           Schortf Emble         online         4         5         5           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         5<!--</td--><td>LAZALS SYS JITC 43CH         Schmtif Gieler         COOL_INIT[77485 in it Lower Non-Record           LAZALS SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           SchartD SYS JITC 44CH         Schntof Ginthi         online           SchartD 2/S JITC 447 AMCH         Schntof Ginthi         online           SchartD 2/S JITC 417 AMCH         Schntof Ginthi         online           SchartD 3/S JITC 418 AMCH         Schntof Ginthi</td><td>able         3           o M1         7           ffine         0           3         5</td></td></td>	A2.3A.S.SYS.UTC.43CH         Schortf GmbH         COCX_URITYTATIST is in Lower Kon Recovering         3           A3.3A.S.SYS.UTC.43CH         ELMA Electronic GmbH         AAC.12.001SWAP1 is in Transition bM         7           A3.2A.S.SYS.UTC.43CH         ELMA Electronic GmbH         AAC.12.001SWAP1 is in Transition bM         7           A0.2A.SYS.SUTC.43CH         Schortf GmbH         online         0           A0.2A.SYS.UTC.43CH         Schortf GmbH         online         5           A1.4.RS.SYS.UTC.43CH         Schortf GmbH         online         5           A1.8.RS.SYS.UTC.43CH         Schortf GmbH         online         5           A1.4.RD.SYS.UTC.412ACH         Schortf GmbH         online         3           A1.4.TD.SYS.UTC.412ACH         Schortf GmbH         online         4           A1.4.TD.SYS.UTC.812ACH         Schortf GmbH         online         4           A1.4.TD.SYS.UTC.813ACH         Schortf GmbH         online         4           A1.4.TD.SYS.UTC.814ACH         Schortf GmbH         online         4           A2.2.7015.8YS.UTC.814ACH         Schortf GmbH         online         4           A2.2.7015.8YS.UTC.814ACH         Schortf GmbH         online         4           A2.2.7015.8YS.UTC.814ACH         Schortf GmbH         onlin	JA2JAS SYS UTC. 14/CH         Schoff Emble         COOL_UNIT27AME is is Lower Non-Recoverable         3           AJ3JAS SYS UTC. 14/CH         ELMA Electronic Grahi         AACC 12 HOTSWAPT is in Transition bolf         7           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         0           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         3           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         5         5           Schortf Emble         online         6         3           ARX XFUTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         6         5           Schortf Emble         online         4         5           Schortf Emble         online         4         4           Schortf Emble         online         4         5           Schortf Emble         online         4         5         5           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         5 </td <td>JA2JAS SYS UTC. 14/CH         Schoff Emble         COOL_UNIT27AME is is Lower Non-Recoverable         3           AJ3JAS SYS UTC. 14/CH         ELMA Electronic Grahi         AACC 12 HOTSWAPT is in Transition bolf         7           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         0           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         3           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         5         5           Schortf Emble         online         6         3           ARX XFUTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         6         5           Schortf Emble         online         4         5           Schortf Emble         online         4         4           Schortf Emble         online         4         5           Schortf Emble         online         4         5         5           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         5<!--</td--><td>LAZALS SYS JITC 43CH         Schmtif Gieler         COOL_INIT[77485 in it Lower Non-Record           LAZALS SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           SchartD SYS JITC 44CH         Schntof Ginthi         online           SchartD 2/S JITC 447 AMCH         Schntof Ginthi         online           SchartD 2/S JITC 417 AMCH         Schntof Ginthi         online           SchartD 3/S JITC 418 AMCH         Schntof Ginthi</td><td>able         3           o M1         7           ffine         0           3         5</td></td>	JA2JAS SYS UTC. 14/CH         Schoff Emble         COOL_UNIT27AME is is Lower Non-Recoverable         3           AJ3JAS SYS UTC. 14/CH         ELMA Electronic Grahi         AACC 12 HOTSWAPT is in Transition bolf         7           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         0           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         3           MD.EXP SYS UTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         5         5           Schortf Emble         online         6         3           ARX XFUTC. 14/CH         Schortf Emble         online         5           Schortf Emble         online         6         5           Schortf Emble         online         4         5           Schortf Emble         online         4         4           Schortf Emble         online         4         5           Schortf Emble         online         4         5         5           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         4           Schortf Emble         online         4         5         5 </td <td>LAZALS SYS JITC 43CH         Schmtif Gieler         COOL_INIT[77485 in it Lower Non-Record           LAZALS SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           SchartD SYS JITC 44CH         Schntof Ginthi         online           SchartD 2/S JITC 447 AMCH         Schntof Ginthi         online           SchartD 2/S JITC 417 AMCH         Schntof Ginthi         online           SchartD 3/S JITC 418 AMCH         Schntof Ginthi</td> <td>able         3           o M1         7           ffine         0           3         5</td>	LAZALS SYS JITC 43CH         Schmtif Gieler         COOL_INIT[77485 in it Lower Non-Record           LAZALS SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         ELMA Flectuatic Ginthi         AMC 12 HOT SMA P1 is it TreasBoot           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           MD 2/R SYS JITC 44CH         Schntof Ginthi         online           SchartD SYS JITC 44CH         Schntof Ginthi         online           SchartD 2/S JITC 447 AMCH         Schntof Ginthi         online           SchartD 2/S JITC 417 AMCH         Schntof Ginthi         online           SchartD 3/S JITC 418 AMCH         Schntof Ginthi	able         3           o M1         7           ffine         0           3         5
A3.34.8 SYS UTC-140CH         E1AM Electronic Cimble         ARC 72 NOTSYMPT is in Transition both         7           MD-20R-SYS UTC-140CH         Schrief Cimble         online         0           MD-20R-SYS UTC-140CH         Schrief Cimble         online         3           MD-20R-SYS UTC-240CH         Schrief Cimble         online         5           MD-20R-SYS UTC-240CH         Schrief Cimble         online         5           MD-20R-SYS UTC-240CH         Schrief Cimble         online         5           Sch 20R-SYS UTC-240CH         Schrief Cimble         online         5           Sch 20R-SYS UTC-240CH         Schrief Cimble         online         6           Sch 20R-SYS UTC-240CH         Schrief Cimble         online         5           Sch 20R-SYS UTC-240CH         Schrief Cimble         online         4           Sch 20R-SYS UTC-240CH         Schrief Cimble         online         4           Sch 20R-SYS UTC-240CH         Schrief Cimble         online         4           Schrief Cimble         online         4         5           Schrief Cimble         online         4         5           Schrief Cimble         online         5         5           SchartD-SYS UTC-2430CH         Schrief Cimble	A3.1A.5. 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Figure 8: MicroTCA monitor.	Figure 8: MicroTCA monitor.	Figure 8: MicroTCA monitor.	Figure 8: MicroTCA monitor.	Figure 8: MicroTCA monitor.	<u> </u>
				EPHA120	
FDH 4 120	<b>FDH 4 120</b>	FPH 4 120	FPH 4 120		

