$$\delta_j^l = \sum_k w_{kj}^{l+1} \delta_k^{l+1} \sigma'(z_j^l)$$

In matrix form,

$$\delta_1^l = \begin{pmatrix} w_{11}^{l+1} & w_{21}^{l+1} & w_{31}^{l+1} & \cdots \end{pmatrix} \begin{pmatrix} \delta_1^{l+1} \\ \delta_2^{l+1} \\ \delta_3^{l+1} \\ \vdots \end{pmatrix} \sigma'(z_1^l)$$

$$\delta_2^l = \begin{pmatrix} w_{12}^{l+1} & w_{22}^{l+1} & w_{32}^{l+1} & \cdots \end{pmatrix} \begin{pmatrix} \delta_1^{l+1} \\ \delta_2^{l+1} \\ \delta_3^{l+1} \\ \vdots \end{pmatrix} \sigma'(z_2^l)$$

$$\sigma_3^l = \begin{pmatrix} w_{13}^{l+1} & w_{23}^{l+1} & w_{33}^{l+1} & \cdots \end{pmatrix} \begin{pmatrix} \delta_1^{l+1} \\ \delta_2^{l+1} \\ \delta_3^{l+1} \\ \vdots \end{pmatrix} \sigma'(z_3^l)$$

$$\begin{pmatrix} \delta_1^l \\ \delta_2^l \\ \delta_3^l \\ \vdots \end{pmatrix} = \begin{pmatrix} w_{11}^{l+1} & w_{21}^{l+1} & w_{31}^{l+1} & \cdots \\ w_{12}^{l+1} & w_{22}^{l+1} & w_{32}^{l+1} & \cdots \\ w_{13}^{l+1} & w_{23}^{l+1} & w_{33}^{l+1} & \cdots \\ \vdots & \vdots & \vdots & \end{pmatrix} \begin{pmatrix} \delta_1^{l+1} \\ \delta_2^{l+1} \\ \delta_3^{l+1} \\ \vdots \end{pmatrix} \begin{pmatrix} \sigma'(z_1^l) \\ \sigma'(z_2^l) \\ \sigma'(z_3^l) \\ \vdots \end{pmatrix}$$

$$= \begin{pmatrix} w_{11}^{l+1} & w_{12}^{l+1} & w_{13}^{l+1} & \cdots \\ w_{21}^{l+1} & w_{22}^{l+1} & w_{23}^{l+1} & \cdots \\ w_{31}^{l+1} & w_{32}^{l+1} & w_{33}^{l+1} & \cdots \\ \vdots & \vdots & \vdots & \end{pmatrix}^T \cdot \begin{pmatrix} \delta_1^{l+1} \\ \delta_2^{l+1} \\ \delta_3^{l+1} \\ \vdots \end{pmatrix} \begin{pmatrix} \sigma'(z_1^l) \\ \sigma'(z_2^l) \\ \sigma'(z_3^l) \\ \vdots \end{pmatrix}$$

$$\delta^l = \left((w^{l+1})^T \delta^{l+1} \right) \odot \sigma'(z^l)$$