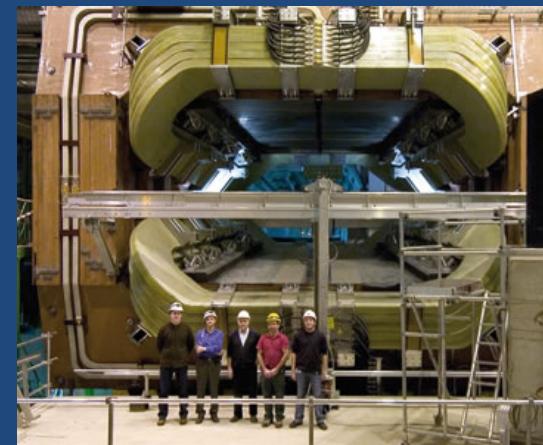
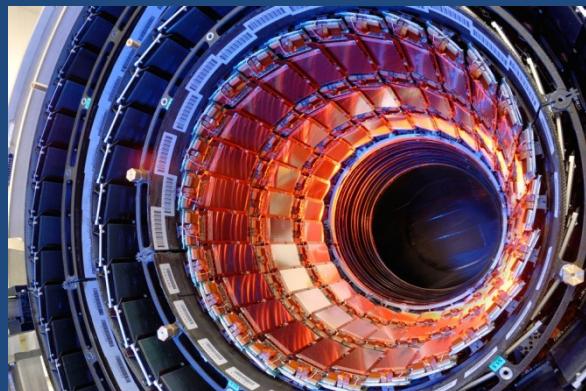


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The coolest place on earth



Middleware Proxy: a request-driven messaging broker for high volume data distribution

Wojciech.Sliwinski@cern.ch



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www.cern.ch

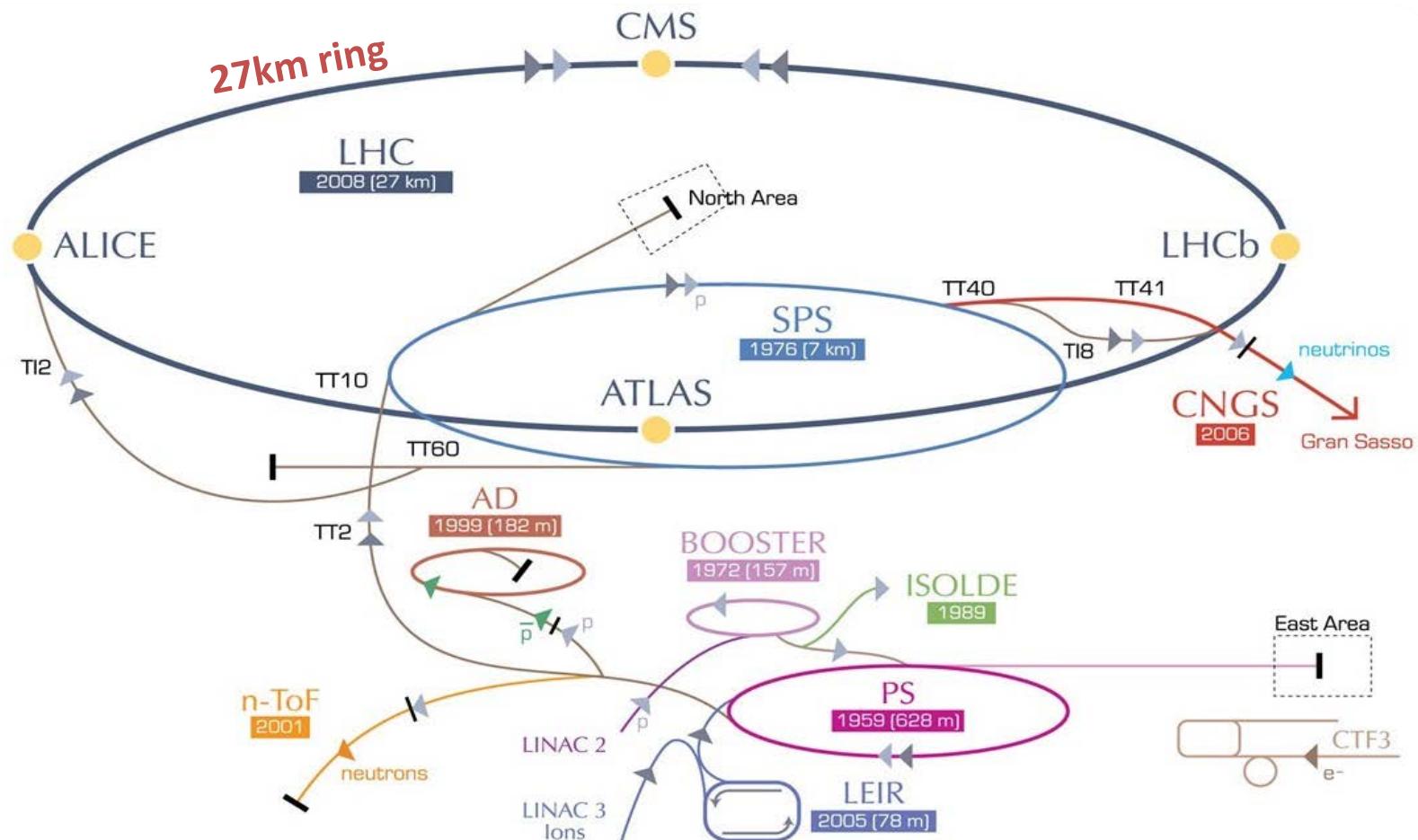
About the Speaker

- Member of CERN's Beams Department, Controls Group
 - Responsible for the Controls Middleware project
 - Communication Infrastructure
 - Role-Based Access Control
 - C++ & Java developer for > 10 years
-

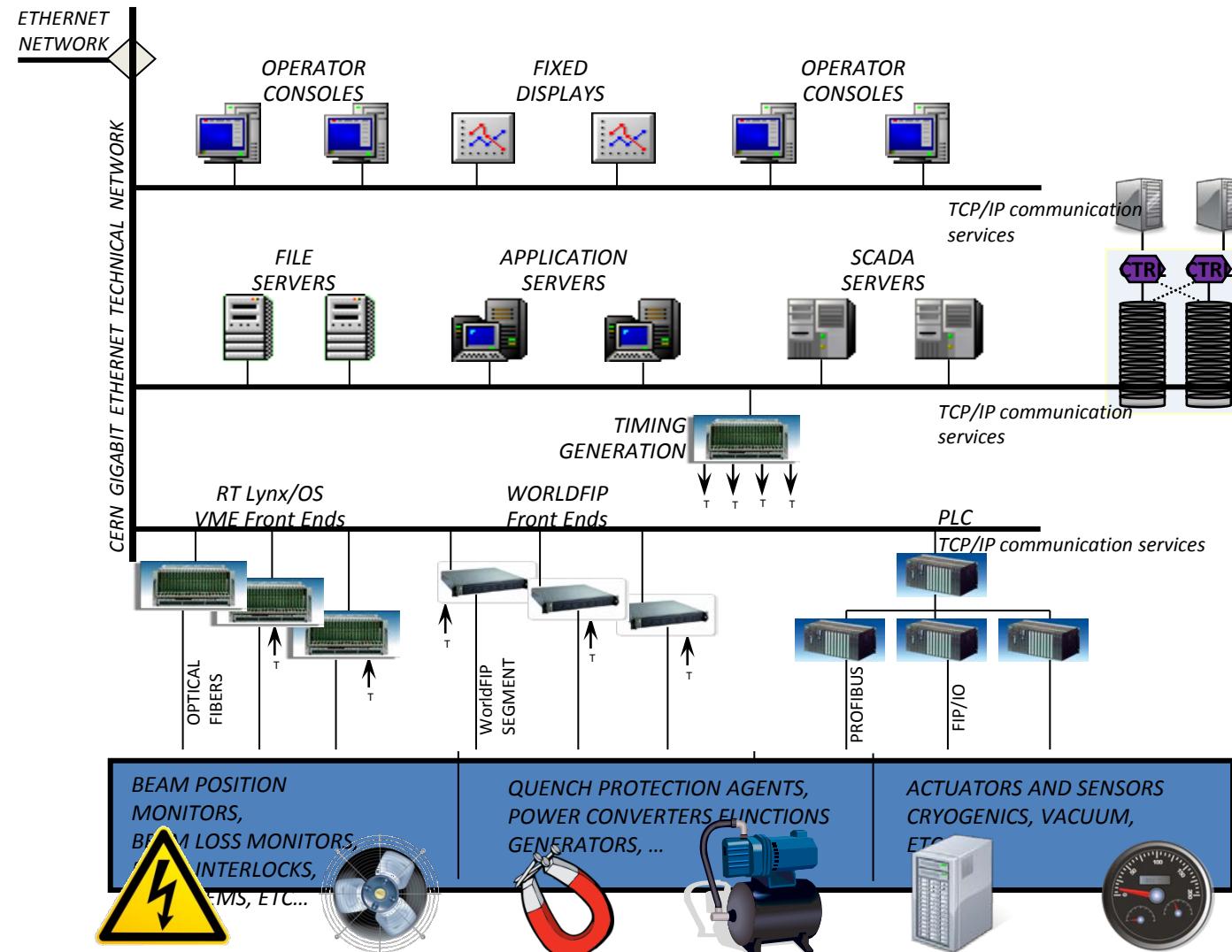


Wojciech.Sliwinski@cern.ch

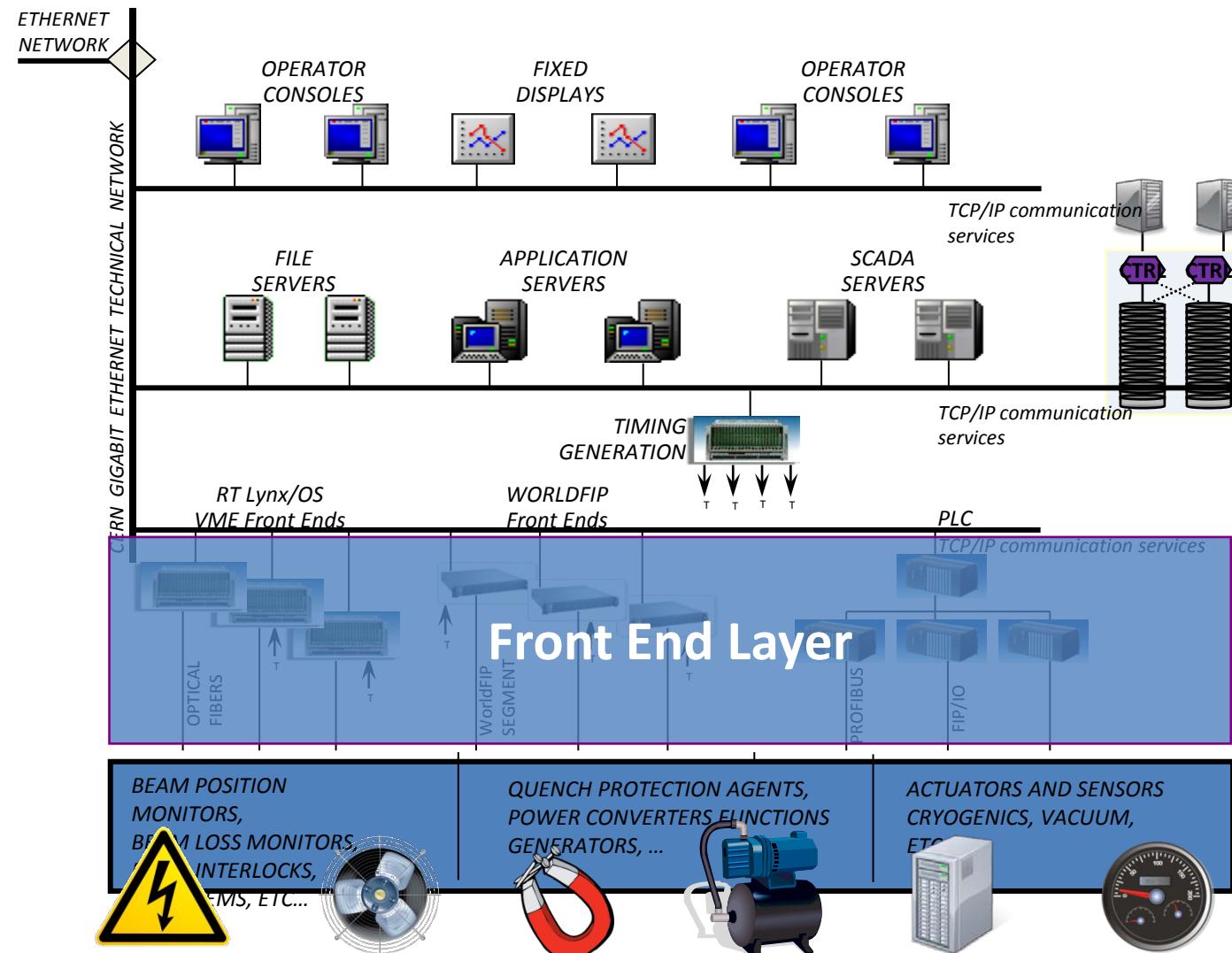
CERN – Where it all started ...