Figure 8: MicroTCA monitor.

In addition the doocs-ipmi server sends an e-mail to the subscribed users (Figs. 9 and 10).

Close	Reply Reply to All Forward Delete Spam 🚔	y ▼
	Hot Swap Event in crate From: (*MTCA IPMI DOOCS server* <mtca_ipmi_doocs_serv To: (*vahan petrosyan* <vahan.petrosyan@desy.de>) (*Tim W</vahan.petrosyan@desy.de></mtca_ipmi_doocs_serv 	10 September, 2019 09:49 er@mail.desy.de> /ilksen" <tim.wilksen@desy.de></tim.wilksen@desy.de>

#### Figure 9: New Event in SEL.

mail.desy.de/public/launchNewWindow.jsp?skin=desy&localeId=en_GB&full=1&childId=0			
Close Reply Reply to All Forward Delete Spam 📥 🕶 🛷 Actions 🕶			
MicroTca crate went offline           From: ("MTCA IPMI DOOCS server"            From: ("MTCA IPMI DOOCS server"	10 September,	2019 11:3	1
To: ("vahan petrosyan" <vahan petrosyan@desy.de="">)</vahan>			

Figure 10: The crate is unavailable.

## REFERENCES

- [1] Open Modular Computing Standards, https://www.picmg.org/
- [2] Distributed Object-Oriented Control System, DOOCS, https://doocs-web.desy.de/index.html.