Figure 1
4 Layer Framework for Security Engineering

What?

Policy
Model
Architecture
Mechanism

How?

Figure 2
4 Layer Framework for Multilevel Security

What? Mulitlevel Security

No information leakage
Lattices (Bell-LaPadula)
Security kernel
Security labels

How?
Figure 3
4 Layer Framework for RBAC

<table>
<thead>
<tr>
<th>What?</th>
<th>Role-Based Access Control (RBAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Policy neutral</td>
</tr>
<tr>
<td></td>
<td>RBAC96 model</td>
</tr>
<tr>
<td></td>
<td>user-pull, server-pull, etc.</td>
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<tr>
<td></td>
<td>certificates, tickets, PACs, etc.</td>
</tr>
</tbody>
</table>

Figure 5
Server-Mirror User-Role Enforcement

Client — Server

User-Role Authorization Server

mirrored
Figure 5
Server-Pull User-Role Enforcement

Client  Server

User-Role Authorization Server

Figure 6
User-Pull User-Role Enforcement

Client  Server

User-Role Authorization Server