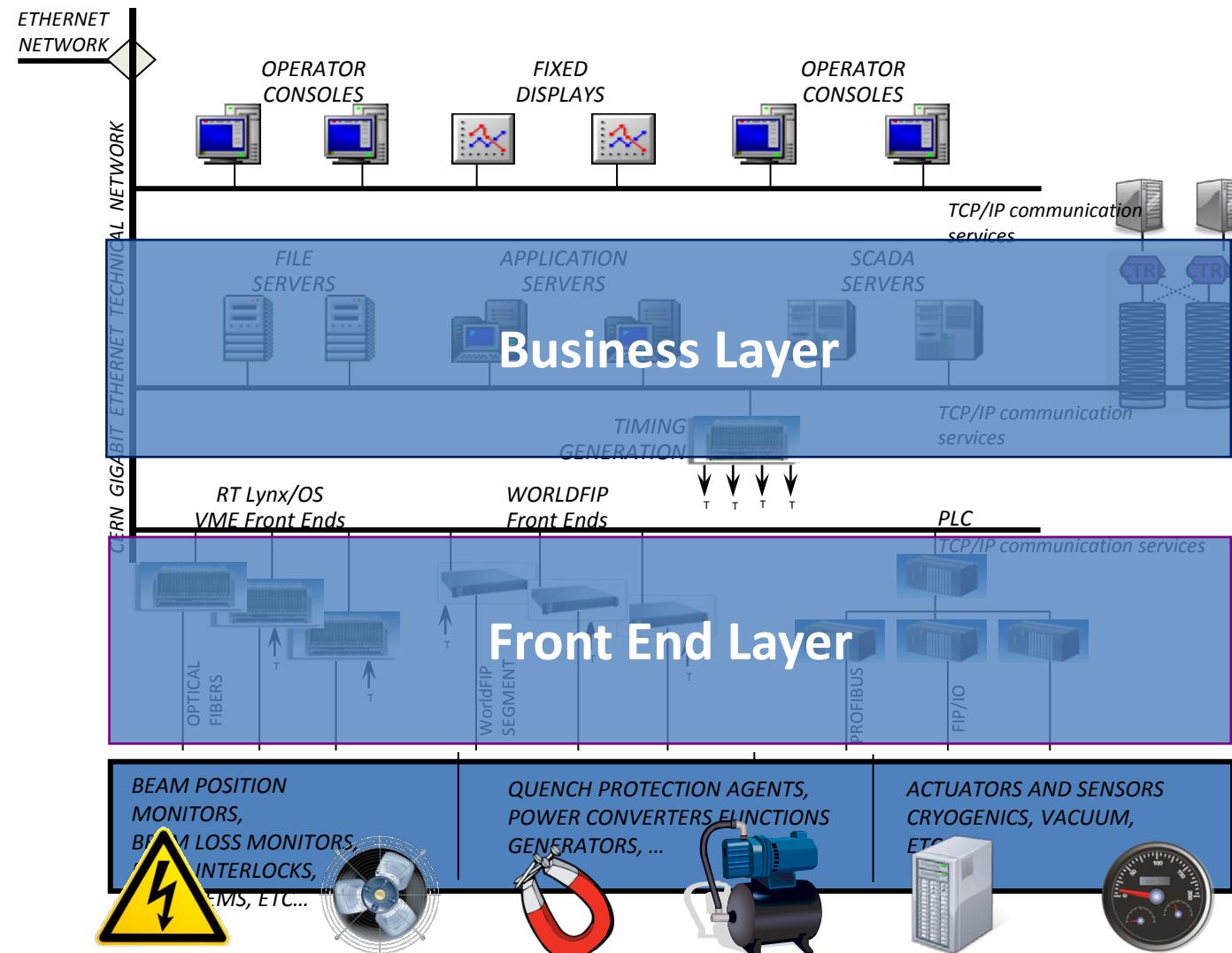
Controls Software Architecture



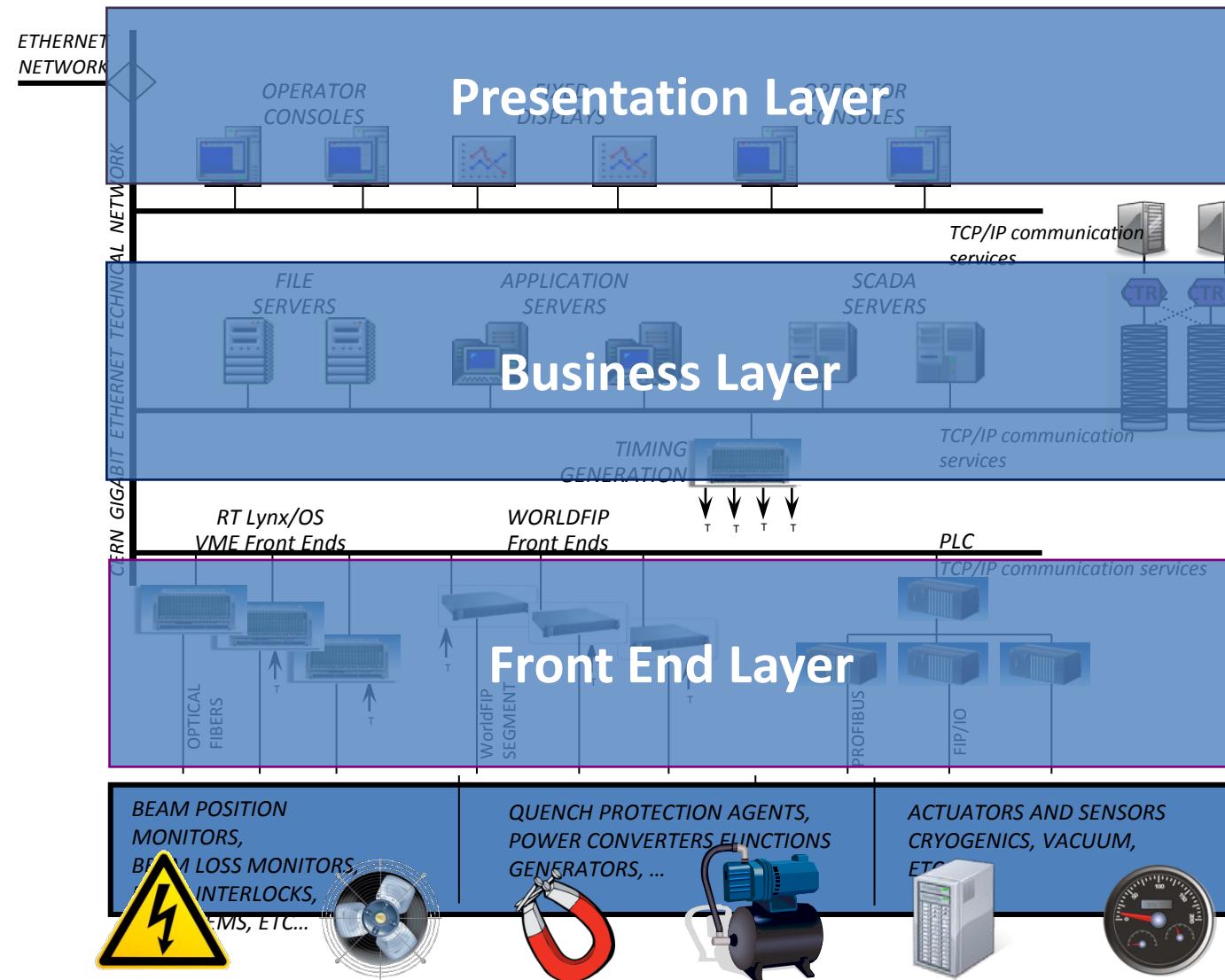
Controls Software Architecture



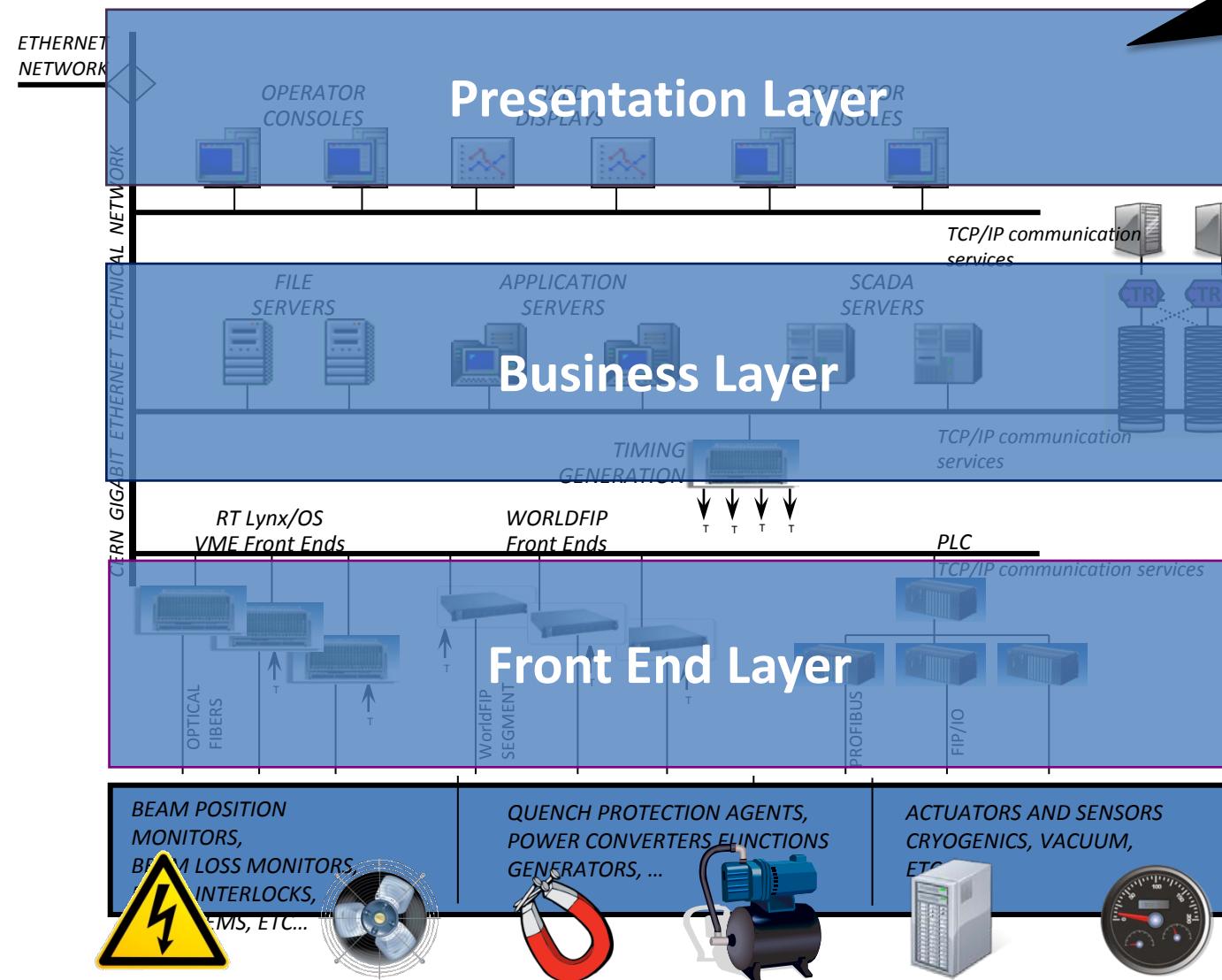
Controls Software Architecture



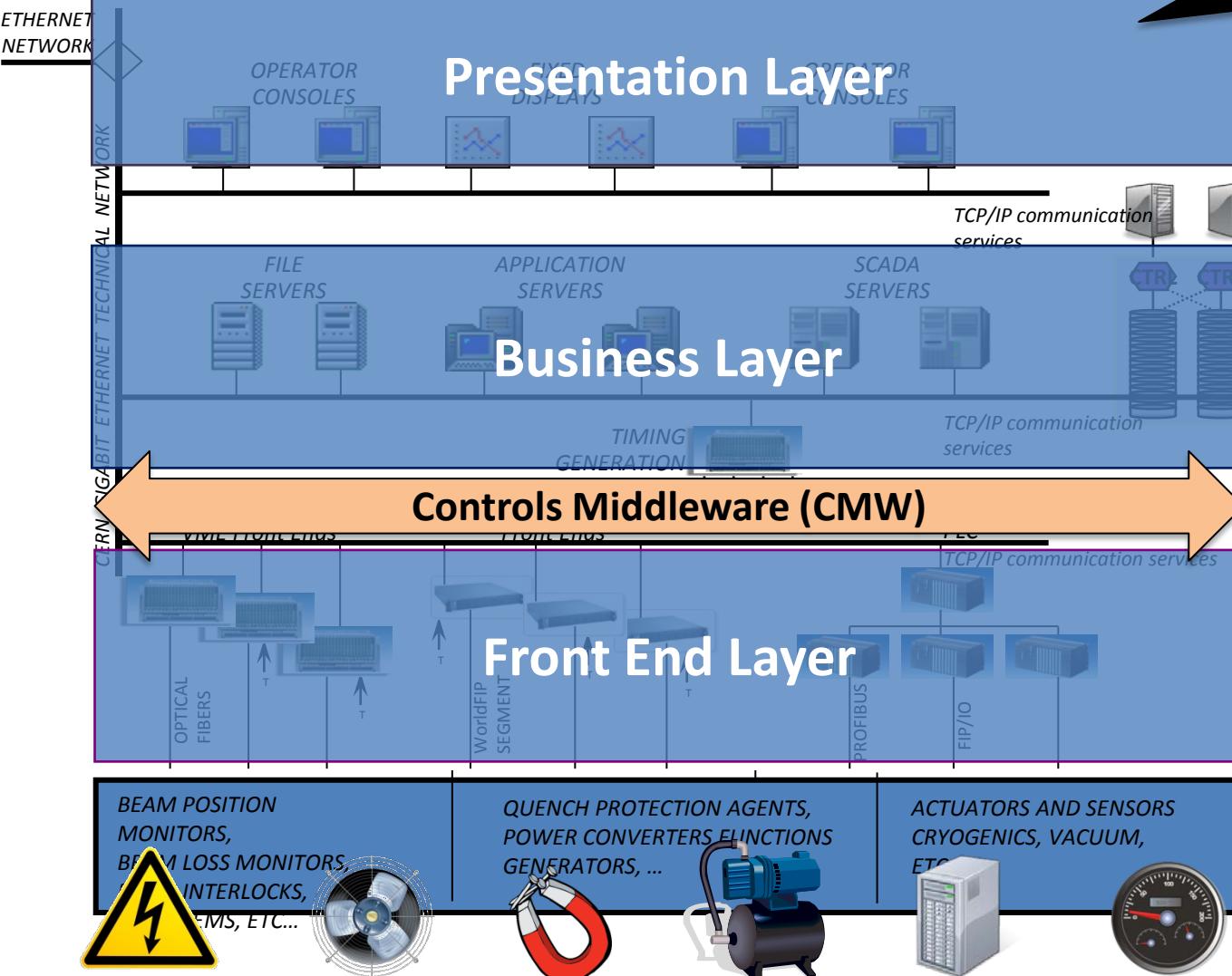
Controls Software Architecture



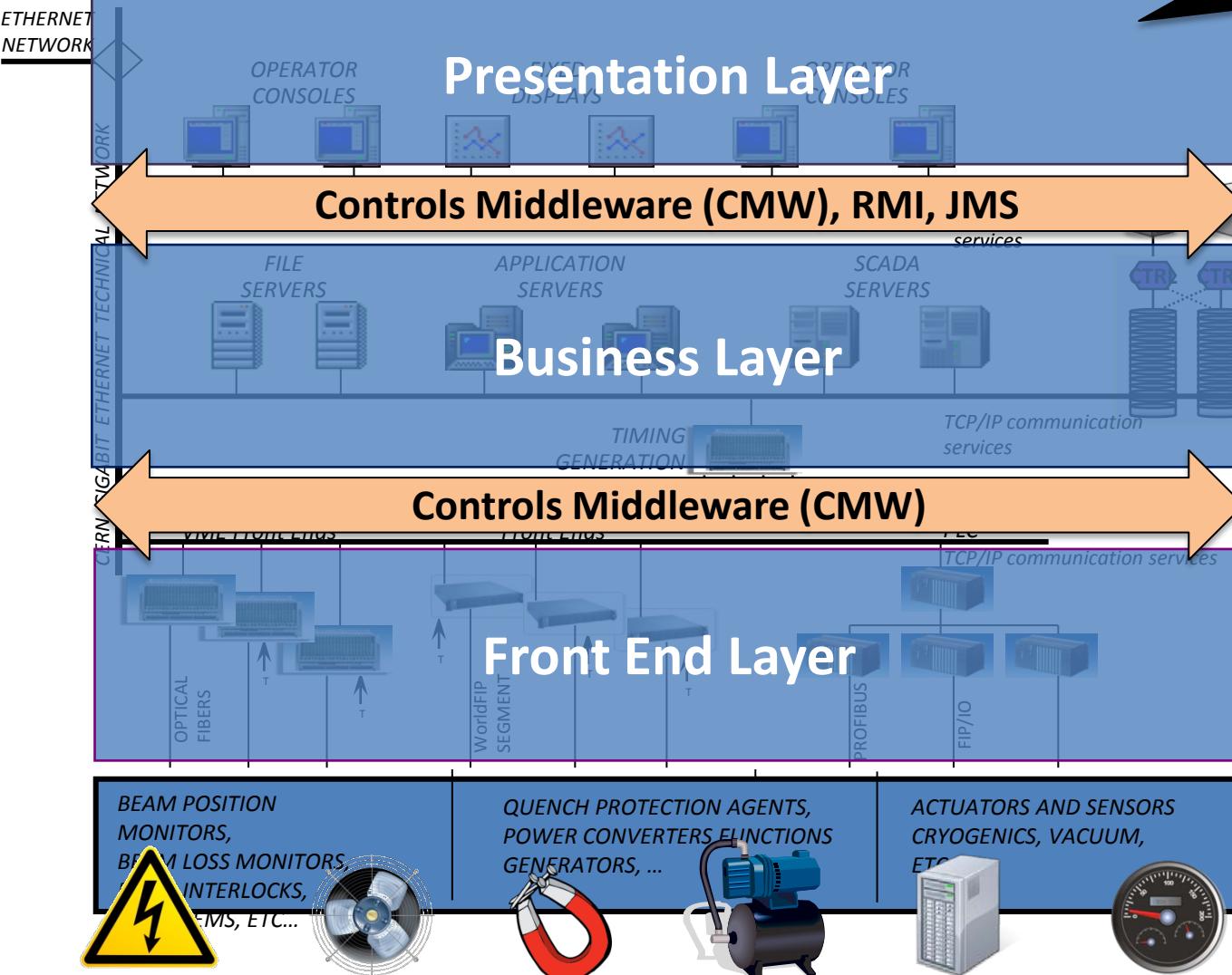
Controls Software Architecture



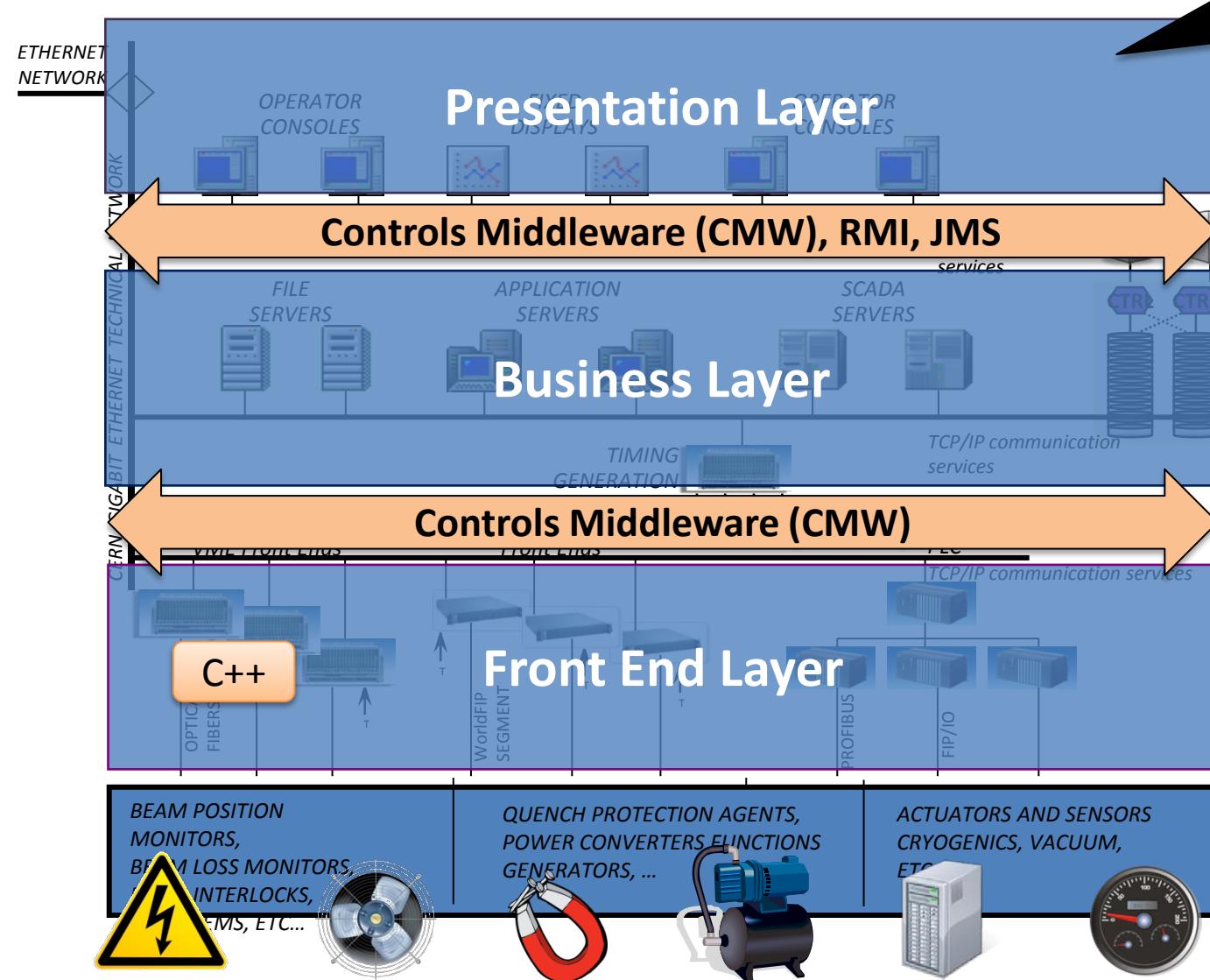
Controls Software Architecture



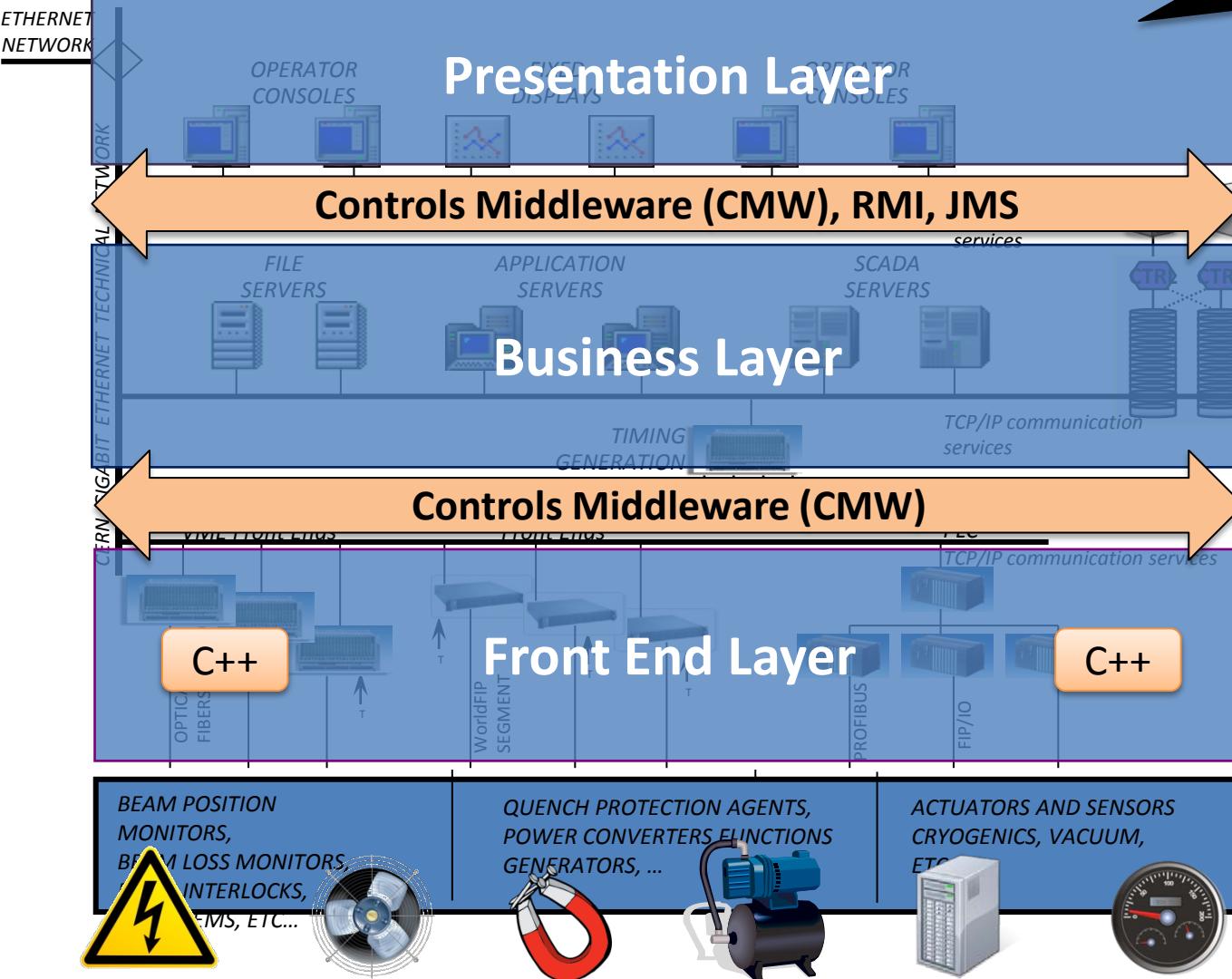
Controls Software Architecture



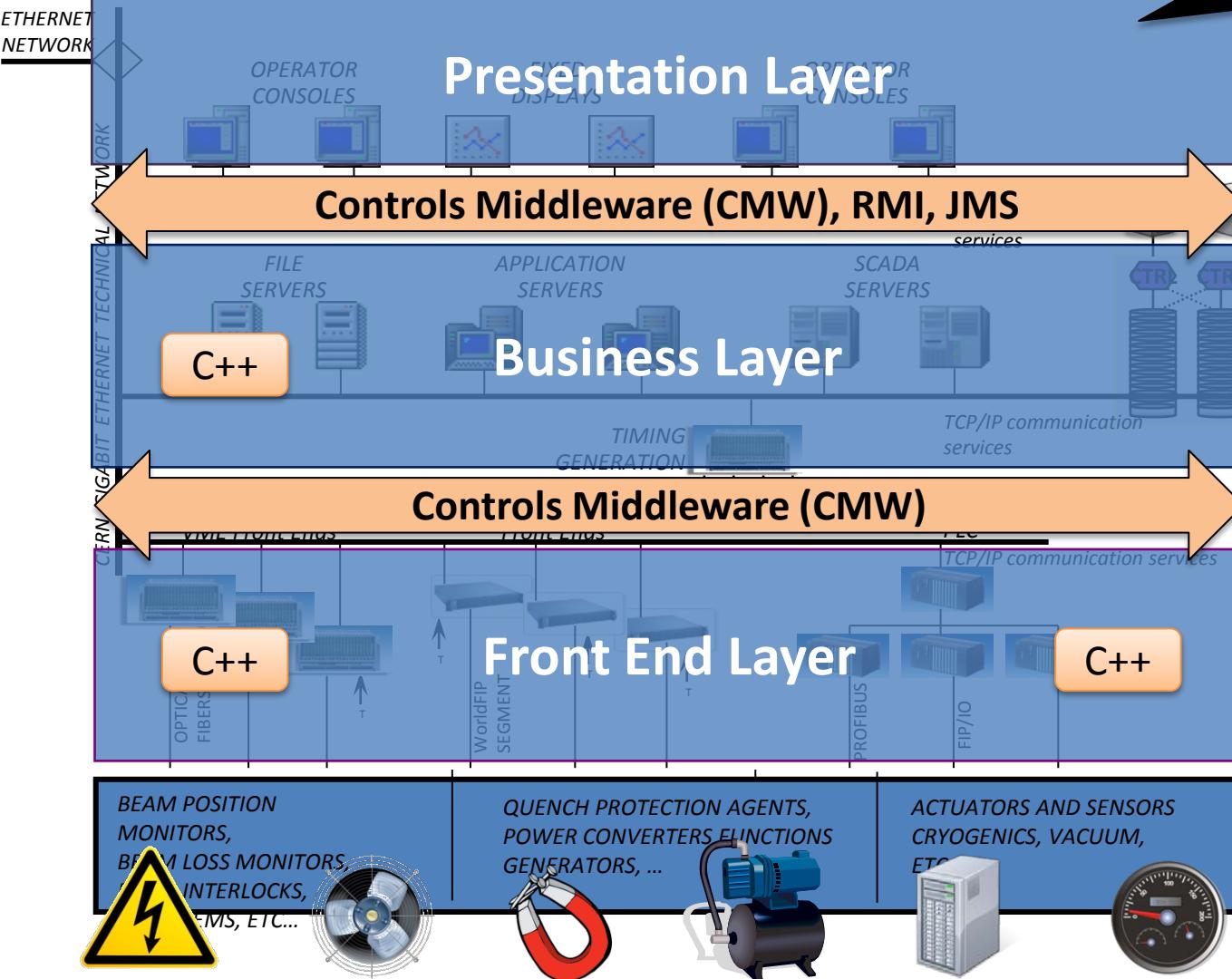
Controls Software Architecture



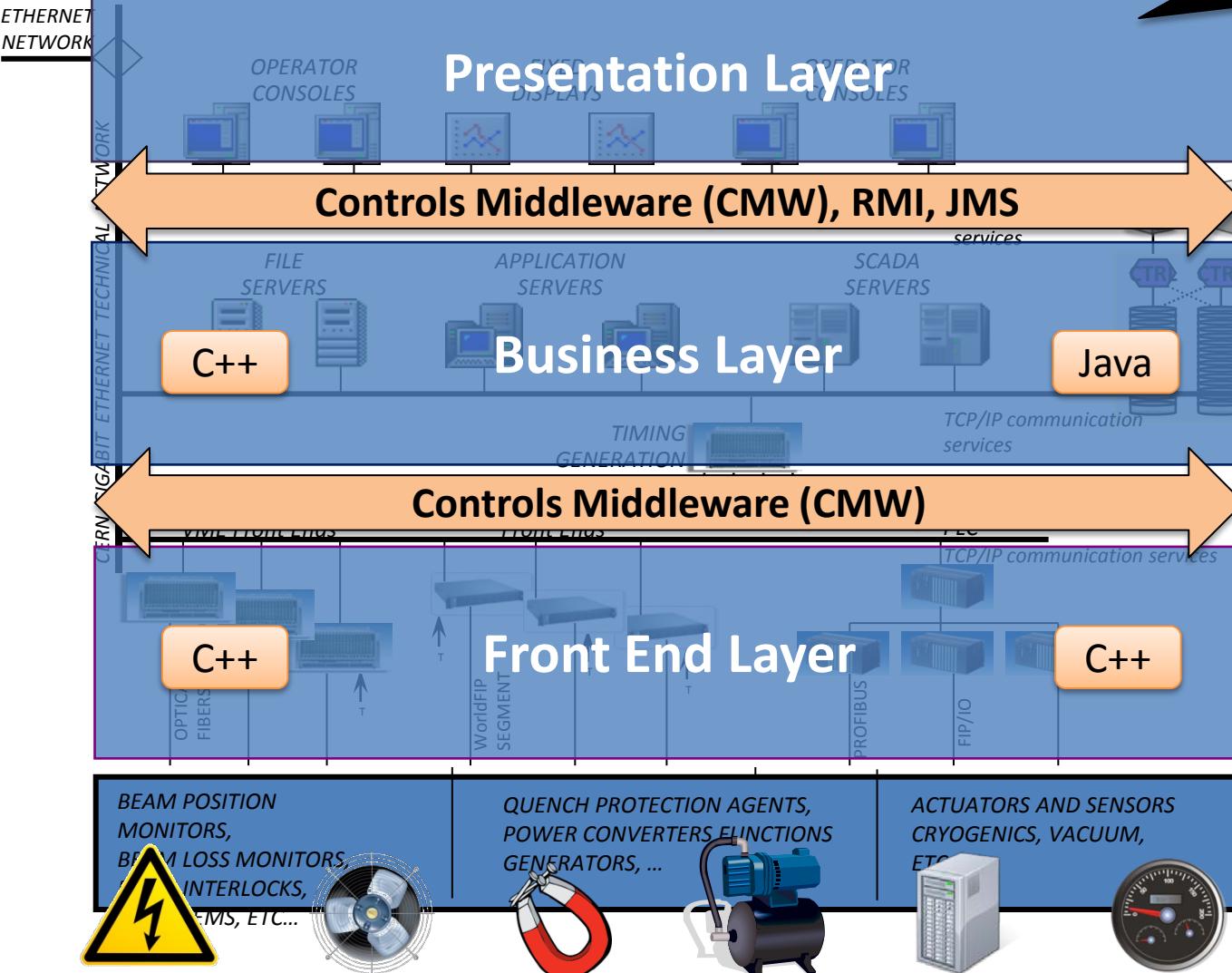
Controls Software Architecture



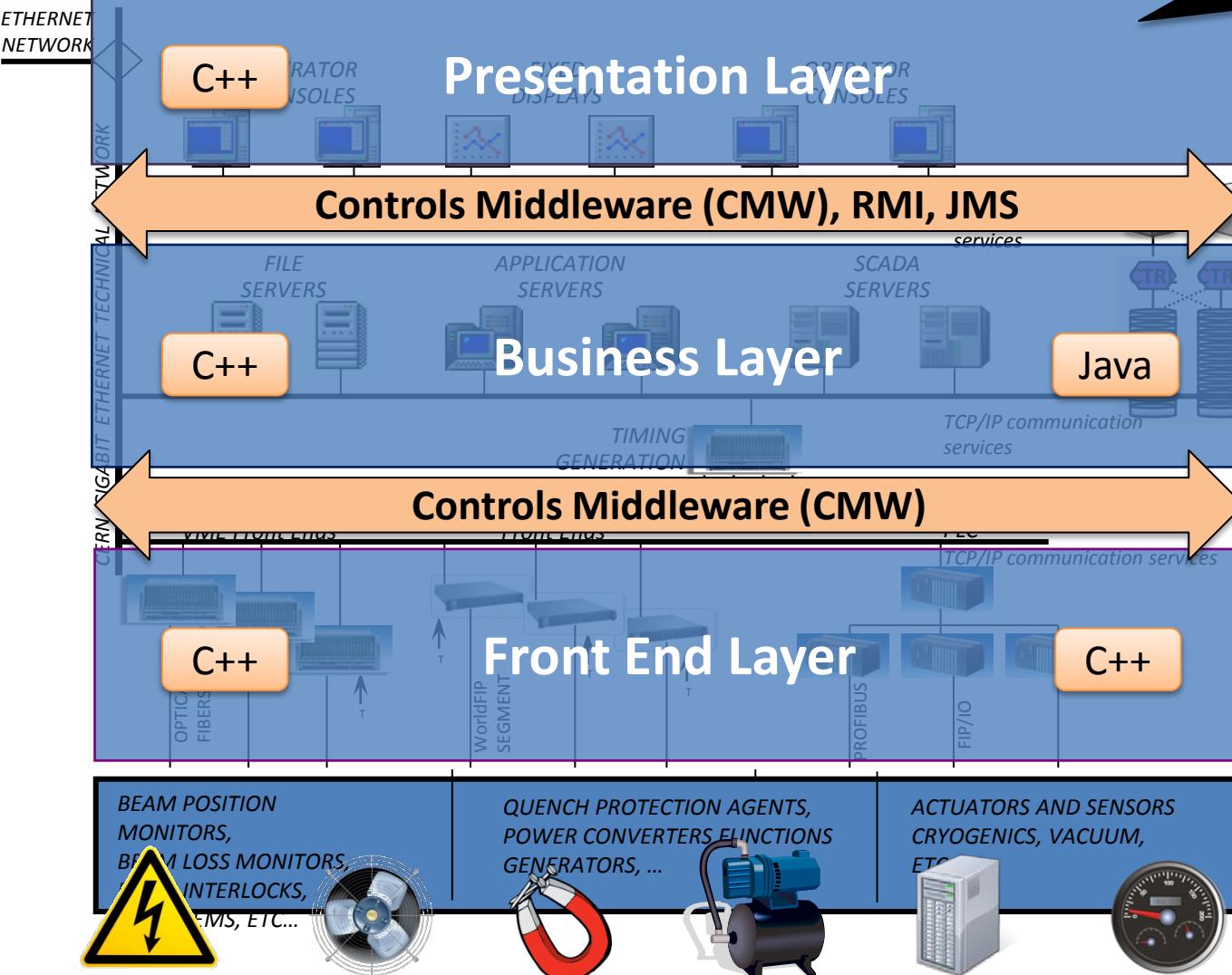
Controls Software Architecture



Controls Software Architecture



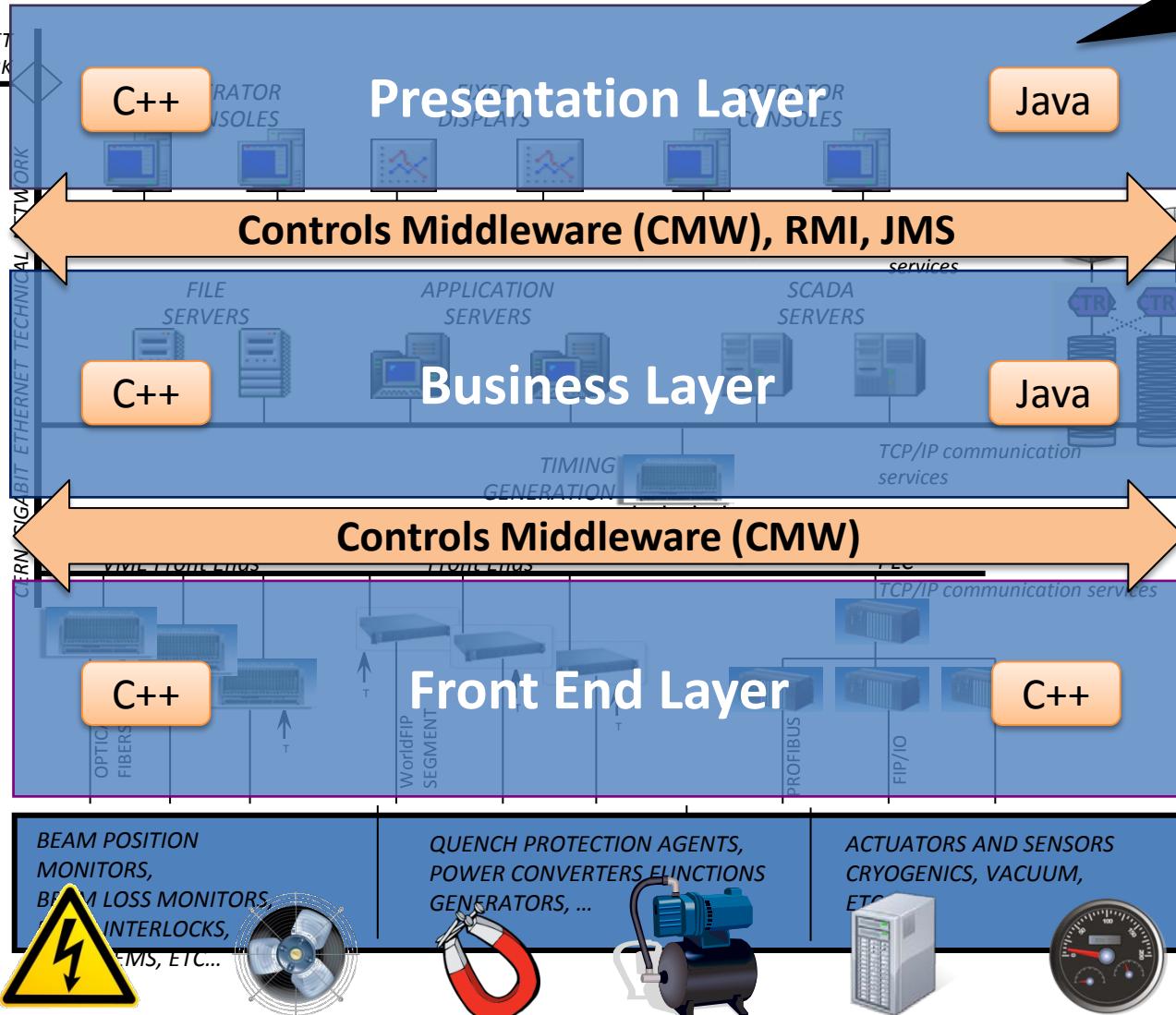
Controls Software Architecture



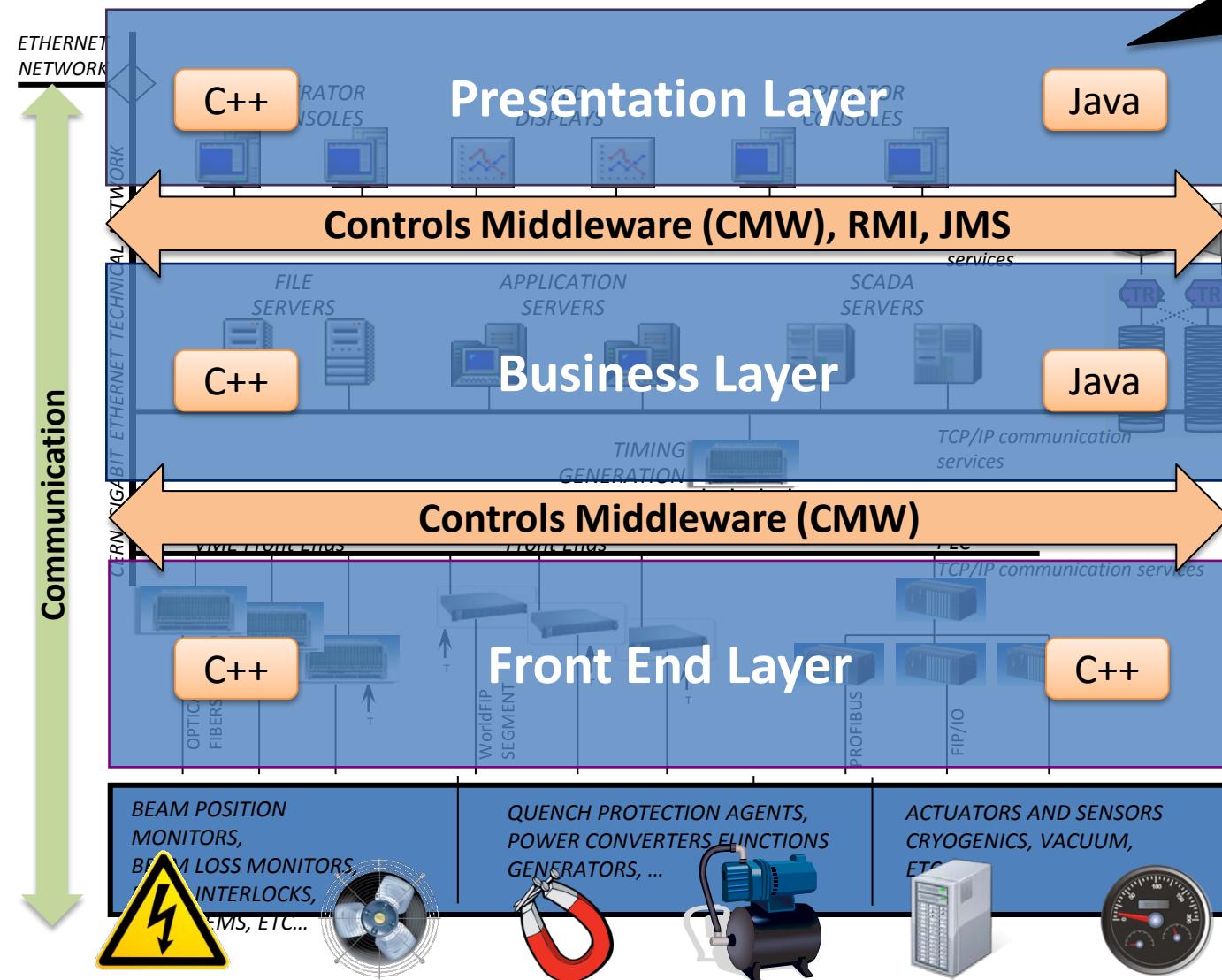
Controls Software Architecture



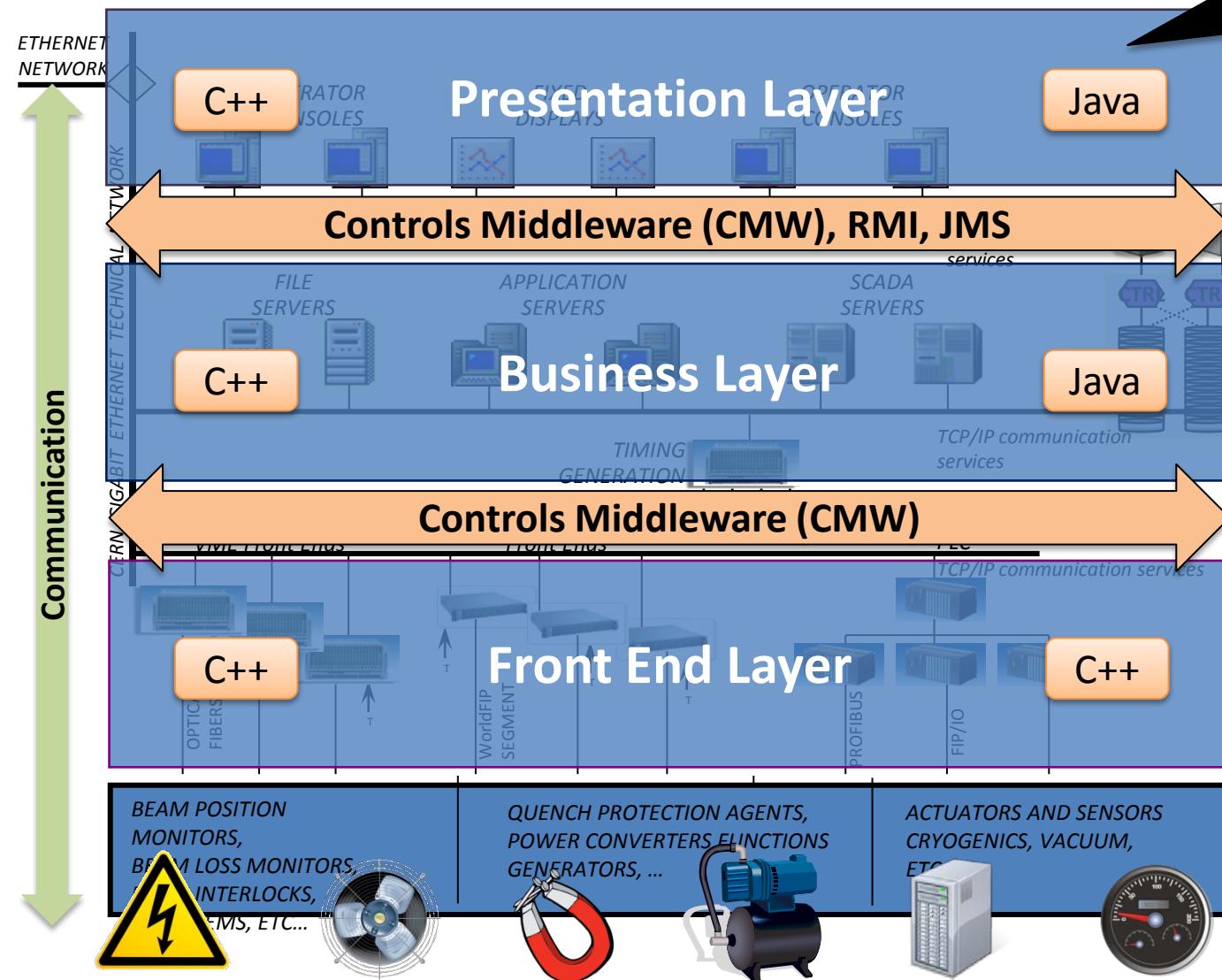
ETHERNET
NETWORK



