



Pacific Northwest  
NATIONAL LABORATORY

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# Belle II Conditions DB

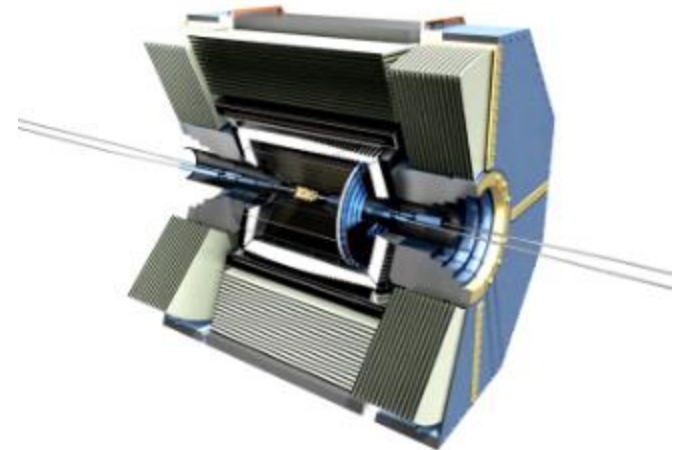
LYNN WOOD

Belle II

HEP Software Foundation Workshop, Jan 20-22, 2015

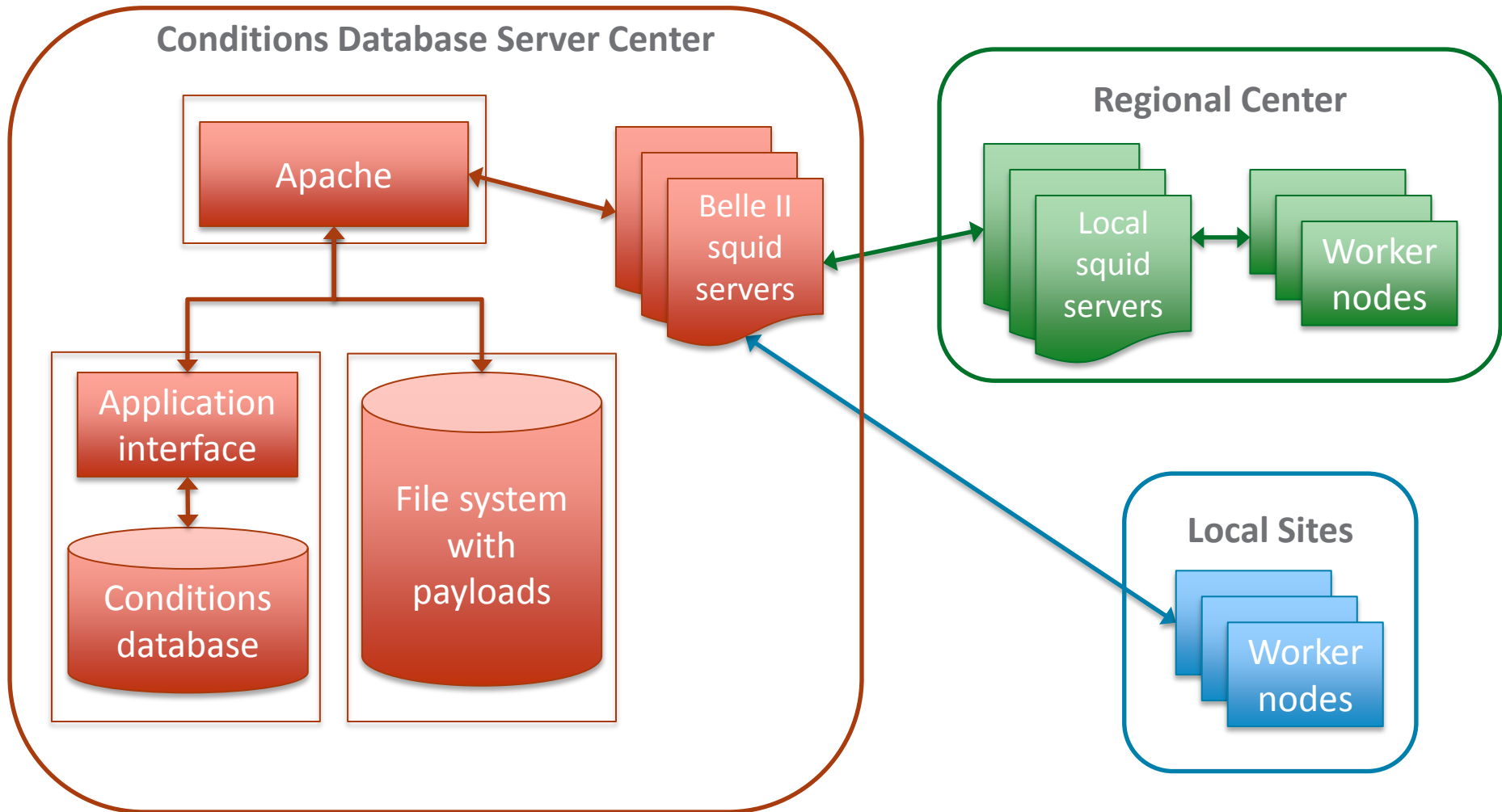


- ▶ Belle II relies on four critical databases:
  - **Configuration DB**, used to configure the subdetectors
  - **Logger DB**, used to record subdetector status
  - **Conditions DB**, used to store calibrations for data processing
  - **File metadata DB**, used to identify and locate data files
  
- ▶ Focus of effort by Database Group is on **Conditions Database**
  - High-priority effort (behind schedule)
  - Active development effort at PNNL started in May 2014



- ▶ Limited resources require leveraging existing solutions
  - ▶ Belle II had considered Frontier/Squid framework for Conditions DB
  
- ▶ Had discussion with CMS database group members in May 2014
  - Clarified details of conditions data implementation
  - Requested details of what worked well, and what did not
  
- ▶ Had similar discussion with ATLAS database group members in July
  
- ▶ Results of discussions:
  - Belle II schema definition based on CMS implementation
  - Distributed database proposal very similar to ATLAS Run-2 structure
  - Belle II implementation relies heavily on existing software
  - Ready for another round of discussions with CMS and ATLAS

# Belle II Distributed Database Design



- ▶ Why not HEP-specific tools?
  - Belle II uses PostgreSQL with methods on server and payloads as files
  - Using industry standard applications allows Belle II to bring in any computing professional for support when needed
  
- ▶ Belle II is utilizing CS and DB professionals in conjunction with PhD physicists to stand up Conditions DB
  - Cost-savings from fractional FTE spending at PNNL
  - Easier to bring in new staff in the future
  - Gain from expertise of professionals who do this all day, every day
  
- ▶ Prototype system nearly complete at PNNL
  - Systems set up on local cloud
  
- ▶ “Beta” release for Belle II developers later this year

- ▶ Consultation from other experiments was critical for Belle II
  - Helped streamline development and **avoid pitfalls**
  - Plan on continued consultation as design continues
  
- ▶ Reliance on industry-standard tools is a major advantage for Belle II
  - Use of existing CS professionals has allowed Belle II to stand up a prototype conditions DB for evaluation at PNNL in ~7 months
  
- ▶ When considering HSF-sponsored efforts (evaluation, reviews, training, etc.) it is critical that CS professionals and industry standard tools are included in the process as well