**New Instructions:**

**INIT_SETUP/INIT_RUN**
- configure on-chip I/O & resources for test

**CLAMP_HOLD/CLAMP_RELEASE**
- hold pins & isolate for in-situ on-chip tests

**IC_RESET** – Reset isolation and control
- Reset of IC or domains through JTAG

**BSDL attributes for Internal JTAG TDR registers**
- for BIST/PLLs/SERDES IP blocks

**MNEMONICS for JTAG register values**
- Easy to remember words – start/stop, on/off

**Package files for on-chip IP blocks**
- self-contained definitions from IP providers

**PDL Script files for device initialization/access**
- Read/write registers via Mnemonics
Mnemonics and register sub-fields
Guide user through GUIs

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<th>Mnemonics and register sub-fields</th>
<th>Guide user through GUIs</th>
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### IP level PDL can be re-targeted to IC

```plaintext
# run some basic tests on registers
iScope UI
iWrite LBIST RUN    # bit-position independent registers
iApply
iRunLoop 3000000
iRead LBISTSTATUS PASS  # check that LBIST passed
iApply
iWrite SWING S400MV   # set differential Swing to 400mv
iWrite PROTOCOL1 SRIO # set protocol to SRIO
iApply
iWrite CAMBIST RUN    # execute CAM BIST
iApply
iRead CAMSTATUS DONE
```

### New BSDL attributes support user TDRs

```plaintext
attribute REGISTER_FIELDS of Example : entity is
"init_data [505] ( ",&
"(Clock[5] IS (504 DOWNTO 500) DEFAULT(Clockset(100Mhz)) ),"&
"(Protocol[3] IS (302 DOWNTO 300) DEFAULT(Protocol(off)) ),"&
"(Voltage[2] IS (101 DOWNTO 100) ), "&
"(Reserved[20] IS ( 19 DOWNTO 0) )");" &
"myTDR[129] ( ",&
"(Address[64] IS (163 DOWNTO 100) ), ",&
"(Data[64] IS (227 DOWNTO 164) ), ",&
"(WE[1] IS (228) ));"
```

29.1 ITC 2011
use std_1149_1_2011.all;

attribute REGISTER_MNEMONICS of SerdesH : entity is
"BTERM  (Norm  (100) <Normal RX Term. RX threshold @800mV >), " &
"Dis   (111) <Termination disabled >), " &
"rsvrd (Others) <Reserved - Undefined behavior>), " &
"BSCM  (Norm_cm (1) <Normal TX Boundary Scan Common Mode>, " &
"Diag_cm (0) <Diagnostic mode. Low TX common mode>), " &
"BSSWING (1160mV (11) <Boundary Scan Output Swing, mVdpp>, " &
"1030mV (10), " &
"890mV (01), " &
"740mV (00), " &
"CHPMFG (Test (100110) <Chip level manufacturing test > ) " ;

attribute REGISTER_FIELDS of SerdesH : package is
"init_data[6] ( "&
-- TDI
-- "=" Value is required but deferred to BSDL level
"(ALLBITS [6 IS (5 DOWNTO 0) DEFAULT(CHPMFG(*)) NOPI ), "&
"(BTERM [3] IS (5 DOWNTO 3) DEFAULT(BTERM(*)) NOPI ), "&
"(BSCM [1] IS (2) DEFAULT(BSCM(*)) NOPI ), "&
"(BSSWING [2] IS (1 DOWNTO 0) DEFAULT(BSSWING(*)) NOPI ) "&
"
)";

end SerdesH;

package body SerdesH is
use STD_1149_1_2011.all;

end SerdesH;

attribute REGISTER_ASSEMBLY of chip_2011 : entity is
"INIT_DATA ( "&
-- TDI
"(USING SerdesO)," &
"(Array IO(0 TO 62) IS init_data DEFAULT.ALLBITS(CHPMFG(Test)) ),"&
"(USING SerdesH)," &
"(HIO IS init_data DEFAULT.ALLBITS (CHPMFG(Test) ) ), "&
"(USING SerdesO)," &
"(Array IO(63) IS init_data DEFAULT.BTERM (BTERM(Cpflt)) " &
"DEFAULT.BSCM (BSCM(DC_CPL)) DEFAULT.BSSWING (BSSWING(1115mV)) "&
")");
-- TDO

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