Controls Software Architecture

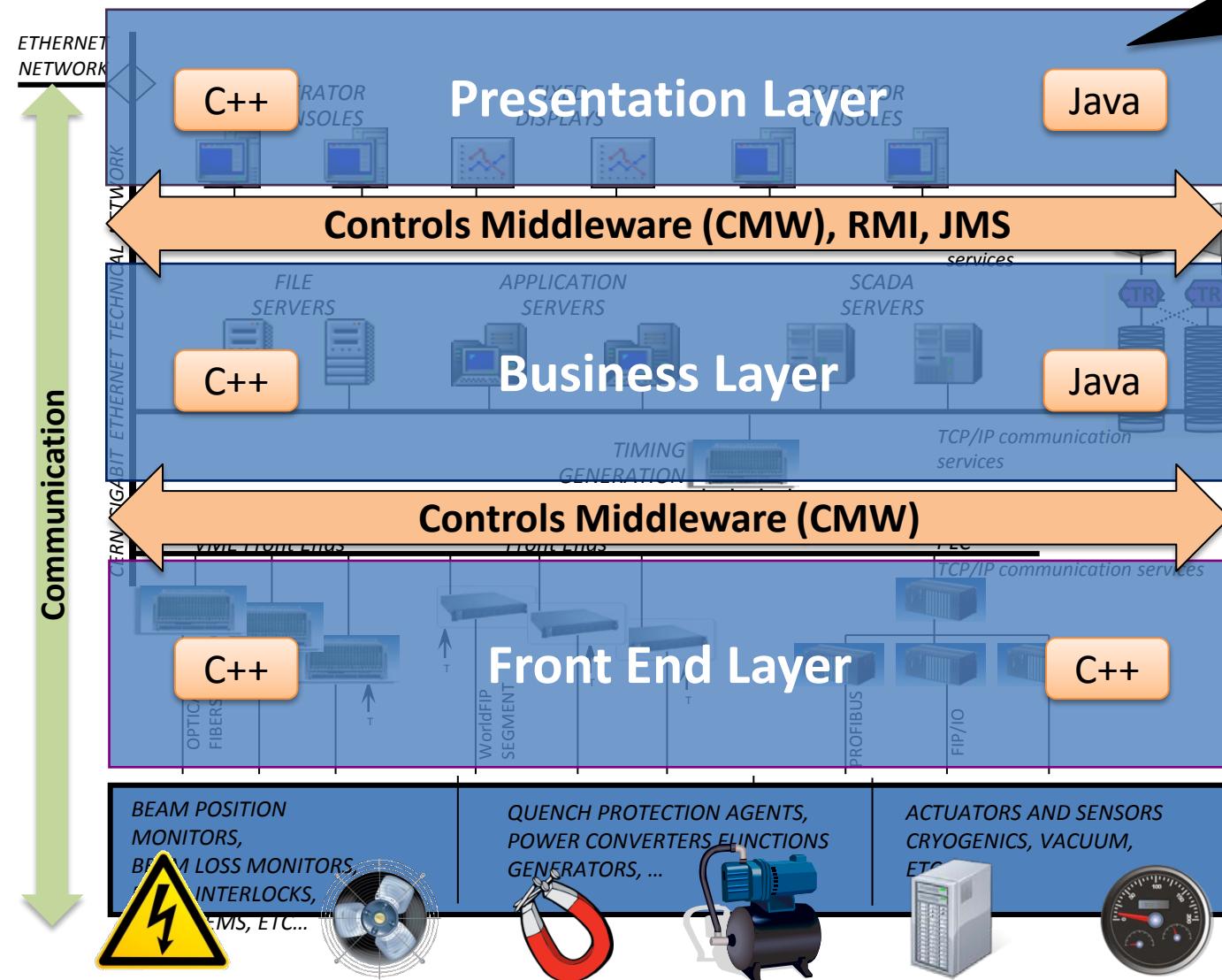


Controls Software Architecture



CMW Purpose:
Reliable and scalable transport of data between controls processes (Java & C++)

Controls Software Architecture



CMW Purpose:
Reliable and scalable transport of data between controls processes (Java & C++)

- ✓ 4'000 CMW servers
- ✓ 85'000 devices
- ✓ 2'000'000 IO-points
- ✓ Based on CORBA

CMW - Controls Middleware



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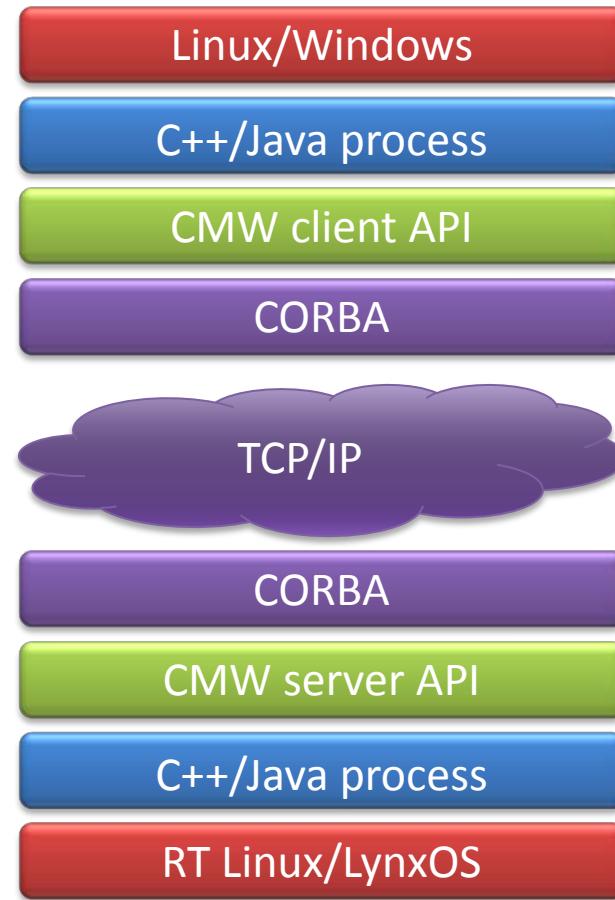
CMW - Controls Middleware

- Core **communication** layer
- Collection of software
components & services
- Operations: **Get, Set,
Subscribe**
- Widely deployed for **all
CERN accelerators**
- **Exportable:** used also in GSI
(Germany)



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Good design => good product



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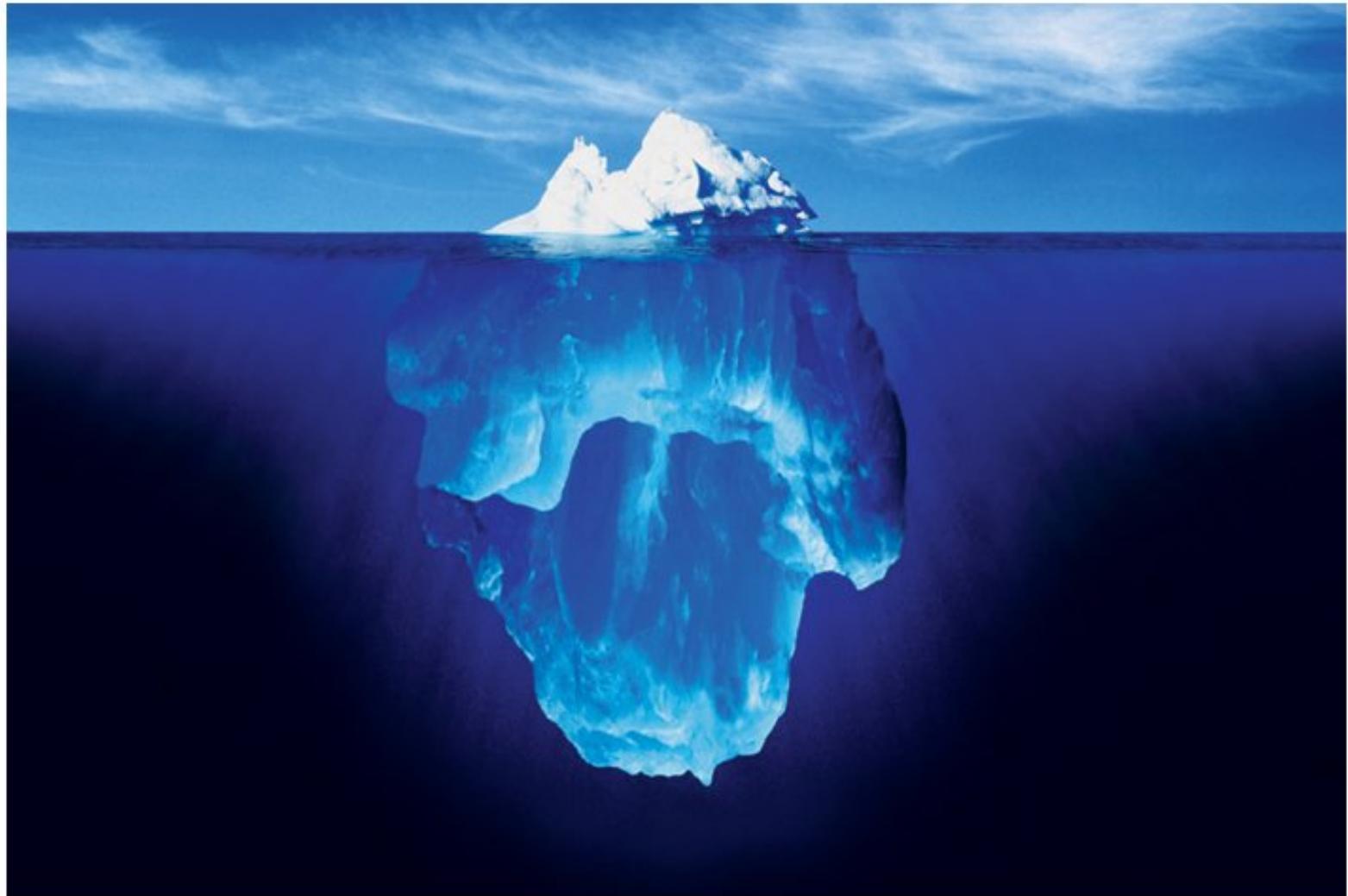
... but reality is often different ...

