The diploma thesis deals with security status of the transmission system within the Czech Republic. The paper reflects upon the character of the transmission system in the context of European critical infrastructure, as well as its position within the system of power supplying. It defines elements of both Czech and European critical infrastructure, and provides résumé of threats that could endanger or even destroy these elements. By employing quantitative risk analysis, as well as other methods, the text is trying to answer the question whether the Czech transmission system is currently dealing with any real threats. It also compares various kinds of approaches to securing of the critical infrastructure with regard to interests of variety of actors, and positions the selected EU member states hold. The whole concept is evaluated from the view of energy security, with an emphasis on network structure whose role in this concept is concerned essential by the thesis, especially insofar as the future is concerned.