Asymmetric nuclear matter is studied in the frame of relativistic mean-field theory, using scalar-isoscalar $\sigma$, vector-isoscalar $\omega$ meson together with their selfinteractions, vector-isovector $\rho$ meson with its cross-interaction with $\omega$ meson too, and scalar-isovector $\delta$ meson as degrees of freedom. The model is used to parameterize the nuclear matter properties results calculated by more fundamental Dirac-Brueckner-Hartree-Fock theory and thus to provide an effective DBHF model applicable also to finite nuclei. Vector $\omega$-$\rho$ cross-interaction seems to be an useful degree of freedom for describing of the asymmetric nuclear matter, mostly due to its impact on density dependence of the symmetry energy.