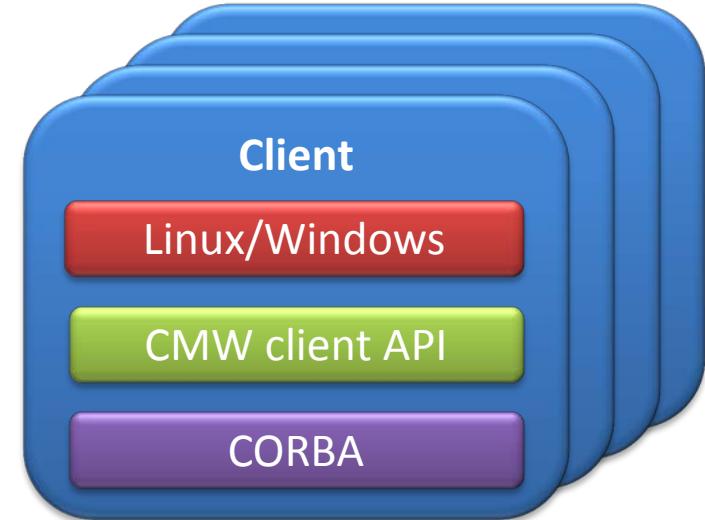


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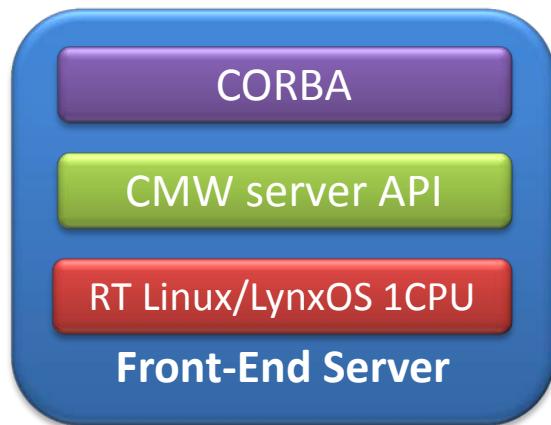


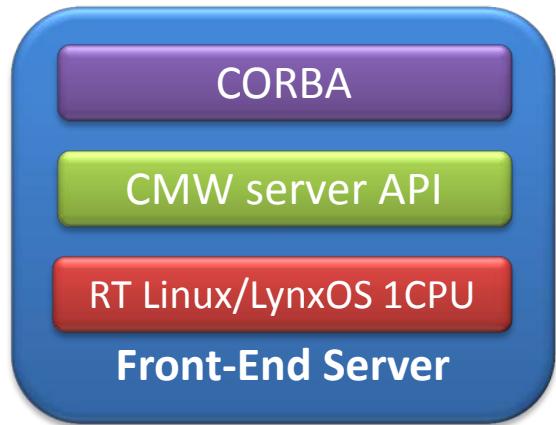
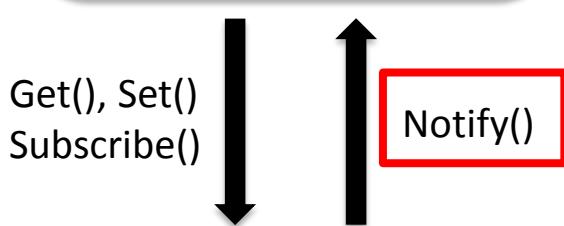
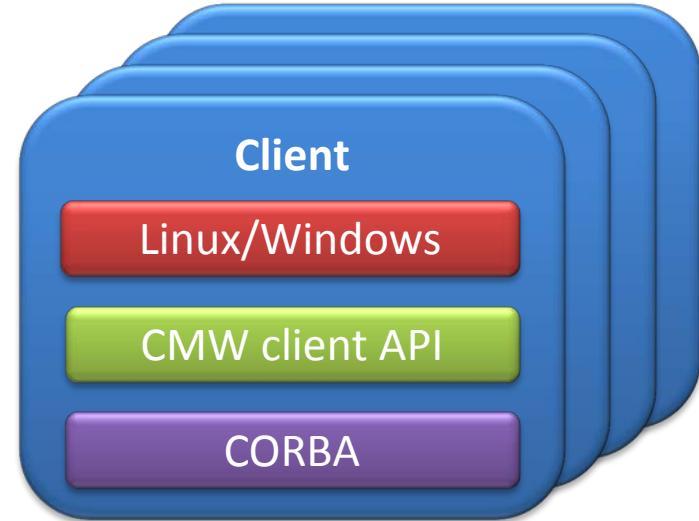


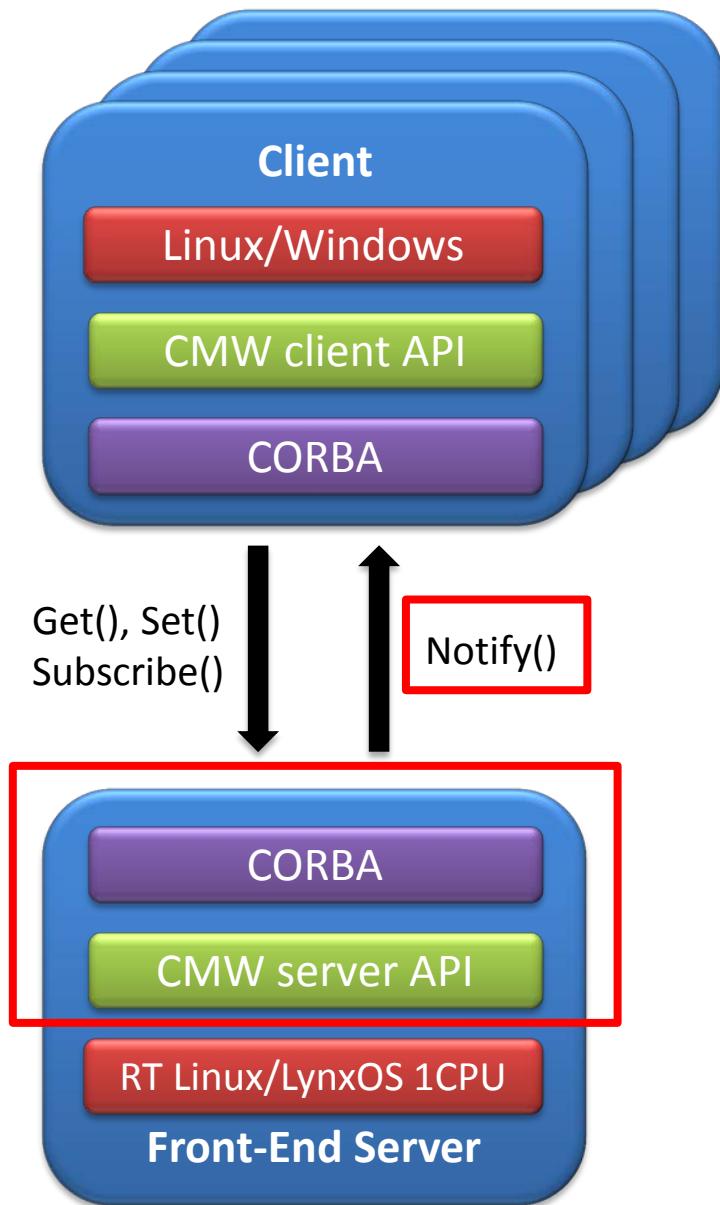
Get(), Set()
Subscribe()

↓ ↑

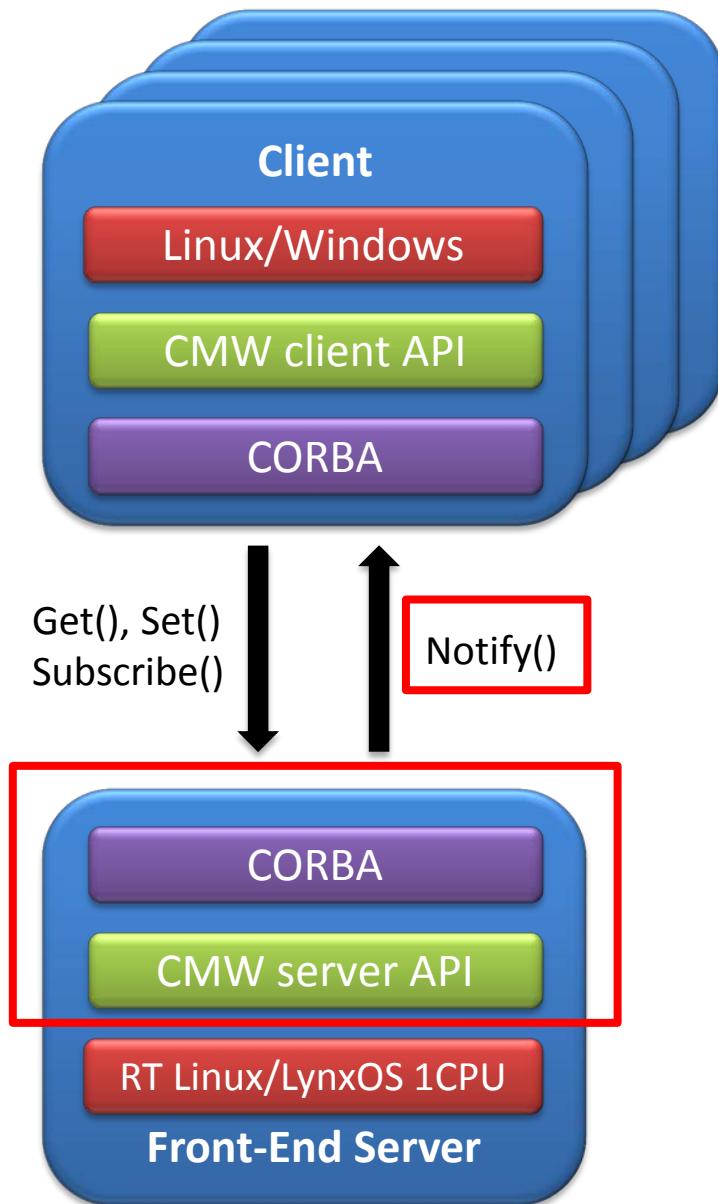
Notify()



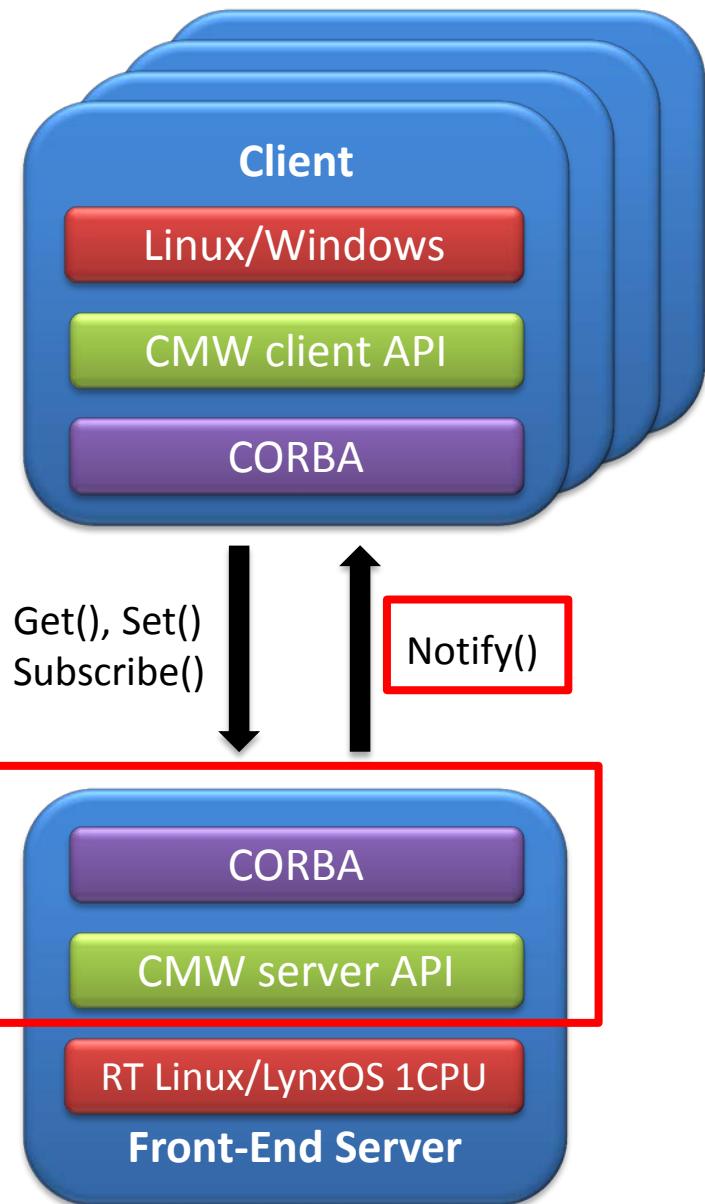




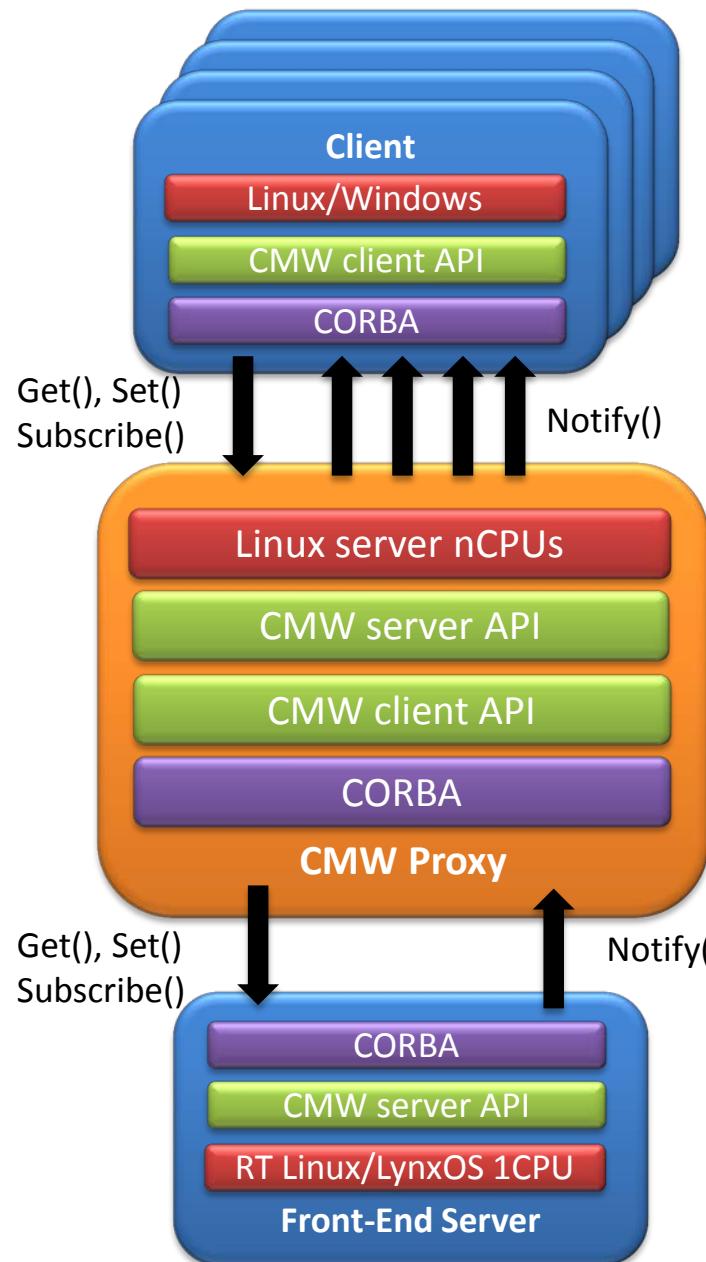
Performance Issue



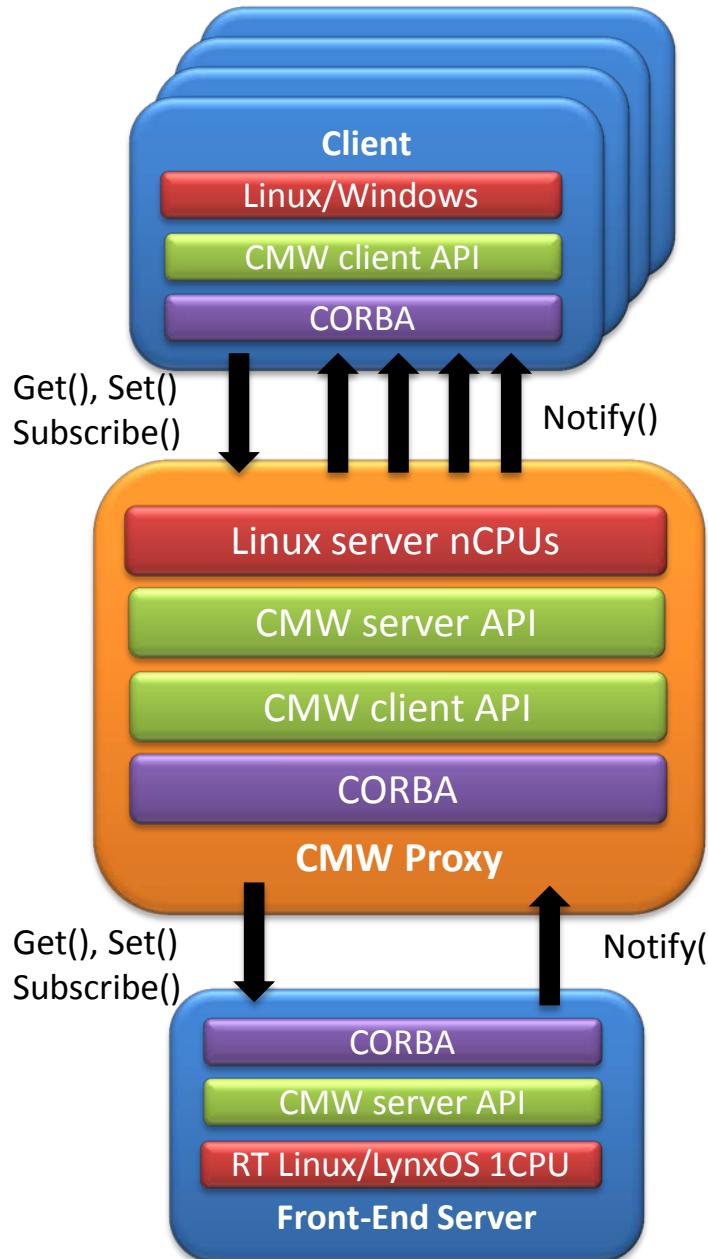
Performance Issue



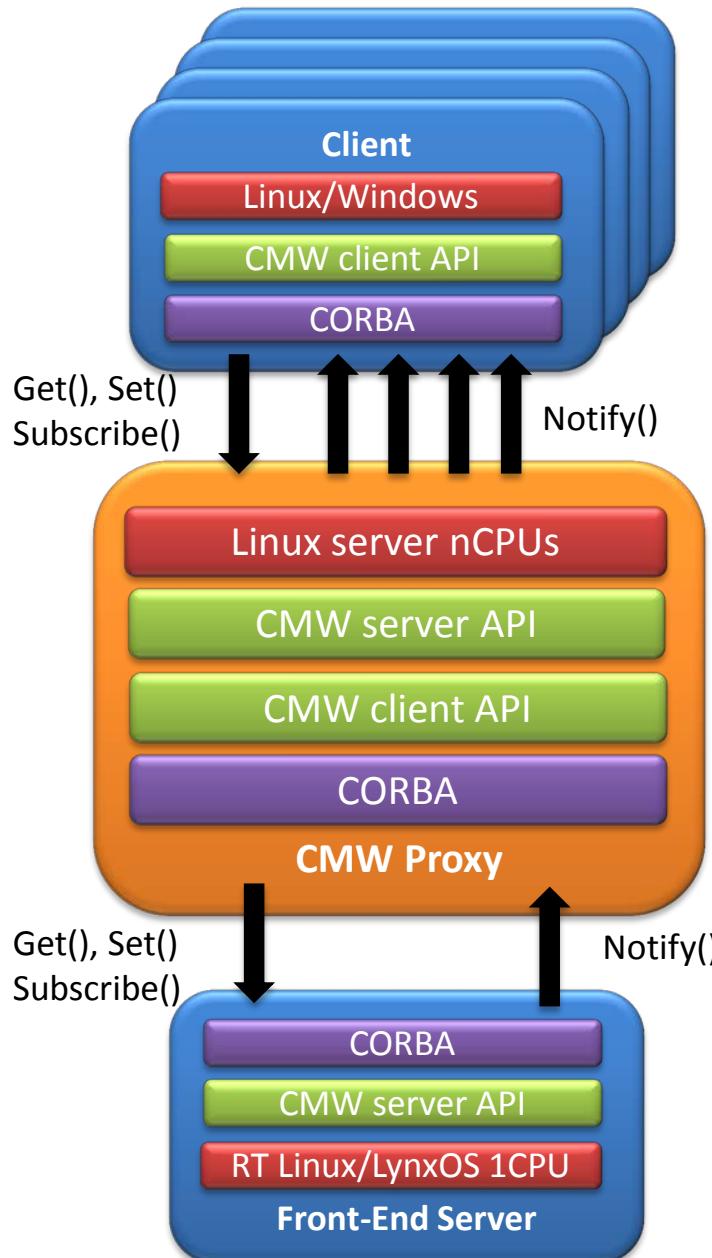
- **Overloaded servers**
 - High data demand from many apps.
 - Many TCP/IP client connections
 - Limited resources: CPU, memory
- **Poor performance of subscriptions**
 - Lack of non-blocking communication
 - Heavy serialization
 - N copies of same data
- **Not feasible to upgrade** front-end platform and/or CMW library
- **Blocking issue** for LHC operation
 - BCT, BPM, RF, Collimators, ...



