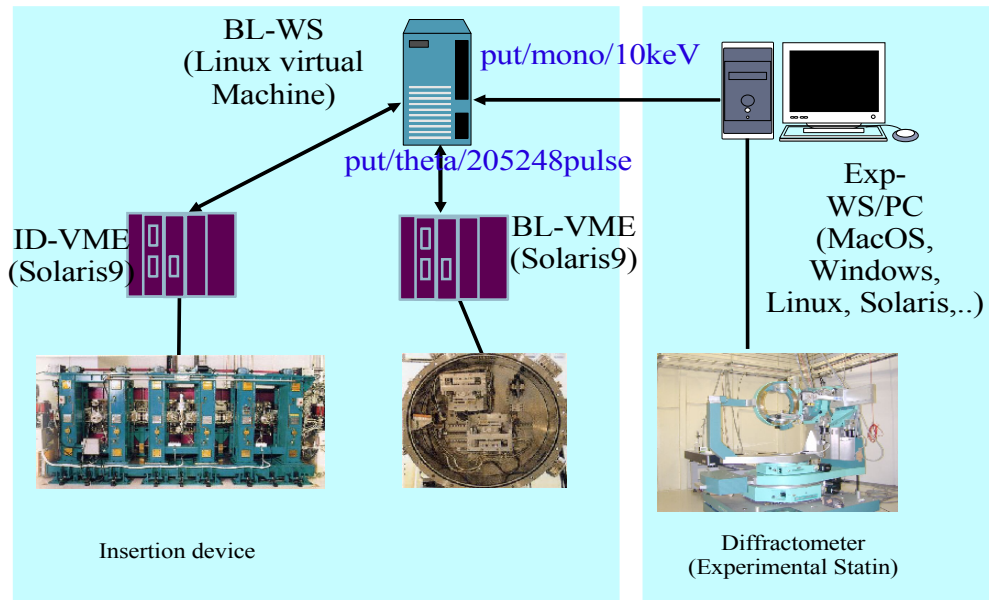


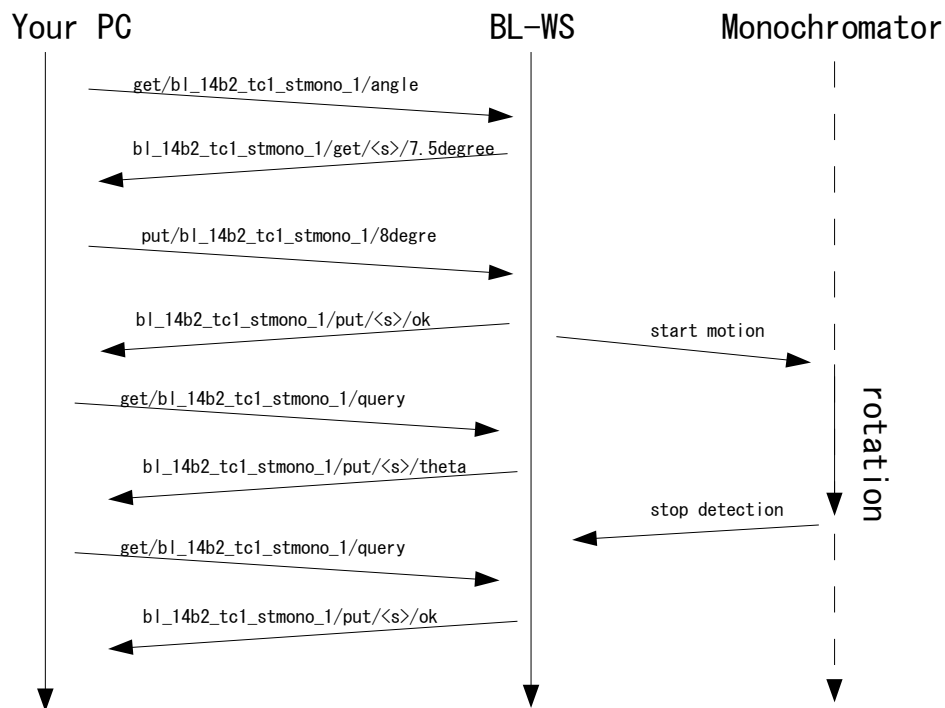
1. Beamline Control System at SPring-8

- MADOCA (Message And Database Oriented Control Architecture) Framework
Message Exchange based control system



Message format is S/V/O/C (usually S is automatically appended by the system).

