

$$\begin{aligned}
 E(\textcolor{blue}{v}_1) \oplus E(\textcolor{red}{v}_2) &= \langle g^{\textcolor{blue}{r}_1}, (g^a)^{\textcolor{blue}{r}_1} g^{\textcolor{blue}{v}_1} \rangle \oplus \langle g^{\textcolor{red}{r}_2}, (g^a)^{\textcolor{red}{r}_2} g^{\textcolor{red}{v}_2} \rangle \\
 &= \langle g^{\textcolor{blue}{r}_1 + \textcolor{red}{r}_2}, g^{a(\textcolor{blue}{r}_1 + \textcolor{red}{r}_2)} g^{\textcolor{blue}{v}_1 + \textcolor{red}{v}_2} \rangle \\
 &= E(\textcolor{blue}{v}_1 + \textcolor{red}{v}_2)
 \end{aligned}$$