Proxy Requirements



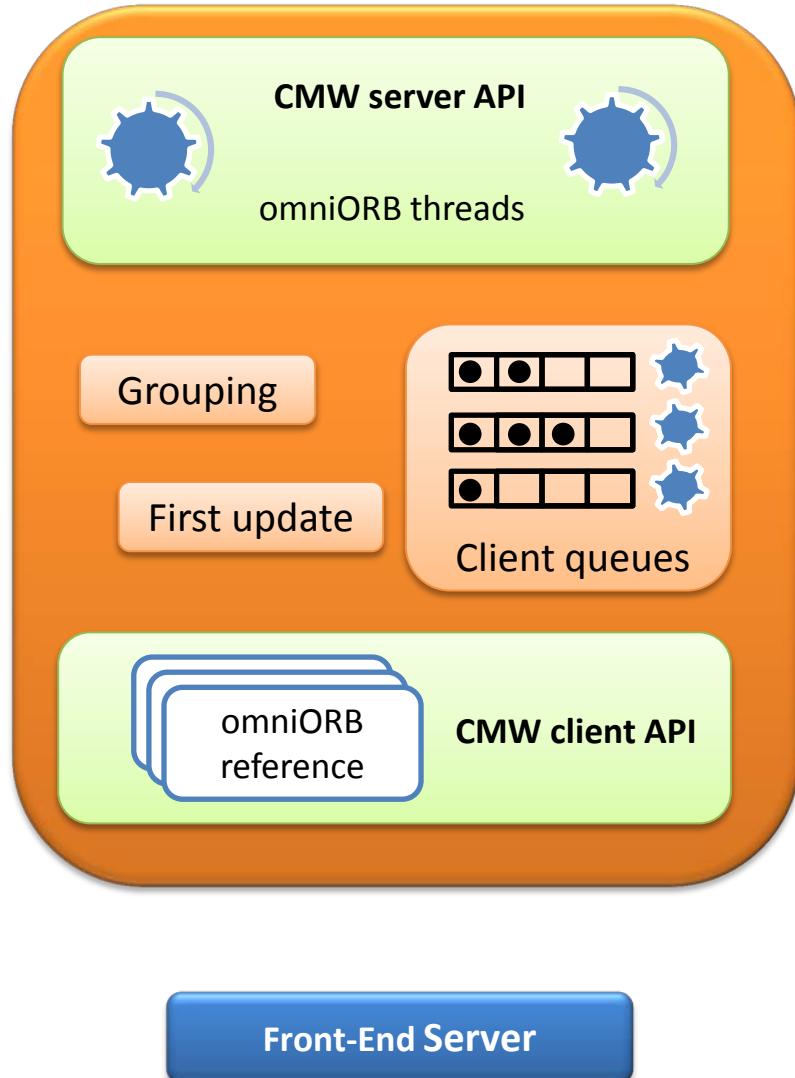
Proxy Requirements



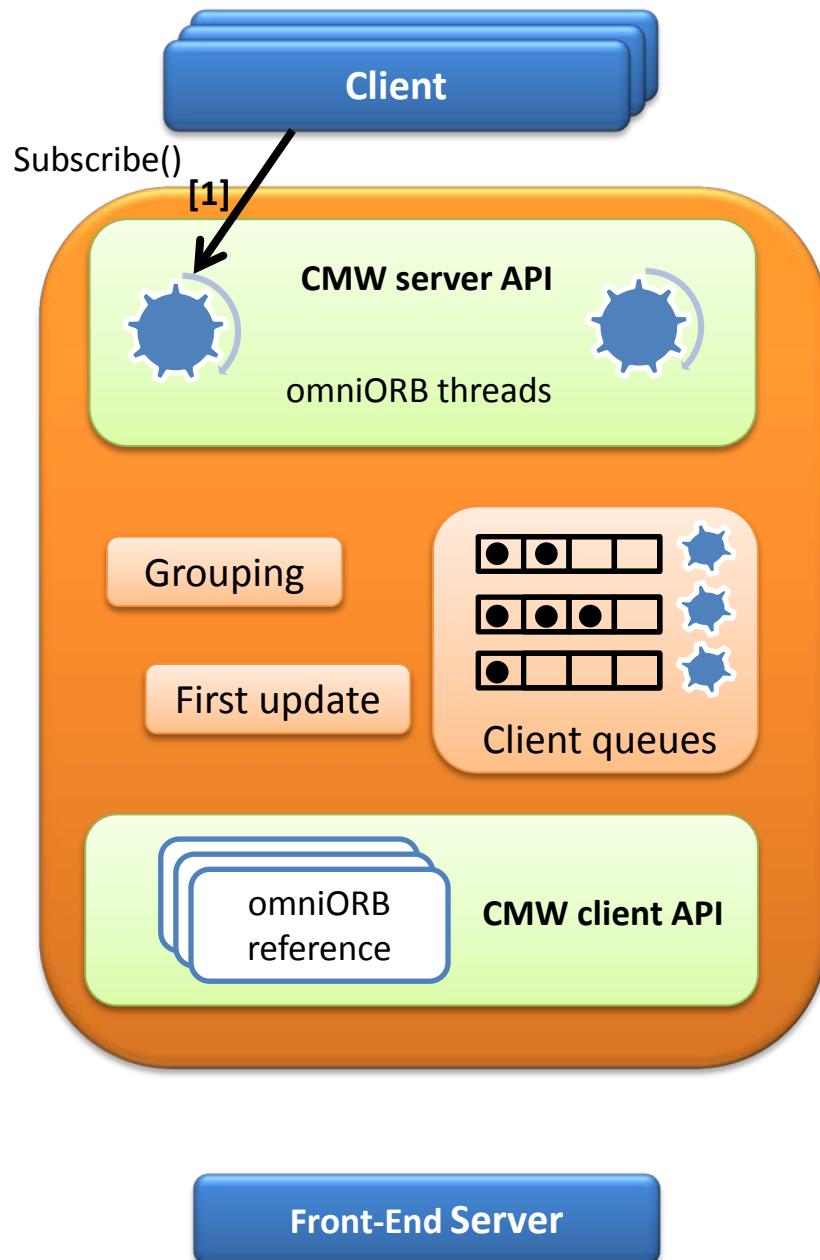
- **Full transparency in p2p comm.**
- Request interceptor => must have **good performance**
- **Grouping of subscriptions** and broadcasting of updates
- Async processing but **preserve ordering**
- Enhanced **runtime diagnostics**

Client

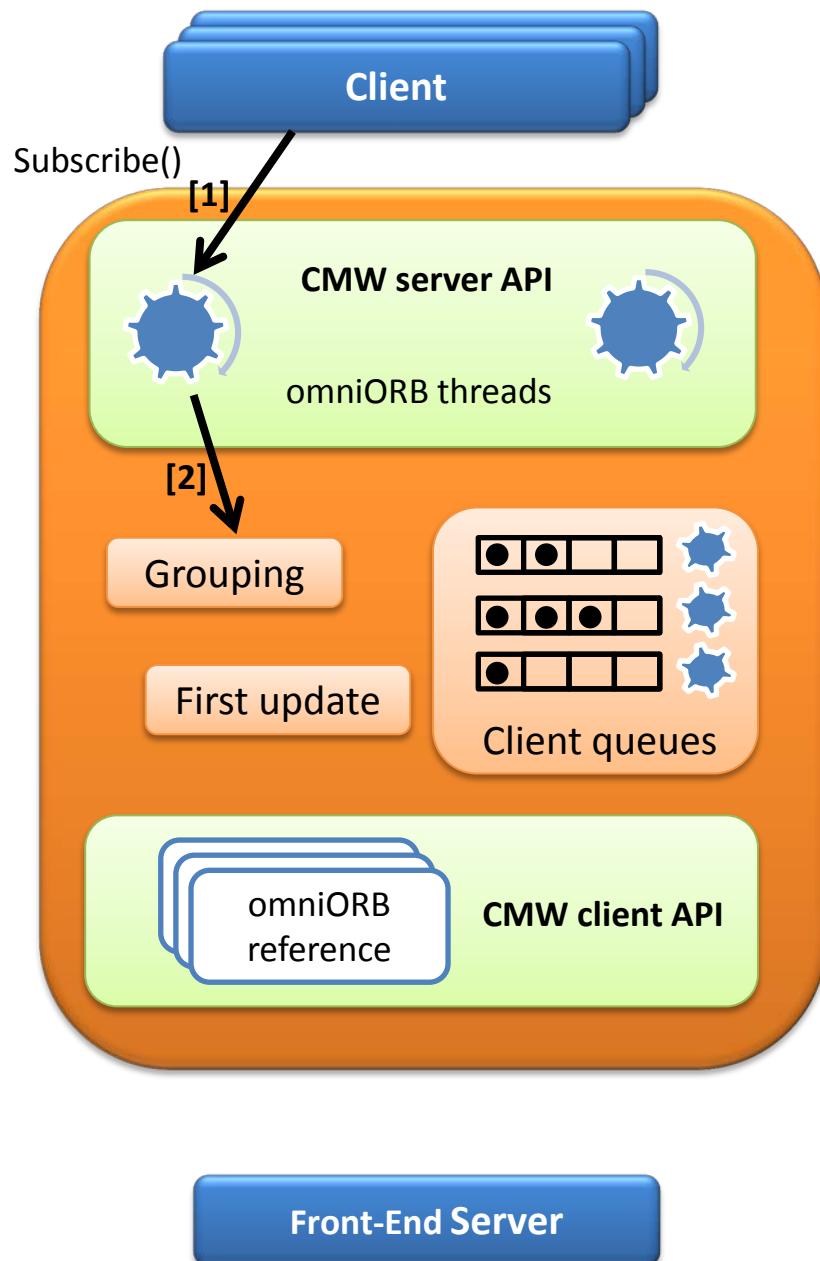
Proxy Architecture



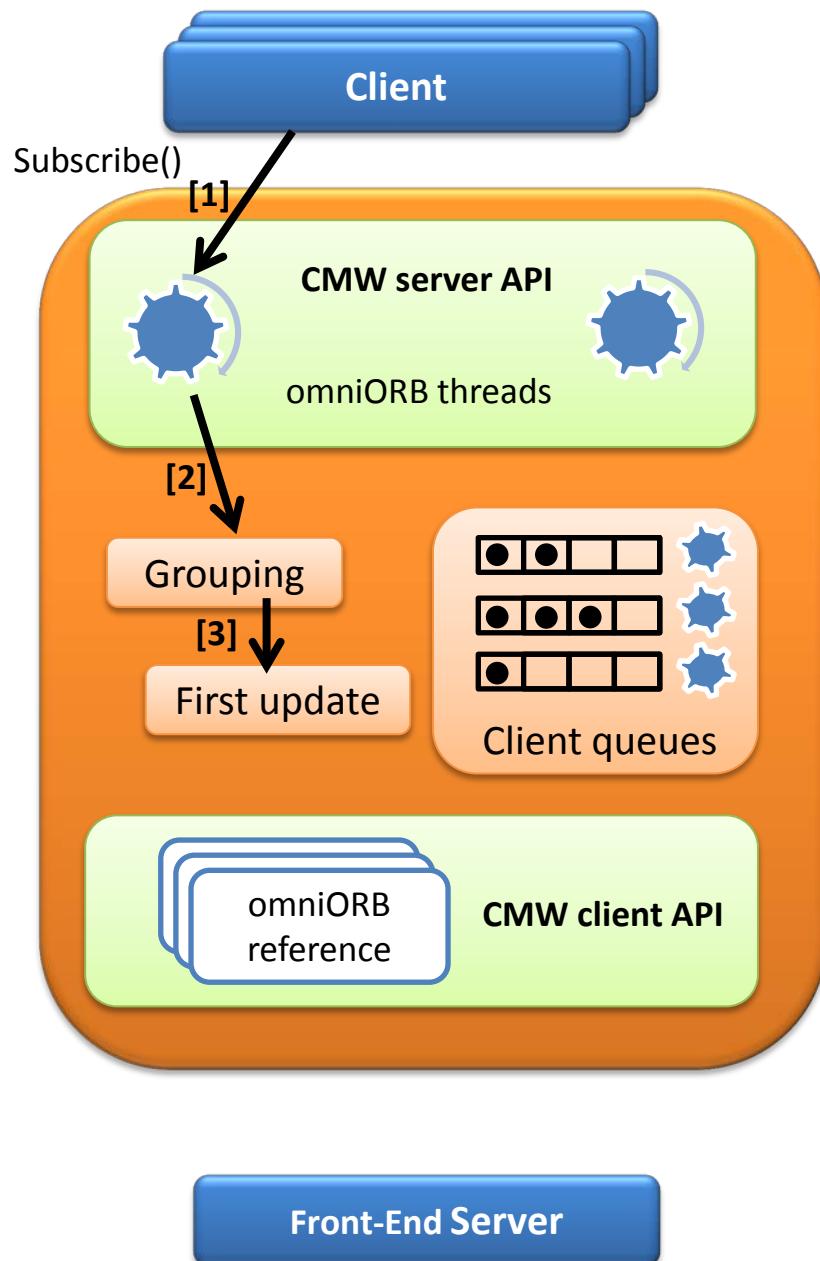
Proxy Architecture



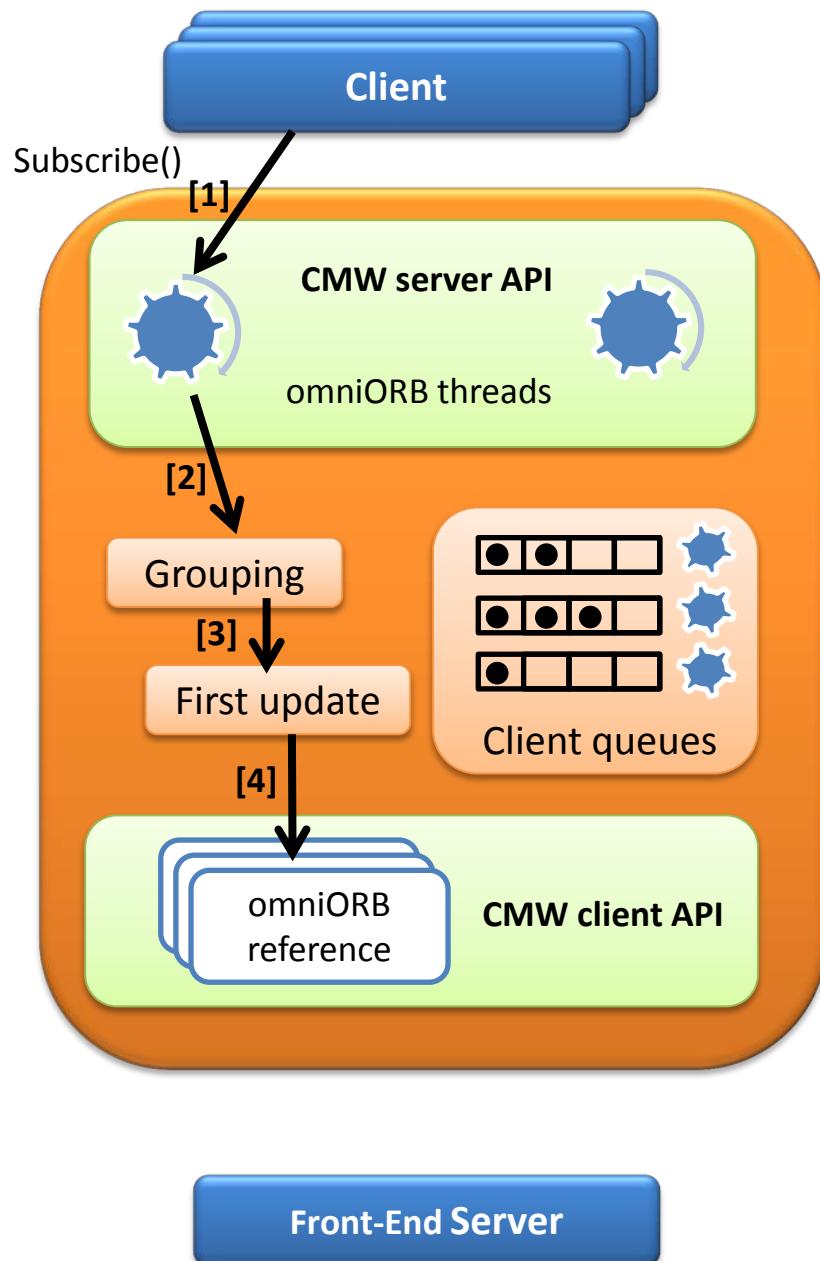
Proxy Architecture



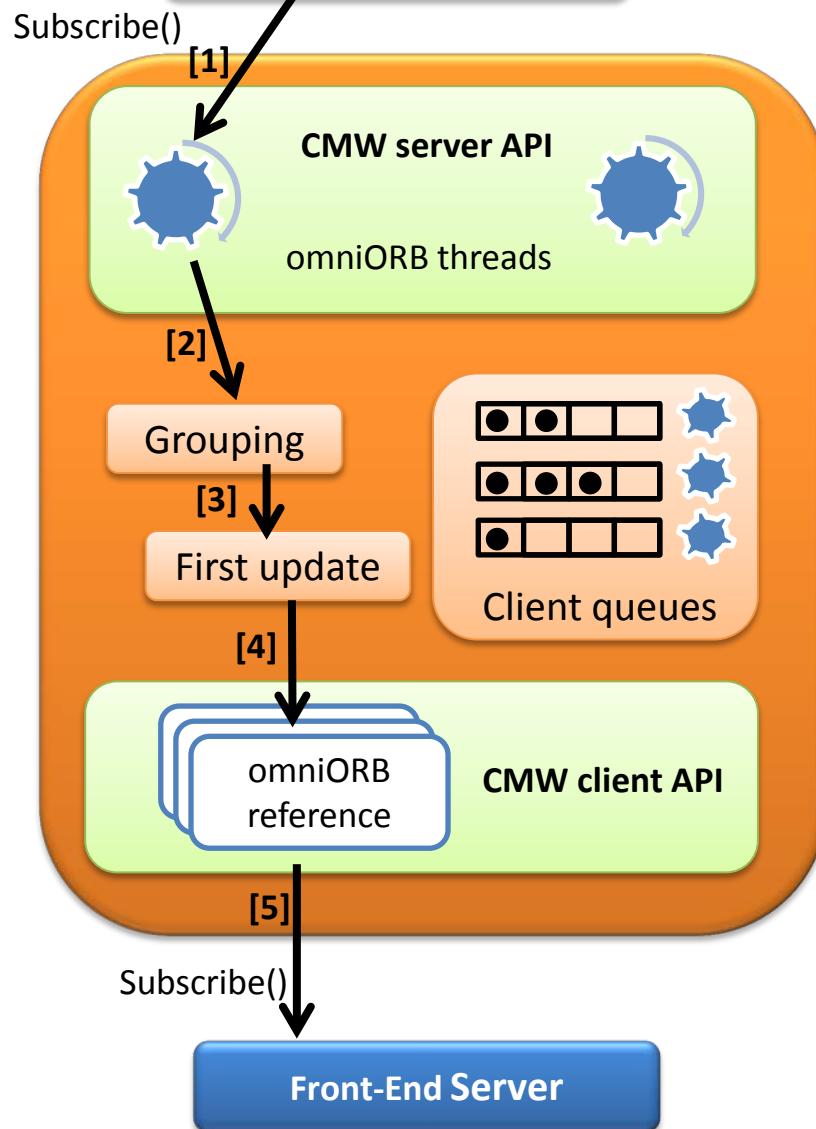
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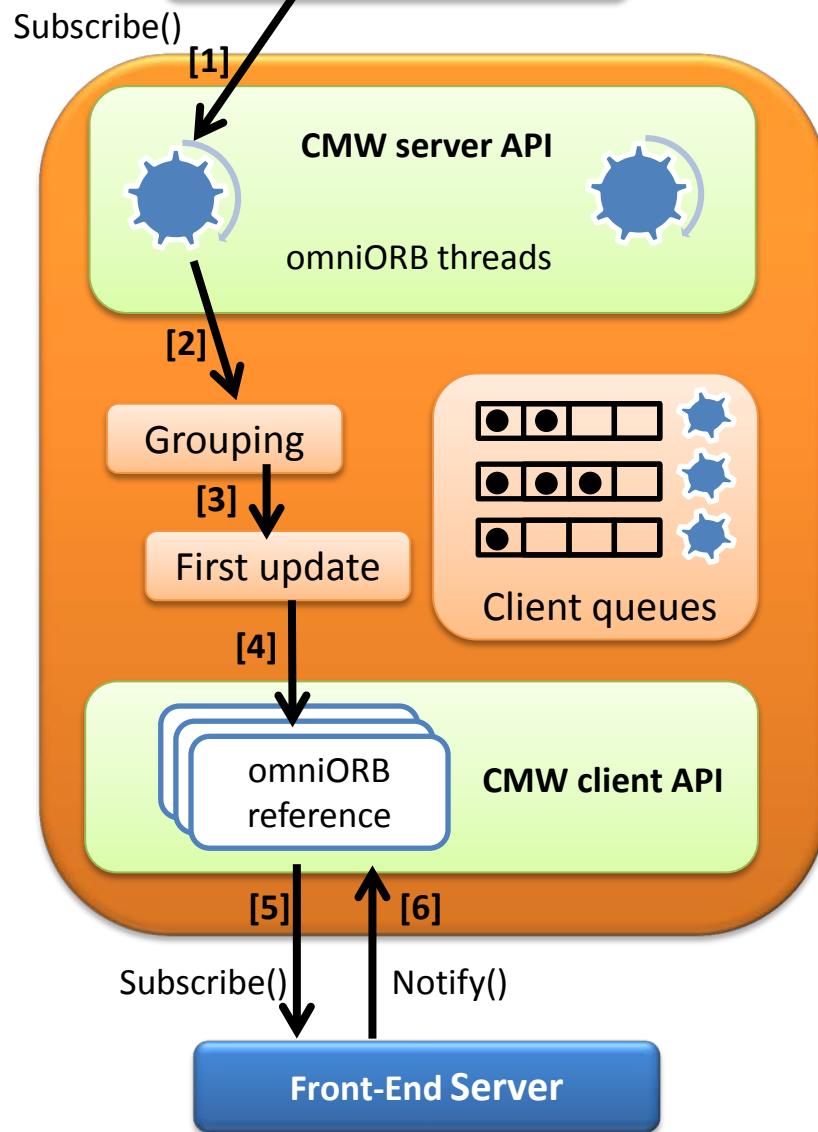
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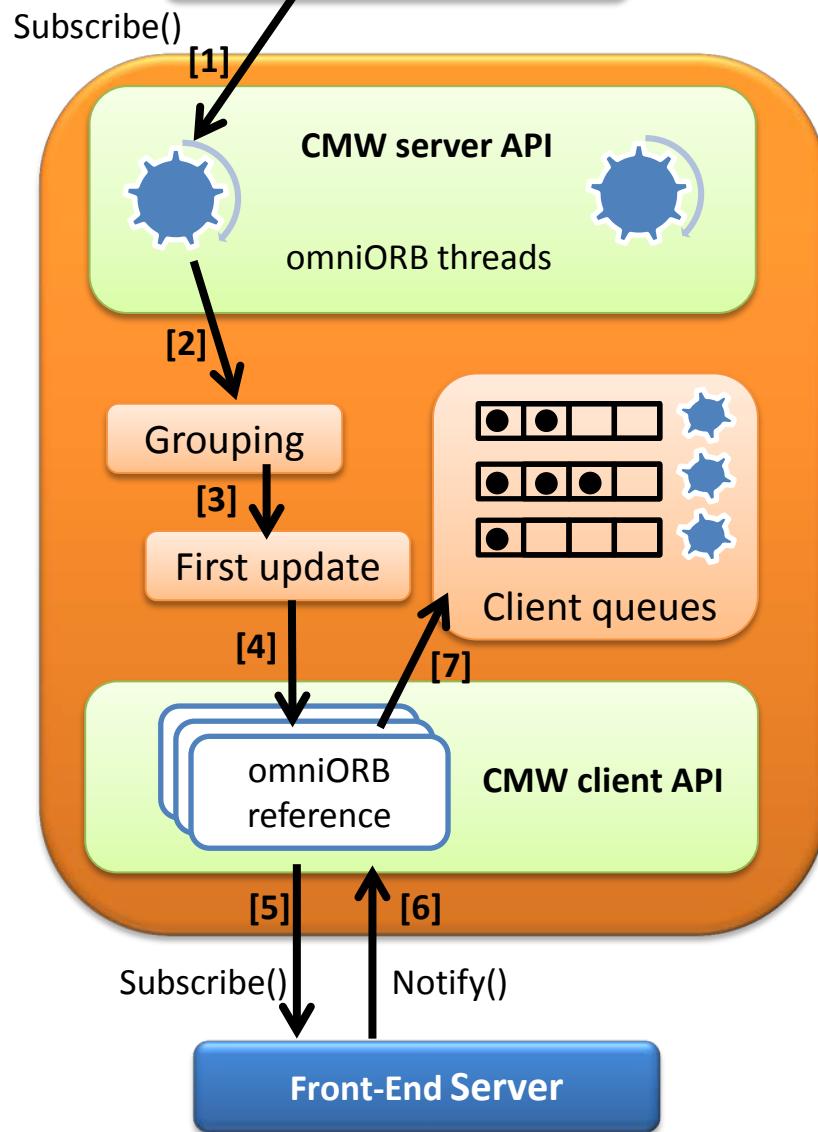
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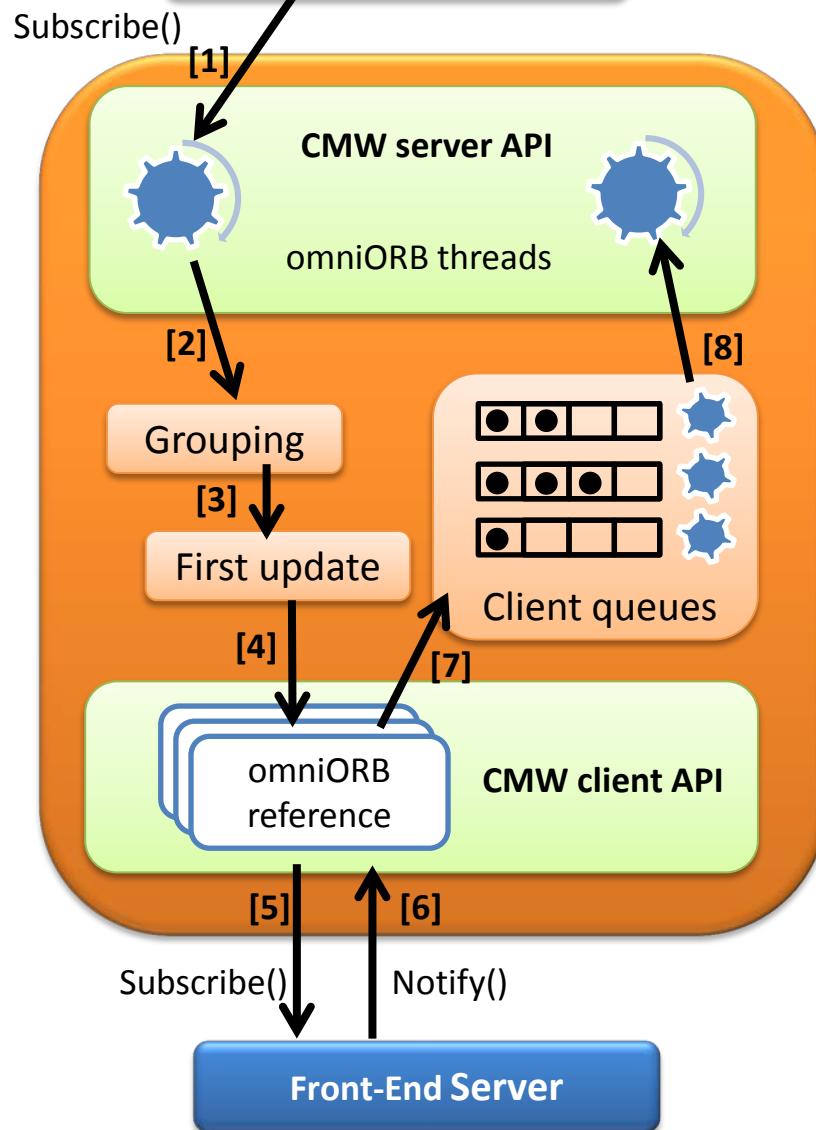
Proxy Architecture



