

PAUL SCHERRER INSTITUT



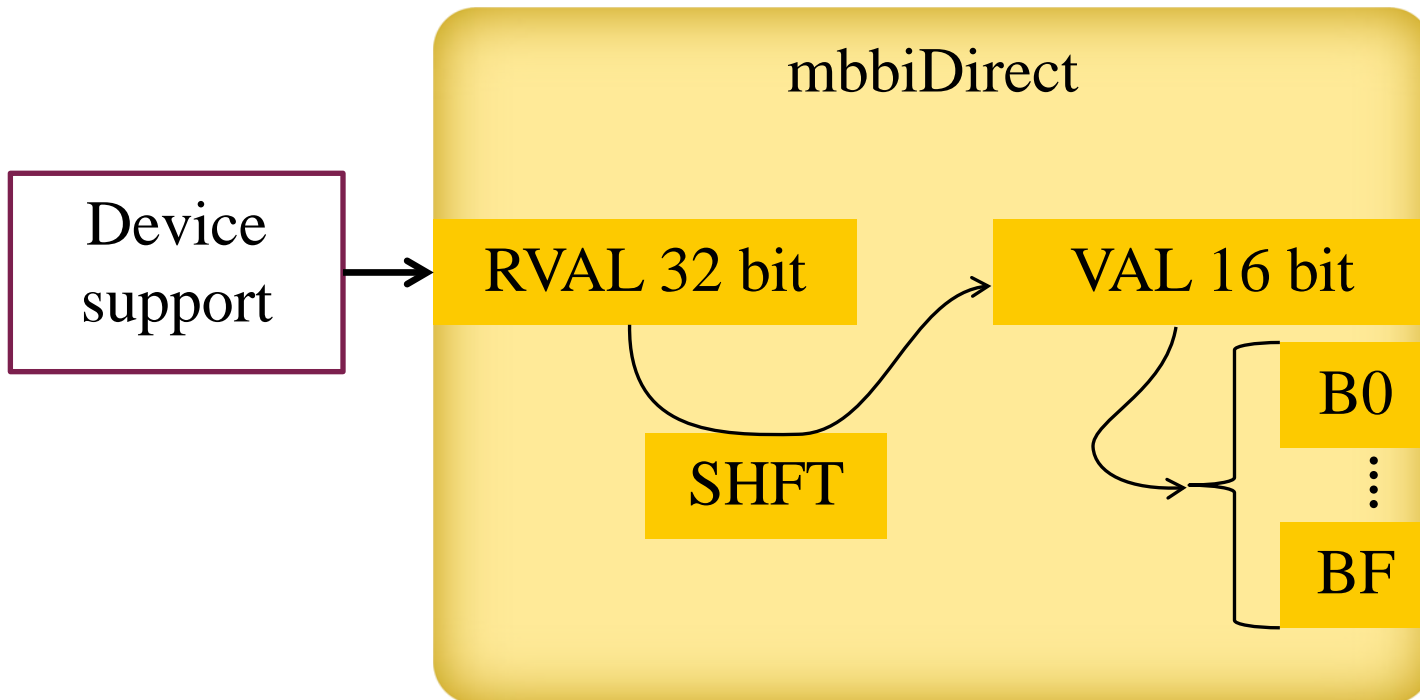
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Extending mbbiDirect and mbboDirect Records to 32 Bit