- Messages to control a monochromator @ BL14B2



2. Summary of messages for the monochromator and counters

V	O	C (send)	C (return)
put	bl_14b2_tc1_stmono_1	%fkev	ok / fail
put	bl_14b2_tc1_stmono_1	%fangstrome	ok / fail
put	bl_14b2_tc1_stmono_1	%fdegree	ok / fail
get	bl_14b2_tc1_stmono_1	energy	%fkev / fail
get	bl_14b2_tc1_stmono_1	wavelength	%fangstrome / fail
get	bl_14b2_tc1_stmono_1	angle	%fdegree / fail
get	bl_14b2_tc1_stmono_1	query	ok / theta / y1 / alpha1 / alpha2 / running / stoping / fail
put	bl_14b2_tc1_stmono_1	stop	ok / fail
put	bl_14b2_tc1_stmono_1	emstop	ok / fail
put	bl_14b2_tc1_stmono_1	recover	ok / fail
put	bl_14b2_tc1_stmono_1_netplane	111 / 311 /511	ok / fail
get	bl_14b2_tc1_stmono_1	netplane	si111 / si311 / si511 / fail

V	O	C (send)	C (return)
put	bl_14b2_st1_counter_1	clear	ok / fail
put	bl_14b2_st1_counter_1	%dsec	ok / fail
get	bl_14b2_st1_counter_1	query	inactive_%dcount... / counting_ %dcount... / fail
get	bl_14b2_st1_counter_1	count	%dcount_%dcount_%dcount_%dcount / fail

- Single message command for testing
tel lms <command>

Example

```
>tel lms get/bl_14b2_tc1_stmono_1/angle
tel lms::received message=bl_14b2_tc1_stmono_1/get/5400_tel lms_furukawa_vaios90s/12degree
>tel lms put/bl_14b2_tc1_stmono_1/8.1kev
tel lms::received message=bl_14b2_tc1_stmono_1/put/5408_tel lms_furukawa_vaios90s/ok
>tel lms get/bl_14b2_st1_counter_1/count
tel lms::received
message=bl_14b2_st1_counter_1/get/5414_tel lms_furukawa_vaios90s/0count_0count_0count_0cou
nt
>tel lms put/bl_14b2_st1_counter_1/clear
tel lms::received message=bl_14b2_st1_counter_1/put/5426_tel lms_furukawa_vaios90s/ok
>tel lms put/bl_14b2_st1_counter_1/1sec
tel lms::received message=bl_14b2_st1_counter_1/put/5434_tel lms_furukawa_vaios90s/ok
>tel lms get/bl_14b2_st1_counter_1/query
tel lms::received
message=bl_14b2_st1_counter_1/get/5440_tel lms_furukawa_vaios90s/counting_0count_0count_0c
ount_0count
>tel lms get/bl_14b2_st1_counter_1/query
tel lms::received
message=bl_14b2_st1_counter_1/get/5446_tel lms_furukawa_vaios90s/inactive_0count_0count_0c
ount_0count
```

Try several commands and consider message sequence to obtain XAFS spectra.

NOTE: Please do not change the netplane today.

- More details of control commands (in the SPring-8 site only)
http://madoca/for_staff_and_users/beamline/usr_svc/

3. Command Interpreter

- Command interpreter (CI) accepts an abstract message like energy or wavelength for beamline components and decompose it into primitive messages which the VME computer can accept. (Primitive messages are used to control individual axis of the beamline components like the monochromator's two theta axis)
- The CI refers a configuration file which describes how an abstract message is interpreted and how to decompose it into primitive messages.
- You can describe the sequence to obtain XAFS spectra in the configuration file.
- Example

```
1: SUBSECTION FUNCTION
2: apply put/count_%dsec_%dtimes
3:
4: function $i [ 0 ]
5: while [ $i < target(2) ]
6:   function bl_14b2_st1_counter_1 [ "clear" ]
7:   function bl_14b2_st1_counter_1 [ target(1) ] sec
8:   sequence
9:   print [ count_1 ] counts
10:  print [ new_line() ]
11:  function $i [ $i + 1 ]
12: endwhile
13: ENDSUBSECTION
```

- 1: Declaration of new abstract message section
- 2: Abstract message, %d, %f and %s denote a integer number, real number and string, respectively.
- 4: Initialization of internal variable. "\$" denotes an internal variable.
- 6: send "put/bl_14b2_st1_counter_1/clear"
- 7: send "put/bl_14b2_st1_counter_1/1sec", time length is described in the second part of C in the abstract message from client.
- 8: Wait for counting end
- 9: Display on screen result. The variable "count_1" is described in other section.

Make a XAFS measurement sequence into the configuration file.