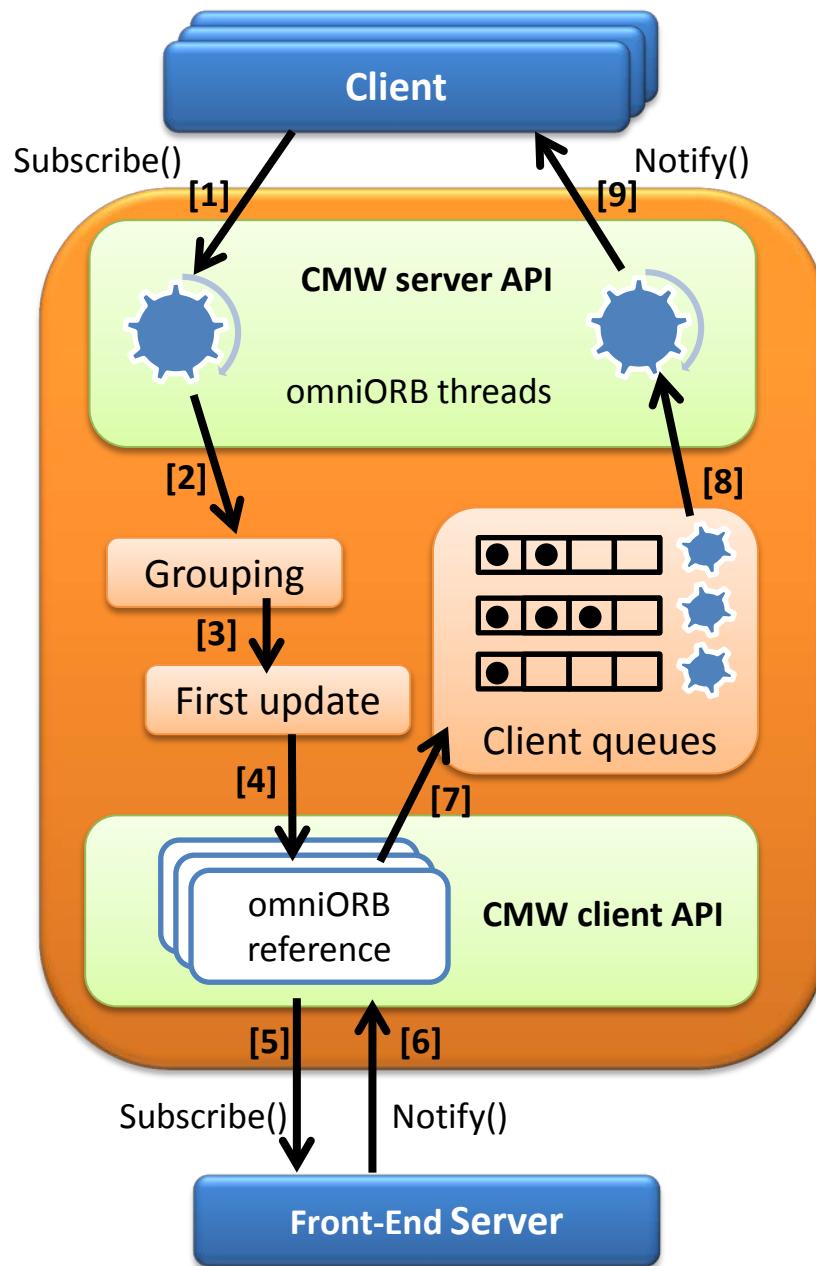
Proxy Architecture



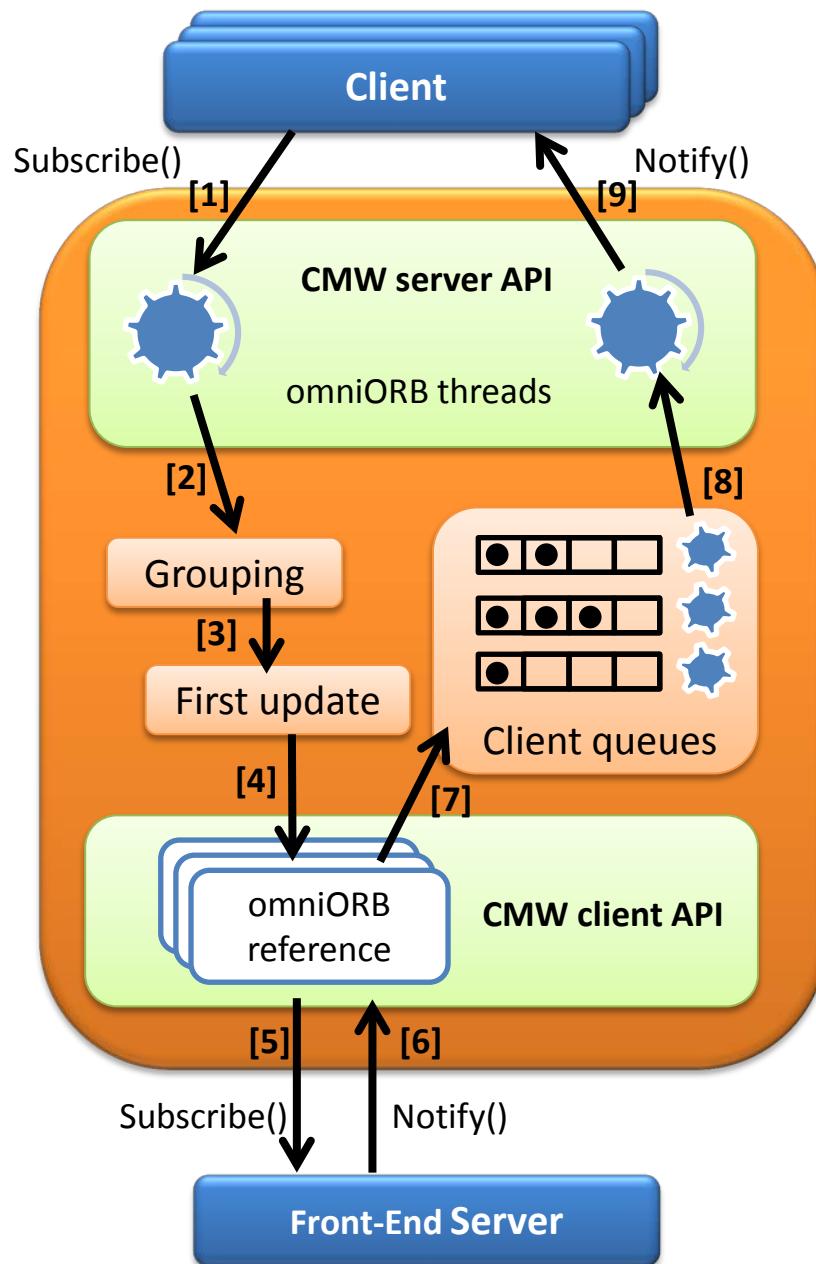
Proxy Architecture



Proxy Architecture



Proxy Architecture

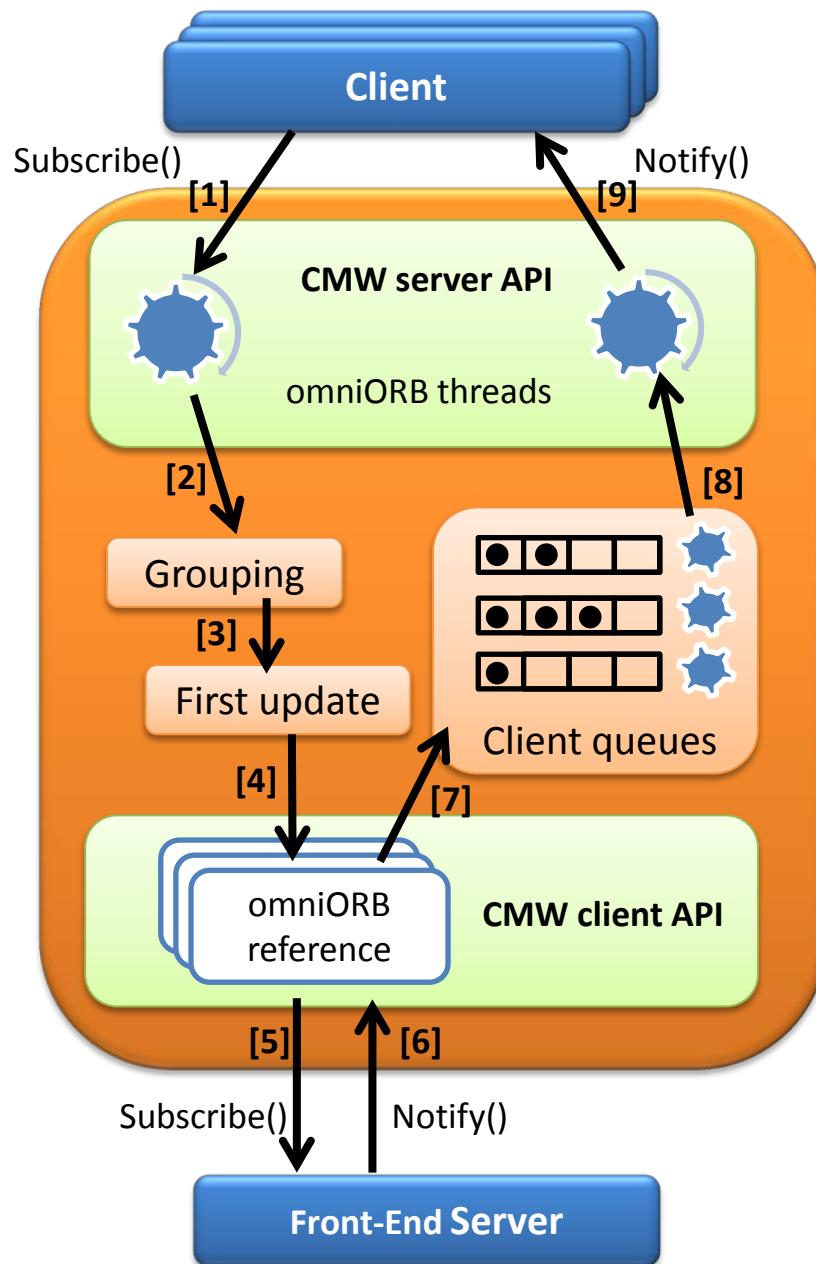


According to requirements:

- Full transparency
- Good performance
- Grouping of subscriptions
- Preserved ordering

Implementation: C++ & Boost libs

Proxy Architecture



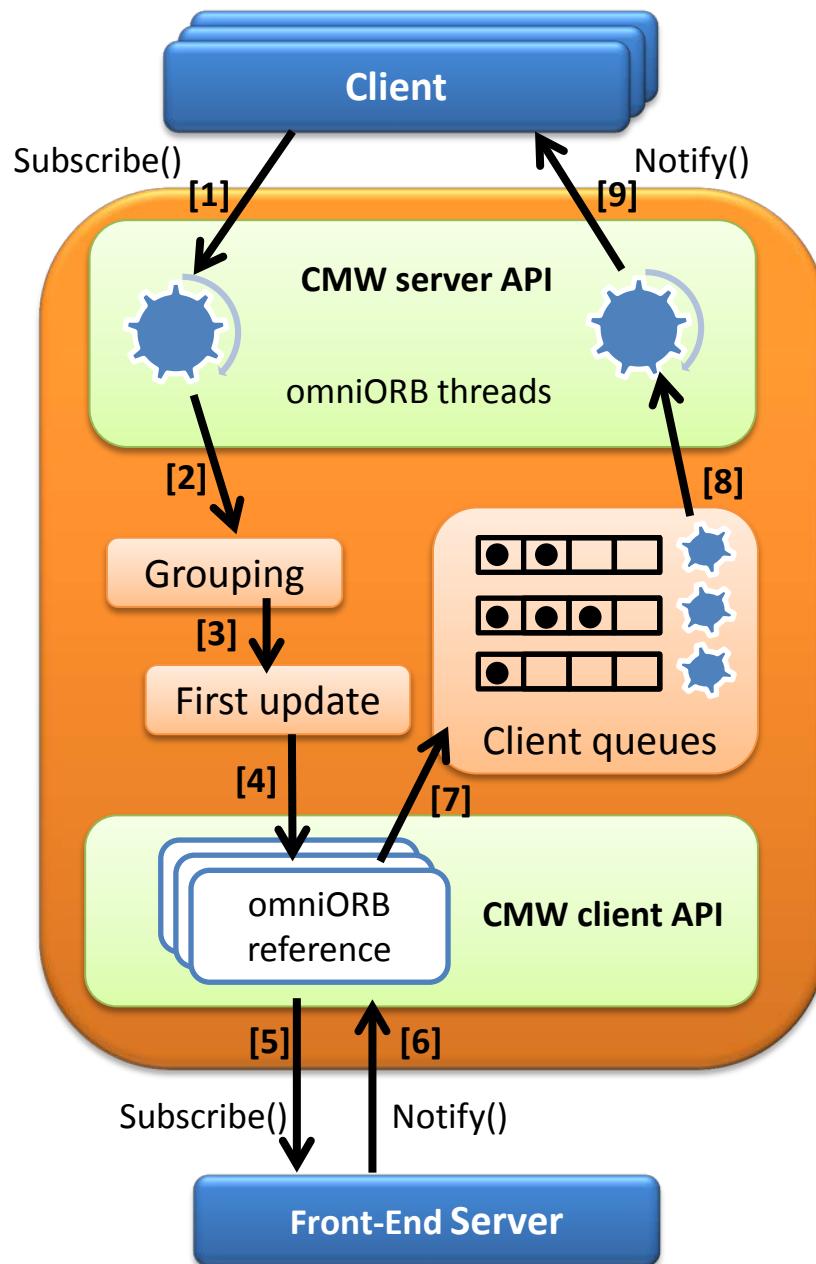
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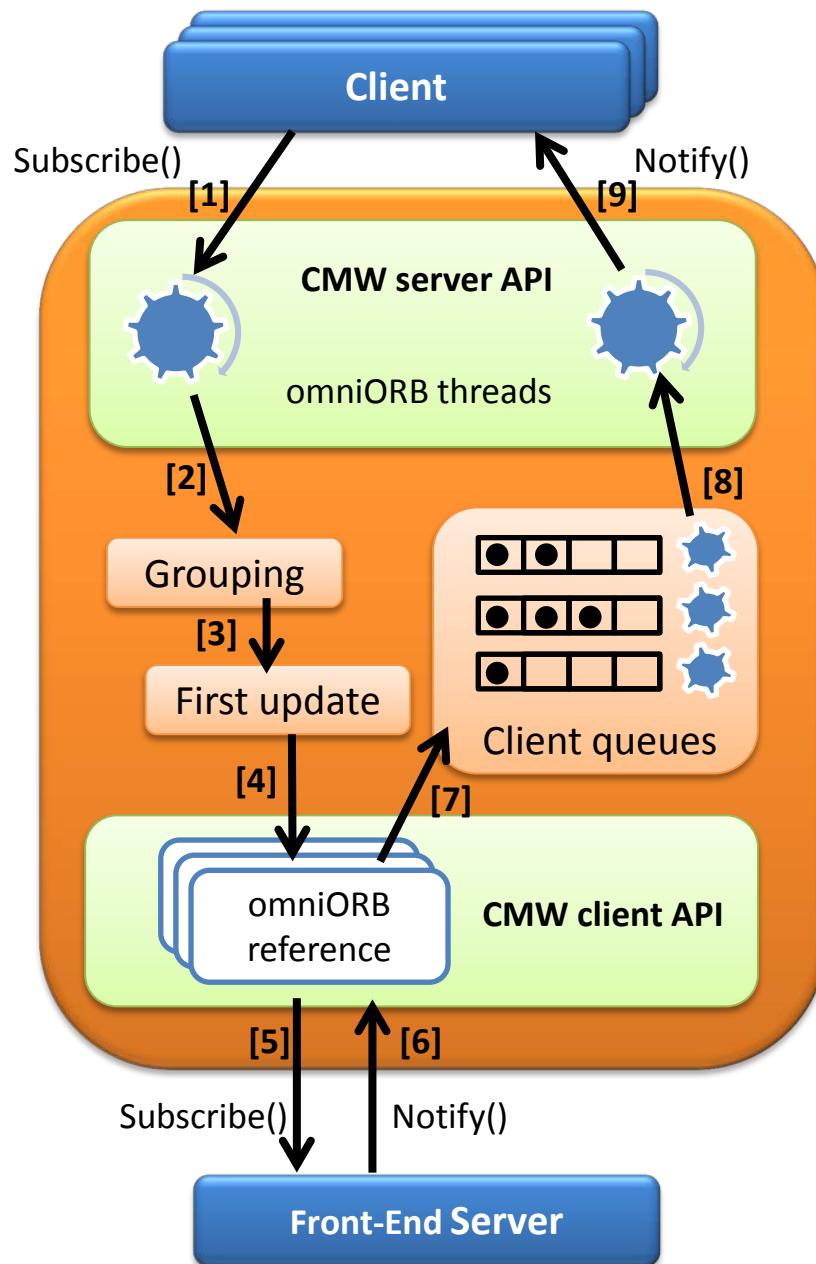
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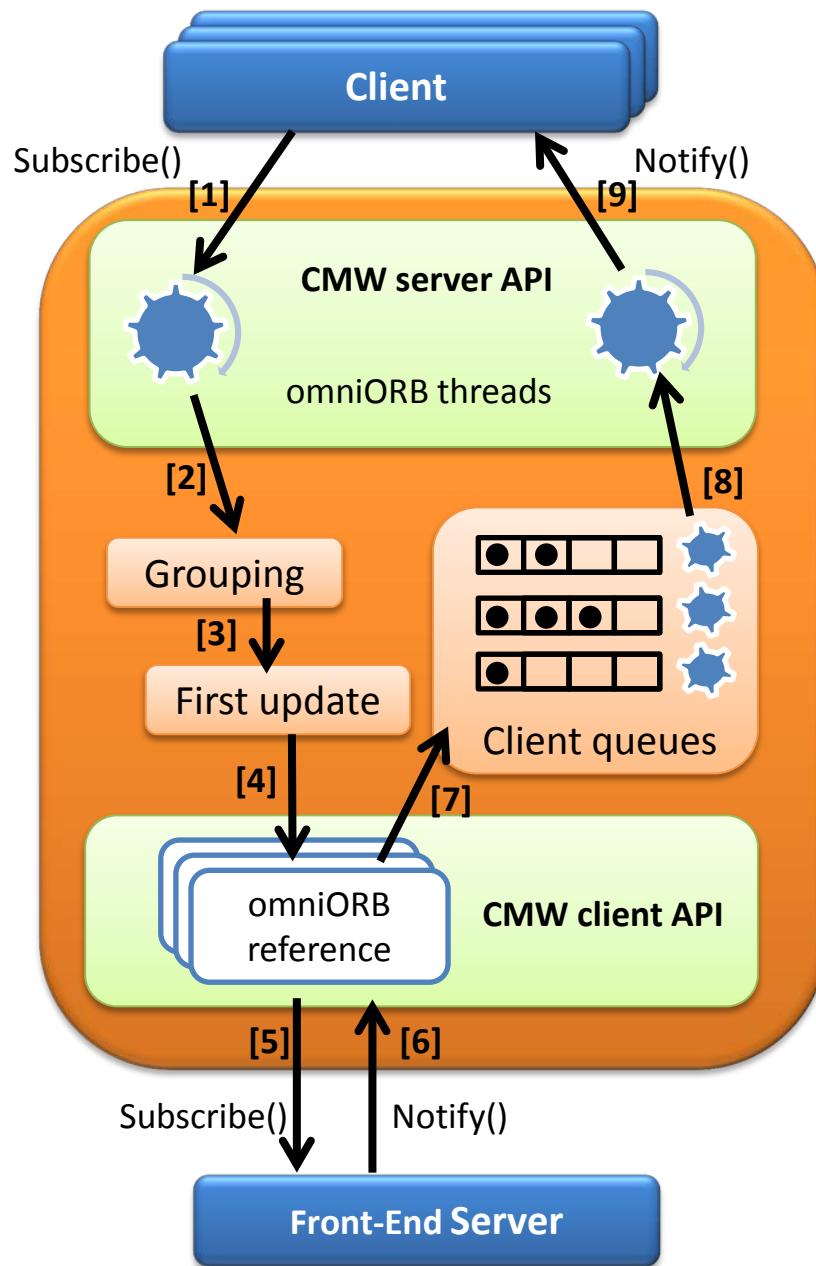
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Proxy Architecture