EPICS Collaboration Meeting at ICALEPCS 2017

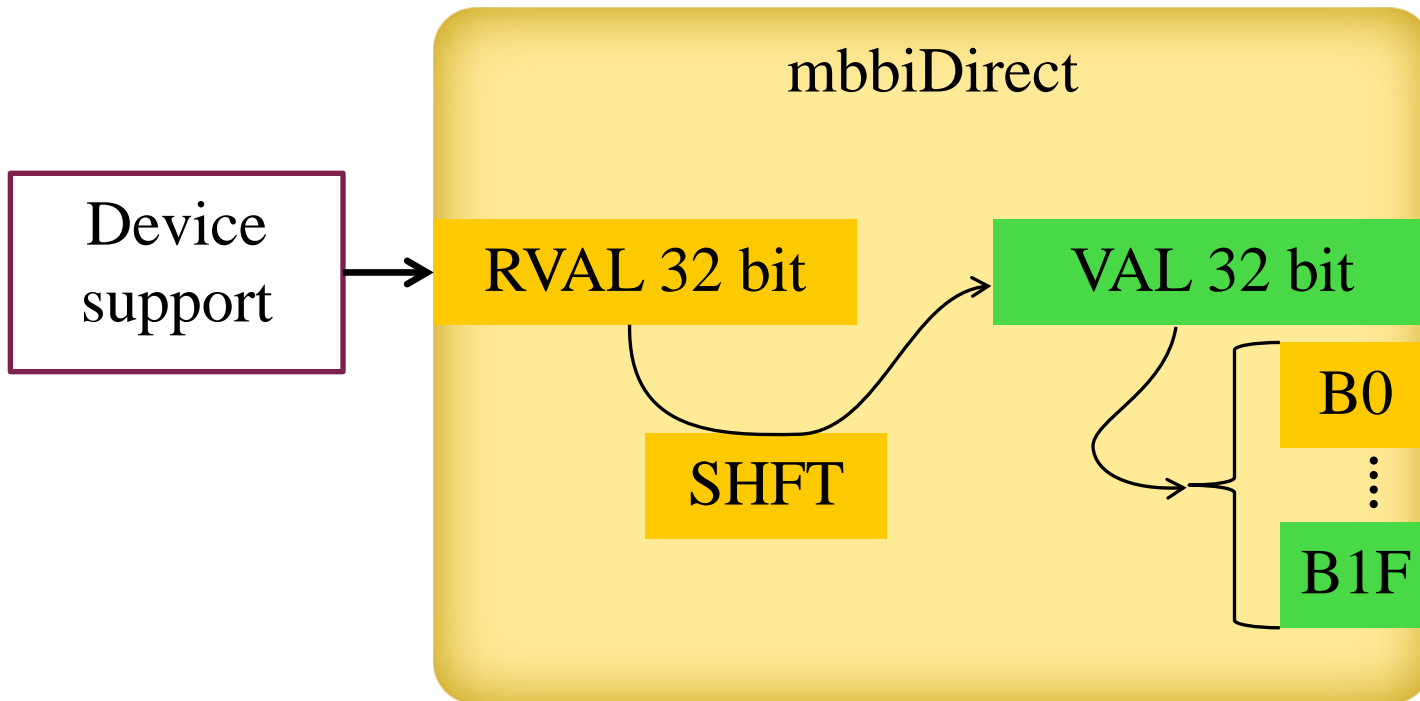
Current mbbiDirect

- Input (RVAL) is 32 bit
- Output (VAL, B0 ... BF) is only 16 bit



- Why?

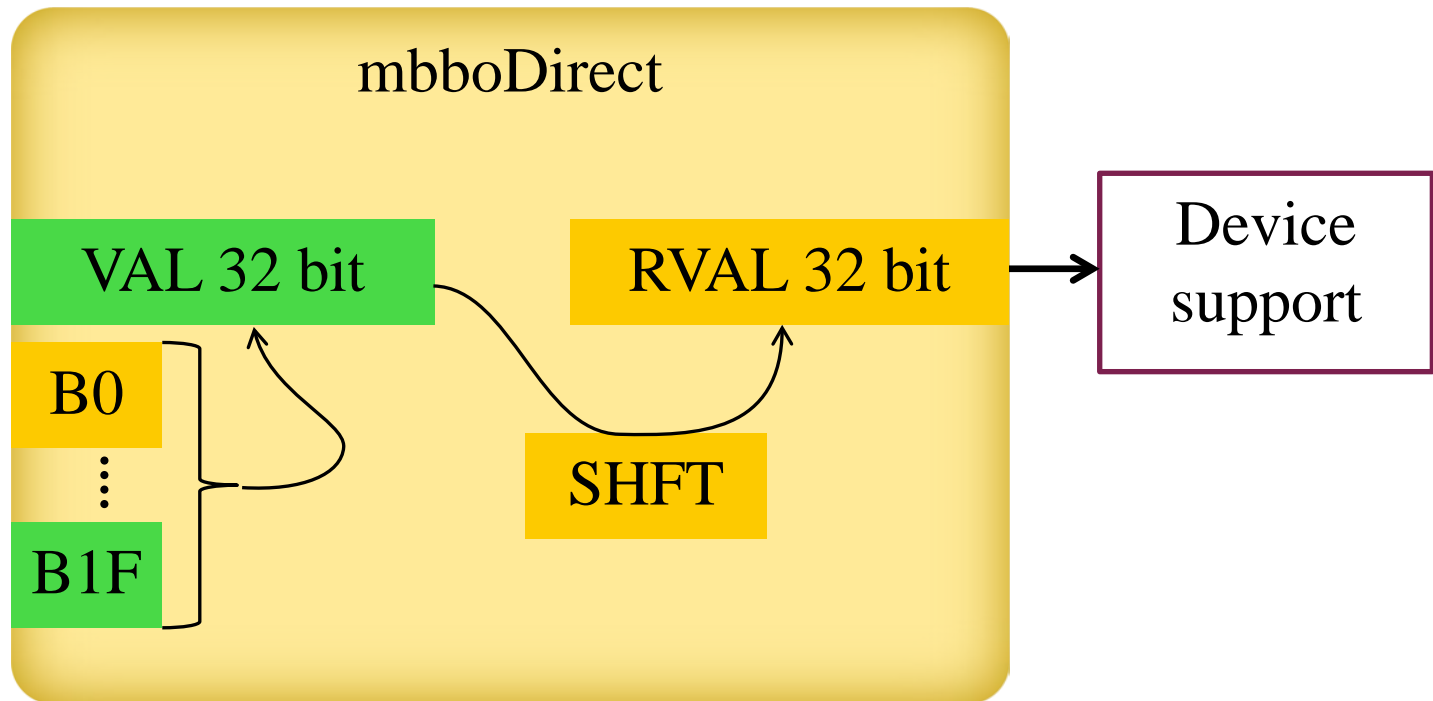
- Input (RVAL) stays 32 bit
- Output (VAL, B0 ... BF, B10 ... B1F) will be 32 bit as well



- Mostly backward compatible

Same for mbboDirect

- Output (RVAL) stays 32 bit
- Input (VAL, B0 ... BF, B10 ... B1F) will be 32 bit as well



- RVAL was and will be ULONG
 - Most device supports only access RVAL and **need no change**
 - Record memory layout changes: re-compile all device supports!
- VAL was USHORT and will be LONG
 - For 16 bit values nothing will change
 - Channel Access Clients have always seen a LONG
- Device support **accessing VAL or B* fields** need modification to support higher bits.
 - Use 32 bit variables when accessing `prec->val`
 - Using pointer `&prec->val` is not safe!
 - When iterating bit fields check for macros like `mbboDirectRecordB1F`

Why not 64 bit?

- 64 bit integers are not supported by Channel Access
- **Changing RVAL to 64 bit would break all existing device support**
- Possible as new record type

What do you think?