A native Kansan, Kris Rinne graduated from Bern High School in Bern, Kansas in 1972, and received her bachelor's degree with an emphasis in math from Washburn University in 1976. At Washburn, Rinne was active in women's basketball, the WU Pep Band and was a member of Phi Kappa Phi. While her original goal had been to become a high school math teacher and basketball coach, Richard Shermoen, a Washburn professor, arranged an interview for her with Southwestern Bell Telephone Company, and she was put on a path to a nearly 40-year career as one of the top female executives in wireless telecommunications.

Rinne held a variety of leadership positions at Southwestern Bell Telephone Company, Southwestern Bell Mobile Systems, Cingular and eventually AT&T, where she retired in 2014 as the senior vice president of network technologies. During her career, Rinne and her team were pioneers in the evolution, development and implementation of such wireless network technologies as smartphones, tablets and high-speed LTE services. In her final role at AT&T, she was responsible for leading the team that planned the technology evolution of AT&T's wireless network as well as its global IP backbone. Rinne had been involved in many industry firsts, including the world's first wide-scale launch of a universal mobile telecommunication/high-speed downlink packet access system in 2005, the initial iPhone launch in 2007 and the distributed architecture for 4G LTE in 2011. She served as chairperson of the board of governors at 3G (later 4G and 5G) Americas, LLC, and the Alliance for Telecommunications Industry Solutions board.

In 2011, she was named "The Most Influential Woman in Wireless" by Fierce Wireless and remained in their top 10 list annually until her retirement. She was inducted into the Wireless Hall of Fame in 2013 and into the Women in Technology International Hall of Fame in 2014. She currently serves on the board of directors for Ericsson and Synchronoss.

Rinne was honored as a Washburn Alumni Fellow in 2006 and joined the Washburn University Foundation board of trustees in 2012 including serving as a director from 2014 to 2018 and on the development and audit committees. She has been a member of the Washburn Women's Venture Partners since 2009 and became chair in 2015. Through both WWVP and her own philanthropy, Rinne has helped secure financial support for numerous priorities at Washburn and has been an especially significant supporter of empowering women leaders and minority women in STEM.

Rinne lives in Atlanta, Georgia, and, besides her Washburn service, enjoys singing in the Johnson Ferry Baptist Church choir, walking and watching college sports.