According to requirements:

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Implementation: C++ & Boost libs

Runtime Diagnostics

cmwAdmin (NOT LOGGED) - default.xml web configuration

File Edit View Help

RBA: no token Search: CMW-PROXY-

Not monitoring servers; click them to update 03:03:13 07/10/13

Search result

CMW-PROXY-ADE.cs-ccr-cmw3	CMW-PROXY-BCTDC.cs-ccr-cmw4	CMW-PROXY-BCTF.cs-ccr-cmw4	CMW-PROXY-BETS.cs-ccr-cmw4	CMW-PROXY-BIS.cs-ccr-cmw4
CMW-PROXY-BLDM.cs-ccr-cmw4	CMW-PROXY-BPM.cs-ccr-cmw4	CMW-PROXY-BQ.cs-ccr-cmw4	CMW-PROXY-BRA.cs-ccr-cmw4	CMW-PROXY-BSRT.cs-ccr-cmw4
CMW-PROXY-BTV.cs-ccr-cmw4	CMW-PROXY-COLL-P3.cs-ccr-cmw5	CMW-PROXY-COLL-P7.cs-ccr-cmw5	CMW-PROXY-COLL.cs-ccr-cmw5	CMW-PROXY-CPS.cs-ccr-cmw3
CMW-PROXY-CTF-BPM.cs-ccr-cmw3	CMW-PROXY-CTF-RF.cs-ccr-cmw3	CMW-PROXY-CTF.cs-ccr-cmw3	CMW-PROXY-CTF-RF.cs-ccr-cmw3	CMW-PROXY-DTM1.cs-ccr-aptst
CMW-PROXY-DTM2.cs-ccr-cmw5	CMW-PROXY-LEI.cs-ccr-cmw3	CMW-PROXY-LIN.cs-ccr-cmw3	CMW-PROXY-PB.cs-ccr-cmw3	CMW-PROXY-RF-ACS.cs-ccr-cmw5
CMW-PROXY-RF-SETPOINTB1.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB2.cs-ccr-cmw5	CMW-PROXY-TESTED-X64.cs-ccr-ctb04	CMW-PROXY-TESTED.cs-ccr-ctb07	

Information State Configuration Clients Logging Device Access Map Routes 02:59:59 07/10/13

refresh

402. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078aa0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
237. HANDLER: SX.WE-CTMCCV1@cvf-ccr-ctmemm selector() onChange(false), KEY: SX.WE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
403. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802d180). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
404. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078dc0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
238-HANDLER: SX.WWE-CTM/AQND@cvf-ccr-ctmemm selector(SPS.USER.SFTLONG2) onChange(false), KEY: SX.WWE-CTM#AQND#SPS.USER.SFTLONG2#0 (CONN
405. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802bd0). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
406. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f81300b0a60). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
239. HANDLER: SX.WWE-CTM/CCV1@cvf-ccr-ctmemm selector() onChange(false), KEY: SX.WWE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
407. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f8078028780). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
408. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f813007f120). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

NOTIFICATIONS:

- Dispatcher: copera@cs-ccr-vcp.cern.ch/29389. Created: 2013.09.28 18:33:06. Last update: 2013.09.28 18:33:06. Notifications: 2. Queue size: 0
- Dispatcher: copera@cs-ccr-vftpro.cern.ch/32610. Created: 2013.10.07 03:05:05. Last update: 2013.10.07 03:05:05. Notifications: 2. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/21831. Created: 2013.09.26 12:38:29. Last update: 2013.09.26 12:38:32. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b2lf.cern.ch/14575. Created: 2013.09.26 14:55:30. Last update: 2013.09.26 16:04:07. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b3lc.cern.ch/2336. Created: 2013.09.26 09:57:17. Last update: 2013.09.26 09:57:26. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/12815. Created: 2013.09.02 16:43:03. Last update: 2013.09.02 16:43:06. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/13662. Created: 2013.09.30 17:06:37. Last update: 2013.09.30 17:06:56. Notifications: 15. Queue size: 0
- Dispatcher: cpson@cwo-ccc-b4lf.cern.ch/17982. Created: 2013.09.26 14:32:21. Last update: 2013.09.26 14:32:24. Notifications: 0. Queue size: 0

03:07:34 - Server CMW-PROXY-CTM.cs-ccr-cmw3 is all fine (last update was 03:03:16 07/10/13)



Runtime Diagnostics

cmwAdmin (NOT LOGGED) - default.xml web configuration

File Edit View

RBA: no token Search: CMW-PROXY-

Search by name

Not monitoring servers; click them to update 03:03:13 07/10/13

Search result

CMW-PROXY-ADE.cs-ccr-cmw3	CMW-PROXY-BCTDC.cs-ccr-cmw4	CMW-PROXY-BCTF.cs-ccr-cmw4	CMW-PROXY-BETS.cs-ccr-cmw4	CMW-PROXY-BIS.cs-ccr-cmw4
CMW-PROXY-BLDM.cs-ccr-cmw4	CMW-PROXY-BPM.cs-ccr-cmw4	CMW-PROXY-BQ.cs-ccr-cmw4	CMW-PROXY-BR.cs-ccr-cmw4	CMW-PROXY-BSRT.cs-ccr-cmw4
CMW-PROXY-BTV.cs-ccr-cmw4	CMW-PROXY-COLL-P3.cs-ccr-cmw5	CMW-PROXY-COLL-P7.cs-ccr-cmw5	CMW-PROXY-COLL.cs-ccr-cmw5	CMW-PROXY-CPS.cs-ccr-cmw3
CMW-PROXY-CTF-BPM.cs-ccr-cmw3	CMW-PROXY-CTF-RF.cs-ccr-cmw3	CMW-PROXY-CTF.cs-ccr-cmw3	CMW-PROXY-CTF-R.cs-ccr-cmw5	CMW-PROXY-DTM1.cs-ccr-aptst
CMW-PROXY-DTM2.cs-ccr-cmw5	CMW-PROXY-LEI.cs-ccr-cmw3	CMW-PROXY-LIN.cs-ccr-cmw3	CMW-PROXY-PSB.cs-ccr-cmw3	CMW-PROXY-RF-ACS.cs-ccr-cmw5
CMW-PROXY-RF-SETPOINTB1.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB2.cs-ccr-cmw5	CMW-PROXY-TESTED-X64.cs-ccr-ctb07	CMW-PROXY-TESTED.cs-ccr-ctb07	

Information State Configuration Clients Logging Device Access Map Routes 02:59:59 07/10/13

refresh

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237. HANDLER: SX.WE-CTMCCV1@cvf-ccr-ctmemm selector() onChange(false), KEY: SX.WE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
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404. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078dc0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
238-HANDLER: SX.WWE-CTM/AQND@cvf-ccr-ctmemm selector(SPS.USER.SFTLONG2) onChange(false), KEY: SX.WWE-CTM#AQND#SPS.USER.SFTLONG2#0 (CONN
405. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802bd0). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
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407. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f8078028780). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
408. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f813007f120). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

NOTIFICATIONS:

- Dispatcher: copera@cs-ccr-vcp.cern.ch/29389. Created: 2013.09.28 18:33:06. Last update: 2013.09.28 18:33:06. Notifications: 2. Queue size: 0
- Dispatcher: copera@cs-ccr-vftpro.cern.ch/32610. Created: 2013.10.07 03:05:05. Last update: 2013.10.07 03:05:05. Notifications: 2. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/21831. Created: 2013.09.26 12:38:29. Last update: 2013.09.26 12:38:32. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/14575. Created: 2013.09.26 14:55:30. Last update: 2013.09.26 16:04:07. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b3lc.cern.ch/2336. Created: 2013.09.26 09:57:17. Last update: 2013.09.26 09:57:26. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/12815. Created: 2013.09.02 16:43:03. Last update: 2013.09.02 16:43:06. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/13662. Created: 2013.09.30 17:06:37. Last update: 2013.09.30 17:06:56. Notifications: 15. Queue size: 0
- Dispatcher: cpson@cwo-ccc-b4lc.cern.ch/17982. Created: 2013.09.26 14:32:21. Last update: 2013.09.26 14:32:24. Notifications: 0. Queue size: 0

03:07:34 - Server CMW-PROXY-CTM.cs-ccr-cmw3 is all fine (last update was 03:03:16 07/10/13)



Runtime Diagnostics

cmwAdmin (NOT LOGGED) - default.xml web configuration

File Edit View

RBA: no token Search: CMW-PROXY-

Not monitoring servers; click them to update 03:03:13 07/10/13

Search result

CMW-PROXY-ADE.cs-ccr-cmw3	CMW-PROXY-BCTDC.cs-ccr-cmw4	CMW-PROXY-BCTF.cs-ccr-cmw4	CMW-PROXY-BETS.cs-ccr-cmw4	CMW-PROXY-BIS.cs-ccr-cmw4
CMW-PROXY-BLDM.cs-ccr-cmw4	CMW-PROXY-BPM.cs-ccr-cmw4	CMW-PROXY-BQ.cs-ccr-cmw4	CMW-PROXY-BRA.cs-ccr-cmw4	CMW-PROXY-BSRT.cs-ccr-cmw4
CMW-PROXY-BTV.cs-ccr-cmw4	CMW-PROXY-COLL-P3.cs-ccr-cmw5	CMW-PROXY-COLL-P7.cs-ccr-cmw5	CMW-PROXY-COLL.cs-ccr-cmw5	CMW-PROXY-CPS.cs-ccr-cmw3
CMW-PROXY-CTF-BPM.cs-ccr-cmw3	CMW-PROXY-CTF-RF.cs-ccr-cmw3	CMW-PROXY-CTF.cs-ccr-cmw3	CMW-PROXY-CIM.cs-ccr-cmw3	CMW-PROXY-DTM1.cs-ccr-aptst
CMW-PROXY-DTM2.cs-ccr-cmw5	CMW-PROXY-LEI.cs-ccr-cmw3	CMW-PROXY-LIN.cs-ccr-cmw3	CMW-PROXY-PSB.cs-ccr-cmw3	CMW-PROXY-RF-ACS.cs-ccr-cmw5
CMW-PROXY-RF-SETPOINTB1.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB2.cs-ccr-cmw5	CMW-PROXY-TESTED-X64.cs-ccr-ctb07	CMW-PROXY-TESTED.cs-ccr-ctb07	

Information State Configuration Clients Logging Device Access Map Routes 02:59:59 07/10/13

refresh

402. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078aa0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

237. HANDLER: SX.WE-CTMCCV1@cvf-ccr-ctmemm selector() onChange(false), KEY: SX.WE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)

403. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802d180). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20

404. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078dc0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

238-HANDLER: SX.WWE-CTM/AQND@cvf-ccr-ctmemm selector(SPS.USER.SFTLONG2) onChange(false), KEY: SX.WWE-CTM#AQND#SPS.USER.SFTLONG2#0 (CONN

405. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802bd0). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20

406. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f81300b0a60). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

239. HANDLER: SX.WWE-CTM/CCV1@cvf-ccr-ctmemm selector() onChange(false), KEY: SX.WWE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)

407. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f8078028780). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20

408. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f813007f120). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

NOTIFICATIONS:

- Dispatcher: copera@cs-ccr-vcp.cern.ch/29389. Created: 2013.09.28 18:33:06. Last update: 2013.09.28 18:33:06. Notifications: 2. Queue size: 0
- Dispatcher: copera@cs-ccr-vftpro.cern.ch/32610. Created: 2013.10.07 03:05:05. Last update: 2013.10.07 03:05:05. Notifications: 2. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/21831. Created: 2013.09.26 12:38:29. Last update: 2013.09.26 12:38:32. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/14575. Created: 2013.09.26 14:55:30. Last update: 2013.09.26 16:04:07. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b3lc.cern.ch/2336. Created: 2013.09.26 09:57:17. Last update: 2013.09.26 09:57:26. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/12815. Created: 2013.09.02 16:43:03. Last update: 2013.09.02 16:43:06. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/13662. Created: 2013.09.30 17:06:37. Last update: 2013.09.30 17:06:56. Notifications: 15. Queue size: 0
- Dispatcher: cpson@cwo-ccc-b4lc.cern.ch/17982. Created: 2013.09.26 14:32:21. Last update: 2013.09.26 14:32:24. Notifications: 0. Queue size: 0

03:07:34 - Server CMW-PROXY-CTM.cs-ccr-cmw3 is all fine (last update was 03:03:16 07/10/13)

Runtime Diagnostics

cmwAdmin (NOT LOGGED) - default.xml web configuration

File Edit View

RBA: no token Search: CMW-PROXY-

Not monitoring servers; click them to update 03:03:13 07/10/13

Search result

CMW-PROXY-ADE.cs-ccr-cmw3	CMW-PROXY-BCTDC.cs-ccr-cmw4	CMW-PROXY-BCTF.cs-ccr-cmw4	CMW-PROXY-BETS.cs-ccr-cmw4	CMW-PROXY-BLDM.cs-ccr-cmw4	CMW-PROXY-BPM.cs-ccr-cmw4	CMW-PROXY-BQ.cs-ccr-cmw4	CMW-PROXY-BRA.cs-ccr-cmw4	CMW-PROXY-BSRT.cs-ccr-cmw4	CMW-PROXY-BT.cs-ccr-cmw4	CMW-PROXY-COLL-P3.cs-ccr-cmw4	CMW-PROXY-COLL-P7.cs-ccr-cmw4	CMW-PROXY-CPS.cs-ccr-cmw3	CMW-PROXY-CTF-BPM.cs-ccr-cmw3	CMW-PROXY-CTF-RF.cs-ccr-cmw3	CMW-PROXY-CTF.cs-ccr-cmw3	CMW-PROXY-CTM.cs-ccr-cmw3	CMW-PROXY-DTM1.cs-ccr-aptst	CMW-PROXY-DTM2.cs-ccr-cmw5	CMW-PROXY-LEI.cs-ccr-cmw3	CMW-PROXY-LIN.cs-ccr-cmw3	CMW-PROXY-PSB.cs-ccr-cmw3	CMW-PROXY-RF-ACS.cs-ccr-cmw5	CMW-PROXY-TESTED-X64.cs-ccr-ctb07	CMW-PROXY-TESTED.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB1.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB2.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB3.cs-ccr-cmw5	CMW-PROXY-TESTED.cs-ccr-cmw5	CMW-PROXY-TESTED-X64.cs-ccr-ctb07
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Information State Configuration Clients Logging Device Access Map Routes 02:59:59 07/10/13

refresh

402. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078aa0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
237. HANDLER: SX.WE-CTMCCV1@cvf-ccr-ctmemm selector() onChange(false), KEY: SX.WE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
403. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802d180). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
404. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078dc0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
238-HANDLER: SX.WWE-CTM/AQND@cvf-ccr-ctmemm selector(SPS.USER.SFTLONG2) onChange(false), KEY: SX.WWE-CTM#AQND#SPS.USER.SFTLONG2#0 (CONN
405. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802bd0). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
406. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f81300b0a60). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
239. HANDLER: SX.WWE-CTM/CCV1@cvf-ccr-ctmemm selector() onChange(false), KEY: SX.WWE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
407. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f8078028780). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
408. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f813007f120). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

NOTIFICATIONS:

- Dispatcher: copera@cs-ccr-vcp.cern.ch/29389. Created: 2013.09.28 18:33:06. Last update: 2013.09.28 18:33:06. Notifications: 2. Queue size: 0
- Dispatcher: copera@cs-ccr-vftpro.cern.ch/32610. Created: 2013.10.07 03:05:05. Last update: 2013.10.07 03:05:05. Notifications: 2. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/21831. Created: 2013.09.26 12:38:29. Last update: 2013.09.26 12:38:32. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/14575. Created: 2013.09.26 14:55:30. Last update: 2013.09.26 16:04:07. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b3lc.cern.ch/2336. Created: 2013.09.26 09:57:17. Last update: 2013.09.26 09:57:26. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/12815. Created: 2013.09.02 16:43:03. Last update: 2013.09.02 16:43:06. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/13662. Created: 2013.09.30 17:06:37. Last update: 2013.09.30 17:06:56. Notifications: 15. Queue size: 0
- Dispatcher: cpson@cwo-ccc-b4lc.cern.ch/17982. Created: 2013.09.26 14:32:21. Last update: 2013.09.26 14:32:24. Notifications: 0. Queue size: 0

03:07:34 - Server CMW-PROXY-CTM.cs-ccr-cmw3 is all fine (last update was 03:03:16 07/10/13)

Runtime Diagnostics

cmwAdmin (NOT LOGGED) - default.xml web configuration

File Edit View

RBA: no token Search: CMW-PROXY-

Not monitoring servers; click them to update

03:03:13 07/10/13

Search result

CMW-PROXY-ADE.cs-ccr-cmw3	CMW-PROXY-BCTDC.cs-ccr-cmw4	CMW-PROXY-BCTF.cs-ccr-cmw4	CMW-PROXY-BETS.cs-ccr-cmw4	CMW-PROXY-BLDM.cs-ccr-cmw4	CMW-PROXY-BPM.cs-ccr-cmw4	CMW-PROXY-BQ.cs-ccr-cmw4	CMW-PROXY-BRA.cs-ccr-cmw4	CMW-PROXY-BSRT.cs-ccr-cmw4	CMW-PROXY-BT.cs-ccr-cmw4	CMW-PROXY-COLL-P3.cs-ccr-cmw4	CMW-PROXY-COLL-P7.cs-ccr-cmw4	CMW-PROXY-CPS.cs-ccr-cmw3	CMW-PROXY-CTF-BPM.cs-ccr-cmw3	CMW-PROXY-CTF-RF.cs-ccr-cmw3	CMW-PROXY-CTF.cs-ccr-cmw3	CMW-PROXY-CTM.cs-ccr-cmw3	CMW-PROXY-DTM1.cs-ccr-aptst	CMW-PROXY-LEI.cs-ccr-cmw3	CMW-PROXY-LIN.cs-ccr-cmw3	CMW-PROXY-PB.cs-ccr-cmw3	CMW-PROXY-TESTED-X64.cs-ccr-ctb07	CMW-PROXY-TESTED.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB1.cs-ccr-cmw5	CMW-PROXY-RF-SETPOINTB2.cs-ccr-cmw5	CMW-PROXY-TESTED-X64.cs-ccr-ctb04	CMW-PROXY-TESTED.cs-ccr-ctb07
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Current status

Information State Configuration Clients Logging Device Access Map Router

refresh

402. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078aa0). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20	237. HANDLER: SX.WE-CTMCCV1@cfv-ccr-ctmemm selector() onChange(false), KEY: SX.WE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
403. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802d180). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20	404. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078dc0). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43
238-HANDLER: SX.WWE-CTM/AQND@cfv-ccr-ctmemm selector(SPS.USER.SFTLONG2) onChange(false), KEY: SX.WWE-CTM#AQND#SPS.USER.SFTLONG2#0 (CONN	405. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802bcd0). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20
106. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130080e50). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43	239. HANDLER: SX.WWE-CTM/CCV1@cfv-ccr-ctmemm selector() onChange(false), KEY: SX.WWE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
407. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f8078028780). Created: 2013.10.01 17:04:20. Last update: 2013.10.01 17:04:20	408. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f813007f120). Created: 2013.10.02 11:22:43. Last update: 2013.10.02 11:22:43

1 grouped subscription with 2 distinct clients

Browse

NOTIFICATIONS:

- Dispatcher: copera@cs-ccr-vcp.cern.ch/29389. Created: 2013.09.28 18:33:06. Last update: 2013.09.28 18:33:06. Notifications: 2. Queue size: 0
- Dispatcher: copera@cs-ccr-vftpro.cern.ch/32610. Created: 2013.10.07 03:05:05. Last update: 2013.10.07 03:05:05. Notifications: 2. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/21831. Created: 2013.09.26 12:38:29. Last update: 2013.09.26 12:38:32. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/14575. Created: 2013.09.26 14:55:30. Last update: 2013.09.26 16:04:07. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b3lc.cern.ch/2336. Created: 2013.09.26 09:57:17. Last update: 2013.09.26 09:57:26. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/12815. Created: 2013.09.02 16:43:03. Last update: 2013.09.02 16:43:06. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/13662. Created: 2013.09.30 17:06:37. Last update: 2013.09.30 17:06:56. Notifications: 15. Queue size: 0
- Dispatcher: cpson@cwo-ccc-b4lc.cern.ch/17982. Created: 2013.09.26 14:32:21. Last update: 2013.09.26 14:32:24. Notifications: 0. Queue size: 0

