In the present work we study the scattering of vector gauge bosons in the framework of higher dimensional theory of Kaluza-Klein type. This work provides an instructive introduction to the given problematics with all technical details of the relevant calculations. The basic ideas of the theory are demonstrated on a set of simple models. Particular attention is paid to the selection of consistent boundary conditions using the variational principle of least action, gauge invariance and tree-level unitarity of longitudinal gauge bosons scattering.