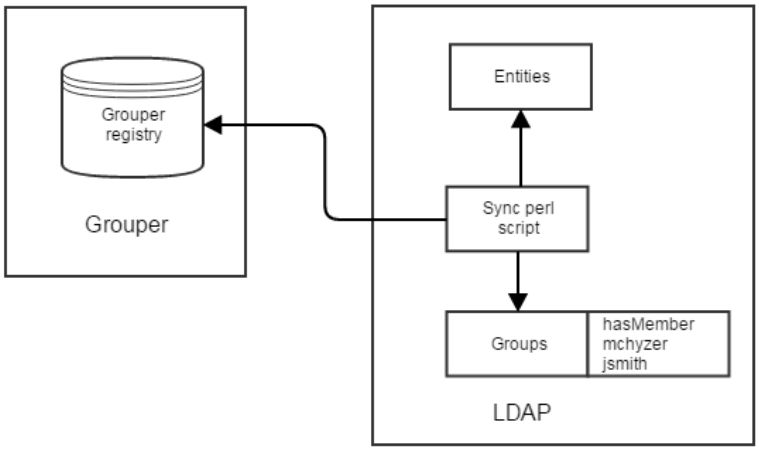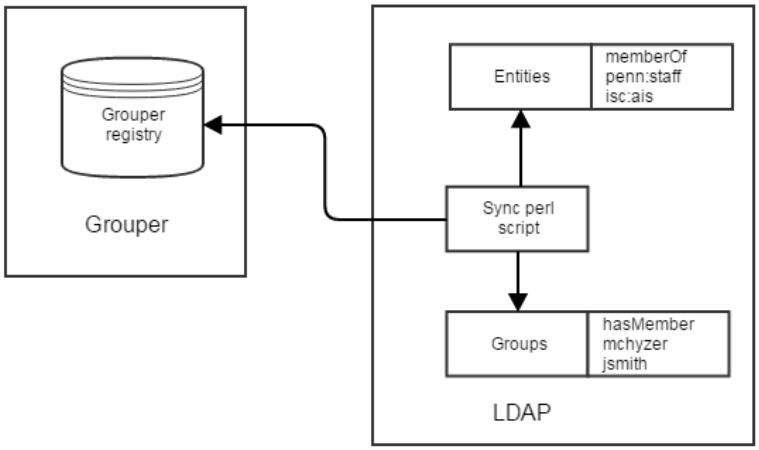University of Pennsylvania diagrams