03:07:34 - Server CMW-PROXY-CTM.cs-ccr-cmw3 is all fine (last update was 03:03:16 07/10/13)

Runtime Diagnostics

cmwAdmin (NOT LOGGED) - default.xml web configuration

File Edit View

RBA: no token Search: CMW-PROXY-

Search by name

Not monitoring servers; click them to update

03:03:13 07/10/13

Current status

CMW-PROXY-ADE.cs-ccr-cmw3 CMW-PROXY-BCTDC.cs-ccr-cmw4 CMW-PROXY-BCTF.cs-ccr-cmw4 CMW-PROXY-BETS.cs-ccr-cmw4 CMW-PROXY-BLDM.cs-ccr-cmw4 CMW-PROXY-BPM.cs-ccr-cmw4 CMW-PROXY-BQ.cs-ccr-cmw4 CMW-PROXY-BRA.cs-ccr-cmw4 CMW-PROXY-BSRT.cs-ccr-cmw4 CMW-PROXY-BT.cs-ccr-cmw4 CMW-PROXY-COLL-P3.cs-ccr-cmw4 CMW-PROXY-COLL-P7.cs-ccr-cmw4 CMW-PROXY-CPS.cs-ccr-cmw3 CMW-PROXY-CTF-BPM.cs-ccr-cmw3 CMW-PROXY-CTF-RF.cs-ccr-cmw3 CMW-PROXY-CTF.cs-ccr-cmw3 CMW-PROXY-CTM.cs-ccr-cmw3 CMW-PROXY-DTM1.cs-ccr-aptst CMW-PROXY-DTM2.cs-ccr-cmw5 CMW-PROXY-LEI.cs-ccr-cmw3 CMW-PROXY-LIN.cs-ccr-cmw3 CMW-PROXY-PSB.cs-ccr-cmw3 CMW-PROXY-RF-SKIPPOINTB1.cs-ccr-cmw5 CMW-PROXY-RF-SKIPPOINTB2.cs-ccr-cmw5 CMW-PROXY-TESTED-X64.cs-ccr-ctb04 CMW-PROXY-TESTED.cs-ccr-ctb07

Information State Configuration Clients Logging Device Access Map Router

refresh

402. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078aa0). Created: 2013.10.01 17:04:20 Last update: 2013.10.01 17:04:20
237. HANDLER: SX.WE-CTMCCV1@cfv-ccr-ctmemm selector() onChange(false), KEY: SX.WE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
403. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802d180). Created: 2013.10.01 17:04:20 Last update: 2013.10.01 17:04:20
404. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f8130078dc0). Created: 2013.10.02 11:22:43 Last update: 2013.10.02 11:22:43
238. HANDLER: SX.WWE-CTM/AQND@cfv-ccr-ctmemm selector(SPS.USER.SFTLONG2) onChange(false), KEY: SX.WWE-CTM#AQND#SPS.USER.SFTLONG2#0 (CONN
405. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f807802bcd0). Created: 2013.10.01 17:04:20 Last update: 2013.10.01 17:04:20
106. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f84300b0ae0). Created: 2013.10.02 11:22:43 Last update: 2013.10.02 11:22:43
239. HANDLER: SX.WWE-CTM/CCV1@cfv-ccr-ctmemm selector() onChange(false), KEY: SX.WWE-CTM#CCV1#0 (CONNECTED, Updated: 2013.10.01 17:04:20)
407. Subscription :spstop@cwo-ccc-a7lc.cern.ch/24222 listener(0x7f8078028780). Created: 2013.10.01 17:04:20 Last update: 2013.10.01 17:04:20
408. Subscription :scettour@CWE-513-VMW098/5508 listener(0x7f813007f120). Created: 2013.10.02 11:22:43 Last update: 2013.10.02 11:22:43

Browse

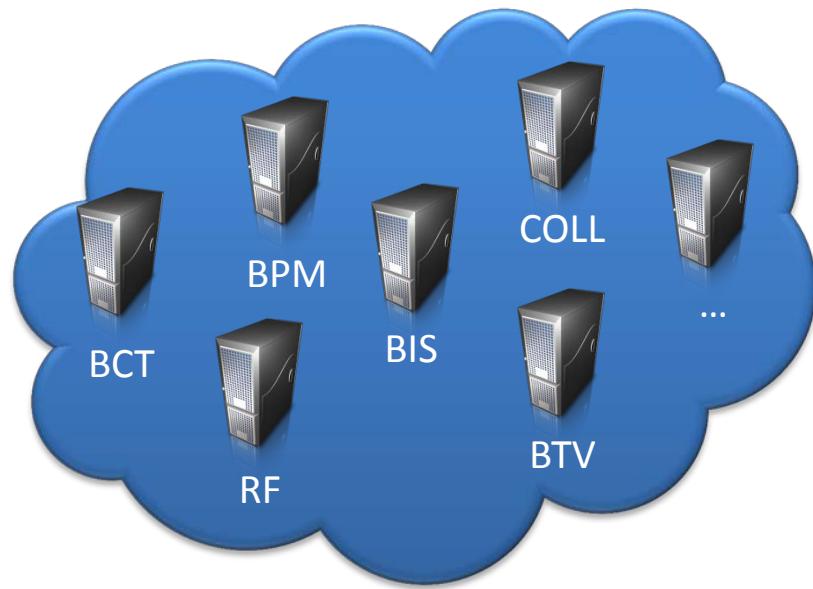
Single client queue

NOTIFICATIONS:

- Dispatcher: copera@cs-ccr-vcp.cern.ch/29389. Created: 2013.09.28 18:33:06. Last update: 2013.09.28 18:33:06. Notifications: 2. Queue size: 0
- Dispatcher: copera@cs-ccr-vftpro.cern.ch/32610. Created: 2013.10.07 03:05:05. Last update: 2013.10.07 03:05:05. Notifications: 2. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b1lf.cern.ch/21831. Created: 2013.09.26 12:38:29. Last update: 2013.09.26 12:38:32. Notifications: 9. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b2lf.cern.ch/14575. Created: 2013.09.26 14:55:30. Last update: 2013.09.26 16:04:07. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b3lc.cern.ch/2336. Created: 2013.09.26 09:57:17. Last update: 2013.09.26 09:57:26. Notifications: 15. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/12045. Created: 2013.09.02 16:43:00. Last update: 2013.09.02 16:43:00. Notifications: 0. Queue size: 0
- Dispatcher: cpsop@cwo-ccc-b4lc.cern.ch/13662. Created: 2013.09.30 17:06:37. Last update: 2013.09.30 17:06:56. Notifications: 15. Queue size: 0
- Dispatcher: cpson@cwo-ccc-b4lc.cern.ch/17982. Created: 2013.09.26 14:32:21. Last update: 2013.09.26 14:32:24. Notifications: 0. Queue size: 0

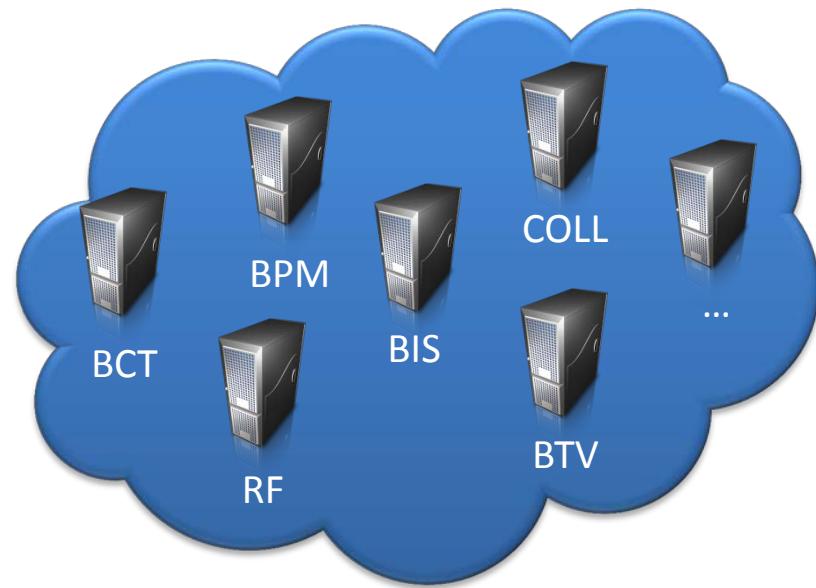
03:07:34 - Server CMW-PROXY-CTM.cs-ccr-cmw3 is all fine (last update was 03:03:16 07/10/13)

Deployment Today



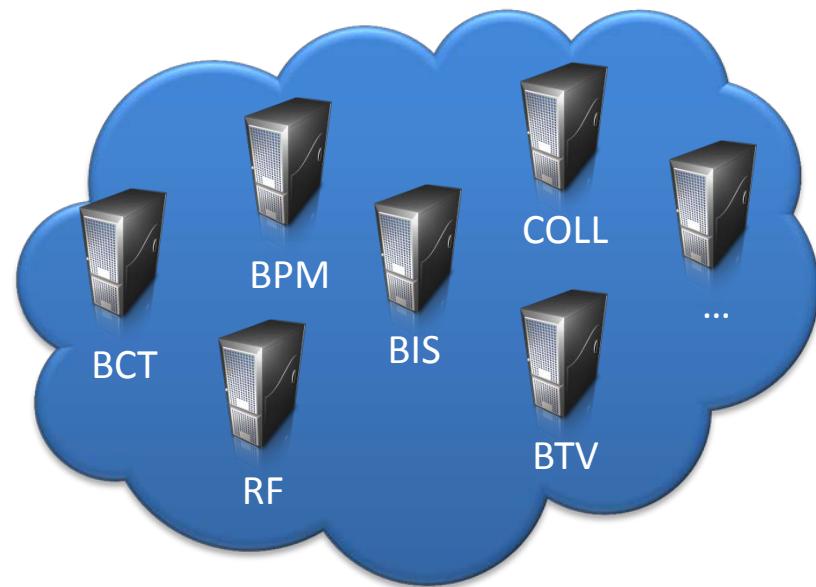
Deployment Today

- 26 **production** Proxies, 2 test
- Linux servers, **multicore** machines
- Independent, **manageable** entities
- **Monitored** by DIAMON



Deployment Today

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- Linux servers, **multicore** machines
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Overall result:

- ✓ Equipment data was delivered to **all interested applications**
- ✓ Front-end servers were operating in **stable & constant conditions**

Future Plans for Proxy



European Organization for Particle Physics
Organisation européenne pour la physique des particules

www.cern.ch

Future Plans for Proxy

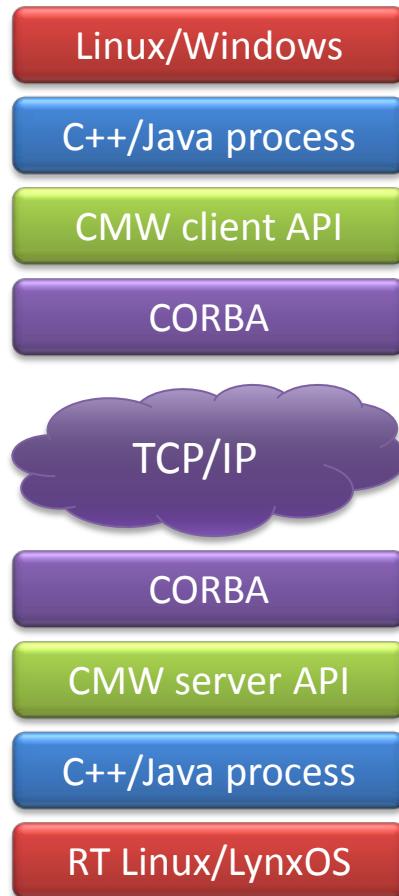
- **Follow major CMW upgrade**
 - Integrate with **CMW-RDA3**
 - **ZeroMQ** replaces CORBA
- **Improve Proxy performance**
 - Avoid data copies & serializaton
 - Less custom logic
- **New CMW-RDA3**
 - Beta release v. 0.4.0
 - Release **v. 1.0.0 begin. 2014**
 - Scalability tests in Oct 2014
 - **Open-source: LGPL**
 - Interest from: GSI & LBL
 - Knowledge exchange with TANGO



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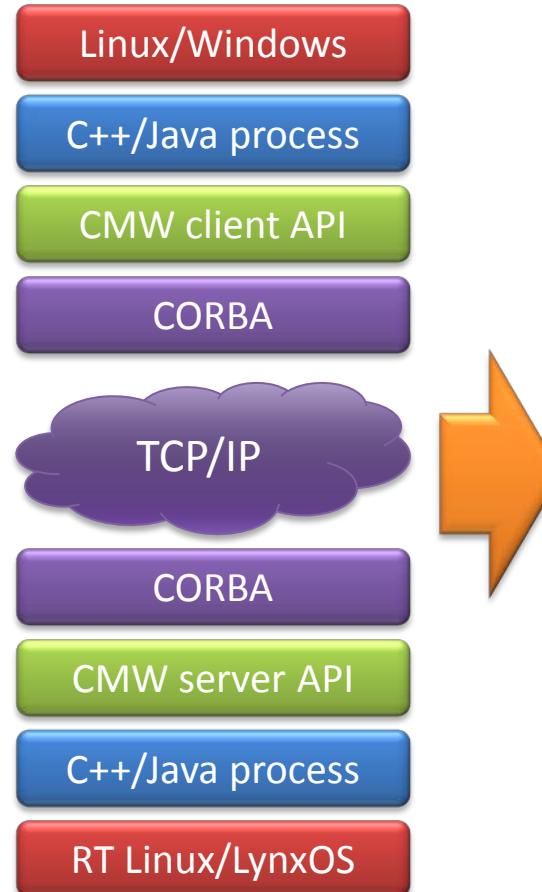
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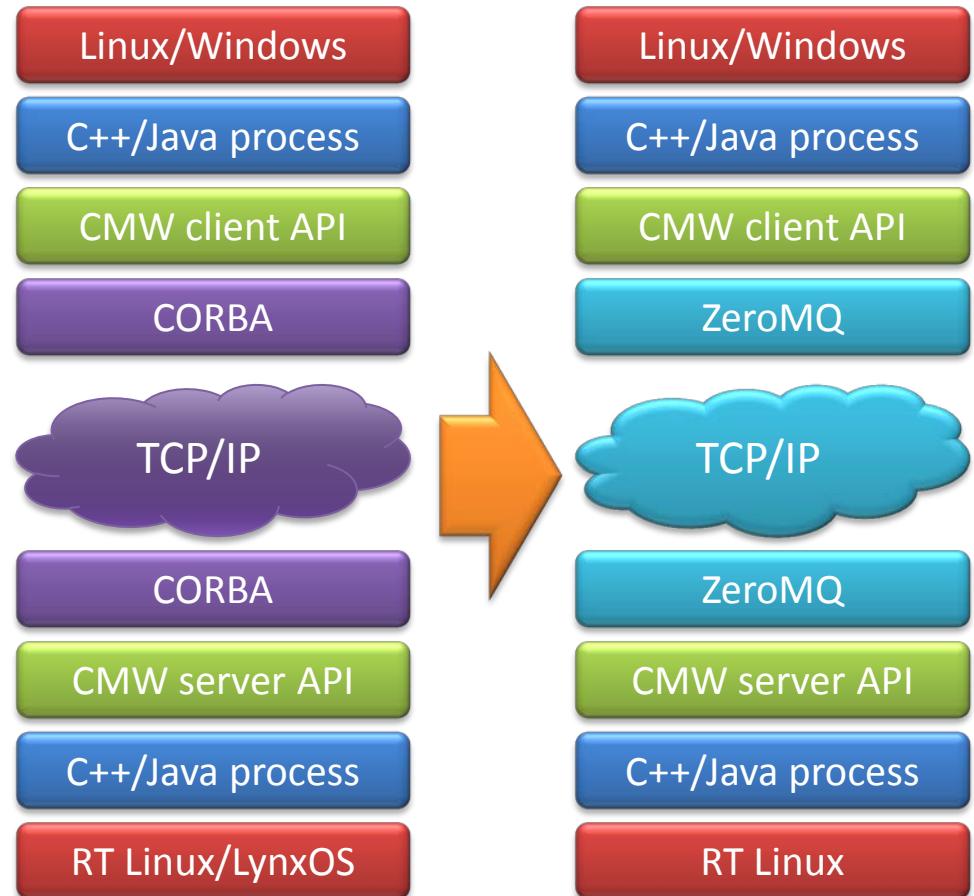
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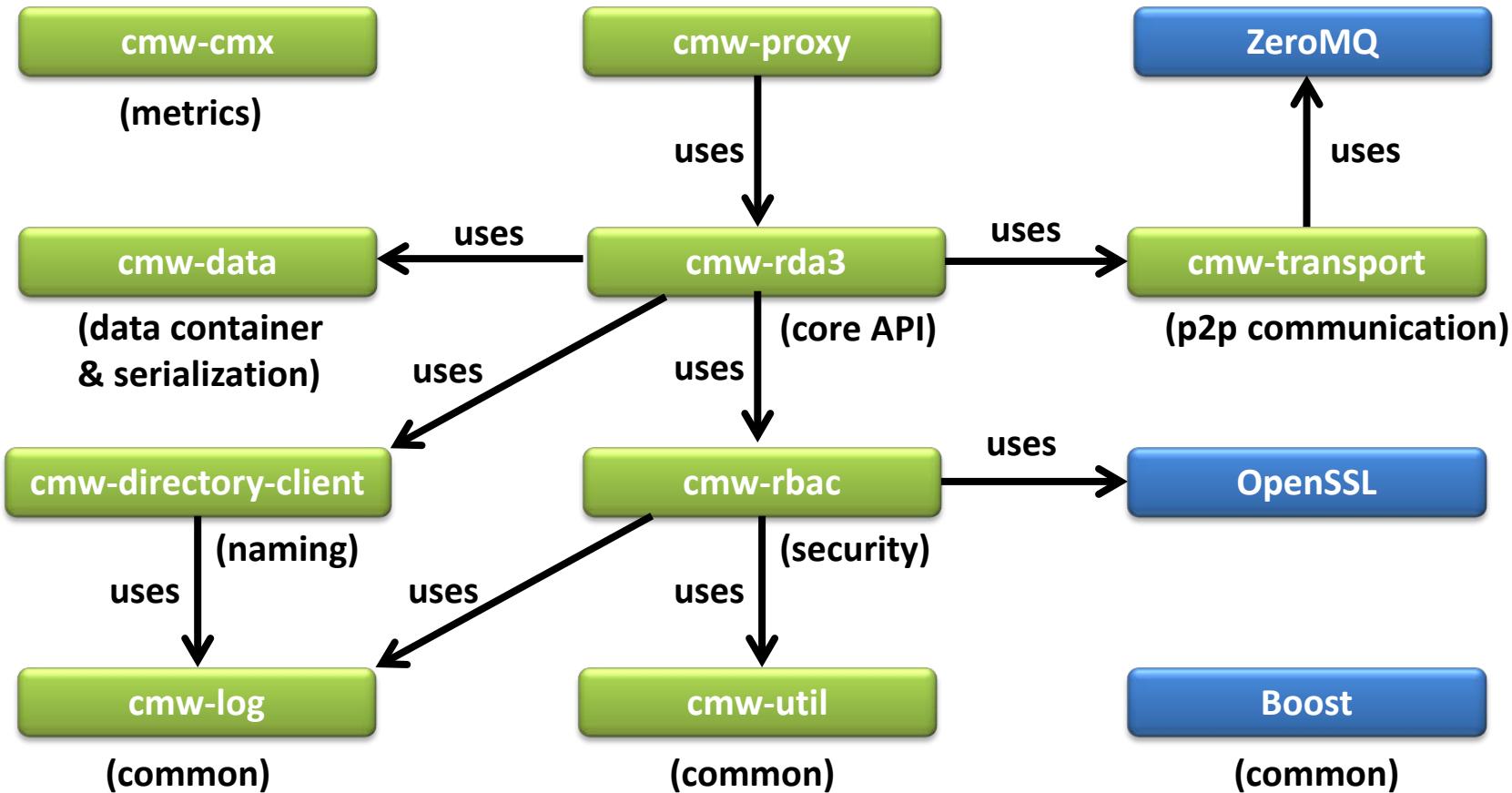
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New CMW: **open-source** approach & **component** architecture



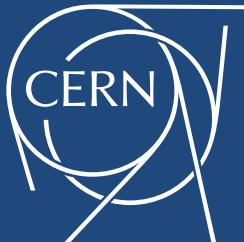
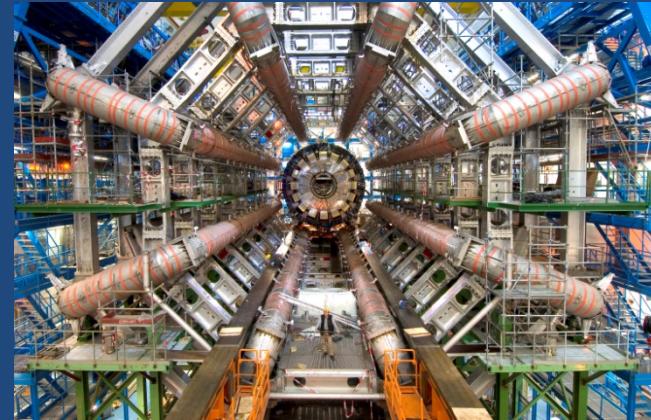
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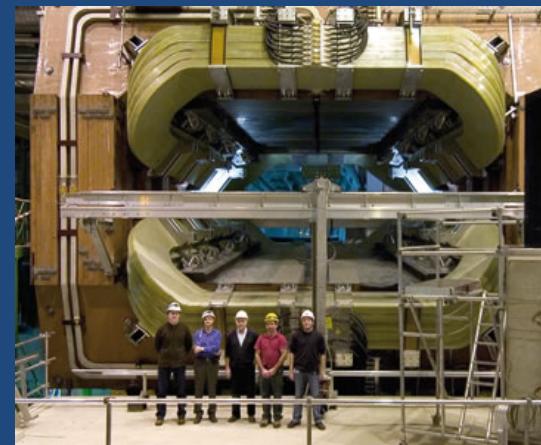
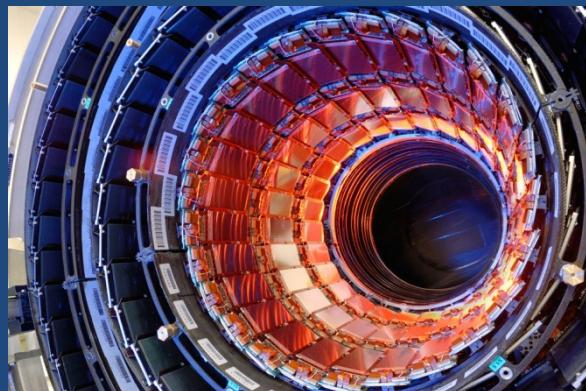
Contact

- CMW project: cmw-info@cern.ch
- Design & architecture: <http://tiny.cc/CMW-RDA3>
- Soon, public website: <http://cern.ch/cmw>
- Wojciech.Sliwinski@cern.ch





European Organization for Particle Physics
Take part!



Additional slides ...



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CMW in the Controls System

