

IEEE BDA Tutorial Series: Big Data & Analytics for Power Systems

The Increasing Data Streams in Power Grid Operation

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Abstract: The real-time measurement data that are streamed to the control centers are increasing, both in volume and in type. PMU data and AMI data are new types of data that are being handled by EMS and DMS respectively. The DMS data volumes are increasing because of monitoring of generators, active loads, storage devices and intelligent switches in the distribution systems. In addition, these control centers are adding functions which generate more calculated data that needs to be shared with neighboring control centers. This data sharing can be hierarchical between EMS and DMS but also horizontal between neighboring EMS or neighboring DMS. This streaming of data from the field to the control centers and between control centers is highlighting the need for communication networks that are networked rather than just supplying a central server. The database design for such data needs to become much more distributed than today's centralized design.

Bio: Anjan Bose is a Regents Professor and the Distinguished Professor of Electric Power Engineering at Washington State University in Pullman, Washington, where he also served as the Dean of the College of Engineering & Architecture (1998-2005). In 2012-13 he served as a Senior Advisor to the US Department of Energy on the electric power grid during the Obama Administration. He has worked in the electric power industry as well as academe for over 40 years. Dr. Bose is a Member of the US National Academy of Engineering, as well as those of China and India. He is a Fellow of the IEEE which has awarded him the Halperin T&D Award, Distinguished Power Educator Award and the Millennium Medal. He is also the recipient of the CIGRE Medal.

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