> **NOTE**   Before moving on, a comment is in order about the relative use of the word
> "summary" in OSPF. The typical uses within OSPF include the following:
>
> ■ Type 3 LSAs are called *summary* LSAs in the OSPF RFCs.
>
> ■ Type 5 and 7 external LSAs are sometimes called summary LSAs, because the LSAs
>   cannot represent detailed topology information.
>
> ■ The term *LSA summary* refers to the LSA headers that summarize LSAs and are sent inside
>   DD packets.
>
> ■ The term *summary* can also be used to refer to summary routes created with the **area range**
>   and **summary-address** commands.

Stubby Areas

OSPF can further reduce overhead by treating each area with one of several variations of rules,
based on a concept called a *stubby area*. Stubby areas take advantage of the fact that to reach
subnets in other areas, routers in an area must forward the packets to some ABR. Without stubby
areas, ABRs must advertise all the subnets into the area, so that the routers know about the subnets.
With stubby areas, ABRs quit advertising type 5 (external) LSAs into the stubby area, but instead
ABRs create and advertise default routes into the stubby area. As a result, internal routers use
default routing to forward packets to the ABR anyway. However, the internal routers now have
sparser LSDBs inside the area.

The classic case for a stubby area is an area with one ABR, but stubby areas can work well for
areas with multiple ABRs as well. For example, the only way out of area 3 in Figure 9-6 is through
the only ABR, R1. So, R1 could advertise a default route into area 3 instead of advertising any
external type 5 LSAs.

Also in Figure 9-6, area 5 has two ABRs. If area 5 were a stubby area, both ABRs would inject
default routes into the area. This configuration would work, but it may result in suboptimal routing.

OSPF defines several different types of stubby areas. By definition, all stubby areas stop type 5
(external) LSAs from being injected into them by the ABRs. However, depending on the variation,
a stubby area may also prevent type 3 LSAs from being injected. The other variation includes
whether a router inside the stubby area can redistribute routes into OSPF, thereby injecting an
external route. Table 9-5 lists the variations on stubby areas, and their names.

Note in Table 9-5 that all four stub area types stop type 5 LSAs from entering the area. When the
name includes "totally," type 3 LSAs are also not passed into the area, significantly reducing the size
of the LSDB. If the name includes "NSSA," it means that external routes can be redistributed into
OSPF by routers inside the stubby area; note that the LSAs for these external routes would be type 7.